



## **ARCHIVE 4**

**Code Adoption Documents, Guidelines,  
Bulletins, Advisories, Director's Orders &  
Safety Orders**

**Issued from  
November 2011 to September 2019**

**as of**

**August 1, 2022**

**Elevating and Amusement Devices Safety Program  
Technical Standards and Safety Authority**

This file contains historical documents (or regulatory instruments) that formed part of Ontario's Elevating Devices Regulatory Landscape.

The documents enclosed are those which have been Archived due to their age, being superseded by other documents or otherwise removed from the current ACTIVE Regulatory Documents Binder (ED-SKI).

Archive 1 contains documents created prior to May 5, 1997 that were issued by the Ministry of Consumer and Commercial Relations (MCCR).

Archive 2 contains documents issued from May 5, 1997 to Dec 2006.

Archive 3 contains archived documents issued from January 2007 to October 2011.

Archive 4 contains archived documents issued from November 2011 to September 2019

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
ID No.	Date	CODE ADOPTION - ARCHIVE	Archive
277/19	Feb-01-19	ED CAD Amendment - Updated to Parts 1,2,4,5,8, Re-Issue Parts 3,6,7	Archive 4
268/14	Dec-05-14	Requirements for Transport Platforms	Archive 4
261/13-r1	Sep-15-13	CAD Amendment - 261/13-r1 - Adoption of A17.1-2010/B44-10	Archive 4
255/12	Sep-14-12	Construction Hoist CAD - Maintenance and Operator Logs	Archive 4
250/11	Nov-01-11	CAD Amendment - Adoption of A17.1-2010/B44-10	Archive 4
246/11	Apr-25-11	Complete CAD Amendment and Adoption of Z98-07(Oct 1,2011)	Archive 3
239/10	Jun-21-10	Annual Testing of Firefighter's Emergency Operation	Archive 3
238/09	Jan-29-10	Adoption of CSA Standard B355-09, Lifts for Persons with Physical Disabilities	Archive 3
212/07-r1	Mar-17-09	Oil Loss Monitoring for Hydraulic Elevators	Archive 3
225/07-r3	Mar-02-09	Adoption of ASME A17.1/CSA B44-07 Safety Code for Elevators and Escalators	Archive 3
194/08	Oct-08-08	Regulation of Parking Garage Lifts	Archive 3
225/07-r2	May-13-08	Adoption of ASME A17.1/CSA B44-07 Safety Code for Elevators and Escalators	Archive 3
225/07-r1	Nov-30-07	Adoption of ASME A17.1/CSA B44-07 Safety Code for Elevators and Escalators	Archive 3
216/07	Sep-01-07	Adoption of Z185-M87(R2001), Z256-M87(R2006), A10.22-1990(R1998) w E/EE/PES requirements.	Archive 3
225/07	Jul-16-07	Adoption of ASME A17.1/CSA B44-07 Safety Code for Elevators and Escalators	Archive 3
213/07	Apr-10-07	Refurbishing of Type D Rack and Pinion Safeties	Archive 3
212/07	Jan-12-07	Oil Loss Monitoring for Hydraulic Elevators	Archive 3
204/06	Jan-20-06	Adoption of A17.1S-2005 for MRL Elevators ONLY	Archive 2
198/05	Jun-30-05	B44-04 Code Adoption	Archive 2
183/03	Dec-01-03	Adoption of B355-00 Supplement#1 - Lifts for persons with physical disabilities	Archive 2
186/03	Nov-01-03	Adoption of Z98S1-02 (Supplement #1) to CAN/CSA-Z98-01	Archive 2
181/03	Jun-27-03	Adoption of B44-00 Update#1	Archive 2
174/02	Feb-24-03	Adoption of B311-02 Code	Archive 2

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161/01-r2	May-17-02	Adoption of B44-00 Code	Archive 2
161/01-r1	Mar-07-02	Adoption of B44-00 Code	Archive 2
167/01	Dec-31-01	Adoption of CSA Z98-01 Passenger Ropeways Standard - New Edition	Archive 2
161/01	Aug-16-01	Adoption of B44-00 Code	Archive 2
157/01	Jan-10-01	Adoption of CSA B355-00	Archive 2
141/98	Dec-30-98	Adoption of B44S2 – 98 Supplement No.2 to CAN/CSA- B44-94 Safety code for Elev.	Archive 2
99/92-r4	Dec-30-98	Maintenance of Elevators, D/W, Freight Plat, Esc, etc. –New Standard	Archive 2
99/92-r3	Oct-20-98	Maintenance of Elevators, D/W, Freight Plat, Esc, etc. –New Standard	Archive 2
129/97	Apr-02-97	Adoption of Supplement #1 – 1997 to CAN/CSA-B44-94	Archive 1
126/96	Aug-06-96	Adoption of CSA-Z98-96 Passenger Ropeways	Archive 1
112/94-r2	Dec-06-94	Adoption of CSA B355-94 Lifts for Persons with Physical Disabilities	Archive 1
99/92-r2	Dec-02-94	Maintenance of Elevators, D/W, Freight Plat, Esc, etc. –New Standard	Archive 1
115/94	Nov-04-94	Adoption of CSA B444-94, Safety code for Elevators	Archive 1
112/94-r1	Nov-04-94	Adoption of CSA B355-94 Lifts for Persons with Physical Disabilities	Archive 1
112/94	Apr-26-94	Adoption of CSA B355-94 Lifts for Persons with Physical Disabilities	Archive 1
99/92-r1	Feb-10-94	Maintenance of Elevators, D/W, Freight Plat, Esc, etc. –New Standard	Archive 1
94/92r1	Jan-20-93	Adoption of Supplement No. 1-1992 to CAN/CSA-B44-M90 Safety Code for Elevators	Archive 1
101/ 93	Jan-13-93	Adoption of Supplement No. 1-92 to CAN/CSA-Z98-M91 Passenger Ropeways	Archive 1
99/92	Oct-30-92	Maintenance of Elevators, D/W, Freight Plat, Esc, etc. –New Standard	Archive 1
98/92	Oct-13-92	Adoption of CAN/CSA-Z98-M91 Passenger Ropeways New Edition	Archive 1
94/92	Jun-22-92	Adoption of Supplement No. 1-1992 to CAN/CSA-B44-M90 Safety Code for Elevators	Archive 1
78/90-r5	Jun-22-92	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1
78/90-r4	May-27-91	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1
78/90-r3	May-23-91	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1
78/90-r2	Jan-17-91	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1



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78/90-r1	Oct-22-90	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1
78/90	Jun-01-90	Adoption of CAN/CSA B44-M90 – Safety Code for Elevators	Archive 1
57/87	Nov-16-87	Adoption of Supp.No.1 – 1987 to CAN3-B44-M85 Safety Code for Elevators	Archive 1
50/87	May-06-87	Adoption of CAN/CSA Z256-M87 Construction Hoists	Archive 1
46/87	Jan-15-87	Adoption of CAN/CSA-B355-M86 Elevating Devices for the Handicapped	Archive 1
45/86	Dec-31-86	Adoption of Supp. No. 2-1986 to CAN3-Z98-M78 Passenger Ropeways	Archive 1
31/86	Jan-15-86	Adoption of CAN3-B44-M85- Safety Code for Elevators	Archive 1
26/85-r1	Dec-27-85	Adoption of CAN3-B44-M85 Safety Code for Elevators	Archive 1
27/85	Nov-10-85	Adoption of Supplement No.1-1984 to CAN3-Z98-M78 Passenger ropeways	Archive 1
26/85	Sep-10-85	Adoption of CAN3-B44-M85 Safety Code for Elevators	Archive 1
21/85	Jan-04-85	Retainers Required on New Slide Landing Doors	Archive 1
05/83	Aug-24-83	Testing of ski chair lift components	Archive 1
<b>ID No.</b>	<b>Date</b>	<b>GUIDELINES</b>	<b>Archive</b>
258/12	Dec-14-12	NTSD and NSM Independence (B44-10)	Archive 4
257/12	Sep-14-12	Guideline - Construction Hoist Operator Logs	Archive 4
256/12	Sep-14-12	Guideline - Construction Hoist Maintenance Logs	Archive 4
252/12-r2	Nov-15-19	Simplified Procedure to Correct / Revise a Registered Design Submission	Archive 4
252/12-r1	Sep-03-19	Simplified Procedure to Correct / Revise a Registered Design Submission	Archive 4
252/12	Mar-20-12	Simplified Procedure to Correct / Revise a Registered Design Submission	Archive 4
251/11-r2	Sep-15-13	Alterations Guideline for CAD 261/13-r1 ( & 277/19)	Archive 4
251/11-r1	May-01-13	Alterations Guideline for CAD 261/13	Archive 4
251/11	Feb-13-12	Alterations Guideline for CAD 261/13	Archive 4
224/07-r1	Nov-30-12	Aging Ski Lift - Subsequent Engineering Assessments	Archive 4
214/09-r1	Jul-05-12	Incident Reporting Requirements for Z98 Passenger Ropeway Devices	Archive 4

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
214/09-r1 (Form)	Jul-05-12	Incident Reporting Requirements for Z98 Passenger Ropeway Devices	Archive 4
214/09	Jan-18-10	Incident Reporting Requirements for Z98 Passenger Ropeway Devices	Archive 3
234/09	Jun-11-09	Frequency of Plunger Gripper Inspection and Testing	Archive 3
226/07-r1	Mar-02-09	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-07	Archive 3
226/07	Nov-26-07	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-07	Archive 3
224/07	Jun-25-07	Aging Ski Lift - Subsequent Engineering Assessments	Archive 3

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200/05	Sep-23-05	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-04	Archive 2
164/02-r1	Dec-11-03	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-00	Archive 2
164/02	May-01-02	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-00	Archive 2
116/95-r1	Jul-30-96	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-94	Archive 1
116/95	Feb-20-95	Alterations of Elevators, DW, Freight Platforms , Escalators & Moving Walks per CSA B44-94	Archive 1
48/87	Jan-30-87	General Variance to Freight Platform Lifts Limitations: Floor Penetration and Travel	Archive 1
37/86	Apr-22-86	Section 58 (1) of O.Reg. 229/81 .....	Archive 1
05/83-r2	May-28-85	Testing of ski chair lift components & Non-Destructive Testing of Hauling Ropes	Archive 1
06/83	Oct-11-83	HW enclosure, landing door & platforms new rules	Archive 1
05/83-r1	Sep-26-83	Testing of ski chair lift components	Archive 1
04/83-r2	Sep-20-83	Emergency power & special emergency service	Archive 1
04/83-r1	Apr-14-83	Emergency power & special emergency service	Archive 1
04/82	Mar-30-83	Emergency power & special emergency service	Archive 1
<b>ID No.</b>	<b>Date</b>	<b>Advisory - Enforcement Policy - Enforcement Procedure - Interpretation Bulletin</b>	<b>Archive</b>
275/18	Sep-12-18	Emergency Brake - Brake Lining Replacement	Archive 4
265/14	Jan-07-14	Construction Hoist Interlocks	Archive 4
264/13	Aug-22-13	Advisory - NTSD & NSM	Archive 4
259/12	Dec-18-12	List of Data - Contractor Registration / Renewals (March 2013)	Archive 4
232/08-r1	Aug-01-12	Continuing Education Requirements for ED Mechanics	Archive 4
218/07-r1	Jan-11-11	TSSA Inspection Enforcement Procedures (3X fee)	Archive 3
242/10	Nov-01-10	Signing of log books	Archive 3
241/10	Apr-09-10	Monthly Application of Friction Reducing Agents on Escalator & Moving Walk Skirts	Archive 3
228/07 -r1	Dec-22-08	Activation of FEO on Alterations	Archive 3
231/08	Nov-27-08	Roof Top Access	Archive 3

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232/08	Nov-25-08	Continuing Education Requirements for ED Mechanics	Archive 3
218/07	Dec-04-07	TSSA Inspection Enforcement Procedures (2X fee)	Archive 3
228/07	Oct-01-07	Activation of FEO on Alterations	Archive 3
222/07	Apr-23-07	TSSA Grounding and Bonding - Enforcement Procedure	Archive 3
199/06-r1	Jul-27-06	Pre-Inspection Checklist for Passenger and Freight Elevators	Archive 2
199/06	Apr-03-06	Pre-Inspection Checklist for Passenger and Freight Elevators	Archive 2
117/95-r1	Mar-01-05	Guidelines for Reporting of Accidents/Incidents	Archive 2
166/01	Dec-17-01	LULA Elevators & Long Apron Plates, Travel Restrictions: EnclosedVPL's & LULA	Archive 2
155/00	Sep-26-00	Hydraulic Elevator Specification Sheet	Archive 2
153/00	Mar-20-00	Electric Elevator Specification sheets – New format	Archive 2
149/99	Jul-30-99	Elevators in residential buildings altered to conform with the Ontario Fire Code	Archive 2
146/99	Mar-15-99	Revision to Design Submissions. Simplified Procedure	Archive 2
135/98	Oct-20-98	Inspection operation w/open door circuits (CSA/B44 3.12.1.4.4) - Procedures	Archive 2
117/95	Aug-05-95	Guidelines for Reporting of Accidents/Incidents	Archive 1
121/95	Aug-01-95	Step Fatigue Test for Escalators	Archive 1
120/95	Aug-01-95	Replacements of Seals of Components Previously Sealed by an Inspector	Archive 1
113/94-r1	Oct-21-94	Door Monitoring System	Archive 1
114/94	Jul-20-94	Inspection: By-Pass Switches and Door Monitoring System	Archive 1
113/94	Jul-20-94	Door Monitoring System	Archive 1
111/93	Aug-13-93	Periodic Load testing of the Above Surface Passenger Ropeways	Archive 1
96/92	Jun-22-92	Standardization of Spec .Sheet Entries for the New EDB Computer data bank	Archive 1
95/92	Jun-22-92	Stop Switch on In-Car Emergency Operation Clause 3.12.15.8.2 (h)	Archive 1
90/92	Feb-09-92	Escalator installation # Changes	Archive 1
80/90	Oct-22-90	Revisions to Design Submissions Filed Prior to Registration	Archive 1
74/89	Jan-11-89	Fire Rating of Oversized Hoistway Door Assemblies	Archive 1

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64/88	Jun-03-88	Relocated Elevating Devices Licensing Procedure and Applicable Standards	Archive 1
55/87	Dec-01-87	Reporting of Maintenance Contractors	Archive 1
54/87	Dec-01-87	Reporting of Maintenance Contractors	Archive 1
47/87-r1	Nov-19-87	New Electric Elevators: Acceptance	Archive 1
49/87-r1	Jun-24-87	Escalators Type Tests - Revised	Archive 1
49/87	Mar-19-87	Escalators Type Tests and Certification in accordance with Clause 8.11* of CAN3-B44-M85	Archive 1
47/87	Jan-19-87	New Electric Elevators: Acceptance	Archive 1
43/86	Dec-01-86	Reporting of Maintenance Cont (Owner-contractors)	Archive 1
42/86	Dec-01-86	Reporting of Maintenance Contractors	Archive 1
41/86	Aug-01-86	New Fees under the Elevating Devices Act, Ontario Reg. 463/86	Archive 1
39/86	Jun-13-86	Unauthorized Access to Elevator Hoistways and Car Tops	Archive 1
35/86	Apr-22-86	New Fees Proposed Under the ED act	Archive 1
33/86	Jan-20-86	Reporting of Maintenance Contractors	Archive 1
32/86	Jan-20-86	Reporting of Maintenance Contractors	Archive 1
30/85	Dec-10-85	1986 Updating of Registered Contractors Maintenance List - by Reg. 13 EDevices Act & Regs.	Archive 1
29/85	Nov-15-85	Amendment to EDB Ruling #22/85 – Section 40 of O.Reg.803/82	Archive 1
20/84	Dec-17-84	New Procedure for Reporting of Maintenance Contracts	Archive 1
15/84	Nov-01-84	Temporary rules for automatic leveling on Vertical Platform “C”	Archive 1
09/83	Dec-20-83	Accidents & incidents reporting Provision of testing equipment ED pre-examination	Archive 1
02/82	Nov-24-82	Sprinklers in M/R	Archive 1
<b>ID No.</b>	<b>Date</b>	<b>ADVISORY - Information Bulletin</b>	<b>Archive</b>
276/18	Aug-31-18	CAT1 - Testing of Emergency Power	Archive 4
275/18-r1	Aug-31-18	Emergency Brake - Brake Lining Replacement	Archive 4
263/13	Jun-07-13	Elevating Devices Owners Bulletin - Owner Responsibilities	Archive 4

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
261/13	May-01-13	CAD Amendment - 261/13 - Adoption of A17.1-2010/B44-10	Archive 4
262/13	Apr-19-13	Maintenance and repair of Elevating Devices by Qualified Mechanics	Archive 4
259/12-r1	Jan-31-13	List of Data - Contractor Registration / Renewals (March 2013)	Archive 4
254/12	Apr-19-12	Operation and Maintenance Manuals for Existing Passenger Ropeways	Archive 4
243/10-r1	Mar-20-12	Buried hydraulic jacks with single bulkhead cylinders	Archive 4
244/10	Apr-28-10	Maintenance and repair of Elevating Devices by Qualified Mechanics	Archive 3
243/10	Apr-09-10	Buried hydraulic jacks with single bulkhead cylinders	Archive 3
237/08	Dec-23-08	Maintaining safe clearances around chair lift carriers	Archive 3
236/08	Dec-18-08	Structural failure due to water intrusion & ice expansion	Archive 3
215/07	Aug-20-07	Outdoor Lifts for Persons with Physical Disabilities	Archive 3
227/07	Jul-03-07	Extension to Sheave Jammer Deadline	Archive 3
208/06-r1	May-31-07	Examination and test of free-fall, overspeed, and uncontrolled low-speed protection devices	Archive 3

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
197/06-r1	Dec-06-06	B355 Maintenance Requirements	Archive 2
208/06	Jul-27-06	Examination and test of free-fall, overspeed, and uncontrolled low-speed protection devices	Archive 2
195/05	Jul-27-06	Examination, Test & Periodic Maint. of H/W Rope Gripper for ACO and UCM	Archive 2
197/06	Mar-17-06	B355 Maintenance Requirements	Archive 2
203/06	Mar-02-06	Use of Shopping Carts on Moving Walks	Archive 2
196/05	Apr-14-05	B44-00 Update#1 Requirements Related to 2.27.1 Emergency Communications	Archive 2
187/04	Mar-31-04	List of Active Elevating Device Rulings and Bulletins as of March 2004	Archive 2
176/02	Aug-18-03	Sealing of Components on all Elevating Devices excluding Passenger Ropeways	Archive 2
175/02	Jun-23-03	Firefighter Emergency Operations [FEO], formerly 'SES'	Archive 2
152/00	Mar-15-00	Elevating Devices Mechanics Certification Process/Due Diligence	Archive 2
151/99	Nov-18-99	Potential Y2K Issues affecting Elevating Devices	Archive 2
139/98	Dec-04-98	CSA-B44 Code – Section 12 - Five Year Governor Pull-Through Force Tests	Archive 2
131/98	Oct-20-98	(1) DO's Replacing DR's (2) List of Active / Cancelled Rulings	Archive 2
132/98	Jul-24-98	Maintenance and Repair of Elevating Devices by Qualified Mechanics	Archive 2
127/96	Nov-20-96	Interpretation of DR #105/93 – Rules for fire retrofit residential building	Archive 1
124/96	Jan-31-96	Safety Alert – Maintenance Hazards on Escalators	Archive 1
119/95	Jul-18-95	Maintenance and Repair of Elevating Devices by Qualified Mechanics	Archive 1
118/95	Jun-16-95	Fall Protection on Elevator Car Tops	Archive 1
100/92	Jun-24-94	Major Alteration Inspection Prior to return to Service	Archive 1
81/90-r1	Sep-28-93	Supervision of “Mechanics in Training”	Archive 1
89/92	Jan-14-92	New Fees – Regulation 2/92	Archive 1
86/91	Oct-30-91	Work start date on major alterations to be reported to the Elevating Devices Branch	Archive 1
81/90	Nov-02-90	Supervision of “Mechanics in Training”	Archive 1
77/90	May-01-90	Observation Elevators – Cleaning of Glass Enclosures	Archive 1
76/90	May-01-90	Cleaning of Glass Enclosures on Observation Elevators	Archive 1

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75/90	Feb-22-90	Return to Service Following a Minor Alteration	Archive 1
73/89	Aug-14-89	New Fees under the Elevating Devices Act, O. Reg. No. 451/89	Archive 1
72/89	Jun-09-89	Maintenance Procedures	Archive 1
70/89	Feb-23-89	Item 126 (Kinetic Energy) Spec. Sheet for Hyd. Elevators – Form #ID-29426 (Ed 11/88)	Archive 1
66/88	Jun-27-88	Maintenance and Repair of Elevating Devices by Qualified Mechanics	Archive 1
56/87	Nov-13-87	Oil Buffers Certification with C.3.3.5.10 of CAN3-B44-M87 required after January 1,1989	Archive 1
53/87	Nov-06-87	Concrete Foundations for New Passenger Ropeways	Archive 1
52/87	Jun-02-87	Elevators – Emergency Signal Devices Clause 3.13 of CAN3-B44-M85	Archive 1
51/87	Jun-02-87	New Hydraulic Elevators – Auxiliary Contact in Main Disconnect Switch	Archive 1
38/86	May-01-86	Section 40 – Compliance	Archive 1
28/85	Sep-11-85	Minor Type ‘A’ and Minor Type ‘B’ Submission and Inspection Rules	Archive 1
22/85-r1	Aug-29-85	Important Section 40, Ontario Regulation 803/82 s.3-Compliance	Archive 1
23/85	Apr-16-85	Important Compliance with Section 59 of Ontario Reg. 229/81 s.58 Required	Archive 1
22/85	Apr-16-85	Important Section 40, Ontario Regulation 803/82 s.3-Compliance	Archive 1
19/84	Nov-20-84	Speed Limits – Workman’s Construction Hoists	Archive 1
18/84	Nov-19-84	Safety Test Records – Section 23 of Ont. Reg. 229/81 – Req'mnts for inspection & testing	Archive 1
08/83	Oct-24-83	Safe working practice on elevators	Archive 1
<b>ID No.</b>	<b>Date</b>	<b>Directors Order - Safety Order - Safety Alert</b>	<b>Archive</b>
266/14	Jun-01-14	Galaxy Wiring Methods	Archive 4
260/14-r1	Apr-15-15	Apron Plate Safety Order	Archive 4
267/14	May-15-14	Retroactive Leveling Requirement for Passenger Elevators with Single Speed Control	Archive 4
260/14	Mar-17-14	Apron Plate Safety Order	Archive 4
253/12	Mar-12-12	Retroactive Interlock Requirements for Freight Platform Lifts and Material Lifts	Archive 4
249/11	Oct-14-11	Cylinder Collar Welding on Lifts for Persons with Physical Disabilities	Archive 3



Technical Standards & Safety Authority ID No.	Date	Document Type	Status
247/11	Jul-07-11	Requirements for Maintenance and Testing of Escalator Brakes	Archive 3
248/11	Apr-27-11	Pressure Sensor requirements for (B355) Vertical Platform Lifts	Archive 3
245/10	Dec-01-10	Installation or Upgrade of Car top Guardrails	Archive 3
240/09	Dec-16-09	Raising the chair lift safety bar - continued data collection and monitoring	Archive 3
235/09	Jun-11-09	Motor Addition to Northern ERM Machines	Archive 3
233/08-r1	Feb-06-09	Data Collection and Monitoring	Archive 3
233/08	Nov-03-08	Data Collection and Monitoring	Archive 3
223/08-r1	Mar-04-08	Weld Inspection of Unitech / Lift Tech Elevators	Archive 3
223/08	Feb-01-08	Weld Inspection of Unitech / Lift Tech Elevators	Archive 3
219/07	Oct-12-07	Hotel Fire code retrofit	Archive 3
229/07	Oct-10-07	Changes to Unloading Station on Chair Lifts	Archive 3
220/07	Jun-22-07	Kone Escalator Brakes	Archive 3
211/06-r2	May-01-07	Common FEO Key	Archive 3
169/02-r2	Apr-18-07	Periodic Engineering Review and Assessment of Aging Above-Surface Passenger Ropeways	Archive 3
221/07	Feb-16-07	Falling from Chair Lifts	Archive 3
206/07	Jan-11-07	O Thompson Controls - non compliance - redundancy and checking	Archive 3
207/06-r1	Dec-05-06	Sheave Jammer Replacement Order	Archive 2
211/06-r1	Nov-28-06	Common FEO Key	Archive 2
211/06	Jul-28-06	Common FEO Key	Archive 2
210/06	Jul-27-06	Replacement & NDT Inspection Requirements for Hangers and Chairs manufactured by BM Lifts Limited.	Archive 2
207/06	Jul-27-06	Sheave Jammer Replacement Order	Archive 2
192/05-r2	Jul-27-06	ThyssenKrupp Sheave Jammer Inspection & Testing Requirements	Archive 2
209/06	Mar-10-06	NDT & Inspection Requirements for Hanger & Chairs manufactured by BM Lifts Ltd.	Archive 2
189/05	Sep-23-05	General Variance to Type B Material Lifts Limitations: Floor Penetration and Travel	Archive 2
192/05-r1	Jul-15-05	ThyssenKrupp Sheave Jammer Inspection & Testing Requirements	Archive 2

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
188/04	Jun-30-05	Change in Scope of EDM-B Certificate	Archive 2
171/02-r2	May-03-05	Cab Interior Modernization and / or Change in Cab Weight	Archive 2
191/05	Apr-15-05	Dover 105 Machine Brake - PDQ Motor Field Control Circuits	Archive 2
192/05	Feb-23-05	ThyssenKrupp Sheave Jammer Inspection & Testing Requirements	Archive 2
193/05	Feb-08-05	ThyssenKrupp 340 M/C Brake Maintenance	Archive 2
173/02-r1	Jun-01-04	Retrofitting of elevators without car top maintenance	Archive 2
190/04	Mar-23-04	Otis 15 ATL Machine Sheave Bolts	Archive 2
185/03	Sep-24-03	BM Chair Lifts with CWT Tensioning	Archive 2
184/03	Sep-24-03	Inspection and Replacement Criteria for CWT Ropes	Archive 2
171/02-r1	Sep-05-03	Cab Interior Modernization and / or Change in Cab Weight	Archive 2
182/03	Aug-11-03	Actions to mitigate hazards and causes for detachments on tube tows	Archive 2
179/03	May-12-03	Hollister/Whitney Disc Brake	Archive 2
177/03	May-12-03	Muffler Inserts	Archive 2
171/02	Apr-03-03	Cab Interior Modernization and / or Change in Cab Weight	Archive 2
180/03	Mar-17-03	Chair Lifts with Counterweight Ropes – ‘Inspection / Verification and/or Replacement’	Archive 2
169/02-r1	Mar-05-03	Periodic Engineering Review and Assessment of Aging Above-Surface Passenger Ropeways	Archive 2
178/03	Feb-24-03	Reporting of Detachments on "Tube Tows" - Secondary Carriers	Archive 2
173/02	Nov-01-02	Retrofitting of elevators without car top maintenance	Archive 2
172/02	Nov-01-02	Elevators with in-car special emergency operation	Archive 2
165/02	Jul-24-02	US Elevator - Ascension 2000 Control - Door Monitor	Archive 2
170/02	Mar-20-02	Apprenticeship Requirement of Elevating Devices Mechanics-in-Training	Archive 2
169/02	Feb-14-02	Periodic Engineering Review and Assessment of Aging Above-Surface Passenger Ropeways	Archive 2
168/02	Jan-17-02	Periodic Load testing and Preseason Inspection - of Passenger Ropeways	Archive 2
159/01	Dec-13-01	Armor AD1 AD2 Controls - Shorts in circuits due to objects falling on relays mounted below	Archive 2
162/01	Aug-22-01	Listing of Elevators w/o Car Top Maintenance Stations	Archive 2

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
160/01	Aug-16-01	Elevator with inverted cylinders	Archive 2
158/01	Feb-20-01	Schindler Escalators Inserts	Archive 2
156/01	Dec-14-00	Firefighter's Elevators	Archive 2
150/00-r2	Nov-17-00	Barricading Escalators/Moving Walk during maintenance	Archive 2
150/00-r1	Sep-26-00	Barricading Escalators/Moving Walk during maintenance	Archive 2
154/00	Jul-31-00	Hollister/Whitney Governors – model 201, 205 & 208	Archive 2
150/00	Jun-07-00	Barricading Escalators/Moving Walk during maintenance	Archive 2
147/99-r1	Dec-31-99	Garaventa Stair Plat. Lifts – Leading Edges Operation	Archive 2
61/88-r13	Jul-28-99	Retrofitting of Elevator Slide Doors w/ safety retainers - 1st amend.	Archive 2
147/99	Jun-30-99	Garaventa Stair Plat. Lifts – Leading Edges Operation	Archive 2
148/99	Jun-28-99	Otis Electronic Touch Buttons, Maintenance procedures	Archive 2
145/99	Feb-16-99	Carriers on Borvig double Chair Lifts. Urgent Actions Required.	Archive 2
144/99	Feb-16-99	Cross-arm assemblies on Hallift bars lifts and/ or chair lifts Urgent Actions Required	Archive 2
143/99	Feb-08-99	In-ground cylinder corrosion - Contractors to develop and implement checking	Archive 2
142/98	Dec-30-98	“Contact Shields” on horizontally mounted Klockner – Moeller and Benedict + Jager	Archive 2
140/98	Dec-04-98	Turnbull / Dover Elev.; Door – zone – switch retrofit required	Archive 2
138/98	Oct-20-98	Northern Elev. Traction Sheave Break (“Jammer”)	Archive 2
137/98	Oct-20-98	GD45 Dover Machine Gear Mounting Bolt Failure	Archive 2
136/98	Oct-20-98	Benedict & Jager Relays – Horizontally Mounted	Archive 2
133/98	Jul-20-98	Advisement of the Service Bulletin Number 1998-001 issued by Van Roll Tramways	Archive 2
134/98	Jun-24-98	G.A.L/ Hollister –Whitney “Rope-Gripper”- Models #600/605/610 may need retrofit	Archive 2
128/96-r1	Jul-24-97	Support, hold-down & combination hold-down/support sheave assemblies on the chair lifts	Archive 2
128/96	Dec-13-96	Hold-down & combination hold-down/support sheave assemblies on the above-surface chair lifts	Archive 1
108/93-r1	Mar-18-96	Relays in Safety Circuits and Wiring Changes on Horn / Armor	Archive 1
125/96	Mar-01-96	Retrofit of Pivot Pins on Northern Type N two Speed Door Relating Linkage	Archive 1

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
123/96	Jan-31-96	Order to Retrofit Dover 105B & G01015 Geared Machines	Archive 1
122/95	Sep-15-95	C.O. & 2 Spd Hall & Car Doors – Devices with 1/ 8” Dia. Air Cord of 7x7 Strand	Archive 1
103/93-r2	Jan-05-95	Existing Elevator Door Reopening Devices - alteration to conform with B44 cl 2.13.5	Archive 1
105/93-r2	Oct-25-94	Fire Code Retrofit Elevators – Residential Buildings (O.Reg. 627 / 92 Fire Marshals Act)	Archive 1
105/93-r1	Mar-01-94	Fire Code Retrofit Elevators – Residential Buildings (O.Reg. 627 / 92 Fire Marshals Act)	Archive 1
103/93-r1	Jul-15-93	Existing Elevator Door Reopening Devices - alteration to conform with B44 cl 2.13.5	Archive 1
110/93	Jul-14-93	Continuity of Ground on Controllers to be verified, Checking Beckett VV Controllers	Archive 1
109/93	Jul-14-93	Warning: Effectiveness of Safety Retainers Depends on Panel – Sill Clearances	Archive 1
108/93	Jul-12-93	Relays in Safety Circuits and Wiring Changes on Horn / Armor	Archive 1
107/93	Jun-21-93	Inconsistencies in reporting devices maintained in Ontario	Archive 1
106/93	May-10-93	Alert – Use of Jumpers – Safe Trouble-shooting procedures required	Archive 1
105/93	Feb-17-93	Fire Code Retrofit Elevators – Residential Buildings (O.Reg. 627 / 92 Fire Marshals Act)	Archive 1
104/93	Jan-20-93	Elevators w/Dover 105B or GD105 M/C's and MP-1 control retrofitting of M/C brakes	Archive 1
103/93	Jan-20-93	Existing Elevator Door Reopening Devices - alteration to conform with B44 cl 2.13.5	Archive 1
102/93	Jan-20-93	M.A.C Interlocks - check immediately - attach maintenance instructions	Archive 1
97/92	Nov-13-92	Retrofitting of Elevators Single Slide Doors with Safety Retainers	Archive 1
93/92	Jun-24-92	Northern Elevator wiring changes in Leveling circuits per Northern Bulletin # 85-034	Archive 1
92/92	Jun-23-92	Northern Elevators with VV Relay Tape controllers - changes per Northern Bulletin # 91-063	Archive 1
91/92	Jun-02-92	Northern Elevator with Normic Controllers may require wiring changes	Archive 1
79/90-r2	Mar-16-92	Hydraulic Cylinders Removal, Examination and Replacement	Archive 1
79/90-r1	Jan-13-92	Hydraulic Cylinders Removal, Examination and Replacement	Archive 1
85/91-r1	Sep-18-91	Escalator Brake Setting – Follow up to Ruling # 65 / 88	Archive 1
85/91	Sep-03-91	Escalator Brake Setting – Follow up to Ruling # 65 / 88	Archive 1
83/91	Feb-25-91	Retrofitting of Elevator Single Slide Doors with Safety Retainers – Procedure	Archive 1
82/90	Nov-21-90	Potential Hazard – Action by Elevator Maintenance Contractors	Archive 1

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
79/90	Aug-03-90	Hydraulic Cylinders Removal, Examination and Replacement	Archive 1
68/88-r3	Feb-22-90	Protection: Ascending Car Overspeed & Uncontrolled Car Lowspeed mov'mnt	Archive 1
62/88-r1	Nov-26-89	Door Safety Retainers – Add'l Design Req'mts for Hor. Slide Landing Doors	Archive 1
68/88-r2	Jun-09-89	Protection: Ascending Car Overspeed & Uncontrolled Car Lowspeed mov'mnt	Archive 1
71/89	May-04-89	Re-Wiring on “Northern “ Elevators with “KUP” Style Relay Controllers	Archive 1
68/88-r1	Dec-19-88	Protection: Ascending Car Overspeed & Uncontrolled Car Lowspeed mov'mnt	Archive 1
69/88	Oct-31-88	Gal Type “MO” and “MOCP” Interlock Assemblies	Archive 1
68/88	Oct-27-88	Protection: Ascending Car Overspeed & Uncontrolled Car Lowspeed mov'mnt	Archive 1
67/88	Oct-27-88	Protection Against Uncontrolled Overspeed of Ascending Car	Archive 1
65/88	Jun-10-88	Checking of Escalator Brake Setting	Archive 1
63/88	Jun-03-88	Beckett Elevators w/VV Drives to be revised to Eliminate Potentially Unsafe Conditions	Archive 1
62/88	Jun-03-88	Door Safety Retainers – Add'l Design Req'mts for Hor. Slide Landing Doors	Archive 1
60/88-r1	May-31-88	Fire Code Retrofit Elevators	Archive 1
61/88	May-01-88	Retrofitting of Elevator Slide Doors w/ safety retainers	Archive 1
60/88	Apr-18-88	Fire Code Retrofit Elevators	Archive 1
59/88	Mar-31-88	Escalator Load Test on Initial Inspection - No type Test Certificate Available	Archive 1
58/88	Jan-27-88	Potential Failure of Sheave Shaft of Anglo Electromatic Traction Machine	Archive 1
44/86	Nov-28-86	Horizontal Sliding Hoistway Doors	Archive 1
34/86	Nov-22-86	Major Alterations & Counterbalance	Archive 1
36/86	Apr-22-86	Hitch for Governor Rope must be secured	Archive 1
25/85	Jul-09-85	Potential Hazard created by Wear on Lock Beak and Lock Ledger	Archive 1
24/85	Jun-21-85	Unauthorized Modifications of Dover Door Latches may create potential hazard	Archive 1
17/84	Nov-16-84	Signs required if counterweight runby on elevators is not maximum allowed by the B44	Archive 1
16/84	Nov-15-84	Northern Instantaneous type ‘A’ Safeties Potentially Incapacitated by Misadjustment	Archive 1
13/84	May-16-84	Dover Elevators w/o Retiring Cam - Potentially Unsafe	Archive 1

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
12/84	Apr-13-84	BECKETT G79 governor	Archive 1
11/84	Mar-15-84	HW door gibs	Archive 1
10/84	Mar-15-84	OTIS "R" governor – pins	Archive 1
07/83	Oct-01-83	MOLINE (Mac) door interlocks	Archive 1
03/82	Dec-15-82	Working practice on chair lifts	Archive 1
01/82	Nov-18-82	Reporting of Incidents, Use of jumper wires, Testing of safeties (method)	Archive 1
ID No.	Date	Not Issued / Not Included	Archive 1
61/88-r12	Nov-01-93	Retrofitting of Elevator Slide Doors w/ safety retainers - Consolidation (not included)	
61/88-r11	Oct-18-93	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r10	Jun-01-92	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r9	Jan-10-92	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r8	Apr-12-91	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r7	Oct-20-90	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r6	Apr-30-90	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r5	Jan-22-90	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r4	Sep-26-89	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r3	Feb-24-89	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
61/88-r2	Oct-12-88	Retrofitting ...with Safety Retainers, Additional Designs ( <i>not included</i> )	
40/86	Jun-16-86	Amusement Devices Act, 1986 Ontario Regulation 248/86 ( <i>not included</i> )	
205/08		Carts on Existing Moving Walks - never issued	
130/98		Not issued	
88/91		Ruling 88 never issued	
87/91		Ruling 87 never issued	
84/91		Ruling 84 never issued	

Technical Standards & Safety Authority ID No.	Date	Document Type	Status
14/84		<i>Ruling 14 never issued, however Issued as ruling 21/85</i>	



<b>TYPE - LOCATION - SHUTDOWN</b>	<b>In case of death, serious injury or immediate hazard call:</b>		<b>877-682-8772</b>		<b>Email: <a href="mailto:ski-incident@tssa.org">ski-incident@tssa.org</a></b> ☒ = Shut Down ☎ = Call		<b>PASSENGER ROPEWAY Installation Number</b>	
	<b>Occurrence Type</b>		<input type="checkbox"/> death s36.(1) ☒☎ <input type="checkbox"/> injury with medical attention s36.(1) ☒☎ <input type="checkbox"/> injury without medical attention s36.(2) <input type="checkbox"/> equipment-property damage s36.(2) <input type="checkbox"/> equipment in a hazardous condition s36.(4,5) ☒☎ <input type="checkbox"/> fire, flood, lightning strike s36.(3) ☒☎ <input type="checkbox"/> voluntary reporting of an instance of elevated exposure to risk (No Injury and not covered in s36.(1) through s36.(5))					
<b>Device Type</b>		<input type="checkbox"/> above surface lift <input type="checkbox"/> surface lift <input type="checkbox"/> conveyor <input type="checkbox"/> secondary carrier (tube tow) <input type="checkbox"/> Other, Specify:						
<b>Location / Address of the Ski Lift</b>					<b>Occurrence Date</b>		<b>Occurrence Time</b>	
<b>Note: If the incident type is 36.(1), (3), (4) or (5), the device shall not be returned to service until:</b> <input type="checkbox"/> Cause identified, and <input type="checkbox"/> Safety of the device is restored, and <input type="checkbox"/> Inspector gave permission to return to service or <input type="checkbox"/> Returned to service per the Incident Reporting provision 214/09 s5. See completed attestation report attached.								
<b>Describe the incident in detail and cause if known:</b> (in loading/unloading area, near tower #, struck, fall from height, etc.)  <div style="text-align: center; opacity: 0.5; font-size: 2em;">Archived Superseded by New</div>								
<b>What actions were taken to secure the scene and make the site safe by the owner or contractors (if any)?</b>  <b>Describe actions taken (if any) by the owner or contractor to prevent or reduce the chance of a reoccurrence.</b>								
<b>Injured Person or N/A</b> (use one form per each injured person) N/A <input type="checkbox"/>								
<b>Name:</b>			<b>Address:</b>			<b>Telephone No:</b>		
<b>Sex:</b> <input type="checkbox"/> Male <input type="checkbox"/> Female		<b>Age:</b>						
<b>Describe injuries and medical / hospital help received (use additional sheet if required)</b>								
<b>Witness – if any witness to the incident</b>								
<b>Name:</b>			<b>Address:</b>			<b>Telephone No:</b>		
1.								
2.								
<b>Reported by:</b>		<input type="checkbox"/> Owner		<input type="checkbox"/> Contractor		<input type="checkbox"/> Other:		
<b>Completed by:</b>		<b>Name</b>		<b>Date:</b>				
		<b>Position</b>		<b>Telephone:</b>				
				<b>Fax:</b>				
				<b>Email:</b>				

INSTALLATION NUMBER IS MANDATORY





**Attestation for Return to Service (if other than death)**

**Note: ALL items MUST apply before returning a device to service prior to receiving inspector permission.**

<input type="checkbox"/> Incident was investigated by a Ski Lift Mechanic or Professional Engineer (Note: not SLM-T)	5.b) i)
<input type="checkbox"/> The incident was not a result of electrical or mechanical issues with the lift	5.b) ii)
<input type="checkbox"/> Operators at this device are competent in their load / unload / passenger assist duties	5.b) iii)
<input type="checkbox"/> Above Surface: Incident due to rider failure to load or unload in the loading / unloading area	5.b) iv)
<input type="checkbox"/> Above Surface: Incident did not involve a fall from chair greater than 3m in height (9.8 feet)	5.b) iv)
<input type="checkbox"/> Above Surface: No contact any fences, railings or structures in the loading / unloading area	5.b) iv)
<input type="checkbox"/> Surface Lift: Incident solely due to rider fall	5.b) iv)
<input type="checkbox"/> The incident was reported to the Director by telephone. This report was sent within 24hrs.	5.b) v)

Mechanic / Engineer Name: \_\_\_\_\_ Mechanic SLM # \_\_\_\_\_ Phone: \_\_\_\_\_

**INSTRUCTIONS TO THE PASSENGER ROPEWAY / SKI LIFT INCIDENT REPORTING FORM**

The following instructions are provided for information only. For complete regulatory reporting requirements, refer to the *Technical Standards & Safety Act, 2000* and Ontario Regulation 209/01 (Elevating Devices) and Director's Guideline ED-214/09 available at <http://www.tssa.org/regulated/ski/skiSafety.asp?loc3=adob>. Reporting forms can be obtained at <http://www.tssa.org/report.asp>

**TYPE – LOCATION - SHUTDOWN:** Identify the device *Installation Number*, the *Occurrence Type* (see table below), the *device type, address*, occurrence *time* and *date*. Acknowledge the shutdown / return to service criteria.

**INCIDENT DETAILS:** Provide as much detail as possible to describe the incident / event and actions taken after the incident.

**PERSONS:** Provide details related to persons; injured, any witnesses to the event, and information about the person completing this report.

**FAQ's:**

- a) Is reporting of incidents mandatory? Yes, required by the *Technical Standards & Safety Act, 2000* and section 36 of the *Ontario Regulations 209/01*. Section 37(1) of the Act specifies fines for failure to report an incident.
- b) Is the use of this form mandatory? Yes.
- c) Are owners and contractors required to report? Yes. See table below.

Summary of Reporting Requirements			
Reg ref.	Occurrence Type	Notification	Written Reports
s36.(1)	Death	Owner must notify the Director immediately	The contractor shall submit a written report to the Director within 24 hours of becoming aware of the incident
	Injury requiring services of a medical practitioner		
s36.(2)	Injury other than 36.(1) or property damage	Owner and Contractor must notify the Director within 24 hours of becoming aware	The Owner and the Contractor shall submit a written reports to the Director within 7 days of becoming aware
s36.(3)	Equipment exposure to harmful events impacting safe operation		
s36.(4)	Mechanic finds equipment in a condition that constitutes an immediate hazard	The mechanic must notify the Owner or Contractor immediately	The licence holder shall submit a written report to the Director within 7 days of the finding
s36.(5)	Licence holder finds or becomes aware of equipment in a condition that constitutes an immediate hazard	The licence holder must notify the Director within 24 hours of the finding	The licence holder shall submit a written report to the Director within 7 days of the finding

- d) **What is voluntary reporting of an instance of elevated exposure to risk?** If a device is in condition that does NOT constitute an immediate hazard, but the condition poses an "**elevated exposure to risk**" to the public, voluntary reporting provides additional data that can aid in better risk informed decision making by the Director, the elevating devices safety program and TSSA's industry councils.



Elevating and Amusement Devices Safety Division	Ref. No.: 214 / 09	Rev. No.: 1
DIRECTOR'S GUIDELINE	Date: January 6, 2010	Date: July 5, 2012

**Subject:** Guideline for the reporting of  
1) incidents  
2) equipment exposed to harmful events affecting safe operation and  
3) equipment found in a hazardous state (by a mechanic or owner)

**Applicable to:** All Passenger Ropeway Contractors, Consultants, Owners and Certificate Holders

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## 1. Introduction

Ontario Regulation 209/01 (Elevating Devices) as amended by O.Reg 252/08, which came into effect on January 1, 2009, contains updated requirements related to the reporting of incidents.

Note: Passenger ropeways fall under the definition of elevating device, as defined by O.Reg 209/01. For the purpose of this guideline, and to facilitate its readability for the ski lift industry, the term elevating device (which covers passenger ropeways and conveyors) will be replaced with either passenger ropeway or ski lift.

## 2. Purpose of this Guideline

This guideline is intended to aid in compliance with section 36 of Ontario Regulation 209/01 (Elevating Devices) titled **Reporting of Incidents**. Section 36 requires that any incident involving a ski lift be reported to the Director. The specifics of this requirement vary depending on the nature of the incident.

The **Reporting of Incidents** section of the regulation addresses issues related to;

- types of incident(s),
- harmful events which may impact the safety of a device,
- devices found in a hazardous condition,
- who should report, method of reporting and reporting timelines,
- requirements related to preserving the scene,
- returning a device back into operation, and
- thorough investigation of incidents.

A copy of section 36 is attached as Appendix 'A'.

## 3. Intent

The intent of section 36 is to ensure that the Director is informed of all incidents related to ski lifts. Section 36 deals with not only actual incidents but also hazardous conditions where no injury or property damage has yet occurred. The reporting of instances or hazardous conditions can be an effective trigger for safety enhancements and it is vital to 'risk-informed decisions making' in order to manage public safety related to ski lifts. Legislated requirements for incident reporting allow the Director to make use of information obtained beyond that which is gained only from inspection activities.

#### 4. Effective Date

The amended incident reporting section came into effect on January 1, 2009.

#### 5. Returning Passenger Ropeways to Service

a) Subsection 36.(8) provides that no person shall return an elevating device to service after an incident until the cause of the incident or condition is identified, the safety of the device restored and an inspector gives permission to return the device to service.

Responsible  
Party

b) Subject to compliance with all applicable incident reporting and notification requirements, a licensee may return a passenger ropeway to service after an incident (other than death) if,

Investigated by

- i) The incident is investigated by,
1. a ski-lift mechanic certified for that device type (not an SLM-T) or
  2. by a professional engineer; and

Not equipment  
related

ii) The person conducting the investigation can confirm that the incident did not occur as a result of an mechanical or electrical issue with the passenger ropeway; and

Not operator  
related

iii) the operators/attendants at the device can demonstrate / have practiced / are proficient in all applicable maneuvers to readily load / unload / assist passengers who have failed to load / unload (see CSA Z98-07 13.10.2), and

iv) **FOR ABOVE SURFACE LIFTS**, the person conducting the investigation determines that,

Injury occurred in  
the loading/  
unloading area

1. the incident was solely due to the rider failing to load or unload properly, within the loading and unloading area, herein defined as:

- a. Loading area: the area from the wait to load sign - to the point where a fall from the seat begins to exceed 3 meters
- b. Unloading area: the area where a fall from the seat becomes less than or equal to 3 metres - to a point 3 meters past the tangent of the upper bull wheel, and

2. the victim did not contact fences, railings, or structures within the load/unload area;

or

**FOR SURFACE LIFTS, the incident was solely due to a rider falling anywhere along the tow path, from the wait to load point to the unload point and did not sustain the injury as a result of coming in contact with any equipment related to the lift, and**

Injury occurred  
due to rider fall,  
not equipment  
strike

Incident  
Reported

v) The return to service is immediately reported to the Director at 877-682-8772 (incident reporting). Note: A written incident report is also required within 24 Hrs.

Note: The provisions in this section are an attempt to allow resorts to restore operation to a device in relatively short order, following a personal injury to a patron, provided the requirements detailed above are followed. Failure to follow the prescribed process may result in this provision being removed from the guideline.

## 6. Incident Notification and Reporting Q&A's:

### a) What is an incident?

The regulation defines an incident as follows:

*“Incident” means an occurrence involving an elevator system, an elevating device or a component of an elevating device resulting in an adverse consequence to persons or property.*

Note:

- Subsections 36.(1) and 36.(2) of the regulation specifically deal with “incidents”.
- Subsections 36.(3) through 36.(5) do not deal with “incidents” but rather with “conditions”.

### b) Are reporting requirements connected to the severity of the “incident”?

Yes.

Subsection 36.(1) details notification and reporting requirements for two categories of incident: “death”, or “injury to a person that requires the services of a medical practitioner”.

Subsection 36.(2) has notification and reporting requirements for minor incidents which are not covered in ss. 36.(1). A minor incident would be a personal injury where no medical practitioner was required or where there was property damage. Remember that a consequence to person or property = an incident.

### c) What is meant by “services of a medical practitioner”?

The regulation defines medical practitioner as follows:

*“medical practitioner” means a physician, nurse, dentist, chiropractor or physiotherapist legally qualified to practice their profession in Ontario, and a paramedic as defined under the Ambulance Act.*

If a personal injury requires the services of a medical practitioner, then the notification and reporting requirements as described in ss. 36.(1) apply.

Note: If, for example, the personal injury requires the services of a medical practitioner and a paramedic responds to the call and provides medical services in connection with a ski lift incident, the owner and if applicable the maintenance or service contractor must both comply with the reporting requirements of ss. 36.(1) in relation to a death or serious injury.

If an incident occurs in connection with a ski lift where the services of a medical practitioner are not provided or are not required, the owner and if applicable the maintenance or service contractor must both comply with the reporting requirements of ss. 36.(2) in relation to a minor injury.

### d) Do I need to report a personal injury which did not require the services of a medical practitioner (i.e. a more minor type injury)?

Yes.

Subsection 36.(2) of the regulation requires reporting incidents other than those described in ss. 36.(1). A personal injury that does not require the services of a medical practitioner would fall into this category.

### e) Aside from the “incidents” described as

- |                       |  |
|-----------------------|--|
| i) death:             | in ss.36.(1),  |
| ii) injuries:         | serious injuries in ss36.(1) and minor injuries in s36.(2), or |
| iii) property damage: | in ss.36.(2)   |

**are there any other reportable events?**

Yes.

Any time a ski lift is found to be in a condition where the safe operation of the equipment is affected (see ss. 36.(3)) or where there is an immediate hazard to the safety of persons or property [see ss. 36.(4) and ss. 36.(5)] the Director must be notified and a written report must be submitted.

**f) When are the conditions of subsection 36.(3), that detail fire, flood or other significant water exposure, vandalism, impact or lightning strike, reportable?**

Any time a ski lift has been negatively impacted to the extent that safe operation is questionable as a result of exposure to the conditions listed above, the owner and if applicable the maintenance or service contractor must both notify the Director and submit a written report of the incident to the Director.

**g) What's the difference between subsections 36.(4) and 36.(5)?**

Both of these provisions relate to the finding of the device in a condition which constitutes an immediate hazard. The difference depends on who finds or becomes aware of the hazard. Subsection 36.(4) applies if a mechanic finds the device in a hazardous state whereas subsection 36.(5) applies to licence holders.

**h) What is meant by a “condition which constitutes an immediate hazard”?**

A condition which constitutes an immediate hazard would be something that, if left unattended, would imminently cause death or serious injury to a person, also if the condition has the potential to cause property damage it likely also exhibits the potential for serious injury. If a device is in a condition that constitutes an immediate hazard, it must be immediately removed from service.

**i) What if the immediate hazard is something that can be fixed quickly through general maintenance or repair. Do I still need to report?**

Yes.

If there was a potential for harm to persons or property the Director must be notified of the event or condition and a written report must be submitted.

**j) If I comply with my notification and reporting requirements, can the device be returned to service?**

Not if the incident or condition is of a type referred to in ss. 36.(1), ss. 36.(3), ss. 36.(4) or ss. 36.(5). No person shall disturb the scene except for making the site safe or to facilitate rescue. Nothing is permitted to be done to the scene until an inspector gives permission to do so. No person is permitted to return the device to service until:

1. The cause of the incident or condition is identified;
2. The safety of the device is restored; and
3. The inspector has authorized the return to service.

**See the exception found in section 5 of this guideline, “Returning Passenger Ropeways to Service”.**

- k) If an incident [ss. 36.(1) or ss. 36.(2)] occurs or a condition as specified in ss. 36.(3), (4) or (5) is identified, can the device operate?

Requirements for Device Operation			
Reg ref.	Occurrence or Event	Operation of Equipment	Requirements before restoring operation
36.(1)	Death	<b>Shut Down.</b> Cannot interfere with anything connected with the elevating device, except for making the site safe or rescue of injured persons, until an inspector gives permission	Operation only after: 1. cause is identified & 2. device safety is restored & 3. inspector gives permission
	Injury requiring services of a medical practitioner		
36.(2)	Injury other than 36.(1) or property damage	<b>No shut down</b> requirements	Safety of the device is restored
36.(3)	Equipment exposure to harmful events impacting safe operation	<b>Shut Down.</b> Cannot interfere with anything connected with the elevating device, except for making the site safe or rescue of injured persons, until an inspector gives permission	Operation only after: 1. cause is identified & 2. device safety is restored & 3. inspector gives permission
36.(4)	Mechanic finds equipment in a condition that constitutes an immediate hazard		
36.(5)	Licence holder finds or becomes aware of equipment in a condition that constitutes an immediate hazard		

See exception found in section 5 of this guideline, “Returning Passenger Ropeways to Service”.

- l) Who is responsible to report?  
What are the timelines for reporting?  
What documentation is required?

Summary of Reporting Requirements			
Reg ref.	Occurrence or Event	Notification	Written Reports
36.(1)	Death	Owner must notify the Director immediately	The contractor shall submit a written report to the Director within 24 hours of becoming aware of the incident
	Injury requiring services of a medical practitioner		
36.(2)	Injury other than 36.(1) or property damage	Owner and Contractor must notify the Director within 24 hours of becoming aware	The Owner and the Contractor shall submit a written reports to the Director within 7 days of becoming aware
36.(3)	Equipment exposure to harmful events impacting safe operation		
36.(4)	Mechanic finds equipment in a condition that constitutes an immediate hazard	The mechanic must notify the Owner or Contractor immediately	The licence holder shall submit a written report to the Director within 7 days of the finding
36.(5)	Licence holder finds or becomes aware of equipment in a condition that constitutes an	The licence holder must notify the Director within 24 hours of the finding	The licence holder shall submit a written report to the Director within 7 days of the finding

**m) What information must be included in the report to the Director?**

TSSA has a reporting form available on the [www.tssa.org](http://www.tssa.org) web site which must be used to capture the necessary information when reporting an incident. The regulation requires that full particulars of the incident / event are provided. Subsection 36.(6) provides as follows:

“The written report shall contain the results of an investigation carried out by the contractor following the incident or finding that the [...] device was in a condition that constituted an immediate hazard.”

A copy of the reporting form is attached to this guideline.

**n) Is it a requirement to use TSSA’s reporting form?**

Yes.

A written report must be submitted to the Director in the form provided by the Technical Standards and Safety Authority. A copy of this form is attached to this guideline.

**o) Does the licence holder need to report the results of the investigation under ss. 36.(6)?**

Yes.

It will be necessary for the licence holder to work with their maintenance contractor to complete the reporting form details. Subsection 36.(6) requires that contractors carry out an investigation following an incident or the finding of a hazardous condition. This information must be included in the licence holder’s report to the Director.

While gathering information for the incident report, licence holders and contractors must be aware that during the investigation process, subsection 36.(7) requires that no person shall interfere with, disturb, destroy, carry away, or alter anything at the scene of or connected with the incident until an inspector gives permission to do so.

**p) What are some examples of a condition that constitutes an immediate hazard (imminent potential for death or serious injury)?**

While there are many possible conditions that could constitute an immediate hazard it is difficult to provide an exhaustive list. An immediate hazard is a condition that could result in death or serious injury to persons if not immediately removed from service or rectified.

Here are a few examples of hazardous conditions\*;

- A jumper is left on a safety circuit
- A safety related component is circumvented
- Missing or failed safety components
- A crack is discovered in an important weldment
- Failure of the tensioning system or components
- A single failure of a component which has created an immediate hazard condition
  - oil line or hydraulic cylinder failure
  - parted suspension or haul rope
  - brake failure

- rope derailment

\* to be considered an immediate hazard, the nature of these condition have a high probability to cause death or serious injury.

- q) **If a device is in a condition that does NOT constitute an immediate hazard [per Q&A (h) or (p)], but the condition poses an “elevated exposure to risk” to the public, can I voluntarily report the condition even though this is not covered by the regulation, and if so, how?**

Yes. Voluntary reporting of conditions which pose an “elevated exposure to risk” to the public are welcomed and can aid in better risk informed decision making by the Director, the elevating devices safety program and TSSA’s industry councils. The regulation defines the minimum requirements for reporting. The incident reporting form includes checkboxes used to specify the “occurrence type”. To report a condition which poses an elevated exposure to risk select the occurrence type; “**voluntary reporting of an instance of elevated exposure to risk**”.

Example of elevated risk might include:

- Repetitive misloads or unloads on the same device

- r) **What should I do if I am uncertain about my notification and reporting obligations?**

If you are in doubt as to whether reporting is required, you are encouraged to report the finding, or contact TSSA’s customer contact centre at 1 (877) 682-8772 for further clarification.

- s) **How do I Report?**

An incident reporting form (specific to ski lifts) is available online at [www.tssa.org](http://www.tssa.org)

Incidents may be reported via:

- Telephone Notification - TSSA’s customer contact centre at 1 (877) 682-8772
- Written Notification - via email to [ski-incident@tssa.org](mailto:ski-incident@tssa.org)

Where the regulation requires immediate reporting, see table “Summary of Reporting Requirements”, reporting must be done by telephone.

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

This Guideline has been developed in consultation with the Ski Lift Advisory Council.



## Appendix 'A'

From Ontario Regulation 209/01

### INCIDENTS

#### Reporting of incidents

36. (1) Where an incident occurs in connection with an elevating device that results in the death of a person or injury to a person that requires the services of a medical practitioner,
- (a) the owner of the device shall notify the director by telephone immediately; and
  - (b) the contractor maintaining the device shall submit to the director, in the form provided by the designated administrative authority, a written report giving full particulars within 24 hours of first becoming aware of the incident. O. Reg. 252/08, s. 21.
- (2) Where an incident occurs in connection with an elevating device, other than an incident described in subsection (1), the owner and the contractor maintaining the device shall,
- (a) notify the director by telephone or other means within 24 hours of first becoming aware of the incident;
  - (b) each submit to the director in the form provided by the designated administrative authority a written report giving full particulars within seven days of first becoming aware of the incident. O. Reg. 252/08, s. 21.
- (3) Where there has been a fire, flood or other significant exposure to water, vandalism, impact or lightning strike that may adversely affect the safe operation of an elevating device, the owner and the contractor maintaining the device shall,
- (a) notify the director by telephone or other means within 24 hours of first becoming aware of the condition that may adversely affect the safe operation of the device;
  - (b) each submit to the director, in the form provided by the designated administrative authority, a written report giving full particulars within seven days of first becoming aware of the condition. O. Reg. 252/08, s. 21.
- (4) Where a mechanic finds that an elevating device is in a condition that constitutes an immediate hazard to the safety of a person or property, he or she shall immediately remove the device from service and notify the owner or contractor maintaining the device. O. Reg. 252/08, s. 21.
- (5) Where a licence holder for an elevating device finds or becomes aware that the device is in a condition that constitutes an immediate hazard to the safety of a person or property, the licence holder shall,
- (a) immediately remove the device from service;
  - (b) notify the director by telephone or other means within 24 hours of making the finding; and
  - (c) within seven days of making the finding, submit to the director in the form provided by the designated administrative authority a written report giving full particulars. O. Reg. 252/08, s. 21.
- (6) The written report shall contain the results of an investigation carried out by the contractor following the incident or finding that the elevating device was in a condition that constituted an immediate hazard. O. Reg. 252/08, s. 21.
- (7) Where an incident or condition of a type referred to in subsection (1), (3), (4) or (5) occurs, no person shall, except for the purpose of making the site safe or rescuing a person injured in the incident, interfere with, disturb, destroy, carry away or alter any wreckage, article or thing at the scene of or connected with the incident until an inspector gives permission to do so. O. Reg. 252/08, s. 21.
- (8) No person shall return an elevating device referred to in subsection (1), (3), (4) or (5) to service until the cause of the incident or condition is identified, the safety of the device restored and an inspector gives permission to return the device to service. O. Reg. 252/08, s. 21.
- (9) An investigation under this section shall be conducted in such manner as the director considers necessary in the circumstances. O. Reg. 252/08, s. 21.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 224 / 07	Rev. No.: 1
<b>GUIDELINE</b>	Date: June 25, 2007	Date: <u>November 20,</u> <u>2012</u>

**IN THE MATTER OF:**

**THE *TECHNICAL STANDARDS AND SAFETY ACT* 2000,  
S.O. 2000, c. 16**

**- and -**

**ONTARIO REGULATION 209/01 (Elevating Devices) made under the  
*Technical Standards and Safety Act, 2000***

**- and -**

**Section 5.20 of the Elevating Devices Code Adoption Document  
dated June 1, 2001, as amended**

**Subject:** Periodic Engineering Review and Assessment of Above-surface Passenger Ropeways  
(Aging Ski Lifts)

**Sent to:** **All Passenger Ropeway Contractors and Consultants**

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**1. DIRECTOR'S GUIDELINE**

**1.1 General**

1.1.1 All persons operating above-surface passenger ropeways in Ontario shall comply with Section 5.20 of the Elevating Devices Code Adoption Document, adopted in the Elevating Devices Regulation, and in accordance with the requirements stated in this Guideline.

**1.2 Frequency for Periodic Engineering Review and Assessment**

1.2.1 All above-surface passenger ropeways shall be subject to periodic engineering assessment as follows:

**a) first or initial engineering assessment:**

- maximum 22,500 hours of operation,
- without exceeding 15 years from the initial start-up;  
("initial start-up" means first permitted for use anywhere.)

**b) second engineering assessment:**

- maximum 37,500 hours of operation,
- without exceeding 25 years;

**c) third engineering assessment:**

- maximum 45,000 hours of operation,
- without exceeding 30 years;

**d) subsequent periodic engineering assessments:**

- at every interval of 7,500 hours of operation,
- without exceeding 5 years after the third engineering assessment.

Despite the frequency stated in 1.2.1, reporting due dates may deviate somewhat as permitted by the Director. Where such deviations occur the next reporting date noted on the registered copy of the Periodic Engineering Review and Assessment report will apply. For a current listing of device installation numbers and their next scheduled frequency for the Periodic Engineering Review and Assessment, contact TSSA or obtain a copy of the **Aging Ski-Lift Periodic Engineering Review and Assessment Schedule** from the web site. The latest edition of the “Aging Ski Lift Periodic Engineering Review and Assessment Schedule” is available from the TSSA web site.

### 1.3 **Periodic Engineering Review and Assessment of Above-surface Passenger Ropeways**

- 1.3.1 The Periodic Engineering Review and Assessment shall identify passenger ropeway parts that are affected by:
- fatigue and vibration** of both **moving components** and **fixed structures** causing cracks and fractures of connections and parent metal; and
  - environmental factors** like snow, ice, rain, temperature, humidity, and dust causing corrosion and deterioration of structural, mechanical and electrical components, and shall determine the extent of their deterioration, and evaluate their security at time intervals established in section 1.2 of this bulletin.
- 1.3.2 The following sources shall be used as guides to assess the security of the passenger ropeway parts:
- The latest version of CSA Standard Z98**  
The latest version of CSA Standard Z98 shall be used as a guide to establish criteria to assess safety of parts impacted by an aging ropeway. Those parts of passenger ropeway installation requiring alteration, replacement and/or repair shall meet the requirements of the latest adopted version of CSA Standard Z98, and
  - The requirements by Manufacturer/Designer of the Passenger Ropeway**  
The requirements by Manufacturer/Designer of the Passenger Ropeway shall be used as a guide for those parts of the passenger ropeway installation requiring alteration, replacement and/or repair shall meet the requirements established by the manufacturer/designer of the passenger ropeway. Where manufacturer or designer is no longer in business, an engineer shall establish requirements for alteration, replacement and/or repair, and
  - Non-Destructive Testing (NDT) of Critical Components**  
Non-Destructive Testing of Critical Components shall be undertaken for all above-surface passenger ropeway critical components. Any components to be tested that are not directly accessible shall be disassembled. The method of non-destructive, acceptance/rejection criteria, and other tolerances shall be in accordance with the specification specified by the manufacturer/ designer. Where manufacturer or designer is no longer in business, an engineer shall perform that action.

Critical components are those parts of ropeway, the failure of which would immediately jeopardize passenger safety. The list of critical components of an above-surface ropeway shall include, but not be limited to the following:

#### MOVING COMPONENTS:

- Carrier(s)<sup>1</sup>, including grip, hanger, chair, or gondola;
- Drive and return sheaves including shafts;
- Line sheave assemblies and their attachments;
- Tension systems and their attachments; and
- Wire rope, including haul ropes, track ropes and counterweight ropes

<sup>1</sup>Note: Refer to section 3.5 of this guideline for determination of NDT criteria for carriers

#### FIXED STRUCTURES

- Drive terminal structure;
- Return terminal structure;
- Towers and cross-arms; and
- Catwalks

Identification of every critical component of an above-surface passenger ropeway shall be based on its definition and requirements contained in the latest adopted version of CSA Standard Z98 – Passenger Ropeways. According to the CSA Standard Z98, critical component means “ a component or system of components, the failure of which would immediately jeopardize passenger safety”.

All critical components shall be tabulated with identification, including the type of non-destructive testing conducted, rejection/acceptance criteria, findings, and recommendations. The recommendations may contain establishing program of inspection/maintenance, steps to repair, replace, and/or alter the critical components.

#### 1.4 **Reporting Engineering Review and Assessment Findings**

1.4.1 A professional engineer shall certify the engineering review/assessment report. The report shall address:

- a) guidelines established in Section 1.3; and
- b) the requirements to correct all non-compliance related findings to achieve compliance with the requirements of Section 5.20 of the CAD under the Elevating Devices Regulation.

1.4.2 An owner shall attest that he/she will comply with the requirements of the certified engineering review and assessment report to achieve compliance with the requirements of Section 5.20 of the CAD under the Elevating Devices Regulation.

#### 1.5 **Compliance**

1.5.1 The engineering review and assessment report prepared in accordance with the requirements of Section 1.4 of this Guideline shall be submitted to the Technical Standards and Safety Authority (TSSA) for its registration.

1.5.2 Prior to registering the report, TSSA shall evaluate an engineering and assessment report for its technical integrity and conformance to the requirements of this Guideline. The report shall be registered without conditions, registered with conditions or rejected with explanation.

1.5.3 An owner of an above-surface passenger ropeway shall not operate the ropeway prior to the registration of the certified engineering review and assessment report.

1.5.4 The requirements of Directors Order 169/02-r1 have been superseded with the release of this Guideline.

1.5.5 The requirements of 3.5(g) shall be incorporated into aging assessments prepared for the 2013/14 operating season and all aging assessments thereafter.

## 2. BACKGROUND

### 2.1 **General**

The Elevating Devices Regulation made under the *Technical Standards and Safety Act (TSS Act)* adopts the Elevating Devices Code Adoption Document (CAD). This Guideline is prepared in keeping with the Section 5.20 of the CAD that reads:

*“Every above-surface passenger ropeway shall be subjected periodically to a complete engineering review and assessment to ensure its continued operational safety in accordance with guidelines set by the director.”*

Section 5.20 of the CAD is intended to deal with the impact on the safety of above-surface passenger ropeway as a result of its age. Even though a ropeway is maintained to keep up with its original or current design/manufacturing specification during its life, over the period of time the following elements will still weaken parts of the ropeway that can fail accidentally:

- Fatigue and vibration of both moving components and fixed structures causing cracks and fractures of connections and parent metal; and
- Environmental factors like snow, ice, rain, temperature, humidity, and dust causing corrosion and deterioration of structural, mechanical and electrical components.

*Above-surface passenger ropeways* include those ropeways on which passengers are transported in rope-supported carriers and are not in contact with the ground or snow surface. Chair lifts, gondola lifts, and reversible ropeways are above-surface passenger ropeways.

Periodic engineering review and assessment of every above-surface passenger ropeway will ensure continued compliance with the TSS Act, Elevating Devices Regulation, and CAD, which in turn is intended to ensure continued operational safety.

This Guideline expounds upon the following criteria to meet the intent of Section 5.20:

- frequency for periodic engineering review and assessments;
- guidelines for periodic engineering review and assessment of above-surface passenger ropeways;
- reporting engineering review and assessment findings; and
- compliance.

This Guideline has been developed in consultation with the TSSA Ski Industry Advisory Technical Committee.

## 3. INSTRUCTIONS

- 3.1 Those recommendations of the engineering review and assessment report requiring major and minor alterations of the above-surface passenger ropeway shall be dealt in accordance with the requirements of the Technical Standards and Safety Act, Elevating Devices Ontario Regulation, and Code Adoption Document. All alterations may be submitted as one design submission. The design submission for major alteration(s) must be registered and inspected prior to the operation of the ropeway.
- 3.2 The fee prescribed in the fee schedule for evaluation of engineering review and assessment report will be charged to the submitter of the report.

- 3.3 Submit one electronic copy to TSSA for registration. If package contains drawings exceed 11x17 forward one paper copy of the engineering review and assessment report to TSSA. Upon registration of the report, TSSA will return a registered electronic copy.
- 3.4 Where the latest adopted version of CSA Standard Z98 – Passenger Ropeways and this Guideline requires action by a designer or manufacturer who is no longer in business, that action shall be performed by a professional engineer as defined in the Elevating Devices Regulation.
- 3.5 This Guideline establishes in-depth inspection and compliance requirements to ensure security of critical components of an above-surface passenger ropeway. In order to expedite registration of “Reporting Engineering Review and Assessment Findings” in accordance with Section 1.4 of this Guideline, it is critical that consistent “methodology” is applied to confirm compliance with this Guideline:
- a. Compile “as built” specification of the ropeway necessary to assess security of critical components of an above-surface passenger ropeway.
  - b. Identify critical components of an above-surface passenger ropeway subjected to fatigue, vibration, and environmental exposure for their inspection.
  - c. Prepare list of critical components and non-destructive testing methods to be applied for their inspection.
  - d. Where critical components to be inspected are not directly accessible, any disassembling required must be performed where deemed necessary.
  - e. Evaluate the findings of the inspection with a view to confirm the security of critical components.
  - f. Determine action (repair, replacement and/or alteration) taken or to be taken to secure the integrity of critical components.
  - g. In addition to the assessment criteria listed in section 1.3 and Z98 requirement 12.8.3 (NDT a minimum 20% of carriers per year), aging assessments of carriers should examine prior NDT reports in conjunction with any replacement modification and repair records to determine if a greater number of carriers require yearly NDT, (see 1.5.5 for effective date).
- 3.6 Necessary non-destructive testing (NDT) may be spread (staggered) over a period not exceeding five years to assist planning for compliance with this Guideline in accordance with the “Frequency for Periodic Engineering Review and Assessment” established in Section 1.2.
- 3.7 The current “Periodic Engineering Review and Assessment” Report confirming compliance with this Guideline in keeping with the “Frequency for Periodic Engineering Review and Assessment” established in Section 1.2 shall be linked by reference to all previous “Periodic Engineering Review and Assessment” Report(s) for a specific passenger ropeway in order to justify and resolve the following conditions (where applicable):
- Next NDT cycle (other than Section 1.2 of this Director’s Order) for newly replaced parts identified in the previous “Periodic Engineering Review and Assessment” Report(s);
  - Compliance with all outstanding recommendations and conclusions identified in the previous “Periodic Engineering Review and Assessment” Report(s);
  - Compliance with “Notice of Registration of Design Submission with Conditions” attached to previous “Periodic Engineering Review and Assessment” Report(s) registered with the TSSA.
- 3.8 The current “Periodic Engineering Review and Assessment” Report shall be linked to previous (where applicable) “Periodic Engineering Review and Assessment” Reports for a specific passenger ropeway by

referencing the design submission (DS) number listed under “Notice of Registration of Design Submission with Conditions” attached with the previous “Engineering Review and Assessment” Report registered with the TSSA.

- 3.9 This Guideline is not intended to replace any requirements contained in the latest adopted version of CSA Standard Z98 – Passenger Ropeways and Ontario Regulation.
- 3.10 This is a reminder that “Operation and Maintenance” requirements under Section 32 of the O.Reg 209/01 must be adhered to at all times. When replacing parts of a ropeway, Section 32(5) of the O.Reg 209/01 applies. All work must be performed by qualified persons.

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

This Guideline has been developed in consultation with the Ski Lift Devices Advisory Council.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 232/ 08	Rev. No.:
<b>DIRECTOR'S ORDER</b>	Date: November 25, 2008	Date:

IN THE MATTER OF

*The Technical Standards And Safety Act, 2000,*  
S.O. 2000, c. 16

- and -

**ONTARIO REGULATION 222/01**  
**(Certification and Training of Elevating Device Mechanics)**  
made under the  
*Technical Standards and Safety Act, 2000*

**Subject:** Elevating Device Mechanic Continuing Education Requirements  
**Sent to:** All Mechanics, Mechanics-in-Training, Registered Contractors and Training Providers

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Pursuant to subsection 32.(1) of the *Technical Standards and Safety Act, 2000*, the Director hereby orders the following:

**1. ORDER**

- 1.1 **Effective January 1, 2011**, all classes of Elevating Device Mechanics (EDMs) shall fully complete the continuing education requirement as a condition of each certificate renewal.
- 1.2 An applicant for a certificate renewal, regardless of class, shall complete the continuing education requirement approved by the director that is delivered by a training organization approved by the director.
- 1.3 An application for renewal shall include proof the applicant successfully completed the continuing education requirement.

**2. BACKGROUND**

A coroner's inquest into the death of an elevator mechanic made two recommendations related to continuous education for elevator mechanics. These recommendations are shown below:

- *"All elevator mechanics shall undertake periodic refresher training to ensure that they maintain their competency, particularly in areas where specific training and/or knowledge has not been utilized on a regular basis."*
- [TSSA] *"EDMA, the Mechanics' licensing authority, shall adopt a reporting system whereby licensed mechanics would submit a summary of education, training and job experience gained during the previous two years, as a condition of re-certification."*

These recommendations were discussed at the Training & Certification Advisory Board (TCAB) which formed a subcommittee to develop continuing education training requirements for elevator



mechanics. The subcommittee presented their proposal to the TCAB who endorsed the 12 hours of continuing education. As a result, all Elevating Device Mechanics will require continuing education credits in order to renew their mechanic's certificate.

Proof of 12 hours of Continuing Education within the renewal cycle must be submitted to TSSA and shall include the following:

- 6 hours classroom instruction on Safe Work Practices and related topics that may include product specific safety applications or procedures;
- 3 hours on Act, Code, Regulations and Directors Orders/Bulletins, but not limited to the foregoing, and
- 3 hours on Technical Training related to the elevator industry, which may include cross discipline training involving curriculum that may have an impact on the elevator trade.

EDM-Ts who are enrolled in classroom Apprenticeship training by an Accredited Training Provider are exempt from these requirements as long as the training has taken place within the renewal cycle.

Proof of all continuing education credits must be received by TSSA either prior to submitting a renewal application or attached to the renewal application. Proof must be in the format set out by TSSA and issued by an approved training organization. Any credits issued by organizations not accredited, will not be accepted.

In order to provide elevator mechanics with at least two years notice of the requirement so they can arrange for the training, this Order is **effective January 1, 2011. Renewal applicants with an expiry date of January 1, 2011 or later must have successfully completed the continuing education requirements before submitting a renewal application. The continuing education requirement applies to each and every certificate renewal.**

NOTES:

1. Only certificates from accredited training providers will be accepted as proof of completion of the continuing education requirements.
2. Accredited Training Providers of Continuing Education will be listed on the TSSA website and will be updated accordingly.

Roland Hadaller, P. Eng.  
Director, Elevating Devices Regulation,  
*Technical Standards and Safety Act, 2000*

This Bulletin has been developed in consultation with the Elevating Devices Advisory Council and Training & Certification Advisory Board.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 243 / 10	Rev. No.: 1
<b>Information Bulletin</b>	Date: April 9, 2010	Date: March 20, 2012

**Subject:** Hydraulic Elevators with buried hydraulic jacks with single bulkhead cylinders  
**Applicable to:** Owners of single bulkhead buried cylinders  
Contractors, Consultants and Elevating Device Mechanics

## 1 INTRODUCTION & IMPORTANT NOTICE TO OWNERS

Buried cylinders with single bottoms found on older model hydraulic elevators can fail catastrophically and cause injury to riders.

Hydraulic elevators installed prior to the 1977 code requirements could have buried cylinders with single bottoms.

Pending changes to the elevator code will require mitigation for buried cylinders with single bottoms (commonly referred to as single bulkhead cylinders).

**Effective May 1, 2012** TSSA will adopt the requirements of CSA B44-2010 Safety Code for Elevators, which introduces retroactive requirements for installations incorporating buried cylinders with single bottoms. To manage the change and permit owners and contractors time to prepare and complete for the needed upgrade, a three year phase in period was been permitted with a final compliance required by **May 1, 2015**. Devices not retrofitted by this date shall be / must be removed from service until the upgrade is complete.

**The new code requirements as extracted from B44 Safety Code for Elevators are as follows;**

### 8.6.5.8 Safety Bulkhead.

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. ♦

### 1.1 Upcoming Changes

The new requirements mean that hydraulic elevators with buried single bulkhead cylinders will either have to;

- a) be equipped with a car safety or
- b) be equipped with a plunger gripper or
- c) replace the existing single bottom cylinder with a new double bulkhead cylinder complete with a method of corrosion protection.

### 1.2 Interim & Ongoing Safety Measures

In 1999 TSSA introduced requirements for elevating device contractors to look for effects of corrosion on in-ground hydraulic cylinders with the release of safety alert bulletin 143/99.

A key component of this bulletin was an oil log, intended to flag installations where oil was being added without a viable explanation about where the missing oil went.

Following a hydraulic cylinder failure in Ontario in 2006, TSSA reviewed and heightened the requirements related to oil monitoring and introduced an enhanced oil loss monitoring program with regulatory amendment 212/07.

The heightened requirements forced contractors to account for all oil, lost or added, from an elevators hydraulic system. Contractors must also ensure their oil monitoring programs are documented, and include training records about who received training and when.

With respect to safety, owners and contractors play an important part, and in this regard owners need to be aware of the importance of oil loss monitoring. As part of their due diligence, owners should be asking contractors for documentation that verifies oil loss monitoring is being conducted. On installations known to have single bottom cylinders, oil loss monitoring activities shall occur monthly.

Note: Oil loss monitoring applies to **all** hydraulic elevator installation with **buried** piping or **buried** cylinders. Only those locations with single bottom cylinders require that the monitoring activity be conducted monthly.

## 2 PREPARING FOR CHANGES IN THE 2010 CODE - NOTICE TO OWNERS

**With the adoption of the 2010 code requirements, owners of hydraulic elevators with single bottom cylinders will need to begin planning for necessary changes to their elevator equipment.**

It is advisable that owners begin researching options on how best to deal with single bottom cylinders in order to determine the costs associated with the various options and to determine which is the preferred approach for a given building.

**Remember, all elevators with buried single bottom cylinders will require some form of upgrade (see 1.1) not later than May 1, 2015.**

## 3 BACKGROUND

Design requirements for buried cylinders have evolved over time.

Hydraulic elevators installed prior to the 1977 code did not require cylinders with double bottoms. Cylinder corrosion tends to be more aggressive where the cylinder has been welded. This corrosion can lead to a catastrophic failure at the bottom of the cylinder that can result in the elevator dropping into the pit at a high rate of speed.

TSSA is not aware of any single bulkhead cylinder that failed catastrophically without prior signs of unexplained loss of oil.

TSSA issued Elevating Devices Code Adoption Document Amendment 212/ 07 requiring oil loss monitoring for all hydraulic elevators as a means to recognize early warning signs of potential failure. For elevators with buried single bottom cylinders, this monitoring must be done on a monthly basis.

During periodic inspections of hydraulic elevators with buried single bottom cylinders, TSSA inspectors are finding cases where the oil loss monitoring required by 212 / 07 is not being done on a monthly basis.

Roland Hadaller, P. Eng.

Director, Ontario Regulation 209/01 (Elevating Devices) made under the Technical Standards and Safety Act, 2000

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This Bulletin has been developed in consultation with the Elevating Devices Advisory Council.



Elevating and Amusement Devices Safety Division	Ref. No.: 250 / 11	Rev. No.:
Elevating Devices Code Adoption Document - Amendment	Date: November 1, 2011	Date:

**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

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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 1 070 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) Section 14(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:

- (i) *only elevator personnel are permitted to unlock hoistway doors*
- (ii) *only emergency personnel are permitted to perform emergency evacuations.*
- (iii) access to the unlocking device is controlled or has a controlled procedure
- (iv) 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:

- (i) lettering shall be a minimum of 16mm in height
- (ii) the sign shall remain permanent and readily legible, viewable from the hall
- (iii) the Context of the message shall convey the following information:
  - (a) a 'warning' advising of the potential fall hazard that exists below when the car is above the floor level
  - (b) lower the car prior to attempting rescue of trapped passengers
  - (c) 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.

**8.6.1.1.2** 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

**8.6.1.1.3** 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 8.6.1.1.2, 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;

(99/92)

  - (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. (242/10)

##### **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.

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

#### **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 Rerooping 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 operations, 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
- (b) the date on which the rope was resocketed or other types of fastening changed

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.

**8.6.4.19.12 Traction-Loss Detection Means.**

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

(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).

**Table 8.6.4.20.4 Brake Test Loads**

Class of Service	Not Permitted to Carry Passengers	Permitted to Carry Passengers
Passenger	Not applicable	125% rated load
Freight	Rated load	125% rated load
One Piece Load by 2.16.7	Rated load or one piece load, whichever is greater	125% rated load or one piece load, whichever is greater

**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 Reropeing 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  $\pm 11$  N. The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> and not more than 3 870 mm<sup>2</sup>.

(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  $\pm 2.5$  lbf. The load shall be distributed over a round or square area not less than 3 in.<sup>2</sup> and not more than 6 in.<sup>2</sup>

**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  $\mu$ m (32  $\mu$ in.))
- (d) Area in contact with skirt panel: 2 900  $\pm$  325 mm<sup>2</sup> (4.5  $\pm$  0.5 in.<sup>2</sup>) 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 6.1.3.3.7 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 Combplates**

**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 combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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  $\pm 11$  N (2.5 lbf). The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> (3 in.<sup>2</sup>) and not more than 3 870 mm<sup>2</sup> (6 in.<sup>2</sup>).
- (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  $\pm 2.2$  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  $\pm 11$  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 mm<sup>2</sup> (3 in.2) and no more than 3 870 mm<sup>2</sup> (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 250mm (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 Combplates**

**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

combplates 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 treadway does not provide a continuous unbroken treadway surface or proper engagement with the combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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.

NOTE (8.6.11.5): See ASME A17.4, Guide for Emergency Personnel.

### **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 treadway 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★1 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 2.11.11.3, 2.11.11.5.1, 2.11.11.5.2, and 2.11.11.5.3.
- (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 alternation 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 2 108 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<sup>1,2</sup> 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 75mm (3 in.) when the forces of A17.1/B44 2.10.2.4 are applied

<sup>1</sup> 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).

<sup>2</sup> 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★4(a)(1) is not possible due to existing overhead conditions, a foldable, collapsible or other stow able 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 115kg (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 than 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 ★4 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
  - (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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD [3.8.3](#)

##### **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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

##### **8.7.2.27★4**

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

##### **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**

Where an elevator 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.

#### **8.7.2.27.5 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 than 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 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
- (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.
- (h) Requirements 3.26.1 through 3.26.6.

- (i) Requirement 3.20.

#### **8.7.3.22.3 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 3.22.2. 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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD [3.8.3](#)

#### **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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

### **8.7.3.31★4**

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

#### **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.

Electrical equipment shall conform to 3.26.1, 3.26.4, 3.26.5, and 3.26.6 (not including 2.26.4.4).

#### **8.7.3.31★5 Addition of Soft Start**

Where there is an addition of a soft start feature the follow 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 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.

#### **8.7.3.31.5 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.
  - (2) The operating devices and control equipment shall conform to 3.26. Requirements of 2.26.1.1, 2.26.1.3, and 2.26.12 do not apply.
  - (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★7**

Where an elevator 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.

#### **8.7.3.31.6 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 2.27.3.3.1(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 2.26.2.21, 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.**

Reserved.

#### **8.7.5.2.★1 Alterations to Electric Limited-Use/Limited-Application Elevators**

Alterations to Limited-Use/Limited-Application Elevators, shall conform to 8.7.2 and the requirements of Part 2 except as modified in section 5.2.

#### **8.7.5.2.★2 Alterations to Hydraulic 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.

#### **8.7.5.3 Private Residence Elevators**

**8.7.5.3.1** 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.

#### **8.7.5.4 Private Residence Inclined Elevators**

**8.7.5.4.1** 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, 6.1.6.3.12, and 6.1.6.4.

#### **8.7.6.1.★1 Addition of Handrail Advertizing**

The addition of handrail advertizing is not permitted per 6.1.6.9.2, unless otherwise permitted by a variance request.

#### **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, 6.1.6.3.3, 6.1.6.3.9, 6.1.6.3.11, 6.1.6.3.14, and 6.1.6.5.
- (b) Steps having a width less than 560 mm (22 in.) shall not be reduced in width by the alteration.

#### **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 conforming to 6.1.3.7, 6.1.3.9.1, and 6.1.3.10.1. The installation of a new escalator into an existing truss shall conform to all of the requirements of 6.1.

#### **8.7.6.1.10 Step Wheel Tracks.**

Any alteration to the tracks shall result in the escalator's conforming 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 conforming 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 conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.4, and 6.1.6.3.8.
- (b) Driving Motor. An alteration to the drive motor shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.2, 6.1.6.3.8, and 6.1.6.3.10.
- (c) Machine Brake. An alteration to the machine brake shall result in the escalator's conforming to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

#### **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.★2 Removal of Step Demarcation Lights (226/07)**

The removal of step demarcation lights, shall be permitted if the device complies with the following:

- (a) requirement 6.1.3.3.5,
- (b) requirements 6.1.3.5.4, 6.1.3.5.5, 6.1.3.5.6, and
- (c) requirement 6.1.3.6.2.

#### **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.★3 Controller Replaced (226/07)**

Where a controller is replaced it shall conform to 8.7.6.1.16.

#### **8.7.6.1.★4 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.★5 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.★6 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 movingwalk 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 1<sup>st</sup> 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 1<sup>st</sup> 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 1<sup>st</sup> 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 3.191.2.

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.

(f) 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

**d.3 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.

**d.4 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

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

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**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.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 251 / 11	Rev. No.:
	Date: February 13, 2012	Date:
<b>GUIDELINE</b>		

**Subject:** Alterations Guideline and Alteration Checklist for  
A17.1-2010 / CSA B44-10 Safety Code for Elevators and Escalators as amended by 250/11

**Sent to:** All Elevator Contractors

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**1. Effective Date**

1.1 This Directors Guideline becomes effective May 1, 2012 and is to be used in conjunction with alterations performed under the 2010 edition of A17.1/B44, as adopted in Code Adoption Document (CAD) Amendment 250/11.

**2. Introduction**

2.1 The purpose of this Director's Guideline, in conjunction with Code Adoption Document (CAD) Amendment 250/11, is to;

- (a) advise which types of upgrades are classified as alterations
- (b) indicate the format of the design submission required (see O.Reg 209/01 s.15), by categorizing the scope of work as "major", "minor A" or "minor B"
- (c) provide instruction on the use and submittal of the alteration checklist,
- (d) provide a summarized list of requirements associated with a given alteration scope via a checklist
- (e) supplement the adoption of section **8.7 Alterations** in A17.1/B44 as detailed in Section 3.4 of the CAD.

**3. Alterations**

3.1 Work performed on an elevating device other than worked performed as maintenance, repair, or replacement is an alteration. Part 8, Section 8.6 of B44-10 as amended in CAD 250/11 deals with "Maintenance, Repairs, Replacements and Testing", while Section 8.7 as amended in CAD 205/11 deals with "Alterations".

3.2 This guideline captures the Alteration requirements of Section 8.7 (as amended in CAD 205/11) and displays these requirements in a checklist format (see figure 2).

3.3 Type of Alteration Work

Columns 3 to 6 of the Alteration Checklist (see figure 2 for sample) classify the type of work as one of the following types:

- (a) **Alteration: Modification / Change** (column 3)  
means a change to the original design or characteristics of a component, assembly or the device as a whole, such as material, strength, size, dimension, rating, setting, function, operational mode, design parameters etc., whereby the change may be made on existing equipment or by substituting new modified equipment.  
Note that a change of the component make or model, without any other change, may constitute an alteration under requirements of CAD 250/11 (see item (d) below).
- (b) **Alteration: Addition** (column 4)  
means addition of a new component or a design feature, not previously provided e.g. addition of top-of-car operating devices.
- (c) **Replacement with same** (column 5)

- means the substituted device, assembly or component is the same as the original, and either;
- (i) requirements within B44 Section 8.6.3 as amended by CAD 250/11 classify the specific replacement as an alteration and require that the substituted component and/or the elevating device as a whole meet the specific requirements of the latest Code edition, or
  - (ii) sections 8.6 of B44 as amended by CAD 250/11 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission

- (d) **Replacement with different make and model** (column 6)  
means that the substituted device, assembly or component is the same as the original in its design, performance and safety characteristics, except that it is of a different make and/or model and the B44 code as amended by CAD 250/11 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission.

*Note: In addition to the work described in 3.3 and listed in the Alteration Checklist, any other work performed on an elevating device that results in a change to the inherent safety or operational characteristics **constitutes an alteration** per 2.6.2 of the CAD, even though there may be no change in the original design. The list of alterations in the attached Alteration Checklist is not all-inclusive.*

#### **4. Type of Design Submission**

- 4.1 Columns 3, 4, 5, and 6 of the alteration checklist contain information needed to determine the type of submission required.
- 4.2 By selecting the alteration scope (see column 1 of the Alteration checklist, see also B44 Section 8.7 as amended by CAD 250/11), the submission type is identified in columns 3, 4, 5, & 6. These entries are may be listed as one of the following:

Major	-	means Major alteration
Minor A	-	means Minor alteration type A
Minor B	-	means Minor alteration type B
Blanks (columns 5&6)	-	work that would not constitute an alteration
mrr	-	this work may proceed as a maintenance repair and replacement activity, and no submission is required
n/a	-	means TSSA has permitted an exception to a compliance requirement (for the noted alteration scope) however, if another alteration activity requires compliance, the n/a exemption no longer applies
New	-	means, not an alteration but a new installation
†	-	means that no inspection is required following the alteration
variance	-	this activity can only be considered after approval of a variance

Note: The checklist also utilizes a star symbol (★). This symbol is used to identify TSSA designated alterations or to identify a supplemental TSSA requirement.

#### **5. Requirements for Design Submissions and Inspections**

- 5.1 A design submission or notification (in the case of a Minor B) must clearly specify, for each alteration covered, whether the type of the alteration work is a "modification", or "addition", or "replacement".
- 5.2 Where multiple alterations scopes are undertaken, the "highest ranking" submission shall define the submission type.  
Example: An alteration combination of Minor B and Major will be designated as a Major alteration.

##### **5.2.1 Major Alteration:**

- 5.2.1.1 The design submission shall be registered before the major alteration commences, except as permitted in subsection 7(2) of O.Reg 209/01.
- 5.2.1.2 The alteration shall be inspected by TSSA prior to returning the device to service for public use.

## 5.2.2 Minor Alteration type A and B:

5.2.1.1 According to Section 19 of O.Reg 209/01, the design submission shall be submitted for registration not later than 30 days after returning the elevating device to service. Contractors are advised to submit alteration documents in advance of the work start to ensure that no expense will be incurred should the registration of the proposed design or a requested variance be rejected.

Minor A and B alterations are permitted to be returned to service after work completion, however, the contractor who completed the alteration shall ensure that a “special inspection” has been requested within 60 days after returning the elevator to service. The contractor shall arrange and conduct any tests required by the inspector. A registered design submission or notification shall be available at the time of inspection.

## 5.3 Signatures

5.3.1 According to subsection 15.(6) of O.Reg 209/01, all individual documents composing the design submission for any Major or Minor A alteration shall bear the **signature and seal, or electronic equivalent, of the professional engineer** who prepared or approved the design submission.

5.3.2 In the case of Minor B alterations, per O.Reg 15.(9), the design submission documents (or Notification) may be signed by an officer or director of the company applying for registration if the officer or director is a mechanic or if the document is signed by a mechanic with an appropriate certificate who either performed or supervised the work to which the design submission relates.

5.3.3 Minor B's that are electronically transmitted shall be deemed acceptable provided that the signature box of the Minor B Notification form contains the name, designation and mechanic license number of a registered and licensed mechanic who supervised and is competent to oversee the scope of the minor B alteration.

Example: Signature: John Smith, EDM-A, 00999999

## 5.4 Specification Forms

5.4.1 Alterations should be submitted on the appropriate Specification Sheets (depending on device type) and should itemize all entries that are **Directly** and **Indirectly** affected by the alteration scope.

Example: Cab Interior Modification, resulting in an increase in cab weight

- Directly affected are interior finishes and flame ratings
- Indirectly affected are items such as: rope factor of safety (for electric & roped hydraulic elevators) or cylinder column strength (for hydraulic elevators)
- Sufficient details are to be provided to show compliance verification.

A list of altered components must also be summarized on the submission (typically box 4000).

5.4.2 Items which are not affected by the alterations should be noted with either:

- **N/C** or **No Change** or
- The **Original Entry** followed by **Existing**. Example Car Wt.: **1812 kg - Existing**

5.4.3 Where a “major alteration” or “minor alteration” affects only a very few items, the abridged form may be used instead of the full specification form provided clarity of the submission is not compromised. The Abridged form should specify: box numbers, descriptions, and new entry values.  
(Example: 1670. Maximum System Pressure: 3445 kPa)

5.4.4 Some predefined templates exist for Minor B type alterations and are available from the TSSA web site. These templates shall be utilized where appropriate to ensure all relevant entries are completed and included in the submission. Multiple Minor B notification templates may be utilized to fully cover the scope of work and only one Minor B fee shall apply.

## 5.5 Submitting an Alteration Checklist

5.5.1 The design submission for a Major or Minor A alteration must include an Alteration Checklist to assist in demonstrating compliance with Section 8.7 of the code as amended by CAD 250/11 or any other items listed in Column 1 of the Checklist and must clearly specify the following:



- (a) The scope of the alteration shall be identified with an 'X' in column 0 adjacent to each column 1 item that is part of the primary scope of the alteration
- (b) All relevant sub requirements identified in column 2b shall be identified with an 'x' placed in column 0 to signify the sub requirement was has been given engineering consideration and/or modified. Optional: If desired items which where given engineering consideration but not changed, or deemed not applicable to a given installation may be marked with 'r' to indicate reviewed.

5.5.2 An Alteration Checklist is not required for Minor B Notifications.

5.5.3 Sections of the Alteration Checklist, which are not included in the scope of the alteration work, may be hidden (using the row-hide feature in excel) prior to printing the Checklist, in order to reduce the number of printed pages accompanying a submission.

**5.5.4 To assist our clients in completing the Alteration Checklist, TSSA will post on its Website ([www.tssa.org](http://www.tssa.org)) a fillable version of the Alteration Checklist in excel format (ED-251-11.xls).**

5.5.5 The **B44-10 reference numbers**, shown in column 1 and which are marked with 'X' in the Alterations Checklist, (also shown in **BOLD** font), are **those items that are required to be shown on the Code Data Plate** as per section 8.9 of B44.

5.5.6 The attached Alteration Checklist forms part of this guideline.

**6 Alteration Checklist**

6.1 The Alteration Checklist provides useful information to: contractors, submitting engineers, reviewing engineers and inspectors to assist in determining:

- the scope of the alteration,
- requirements associated with specified scope
- exemptions to a requirement (where n/a is shown)
- additional TSSA requirements (where ★ is shown)
- type of submission required (Major, Minor A or B) (See Fig 1)

**6.2 Parts of the Checklist (See Fig 2)**

**6.2.1 Column 0:**

Submitter's shall mark Column 0 with 'X' to identify the scope and applicable sub-requirements that received engineering consideration.

- Sub-requirements related to the alteration are mandatory and shall be identified with an 'x', except where the sub requirement is unrelated to the device being altered. (see Fig.2 Note E)

B44-10 Reference Number	Job Reference	Type of Alteration	Type of Design Submission
8.7.1.2	Alterations not specifically covered		
8.7.1.4	Welding		
8.7.1.7	Repairs and Requirements		
<b>8.7</b>	<b>Alterations to Electric Elevators</b>		
8.7.2.1	Hoistway Enclosures	Major	Major
8.7.2.1.1	Hoistway Enclosure Walls	Major	Major
8.7.2.1.2	Addition of Elevator to Existing Hoistway		Minor
8.7.2.1.3	Construction at Top of Hoistway	Major	Major
8.7.2.1.4	Construction at Bottom of Hoistway	Major	Major
8.7.2.1.5	Control of Smoke and Hot Gases	Major	Major
8.7.2.2	Pits	Major	Major
8.7.2.2.1	Pit Drains & Sumps	Minor B	Minor B
8.7.2.2.2	Pit Guards	Minor B	Minor A
8.7.2.2.3	Pit Access	Minor B	Minor B
8.7.2.2.4	Pit Illumination	Minor B	Minor A
8.7.2.2.5	Pit Stop Switches	Minor B	Minor A
8.7.2.2.6	Pit Depth	Minor B	Minor A
8.7.2.2.7	Access to Underside of Car	Minor B	Minor A
8.7.2.2.8	Access to Underside of Car	Minor B	Minor A
8.7.2.3	Location and Guarding of Counterweights	Major	Major
8.7.2.3.1	Location and Guarding of Counterweights		
8.7.2.3.2	Location and Guarding of Counterweights		
8.7.2.3.3	Location and Guarding of Counterweights		
8.7.2.3.4	Location and Guarding of Counterweights		

Fig. 1

**6.2.2 Column 1:**

Column 1 contains the Alteration section numbers from B44 as amended by CAD 250/11, as well as specifically noted TSSA alterations.

TSSA alterations are denoted as follows;

- 8.7.2.12★1                                   ★1 denotes the first TSSA designated alteration under section 8.7.2.12
- 8.7.2.12★2                                   ★2 denotes the second TSSA designated alteration under section 8.7.2.12

**6.2.3 Column 2a, 2b and 2c:**

Column 2 describes the scope and applicable alteration sub requirements.

- Column 2a is the primary title of the alteration activity (e.g. interlocks)
- Column 2b is the list of sub requirements by reference number (e.g. 2.12.1, 2.12.2...)

- Column 2c is a text description of the referenced sub requirement. (e.g. General, Interlocks,...)

6.2.4 Column 3, 4, 5 and 6:

The headings of Columns 3 to 6 define the “Type of Alteration Work” as Modification Change, Addition, Replacement with Same, and Replacement with Different. See 3.3 of this guideline.

The contents of Columns 3 to 6 define the “Type of Design Submission” as, Major Alteration, Minor A Alteration, or Minor B – Notification. See 4 of this guideline.

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2	Alterations to Electric Elevators						D
	8.7.2.1	Hoistway Enclosures			Major	Major		
	8.7.2.11	Hoistway Door-Locking Devices, Access Switches & Parking Devices				See Below		
X	8.7.2.11.1	Interlocks	A		-	Major	mrr	Minor B
X		2.12.1	General					
X		2.12.2	Interlocks					
X		2.12.4	Listing/Certification Locking Devices					
X		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)					
X		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	C
X		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
X	8.7.2.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
X		8.7.2.10.1	Entrances & H/W Openings - General Req'mts					
X		8.7.2.10.2	Horizontal Slide-Type Entrances					
		8.7.2.10.3	Vertical Slide-Type Entrances	E				
X		8.7.2.10.4	Marking of Entrance Assemblies					
X		2.13.	Power Operation of Hoistway Doors and Car Doors	F				
X	8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
X		2.13.	Power Operation of Hoistway Doors and Car Doors					
	8.7.2.15	Car Frames and Platforms				See Below		
	8.7.2.15.1	Alterations to Car Frames and Platforms			Major	-		Major
X	8.7.2.15★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
X		8.7.2.15★1(a)	cars weighed prior to alteration					
X		8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
X		8.7.2.15★1(c)	weight change recorded on auxilliary data tag					
X		8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					

Fig 2 – Sample Alteration Checklist

Figure 2 Notes:

- A – indicates 8.7.2.11.1 Interlocks is part of the alteration scope
- B – indicates which sub-requirements have been included (note: 2.12.5 was excluded as permitted by exemption note C)
- C – n/a denotes that TSSA has made this requirement optional (note: contractor opted to include requirement 2.12.6 & 7)
- D – specifies the submission type
  - In the Interlock example a Minor B alteration is required to be submitted
  - In the Power Operation of H/W Doors example a Minor A is required (entire submission is a therefore a Minor A)
- E – this sub-requirement, related to vertical slide entrances, was not selected as it is not applicable to the installation
- F – compliance to 2.13 is a TSSA-designated supplemental requirement as denoted by the ★ symbol
- G – shows two TSSA-designated alterations, one denoted as 8.7.2.12★1, the other 8.7.2.15★1.

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Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards & Safety Act, 2000*

*This Director's Guideline has been developed in consultation with the TSSA Elevating Devices Advisory Council.*

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0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.1.2	Alterations not specifically covered in 8.7						
		1.2	Level of safety shall not be diminished					
	8.7.1.4	Welding						
		8.8	Welding					
		8.7.1.5	Design / Weld Engineer					
	8.7.1.7	Repairs and Replacements						
		8.6.2	for repairs					
		8.6.3	for replacements					
	8.7.2	<b>Alterations to Electric Elevators</b>						
	8.7.2.1	<b>Hoistway Enclosures</b>			Major	Major		
	8.7.2.1.1	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		8.7.2.10	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	8.7.2.1.2	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	8.7.2.1.3	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		8.7.2.4	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.4	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		8.7.2.4	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.5	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	8.7.2.2	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		8.7.2.4	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	8.7.2.2	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	8.7.2.2	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	8.7.2.2	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	8.7.2.2	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	8.7.2.2	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	8.7.2.2	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	8.7.2.3	<b>Location and Guarding of Counterweights</b>			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		2.6.	Protection of Space below H/W					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		2.4.	Vertical Clearances & Runbys for Cars & Cwts					
		<a href="#">8.7.2.17.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
		<a href="#">8.7.2.25.2</a>	Change in Location of Driving Machine					
	<b>8.7.2.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
	<b>8.7.2.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		2.6.	Protection of Space below H/W					
	<b>8.7.2.7</b>	Machinery Spaces, Machine Rooms Control Spaces and Control Rooms			↓ See Below ↓			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7						
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		-	Major		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		OESC	Electrical Equipment Clearances		Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B		mrr
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch for Machinery Space or Control Spaces					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in Machine Rooms/Spaces, Control Room/Spaces					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A		mrr	mrr
		2.7.2	Maintenance Path and Clearance					
		2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		2.10.1	Guarding of Equipment					
			openable/removable only with tools					
			operating/work instruction for accessing equipment					
			clearances in front of electrical control equipment (1000mm)					
			access in front of / space to operate main disconnect (750mm)					
			Installation by registered contractor					
	<b>8.7.2.8</b>	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's &M/C Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.2.9</b>	Machinery and Sheave Beams, Supports, and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement  Job Reference: <b>Superseded by Rev</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10</b>	<b>Entrances and Hoistway Openings</b>			Major	Major	see below	
	<b>8.7.2.10.1</b>	<b>General Requirements</b>			Major	-		
	8.7.2.10.1(a)	<b>General Requirements - All New Entrances</b>			Major	-	Major	Major
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	<b>General Requirements - New Entrances w/Existing Entrances</b>			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	<b>General Requirements - Alteration to H/W Entrance</b>			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	<b>General Requirements - Emergency Doors (added or altered)</b>			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	<b>General Requirements - Access Openings (installed for cleaning)</b>			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	<b>Horizontal Slide-Type Entrances - new entrance and components to meet:</b>			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	hanger /track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11			Type of Alteration Work			
		Scope of Alteration - B44 - 2010 as amended by CAD 250/11			Alteration		Replacement with	
		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model
		Job Reference:			Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet: <a href="#">8.7.2.10.1</a> Entrances & H/W Openings - General Req'mts 2.11.12 Entrances, Vertical Slide Type Installed New components to meet:			Major	Major	see below	
	sills (a)	2.11.10.3	Hinged Hoistway Landing Sills			Minor B	Minor B	
	frames (b)	2.11.12.1	Landing Sills			Minor B	Minor B	
	panels (d)	2.11.12.2	Entrances Frames			Minor B	Minor B	
	panels (d)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies			mrr	mrr	
	panels (d)	2.11.12.3	Rails			Minor A	Minor A	
		2.11.12.4	Panels					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
	guides (e)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	sill guard (f)	2.11.12.5	Guides			mrr	mrr	
	straps (g)	2.11.12.7	Sill Guards					
		2.11.12.8	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet: <a href="#">8.7.2.10.1</a> Entrances & H/W Openings - General Req'mts 2.11.13 Entrances, Swing Type Installed New components to meet:			Major	Major	see below	
	sills (a)	2.11.10.1	Landing-Sill Guards			Minor B	Minor B	
	frames (b)	2.11.10.3	Hinged Hoistway Landing Sills			Minor B	Minor B	
	frames (b)	2.11.13.1	Landing Sills			Minor B	Minor B	
	panels (c)	2.11.13.2	Entrance Frames			Minor B	Minor B	
	panels (c)	2.11.13.4	Hinges			Minor B	Minor B	
	panels (c)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies			Minor B	Minor B	
	panels (c)	2.11.13.3	Panels			Minor B	Minor B	
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
	hinges (d)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies			mrr	mrr	
	hinges (d)	2.11.13.4	Hinges					
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel) Fire Protection Rating not less then existing entrance <a href="#">8.7.2.10.5(a)</a> NBCC requirements			Major	Major		
	CAD 8.7.2.10★1	★ Removing Service To a Floor Bolt entrances shut Remove Interlock From Safety String Remove COP Floor Button				Minor B		
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★ Door Safety Retainers			Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			↓ See Below ↓			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.11.4</b>	Access Switches and Unlocking Devices				Minor B		mrr
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices			-	Minor B		mrr
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.26.1.4 Inspection Operation			-	Minor A		mrr
	<b>8.7.2.11.5</b>	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	<b>8.7.2.12</b>	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		<a href="#">8.7.2.10.1</a> Entrances & H/W Openings - General Req'mts <a href="#">8.7.2.10.2</a> Horizontal Slide-Type Entrances <a href="#">8.7.2.10.3</a> Vertical Slide-Type Entrances <a href="#">8.7.2.10.5</a> Marking of Entrance Assemblies						
	CAD 8.7.2.12★1	★ Replacement of Door Operator 2.13. Power Operation of Hoistway Doors and Car Doors			-	-	mrr	Minor B
	<b>8.7.2.13</b>	Door Reopening Device (Safety Edge) (Altered or Added or replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates 2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI & II at time of install					see 8.6.3.8	
	<b>8.7.2.14</b>	Car Enclosures, Car Doors and Gates, and Car Illumination				See Below		
	<b>8.7.2.14.1</b>	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties <a href="#">8.7.2.15.1</a> Alterations to Car Frames and Platforms			Major	-		
	<b>8.7.2.14.2</b>	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures 2.14.1.2 Securing of Enclosures			Minor A	Minor A		
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added) 2.14.1.5 Top Emergency Exits			Minor B	Minor B		
	8.7.2.14.2(c)	Installation of Glass 2.14.1.8 Glass in Elevator Cars 2.14.1.8.1 Enclosures include glass 2.14.1.8.2 Lining of Walls or Ceilings include glass 2.14.1.8.3 Marking of each Glazing Panel			Minor B	Minor B		mrr
	8.7.2.14.2(d)	Specific Equipment in Elevator Car 2.14.1.9 Equipment Inside Cars (a) Handrails (b) fastening devices for protective linings (c) ceiling mounted hooks/tracks (d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1 (e) conveyor tracks in freights (f) heating or cooling equipment			Minor B	Minor B		
	CAD 8.7.2.14★1	★ Car operating station verify inspection operation 'if provided' verify stop sw verify switches operate as before (eg. FS, FEO, Access)			Minor B	Minor B	mrr	Minor B
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors 2.8.2.1 electrical equipment & wiring 2.14.1.2.3 securing of enclosure equipment 2.14.2.4 Headroom in Elevator Cars			Minor B	Minor B		

0 Conforms to B44 Mark with 'X'	1 B44-10 Reference Number	2a	2b	2c	3				4		5		6							
					Type of Alteration Work								Type of Submission Required							
					Alteration				Replacement with				Modification Change		Addition		Same		Different Make/Model	
					<b>Alteration Checklist for Director's Guideline 251-11</b>								<b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b>							
					<b>Part, Section or Requirement</b>								<b>Job Reference:</b>							
					<b>Superseded by Rev</b>															
	CAD 8.7.2.14★3				★ other equipment								Variance							
	8.7.2.14.2(e)				Side Emergency Exits - Secured Shut								Major	-						
	8.7.2.14.2(f)				Car Ventilation								Minor B	-						
					2.14.2.3	Ventilation														
	8.7.2.14.2(g)				Car Illumination								Minor B	Minor B						
					2.14.7	Illumination of Cars and Lighting Fixtures														
	8.7.2.14.2(h)				Partitions Installed in Elevator Cars								Major	Major						
					2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area														
	8.7.2.14.2(i)				Installation of Car Door or Gate, Installation to meet:								Major	Major						
					2.14.4	Passenger and Freight Car Doors/Gates, General Requirements														
					2.14.5	Passenger Car Doors														
					2.14.6	Freight Elevator Car Doors and Gates														
	8.7.2.14.4				Car Enclosure / Car Door or Car Gates								↓ See Below ↓							
	8.7.2.14.4				Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials															
					2.14.	Car: Enclosure, Doors, Gates, Illumination														
						enclosure material flame ratings shall not be diminished														
					2.14.1.7	car top railing - see CAD 8.7.2.14★4														
					2.14.7.1.3	auxiliary lighting							Minor A							
					2.14.7.1.4	car top light & outlet							Minor B							
					★	CAD 8.7.2.15★1							Minor B	Minor B						
						or														
					★	CAD 8.7.2.15★2							Minor A	Minor A						
	8.7.2.14.4				Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2								Minor A	Minor A						
					2.14.	Car: Enclosure, Doors, Gates, Illumination														
					2.14.1.7	car top railing														
					2.14.7.1.3	auxiliary lighting														
					2.14.7.1.4	car top light & outlet														
	O.Reg 209/01s30				★ Relocation of Elevator License to remote location								Minor B†	-						
	CAD 8.7.2.14★4				★ Car Top Guard Rail								Minor B	Minor A		-	Minor A			
					CAD	8.7.2.14★4(a) Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)														
						or														
					CAD	8.7.2.14★4(b) Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)														
						car top run buttons not enabled until extended														
						normal operation not enabled until stowed														
						electrical limits to ensure car top clearance in overhead														
						minor A submission template														
	8.7.2.15				Car Frames and Platforms								↓ See Below ↓							
	8.7.2.15.1				Alterations to Car Frames and Platforms								Major	-						
					2.15.	Car Frames & Platforms														
	CAD 8.7.2.15★1				★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)								Minor B	Minor B						
					CAD	8.7.2.15★1(a) cars weighed prior to alteration														
					CAD	8.7.2.15★1(b) In/Out weights recorded or cars weighed after alteration														
					CAD	8.7.2.15★1(c) weight change recorded on auxilliary data tag														
					CAD	8.7.2.15★1(e) testing prior to operation to ensure security of interior finishes														
	CAD 8.7.2.15★2				★ Increase Deadweight of Car (>115 kg to 5%)								Minor A	Minor A						
					CAD	8.7.2.15★1 engineering assessment of related items affected by weight change														
	8.7.2.15.2				Increase or Decrease in Deadweight of Car (Car Wt+Rated Load> 5%)								Major	-						
					2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits														
					2.15.9	Platform Guards (Aprons)														
					2.16.	Capacity & Loading														
					2.17.	Car & Cwt Safeties														
					2.18.	Speed Governors														
					2.20.	Suspension Ropes & Connections														
					2.21.(*)	Counterweights														
					2.22.(*)	Buffers & Bumpers														
					2.23.	Car & Cwt Guides Rails, Guide Rail Support, Fastenings														
					2.24.(*)	Driving Machines & Sheaves														
					8.7.2.9	Machinery and Sheave Beams, Supports, Foundations														
					CAD	8.7.2.15★1(a) to (e)														



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11			Type of Alteration Work				
		Scope of Alteration - B44 - 2010 as amended by CAD 250/11			Alteration		Replacement with		
		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model	
		Job Reference:			Type of Submission Required				
	<b>8.7.2.16</b>	<b>Capacity, Loading, and Classification</b>			Major	-			
	<b>8.7.2.16.1</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-			
		2.11.1	Entrances and Emergency Doors Required						
		2.11.2	Types of Entrances						
		2.11.3	Closing of Hoistway Doors						
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills						
		2.11.6	Opening of Hoistway Doors						
		2.11.7	Glass in Hoistway Doors						
		2.11.8	Weights for Closing or Balancing Doors						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access						
		2.13.	Power Operation of H/W Doors and Car Doors						
		2.22 (*)	Buffers & Bumpers						
		2.14.	Car: Enclosure, Doors, Gates, Illumination						
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4						
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits						
		2.16.	Capacity & Loading						
		2.17.(*)	Car & Cwt Safeties						
		2.18.(*)	Speed Governors						
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection						
		2.20.	Suspension Ropes & Connections						
		2.24.(*)	Driving Machines & Sheaves						
		2.25.	Terminal Stopping Devices						
		2.26.	Operating Devices and Control Equipment						
		2.27.	Emergency Operation & Signaling Devices						
			2.27.1 Car Emergency Signalling Devices						
			2.27.2 Emergency or Standby Power Systems						
			2.27.3 FEO: Automatic Elevators						
			CAD 2.27.3.2.2						
			2.27.4 FEO: Non-Automatic Elevators						
			2.27.5 FEO: Automatic Elevators w/Attendant						
			2.27.6 FEO: Inspection Operation						
			2.27.7 FEO: Operating Procedures						
			2.27.8 Switch Keys						
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	<b>8.7.2.16.2</b>	Change in Class of Loading: [from any class to any other class ie A, B, C1, C2, C3]			Major	-			
		2.16.2	Minimum Rated Load for Freight Elevators						
		8.7.2.16.4	Increase in Rated Load						
	<b>8.7.2.16.3</b>	Carrying of Passengers on Freight Elevators			Major	-			
		2.16.4	Carrying of Passengers on Freight Elevators						
		2.16.4.1	not accessible to general public						
		2.16.4.2	rated load not less than required by 2.16.1						
		2.16.4.3	conforms to 2.16.8 Passenger Overload in Down Direction						
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)						
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors						
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings						
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door						
		2.16.4.8	Fs for suspension ropes to Table 2.20.3						
		2.16.4.9	Power Operated vertical doors to 2.13.3.4						
		★	apron guard to ED CAD or extent pit permits						
		★	2.16.5 Signs Required in Freight Elevator Cars						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.16.4	Increase in Rated Load Car doors or gates shall be provided at all car entrances New Car doors and gates to: 2.14.4, 2.14.5, 2.14.6 2.14.4 Passenger & Frt Car Doors & Gates, General Req'mts 2.14.5 Passenger Car Doors 2.14.6 Freight Elevator Car Doors and Gates 2.15.(* ) Car Frames & Platforms- ★apron guard to ED CAD/as pit permits 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.(* ) Counterweights 2.22.(* ) Buffers & Bumpers 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings 2.24. Driving Machines & Sheaves 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.5 Monitor & Prevent Automatic Operation w/ Faulty Door Contacts <u>8.7.2.9</u> Machinery and Sheave Beams, Supports, Foundations			Major	-		
	8.7.2.17	Change in Rise or Rated Speed			Major	-		
	8.7.2.17.1	Increase or Decrease in Rise 2.25. Terminal Stopping Devices retain drum m/c, travel increase < 4570mm 2.4.(* ) Vertical Clearances & Runbys for Cars & Cwts If decrease in rise is at lowest end then; 2.2.4 Access to Pits 2.2.5 Illumination of Pits 2.2.6 Stop Switches			Major	-		
	8.7.2.17.2	Increase in Rated Speed			Major	-		
	8.7.2.17.2(a)	Increase in Rated Speed on a Winding Drum machine Increase in Rated Speed of a winding drum m/c prohibited <u>8.7.2.17.2(c)</u> except as permitted 8.7.2.17.2(c)			Major	-		
	8.7.2.17.2(b)	Increase in Rated Speed except as per 8.7.2.17.2(c) 2.4.2 Minimum Bottom Runby for Counterweighted Elevators 2.4.3 Minimum Bottom Runby for Uncounterweighted Elevators 2.4.4 Maximum Bottom Runby 2.4.5 Counterweight Runby Data Plate 2.4.6 Maximum Upward Movement of the Car 2.4.7 Top of Car Clearances 2.4.8 Top of Counterweight Clearances 2.4.9 Equipment on Top of Car Not Permitted to Strike O/H 2.5. Horizontal Car and Counterweight Clearances Car doors or gates shall be provided at all car entrances 2.14. New doors/gates to: Car: Enclosure, Doors, Gates, Illumination 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.4.2 Comp Rope Tie Down (if speed > 3.5 m/s) 2.22.(* ) Buffers & Bumpers 2.24. Driving Machines & Sheaves 2.25. Terminal Stopping Devices 2.26.(* ) Operating Devices and Control Equipment			Major	-		
	8.7.2.17.2(c)	Increase in Rated Speed less than 10% & less than 0.20m/s new spd <.75 for type A safeties new spd <1 w/spring buffer, 2.18.2.1&.2 2.18.2.1 Car speed governors 2.18.2.2 counterweight speed governors <u>8.7.2.27.3</u> Change in Power Supply			Major	-		

Superseded by Rev



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					Type of Alteration Work								Type of Submission Required			
					Alteration				Replacement with				Same		Different	
					Modification Change		Addition		Same		Different Make/Model					
		<b>Alteration Checklist for Director's Guideline 251-11</b>														
		<b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b>														
		<b>Part, Section or Requirement</b>														
		<b>Job Reference:</b>														
		<b>Superseded by Rev</b>														
	8.7.2.17.3	Decrease in Rated Speed 2.4. Vertical Clearances & Runbys for Cars & Cwts 2.18.2 Tripping Speeds for Speed Governors 2.16. Capacity & Loading 2.16.3(*) Capacity and Data Plates 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts			Major		-									
	8.7.2.18	Car and Counterweight Safeties			Major	Major				↓ See Below ↓						
	8.7.2.18.1	New Car Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major			mrr	Minor A						
	8.7.2.18.2	New Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major			mrr	Minor A						
	8.7.2.18.3	Existing Car Safeties 2.17.(*) Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes					-		mrr	Minor A						
	8.7.2.18.3	Existing Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major		-		mrr	Minor A						
	8.7.2.19	Speed Governors and Governor Ropes			Major	Major				↓ See Below ↓						
	8.7.2.19	2.18. Speed Governors							mrr	Minor A						
	8.7.2.19	2.17.15 Governor Rope Releasing Carriers							mrr	mrr						
	8.7.2.19	Governor Ropes of different material or Construction to: 2.18.6 Design Gov'r Rope Retarding Means for Type B Safeties 2.18.7 Traction between Speed Governor Rope & Sheave & testing to 2.17.3 Function and Stopping Distances of Safeties							-	Minor B						
	8.7.2.20	Ascending Car Overspeed and Unintended Car Movement Protection (ACO & UCM)			Minor A	Major			mrr	Minor A						
	CAD 8.7.2.20 ★ 1	★ 2.19. Ascending Car Overspd & Unintended Car Movement Protection If Elevators Controllers are pre-B44-00 & have ACO & UCM			Minor A		-		mrr	Minor A						
		2.19. ACO & UCM Protection, Except that; detection means to B44-M90 or the code at time of install														
	CAD 8.7.2.20 ★ 2	★ 8.9. Code Data tag to reflect code at time of install If Elevators Controllers are pre-B44-00 & have ACO ONLY			Minor A		-		mrr	Minor A						
		2.19.1 ACO Protection Only, Except that; 2.19.3 Emergency Brake and detection means to B44-M90 or the code at time of install														
		2.19.4 Emergency Brake Supports 8.9. Code Data tag to reflect code at time of install														
	CAD 8.7.2.20 ★ 3	★ Voluntary Addition of Both ACO and UCM where previously not provided					Minor A									
		2.19. ACO & UCM Protection Except that; detection means to B44-M90 code or later														
		2.7. Machinery Spaces, Machine Rooms Control Spaces & Control Rooms as applicable to the equipment installation														
		8.9. Code Data tag to reflect code edition used for the alteration														

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									Type of Alteration Work			
									Alteration		Replacement with	
									Modification Change	Addition	Same	Different Make/Model
Type of Submission Required												
	<b>B44-10 Reference Number</b>	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b>										
		<b>Job Reference:</b>			<b>Superseded by Rev</b>							
	<b>8.7.2.21</b>	<b>Suspension Ropes and Their Connections</b>			↓ See Below ↓							
	<b>8.7.2.21.1</b>	Change in Number of, or Diameter of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Major	-						
	<b>8.7.2.21.1</b>	Change in Material / Grade of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Minor A	-						
	<b>8.7.2.21.2</b>	Addition of Rope Equalizers 2.20.5 Suspension Rope Equalizers			Minor B	Minor B	See 8.6.3.2					
	<b>8.7.2.21.3</b>	Addition of Auxiliary Rope-Fastening Devices 2.20. Suspension Ropes & Connections			Major	Major						
	<b>8.7.2.21.4 (a)</b>	Change in Type of Suspension Means 2.20.8.1 Protection Against Traction Loss 2.20.8.2 Broken Suspension Member 2.20.8.3 Suspension-Member Residual Strength 2.20.11 Suspension-Member Test			Major	Major						
	<b>8.7.2.21.4 (b)</b>	Traction Loss Detection 2.20.8.1 Protection Against Traction Loss			Minor A	Minor A						
	<b>8.7.2.21.4 (c)</b>	Broken Suspension Means Detection 2.20.8.2 Broken Suspension Member			Minor A	Minor A						
	<b>8.7.2.22</b>	<b>Counterweights</b>			Minor A	-						
	<b>8.7.2.22.1</b>	Alteration to any part of a cwt except guiding members 2.21. Counterweights <a href="#">8.7.2.22.2</a> Rod Type Counterweights <a href="#">8.7.2.3</a> Location and Guarding of Counterweights										
	<b>8.7.2.22.2</b>	Rod Type Cwt - can retain if: Minimum of 2 suspension and 2 tie rods Suspension rods: 2.21.2.1 Material - Cwt Frames & Rods 2.21.2.3 Factor of Safety Tie Rods: 2.21.1.2 Retention of Weight Sections										
	<b>8.7.2.22.3</b>	Roller or similar guide shoes added safety jaws cannot touch rails if not activated			mrr		mrr					
	<b>8.7.2.23</b>	<b>Car and Counterweight Buffers and Bumpers</b> 2.22.(*). Buffers & Bumpers			Major	-	mrr	Minor B				
	<b>8.7.2.24</b>	<b>Guide Rails, Supports, and Fastenings (alteration to, or stress increase &gt;5%)</b> 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings			Major	-						
	<b>8.7.2.25</b>	<b>Driving Machines and Sheaves</b>			↓ See Below ↓							
	<b>8.7.2.25.1</b>	Alter / <b>Replace</b> Driving Machines & Sheaves			Major	Major	Major					
	8.7.2.25.1(a)	Driving Machine Installed as part of an alteration 2.7.2 Maintenance Path and Clearance to extent existing installation permits 2.9. Machinery & Sheave Beams, Supports, Foundation 2.10.1 Guarding of Equipment 2.19. Ascending Car Overspeed & Unintended Car Movement Protection <a href="#">8.7.2.20</a> ACO & UCM Protection CAD <a href="#">8.7.2.20★1</a> Pre B44-00 ACO & UCM Protection CAD <a href="#">8.7.2.20★2</a> Pre B44-00 ACO Only Protection CAD <a href="#">8.7.2.20★3</a> Addition ACO/UCM if not required by other alteration scope 2.20. Suspension Ropes & Connections 2.24. Driving Machines & Sheaves 2.26.8 Release and Application of Driving-Machine Brakes			Major	-						

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		Scope of Alteration - B44 - 2010 as amended by CAD 250/11			Alteration		Replacement with		
		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model	
		Job Reference:							Type of Submission Required
	8.7.2.25.1(b)	Alter / Replace		Driving Machine Components - affected component complies w/ 2.24.2 Sheaves and Drums 2.24.3 Factor of Safety for Driving Machines and Sheaves 2.24.4 Fasteners Transmitting Load 2.24.5 Shafts Fillets and Keys 2.24.6 Cast-Iron Worms and Worm Gears 2.24.7 Friction Gearing and Clutches 2.24.8 Braking Systems & Driving Machine Brakes 2.24.9 Indirect-Driving Machines 2.26.8 Release and Application of Driving-Machine Brakes	Major		mrr	Major	
	8.7.2.25.1(c)	Change of		Driving Machine Sheave 2.24.2 Sheaves and Drums 2.24.3 Factor of Safety for Driving Machines and Sheaves 2.24.4 Fasteners Transmitting Load 2.20. Suspension Ropes & Connections	Major	-	mrr	Major	
	8.7.2.25.2	Change in Location of		Driving Machine	Major	-			
	8.7.2.25.2(a)	Change in Location of		Driving Machine w/ no change in Rise 2.7.2 Maintenance Path and Clearance 2.9. Machinery & Sheave Beams, Supports, Foundation 2.10.1 Guarding of Equipment 2.24.2.3 Traction	Major	-			
	8.7.2.25.2(b)	Change in Location of		Driving Machine w/ change in Rise Part 2 (*) Electric Elevators (entire installation to meet Part 2), except 2.5 Horizontal Car and Counterweight Clearances 2.11 Protection of Hoistway Openings 2.4 Vertical Clearances and Runbys for Cars & Cwts  <a href="#">8.7.2.5</a> see also <a href="#">8.7.2.10</a> see also	Major	-			
	CAD 8.7.2.25★1	★ Replacement of worm and/or gear (specify make)		2.24 specify compliance to the applicable requirements Addition of Machine Guarding - see CAD 8.7.2.7★1	-	-	mrr	Minor A	
	8.7.2.26	Terminal-Stopping Devices		2.25. Terminal Stopping Devices	Minor B	Minor B			
	8.7.2.27	Operating Devices and Control Equipment			↓ See Below ↓				
	8.7.2.27.1	Top-of-Car Operating Devices			Minor A	Minor A	mrr	Minor A	
	CAD 8.7.2.27★1	Alteration / Addition of any type of inspection operation		2.26.1.4 Inspection Operation	Minor A	Minor A			
	CAD 8.7.2.27★2	★ Addition of Top-of-Car Operating Device (see CAD 3.8.3)		2.26.1.4 Inspection Operation	-	Minor A			
	8.7.2.27.2	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A			
	CAD 8.7.2.27★3	★ Door By-Pass Switches		2.26.1.6 Operation in Leveling or Truck Zone 2.26.1.5 System to Prevent Auto Operation w/faulty Door Contacts	Minor A	Minor A			
	CAD 8.7.2.27★4	★ Door Monitoring System		2.26.5 System to Prevent Auto Operation w/faulty Door Contacts	Minor A	Minor A			

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.3	Change in Power Supply (a) voltage, frequency or # of phases or (b) AC to DC , DC to AC or (c) combination of DC & AC, then electrical to: 2.26.1.1 Types of Operation 2.26.1.2 For Car-Switch Operation Elevators 2.26.1.3 Add'l Operating Devices for Elevators carrying 1pc. load > than Rated 2.26.1.4 Inspection Operation 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.9 Control & Operating Circuits 2.26.10 Absorption of Regenerated Power new / modified equipment and wiring to: 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts brakes to: 2.24.8 Braking Systems & Driving Machine Brakes 2.26.8 Release and Application of Driving-Machine Brakes winding drum to: 2.25.3.5 Additional Req'mts for Winding Drum Machines see <a href="#">8.7.2.17.2(b)</a> Increase in Rated Speed			Major	-		
	8.7.2.27.4 8.7.2.27.4(a)	Controllers Install / Replace Motion or Operation Controller (no change in method) 2.25. Terminal Stopping Devices 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.3 Contactor and Relays for Use in Critical Operating Circuits 2.26.4 Electrical Equipment and Wiring 2.26.5 System to Monitor & Prevent Automatic Operation w/ Faulty Door Contacts 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.8 Release and Application of Driving-Machine Brakes 2.26.9 Control & Operating Circuits 2.26.11 Car Platform to Hoistway Door Sills Vertical Distance <b>levelling accuracy to 13mm (0.5 in.)</b> 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity 2.27.2 Emergency or Standby Power systems  If FEO previously present or required by OBC; 2.27.3 Firefighters' Emergency Operation - Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's <b>CAD 2.27.3.2.2</b> 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see <a href="#">8.7.1.2</a> safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys 2.27.9 Elevator Corridor Call Station Pictograph  If FEO NOT previously present or required by OBC; <b>CAD 2.27.3.2.2</b> <b>2.27.3.1 Provide Phase 1 Manual Recall Operation Only</b>			Major	-		Major

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		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model	
		Job Reference:							Type of Submission Required
	CAD 8.7.2.27★5	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major				
		2.8.2	Electrical Equipment and Wiring Electrical testing to verify functionality of rewired equipment						
	8.7.2.27.4(b)	Installation of	Door Controller		Minor A	-		Minor B	
		2.26.4.1	Electrical Equipment and Wiring						
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.4(c)	Installation of	Controller for Emergency or Standby Power		Minor A	Minor A		Minor B	
		2.26.4.1	Electrical Equipment and Wiring						
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.4(c)	Installation of	Controller for FEO Operation		Minor A	Minor A		Minor B	
		2.26.4.1	Electrical Equipment and Wiring						
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.5	Change in Type of Motion Control - AC, VVVF, DC, SCR			Major	-			
		2.11.1(*)	Entrances and Emergency Doors Required						
		2.11.2	Types of Entrances						
		2.11.3	Closing of Hoistway Doors						
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors						
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills						
		2.11.6(*)	Opening of Hoistway Doors						
		2.11.8	Weights for Closing or Balancing Doors						
		2.11.9	Hoistway Door Locking Devices & Power Operation						
		2.11.11.8(*)	Hoistway Door Safety Retainers						
		2.11.12.8	Pull Straps						
		2.12.(*)	H/W-Door Locking Devices, Elec. Contacts, H/W Access						
		2.12.5	Restricted Opening of Hoistway or Car Doors						
		2.12.6	Hoistway Door Unlocking Devices						
		2.12.7	Hoistway Access Switches						
		2.13.	Power Operation of H/W Doors and Car Doors						
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination						
		2.14.1.7	car top railing						
		2.16.8(*)	Capacity & Loading						
		2.17.(*)	Car & Cwt Safeties						
		2.18.(*)	Speed Governors						
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection						
		8.7.2.20	ACO & UCM Protection						
	CAD	8.7.2.20★1	Pre B44-00 ACO & UCM Protection						
	CAD	8.7.2.20★2	Pre B44-00 ACO Only Protection						
	CAD	8.7.2.20★3	Addition ACO/UCM if not required by other alteration scope						
		2.25.	Terminal Stopping Devices						
		2.26.(*)	Operating Devices and Control Equipment						
		2.29.	Identification of Equipment and Floors						
	★	2.7.9.2	Temperature and Humidity						
		If FEO previously present or required by OBC;							
		2.27.	Emergency Operation and Signalling Devices						
		2.27.1	Car Emergency Signalling Devices						
		2.27.2	Emergency or Standby Power Systems						
		2.27.3	Firefighters' Emergency Operation: Automatic Elevators						
		2.27.3.1	Phase 1 Recall Operation						
		2.27.3.2	Phase 1 Recall Operation by FAID's						
		CAD 2.27.3.2.2							
		2.27.3.3	Phase 2 Emergency In-Car Operation						
		2.27.3.4	Interruption of Power						
		2.27.3.5	Multicompartment Elevators						
		see 8.7.1.2	safety levels shall not be diminished						
		2.27.4	FEO: Non Automatic Elevators						
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation						
		2.27.6	FEO: Inspection Operation						
		2.27.7	FEO: Operating Procedures						
		2.27.8	Switch Keys						
		If FEO NOT previously present or required by OBC;							
		CAD 2.27.3.2.2							
		2.27.3.1	Provide Phase 1 Manual Recall Operation Only						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.6	Change in Type of Operation Control - CPPB, AUTOMATIC			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.2.27★6	★	Addition of Wander Patient Feature - Change in Operation Control		Minor B	Minor B		
			2.13.5.3	- door time out				
			2.27.3.1.6(l)	- shall not prevent PHI				
	CAD 8.7.2.27★7	★	Addition of Restricted Access - Security / Floor Lock Out		Minor B	Minor B		
			OBC-3.2.6.5(4) - shall not prevent floor access when on FEO					
			D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use					
			2.27.3.3.1(i)	- permit travel to all landings when on PH II				
			2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II				
	8.7.2.27.7		Removal of emergency stop switch on passenger elevators		Minor B	-		
			remove all related markings / engravings & provide an in-car stop switch to:					
			2.26.2.21	In-car stop switch				
		★	2.26.4.3	Positively Opened Contacts				
		★	2.26.9.3	Single failure does not render In-Car Stop Sw ineffective				

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.27.8</b>	<b>Electrical Protective Devices</b>			↓ See Below ↓			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.2 (PES)			Major	Major	mrr	Major
		2.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.1			-	Minor A	mrr	
		2.26.2 Electrical Protective Devices - for specified device						
	<b>8.7.2.28</b>	<b>Emergency Operation and Signaling Devices</b>			↓ See Below ↓			
	8.7.2.28	Car Emergency Signaling Devices			Minor B	Minor B	mrr	
		2.27.1 Car Emergency Signaling Devices						
	8.7.2.28	Emergency or Standby Power			Minor B	Minor A		
		2.27.2 Emergency Or Standby Power systems						
	8.7.2.28	Firefighter's Emergency Operation			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
	8.7.2.28	Addition of Elevator to a Group - all elevators to meet:			-	Minor A		
		2.27. Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.2.28★1	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install conformance to auto recall based on F.S. at time of install			Minor B			
	CAD 8.7.2.28★2	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						



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					Alteration		Replacement with				
					Modification Change	Addition	Same	Different Make/Model			
					Type of Submission Required						
	<b>8.7.3</b>	<b>Alterations to Hydraulic Elevators</b>									
	<b>8.7.3.1</b>	Hoistway Enclosures			see 8.7.2.1						
	<b>8.7.2.1</b>	Hoistway Enclosures			Major	Major					
	<b>8.7.2.1.1</b>	Hoistway Enclosure Walls			Major	Major					
		2.1.1	Hoistway Enclosures								
		2.1.5	Windows and Skylights								
		2.1.6	Projections, Recesses, and Setbacks in H/W								
		2.5.	Horizontal Car and Counterweight Clearances								
		2.7.3.4.6	Access Doors and Openings								
		★ 2.7.3.4.7	Access Doors and Openings								
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms								
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)								
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)								
	<b>8.7.2.1.2</b>	Addition of Elevator to Existing Hoistway			-	New					
		B44-2010	New Installation								
		2.5.	Horizontal Car and Counterweight Clearances								
	<b>8.7.2.1.3</b>	Construction at Top of Hoistway			Major	Major					
		2.1.2.1	Construction at Top of the Hoistway								
		2.1.3	Floor Over Hoistways								
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys								
	<b>8.7.2.1.4</b>	Construction at Bottom of Hoistway			Major	Major					
		2.1.2.2	Construction at Bottom of the Hoistway								
		2.1.2.3	Strength of Pit Floor								
		2.2.	Pits								
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys								
	<b>8.7.2.1.5</b>	Control of Smoke and Hot Gases			Major	Major					
		2.1.4	Control of Smoke and Hot Gases								
	<b>8.7.3.2</b>	Pits			see Electric Elevators						
	<b>8.7.2.2</b>	Pits see other alterations below for non Major Alterations			Major	-					
		2.2.	Pits								
		2.1.2.3	Strength of Pit Floor								
		<a href="#">8.7.3.4</a>	Vertical Car & Cwt Clearances & Runbys								
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B					
		2.2.2.	Pit Drains								
	8.7.2.2	Pit Guards			Minor B	Minor A					
		2.2.3	Guards Between Adjacent Pits								
	8.7.2.2	Pit Access			Minor B	Minor A					
		2.2.4	Pit Access								
	8.7.2.2	Pit Illumination			Minor B	Minor B					
		2.2.5	Illumination of Pits								
	8.7.2.2	Pit Stop Switches			Minor B	Minor A					
		2.2.6	Stop Switches								
	8.7.2.2	Pit Depth			Minor B	Minor A					
		2.2.7	Minimum Pit Depths Required								
	8.7.2.2	Access to Underside of Car			Minor B	Minor A					
		2.2.8	Access to Underside of Car								
	<b>8.7.3.3</b>	Location and Guarding of Counterweights			Major	Major					
		2.3.	Location and Guarding of Counterweights								
		2.5.1.2	Between Car & Cwt and Cwt Guard								
		3.5.	Horizontal car and Counterweight Clearances								
	<b>8.7.3.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts								
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise								
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed								
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack								



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.5</b>	<b>Horizontal Car and Counterweight Clearances (no reduction allowed)</b>			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					
	<b>8.7.3.6</b>	<b>Protection of Spaces Below Hoistways</b>			Minor B	Major		
		3.6.	Protection of Spaces below Hoistway					
	<b>8.7.3.7</b>	<b>Machine Rooms and Machinery Spaces</b>			see 8.7.2.7			
	<b>8.7.2.7</b>	<b>Machine Rooms and Machinery Spaces</b>			↓ See Below ↓			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7						
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		-	Major		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		OESC (C22.1) Electrical Equipment Clearances		Minor B	-			
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B	mrr	
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch in O/H M/C Space in the H/W					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in M/C Rooms					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A		mrr	mrr
		2.7.2	Maintenance Path and Clearance					
		2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		2.10.1	Guarding of Equipment					
		openable/removable only with tools						
		operating/work instruction for accessing equipment						
		clearances in front of electrical control equipment (1000mm)						
		access in front of / space to operate main disconnect (750mm)						
		Installation by registered contractor						
	<b>8.7.3.8</b>	<b>Electrical Wiring, Pipes, and Ducts in Hoistways and Machine Rooms</b>			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
		CSA Labeling (or equivalent)						
		OESC, CSA C22.1 as required						
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.3.9</b>	<b>Machinery and Sheave Beams, Supports and Foundations</b>			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		adequacy of building structure verified by P.Eng.						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.10</b>	Hoistway Entrances and Openings - see <a href="#">8.7.2.10</a>			see <a href="#">8.7.2.10</a>			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-		
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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		Part, Section or Requirement			Modification Change	Addition	Same	Different	
		Job Reference:						Type of Submission Required	
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below		
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major		
		2.11.12	Entrances, Vertical Slide Type						
	sills (a)	2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B		
		2.11.12.1	Landing Sills						
	frames (b)	2.11.12.2	Entrances Frames		Minor B		Minor B		
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	rails (c)	2.11.12.3	Rails		mrr		mrr		
	panels (d)	2.11.12.4	Panels		Minor A		Minor A		
		2.11.12.3	Rails						
		2.11.12.5	Guides						
		2.11.12.6	Counterweighting or Counterbalancing						
		2.11.12.8	Pull Straps						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	guides (e)	2.11.12.5	Guides						
	sill guard (f)	2.11.12.7	Sill Guards		mrr		mrr		
	straps (g)	2.11.12.8	Pull Straps						
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below		
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major		
		2.11.13	Entrances, Swing Type						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B		
		2.11.10.3	Hinged Hoistway Landing Sills						
		2.11.13.1	Landing Sills						
	frames (b)	2.11.13.2	Entrance Frames		Minor B		Minor B		
		2.11.13.4	Hinges						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	panels (c)	2.11.13.3	Panels		Minor B		Minor B		
		2.11.13.4	Hinges						
		2.11.13.5	Marking						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	hinges (d)	2.11.13.4	Hinges		mrr		mrr		
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major			
			Fire Protection Rating not less then existing entrance						
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements						
	CAD 8.7.2.10★1	★	Removing Service To a Floor		Minor B				
			Bolt entrances shut						
			Remove Interlock From Safety String						
			Remove COP Floor Button						
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II						
		2.12.7	H/W Access Switches - if floor was previously the access location						
	CAD 8.7.2.10★2	★	Door Safety Retainers		Minor B	Minor A	mrr	Minor B	
		2.11.11.8	Hoistway Door Safety Retainers						
	<b>8.7.3.11</b>	Hoistway Door-Locking Devices			See 8.7.2.11				
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			↓ See Below ↓				
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B	
		2.12.1	General						
		2.12.2	Interlocks						
		2.12.4	Listing/Certification Locking Devices						
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a		
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a		
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a		
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B	
		2.12.1	General						
		2.12.3	H/W Door Combination Mechanical Locks & Contacts						
		2.12.4	Listing/Certification Locking Devices						
		2.12.6	Hoistway Door Unlocking Devices						
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A			
		8.7.2.11.3	requirements specified						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.11.4</b>	Access switches and Unlocking Devices				Minor B		mrr
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices			-	Minor B		mrr
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.24.8 Braking Systems & Driving Machine Brakes 2.26.1.4 Inspection Operation			-	Minor A		mrr
	<b>8.7.2.11.5</b>	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	<b>8.7.3.12</b>	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		<a href="#">8.7.2.10.1</a> Entrances & H/W Openings - General Req'mts <a href="#">8.7.2.10.2</a> Horizontal Slide-Type Entrances <a href="#">8.7.2.10.3</a> Vertical Slide-Type Entrances <a href="#">8.7.2.10.5</a> Marking of Entrance Assemblies <a href="#">8.7.3.10</a> Hoistway Entrances and Openings * 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12*1	* Replacement of Door Operator 2.13. Power Operation of Hoistway Doors and Car Doors			-	-	mrr	Minor B
	CAD 8.7.2.12*2	* Replacement of Door Reopening Device			See <a href="#">8.7.2.13</a>			
	<b>8.7.2.13</b>	Door Reopening Device (Safety Edge) (Altered or Added or Replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates 2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI &II at time of install					see 8.6.3.8	
	<b>8.7.3.13</b>	Car Enclosures			See <a href="#">8.7.2.14</a>			
	<b>8.7.2.14</b>	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	<b>8.7.2.14.1</b>	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties <a href="#">8.7.2.15.1</a> Alterations to Car Frames and Platforms			Major	-		
	<b>8.7.2.14.2</b>	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures 2.14.1.2 Securing of Enclosures			Minor A	Minor A		
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added) 2.14.1.5 Top Emergency Exits			Minor B	Minor B		
	8.7.2.14.2(c)	Installation of Glass 2.14.1.8 Glass in Elevator Cars 2.14.1.8.1 Enclosures include glass 2.14.1.8.2 Lining of Walls or Ceilings include glass 2.14.1.8.3 Marking of each Glazing Panel			Minor B	Minor B		mrr
	8.7.2.14.2(d)	Specific Equipment in Elevator Car 2.14.1.9 Equipment Inside Cars (a) Handrails (b) fastening devices for protective linings (c) ceiling mounted hooks/tracks (d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1 (e) conveyor tracks in freights (f) heating or cooling equipment			Minor B	Minor B		
	CAD 8.7.2.14*1	* Car operating station verify inspection operation 'if provided' verify stop sw verify switches operate as before (eg. FS, FEO, Access)			Minor B	Minor B	mrr	Minor B
	CAD 8.7.2.14*2	* video cameras / surveillance equipment / video monitors 2.8.2.1 electrical equipment & wiring 2.14.1.2.3 securing of enclosure equipment 2.14.2.4 Headroom in Elevator Cars			Minor B	Minor B		

0	1	2a	2b	2c	3	4	5	6
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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished					
			2.14.1.7 car top railing - see CAD 8.7.2.14★4					
			2.14.7.1.3 auxiliary lighting			Minor A		
			2.14.7.1.4 car top light & outlet			Minor B		
		★	CAD 8.7.2.15★1		Minor B			Minor B
			or					
		★	CAD 8.7.2.15★2		Minor A			Minor A
	8.7.2.14.4	Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg 209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A		Minor A
		CAD	8.7.2.14★4(a) Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD	8.7.2.14★4(b) Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
	8.7.3.14	Car Frames and Platforms			Major	-		Major
		3.15.	Car Frames & Platforms					
	8.7.3.15	Safeties Car or Cwt (plunger gripper see 8.7.3.23.7)			↓ See Below ↓			
	8.7.3.15.1	Car Safeties			-	Major	mrr	Minor A
		3.17.1	Car Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.2	Counterweight Safeties			-	Major	mrr	Minor A
		3.17.2	Counterweight Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.3	Alteration to existing Car or Counterweight Safeties			Major	-	mrr	Minor A
		3.17(*)	Car and counterweight safeties and plunger gripper					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.16</b>	Governors and Governor Ropes			See <a href="#">8.7.2.19</a>			
	<b>8.7.2.19</b>	Speed Governors and Governor Ropes			Major	Major	↕ See Below ↕	
	8.7.2.19	2.18.	Speed Governors				mrr	Minor A
							see	8.6.3.6
	8.7.2.19	2.17.15	Governor Rope Releasing Carriers				mrr	mrr
							see	8.6.3.9
	8.7.2.19	Governor Ropes of different material or Construction to:					Minor B	Minor B
				2.18.6 Design of Gov'r Rope Retarding Means for Type B Safeties				
				2.18.7 Traction between Speed Governor Rope & Sheave				
				& testing to 2.17.3 Function and Stopping Distances of Safeties				
	<b>8.7.3.17</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22.(*)	Buffers & Bumpers					
		3.22.2	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to <b>8.7.2.14★4</b>					
		3.15.	Car Frames & Platforms					
		3.17.	Car and Counterweight Safeties					
		3.21.	Counterweights					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		2.18.(*)	Speed Governors					
		3.16.	Capacity & Loading					
		3.18.	Hydraulic Jacks					
		3.19.	Valves, Pressure Piping, and Fittings					
		3.20.	Ropes and Rope Connections					
		3.24.	Hydraulic Machines and Tanks					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			<b>CAD 2.27.3.2.2</b>					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.3.18</b>	Change in Class of Loading: [A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		3.16.	Capacity & Loading					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.19</b>	<b>Carrying of Passengers on Freight Elevators</b>			Major	-		
		3.16.4	2.16.4 except 2.16.4.3					
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.16.4.9(a) to (e)					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					
	<b>8.7.3.20</b>	<b>Increase in Rated Load</b>			Major	-		
		2.26.1.4	Inspection Operation					
		2.26.1.5	Inspection Operation with Open Door Circuits					
		2.26.5	Monitor & Prevent Automatic Operation w/ Faulty Door Contacts					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		8.7.3.23.4	Increase in Working Pressure					
	<b>8.7.3.21</b>	<b>Increase in Deadweight of Car (Car Wt+Rated Load &gt;5%)</b>			Major	-		
		3.14.	Car: Enclosure, Doors, Gates, Illumination		n/a			
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.24.5	Counterweight Sheaves					
		8.7.3.23.4	Increase in Working Pressure					
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD	8.7.2.15★1					
	CAD 8.7.3.21★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD	8.7.2.15★2					



0	1	2a	2b	2c	3	4	5	6
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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.22</b>	<b>Change in Rise or Rated Speed</b>			Major	-		
	<b>8.7.3.22.1</b>	<b>Increase or Decrease in Rise</b>			Major	-		
		3.25.	Terminal-Stopping Devices					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.4.1	Bottom Car Clearance					
		3.4.2	Minimum Bottom and Top Car Runby					
		3.4.3	Car Top and Bottom Maximum Runby					
		3.18.2	Plungers					
			If decrease in rise is at lowest end then;					
		2.2.4	Access to Pits					
		2.2.5	Illumination of Pits					
		2.2.6	Stop Switches					
	<b>8.7.3.22.2</b>	<b>Increase in Rated Speed</b>			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	New doors/gates to: Car: Enclosure, Doors, Gates, Illumination					
		3.17.(*)	Car and Counterweight Safeties					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.20.	Ropes and Rope Connections					
	<b>8.7.3.22.3</b>	<b>Decrease in Rated Speed</b>			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		2.18.2	Tripping Speeds for Speed Governors					
		3.16.	Capacity & Loading					
		3.16.3(b)	Capacity & data plates					
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	<b>8.7.3.23</b>	<b>Hydraulic Equipment</b>				↓ See Below ↓		
	<b>8.7.3.23.1</b>	<b>Alter / Install / Replace Hydraulic Jacks</b>			Major	-	Major	
		3.18.	Hydraulic Jacks				see 8.6.3.10.1	
	<b>8.7.3.23.2</b>	<b>Alter / Install / Replace Plungers</b>			Major	-	Minor A	
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.3</b>	<b>Alter / Install / Replace Cylinders</b>			Major	-	Minor A	
		3.18.3	Cylinders - Installed as part of Alteration				see 8.6.3.10.2	
		3.18.3	Cylinder is Altered					
		3.18.3	Cylinder is Sleeved		Minor A			
		3.18.4.1	Metal Stops and/or Other Means					
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.4</b>	<b>Increase in Working Pressure &gt;5%</b>			Major	-		
		3.18.(*)	Hydraulic Jacks					
		3.19.(*)	Valves, Pressure Piping, and Fittings					
		3.24.1	Marking Plates					
		3.24.2	Tanks					
		3.24.3	Atmosphere Storage and Discharge Tanks					
		3.24.4	Welding					
	<b>8.7.3.23.5</b>	<b>Change in Location of Hydraulic Jack</b>			Major	-		
		Part 3	Hydraulic Elevators					
	<b>8.7.3.23.6</b>	<b>Relocation of Hydraulic Machine (Power Unit)</b>			Minor A	-		
		3.26.8	Pressure Switch					



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	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement  Job Reference: <b>Superseded by Rev</b>			Type of Alteration Work				
					Alteration		Replacement with		
					Modification Change	Addition	Same	Different Make/Model	
Type of Submission Required									
	8.7.3.23.7	Plunger Gripper	3.17.3 Plunger Gripper 3.1.1(b) strength of pit floor 3.22.1 no strike when buffers compressed		Minor A	Minor A			
	CAD 8.7.3.23.7 ★1	Removal of Plunger Gripper	3.18.3 Cylinders 3.19.4.7 Overspeed Valves 3.4.2.1 Bottom Car Runby		Minor A	-			
	8.7.3.24 (a)	Alter / Replace	Control Valves 3.19. Valves, Pressure Piping, and Fittings		Minor A	-		Minor B see 8.6.3.11	
	8.7.3.24 (b)	Alter / Replace	Relief Valves 3.19. Valves, Pressure Piping, and Fittings		Minor A	Minor A		Minor B see 8.6.3.11	
	8.7.3.24 (b)	Alter / Replace	Check Valves 3.19. Valves, Pressure Piping, and Fittings		Minor A	Minor A		Minor B see 8.6.3.11	
	8.7.3.24 (b)	Alter / Replace	Pressure Piping or Fittings 3.19. Valves, Pressure Piping, and Fittings		Minor A	Minor A		Minor B see 8.6.3.11	
	8.7.3.25	Suspension Ropes and Their Connections				↓	See Below	↓	
	8.7.3.25.1	Change in Number of, or Diameter of Ropes	3.20. Ropes and Rope Connections PEO to certify retained sheaves w/different ropes are satisfactory		Major	-			
	8.7.3.25.1	Change in Material / Grade of Ropes	3.20. Ropes and Rope Connections PEO to certify retained sheaves w/different ropes are satisfactory		Minor A	-			
	8.7.3.25.2	Addition of Rope Equalizers	2.20.5 Suspension Rope Equalizers		Minor B	Minor B			
	8.7.3.26	Counterweights - Alteration of				See 8.7.2.22			
	8.7.2.22	Counterweights				Minor A	-		
	8.7.2.22.1	Alteration to any part of a cwt except guiding members							
		2.21.	Counterweights						
		3.21.	Counterweights						
		<a href="#">8.7.2.22.2</a>	Rod Type Counterweights						
		<a href="#">8.7.2.3</a>	Location and Guarding of Counterweights						
	8.7.2.22.2	Rod Type Cwt - can retain if:							
		Minimum of 2 suspension and 2 tie rods							
		Suspension rods:							
		2.21.2.1	Material - Cwt Frames & Rods						
		2.21.2.3	Factor of Safety						
		2.21.1.2	Retention of Weight Sections						
	8.7.2.22.3	Roller or similar guide shoes added				mrr		mrr	
		safety jaws cannot touch rails if not activated							
	8.7.3.26	Counterweights - Addition of				-	Major		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts						
		3.6.	Protection of Spaces below Hoistway						
		3.14.	Car: Enclosure, Doors, Gates, Illumination						
		2.14.	Car: Enclosure, Doors, Gates, Illumination						
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4						
		3.15.	Car Frames & Platforms						
		3.17.2	Counterweight Safeties						
		3.18.	Hydraulic Jacks						
		3.20.	Ropes and Rope Connections						
		3.21.	Counterweights						
		<a href="#">8.7.3.3</a>	Location and Guarding of Counterweights						
	8.7.3.27	Car Buffers and Bumpers				Major	-	mrr Minor B	
		3.21.	Counterweights						
		3.22.2(*)	Counterweight Buffers						

0	1	2a	2b	2c	3	4	5	6
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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.28</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%)			Major	-		
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	<b>8.7.3.29</b>	Alteration to Tanks			Minor B	-	Minor B	
		3.24.	Hydraulic Machines and Tanks				see 8.6.3.10.4	
	CAD 8.7.3.29★1	★ Addition of Oil Cooler			Minor B		Minor B	
		8.7.3.8	Electrical Wiring, Pipes, and Ducts in H/W and M/C rooms					
		2.7.2	Maintenance Path and Clearance					
		3.10.	Guarding of Exposed Auxiliary Equipment					
	<b>8.7.3.30</b>	Terminal-Stopping Devices			Minor B	Minor B		
		3.25.	Terminal-Stopping Devices					
	<b>8.7.3.31</b>	Operating Devices and Control Equipment			↓ See Below ↓			
	<b>8.7.3.31.1</b>	Top-of-Car Operating Devices			Minor A	Minor A	mrr	Minor A
		3.26.2	Inspection Operation					
	CAD 8.7.3.31★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4	Inspection Operation					
	CAD 8.7.3.31★2	Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4	Inspection Operation					
	<b>8.7.3.31.2</b>	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		3.26.3.2	Operation in Leveling or Truck Zone					
	<b>8.7.3.31.3</b>	Alter / Replace Anti-Creep Leveling Device			Minor B	-	Minor B	
		3.26.3.1	Anti-Creep Operation				see 8.6.3.10.5	
	CAD 8.7.3.31★3	★ Door By-Pass Switches			Minor A	Minor A		
		2.26.1.5	Inspection Operation with Open Door Circuits					
	CAD 8.7.3.31★4	★ Door Monitoring System			Minor A	Minor A		
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					
	<b>8.7.3.31.4</b>	Change in Power Supply			Major	-		
		(a) voltage, frequency or # of phases or						
		(b) AC to DC , DC to AC or						
		(c) combination of DC & AC, then						
		electrical to:						
		3.26.1	Operating Devices and Control Equipment					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6(*)	Control and Operating Circuits					
	CAD 8.7.3.31★5	★ Addition of Soft Start				Minor A		
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					
		3.26.5	Phase-Reversal and Failure Protection					
	CAD 8.7.3.31★6	★ Addition of Power Efficiency Increasing Device				Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.31.5</b>	Controllers						
	8.7.3.31.5(a)	Install / Replace	Elevator Controller (as part of an alteration)		Major	-		Major
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.26.7	Recycling Operation for Multiple or Telescopic Plungers					
		3.26.8	Pressure Switch					
		3.26.9	Low Oil Protection					
		3.26.10	Auxiliary Power Lowering Operation					
		★ 2.7.9.2	Temperature and Humidity					
		3.27.1	Phase 1 Emergency Recall Operation after Device Actuation					
		3.27.2	Phase 1 Emergency Recall Operation prior to Device Actuation					
		3.27.3	Device Acutation at Recall Level					
		3.27.4	Device Acutation with Phase II Emergency In-Car in Effect					
			If FEO previously present or required by OBC;					
		2.27.3	Firefighters' Emergency Operation - Automatic Elevators					
			2.27.3.1 Phase 1 Recall Operation					
			2.27.3.2 Phase 1 Recall Operation by FAID's					
			<b>CAD 2.27.3.2.2</b>					
			2.27.3.3 Phase 2 Emergency In-Car Operation					
			2.27.3.4 Interruption of Power					
			2.27.3.5 Multicompartment Elevators					
			see <a href="#">8.7.1.2</a> safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		2.27.9	Elevator Corridor Call Station Pictograph					
			If FEO NOT previously present or required by OBC;					
			<b>CAD 2.27.3.2.2</b>					
			<b>2.27.3.1 Provide Phase 1 Manual Recall Operation Only</b>					
	CAD 8.7.3.31★7	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	8.7.3.31.5(b)	Install / Replace	Door Controller (as part of an alteration)		Minor A	-		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					

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		Scope of Alteration - B44 - 2010 as amended by CAD 250/11			Alteration		Replacement with		
		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model	
		Job Reference:							Type of Submission Required
	8.7.3.31.6	Change in Type of Motion Control			Major	-			
		2.11.1(*)	Entrances and Emergency Doors Required						
		2.11.2	Types of Entrances						
		2.11.3	Closing of Hoistway Doors						
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors						
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills						
		2.11.6(*)	Opening of Hoistway Doors						
		2.11.8	Weights for Closing or Balancing Doors						
		2.11.9	Hoistway Door Locking Devices & Power Operation						
		2.11.11.8(*)	Hoistway Door Safety Retainers						
		2.11.12.8	Pull Straps						
		2.12.(*)	H/W-Door Locking Devices, Elec. Contacts, H/W Access						
			2.12.5 Restricted Opening of Hoistway or Car Doors						
			2.12.6 Hoistway Door Unlocking Devices						
			2.12.7 Hoistway Access Switches						
		2.13.	Power Operation of H/W Doors and Car Doors						
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination						
			2.14.1.7 car top railing						
		8.7.2.27.5(d)	Capacity & Loading						
		2.17.(*)	Car & Cwt Safeties						
		2.18.(*)	Speed Governors						
		3.25.	Terminal Stopping Devices						
		3.26.(*)	Operating Devices and Control Equipment						
		2.29.	Identification of Equipment and Floors						
		★ 2.7.9.2	Temperature and Humidity						
			If FEO previously present or required by OBC;						
		2.27.	Emergency Operation and Signalling Devices						
			2.27.1 Car Emergency Signalling Devices						
			2.27.2 Emergency or Standby Power Systems						
			2.27.3 Firefighters' Emergency Operation: Automatic Elevators						
			2.27.3.1 Phase 1 Recall Operation						
			2.27.3.2 Phase 1 Recall Operation by FAID's						
			CAD 2.27.3.2.2						
			2.27.3.3 Phase 2 Emergency In-Car Operation						
			2.27.3.4 Interruption of Power						
			2.27.3.5 Multicompartment Elevators						
			see 8.7.1.2 safety levels shall not be diminished						
			2.27.4 FEO: Non Automatic Elevators						
			2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation						
			2.27.6 FEO: Inspection Operation						
			2.27.7 FEO: Operating Procedures						
			2.27.8 Switch Keys						
			If FEO NOT previously present or required by OBC;						
			CAD 2.27.3.2.2						
			2.27.3.1 Provide Phase 1 Manual Recall Operation Only						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.31.7</b>	Change in Type of Operation Control - CPPB, Automatic			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		3.11.1	Protection of Hoistway Landing Openings					
		3.12.1	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		3.13.	Power Operation of H/W Doors and Car Doors					
		3.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.(*)	Operating Devices and Control Equipment					
		★ 2.7.9.2	Temperature and Humidity					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.3.31 ★ 8	★ Addition of Wander Patient Feature - Change in Operation Control			Minor B	Minor B		
		2.11.3.2	- doors closed when not in use					
		2.27.3.1.6(l)	- shall not prevent PHI					
	CAD 8.7.3.31 ★ 9	★ Addition of Restricted Access - Security / Floor Lock Out			Minor B	Minor B		
		OBC-3.2.6.5(4) - shall not prevent floor access When on FEO						
		D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use						
		2.27.3.1.6(l)	- shall not prevent PHI					
		2.27.3.3.1(i)	- permit travel to all landings when on PH II					
		2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II					
		DR 172/02	Elevators With Phase II Operation & Floor Button Controlled by Cards/Keys					
	<b>8.7.3.31.8</b>	Emergency Operation and Signaling Devices						
	8.7.3.31.8(a)	Car Emergency Signaling Devices			Minor B	Minor B		mrr
		2.27.1	Car Emergency Signaling Devices					
	8.7.3.31.8(b)	Emergency or Standby Power			Minor B	Minor A		
		2.27.2	Emergency Or Standby Power systems					

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.8(c)	<b>Firefighter's Emergency Operation</b> <b>3.27. Emergency Operation and Signaling Devices</b> 3.27.1 PHI Emergency Recall Operation After Device Actuation (a) low oil protection (b) plunger follower guide protection (c) auxiliary power lowering (d) oil tank temperature shutdown 2.27 Emergency Operation & Signaling Devices 2.27.1 Car Emergency Signalling Devices 2.27.2 Emergency or Standby Power Systems 2.27.3 FEO: Automatic Elevators <b>CAD 2.27.3.2.2</b> 2.27.4 FEO: Non-Automatic Elevators 2.27.5 FEO: Automatic Elevators w/Attendant 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys 2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC			Minor B	Minor A		
CAD	8.7.3.31.8★10	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install conformance to auto recall based on F.S. at time of install			Minor B			
CAD	8.7.3.31.8★11	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order 2.27.3 FEO: Automatic Elevators			Minor B	Minor A		
	8.7.3.31.9	<b>Auxiliary Power Lowering Operation</b> 3.26.10 Auxiliary Power Lowering Operation include testing procedure			Minor B	Minor B		
	8.7.3.31.10	<b>Removal of emergency stop switch on passenger elevators</b> remove all related markings / engravings & provide an in-car stop switch to: 2.26.2.21 In-car stop switch 2.26.4.3 Positively Opened Contacts 2.26.9.3.1(a) single failure does not render In-Car Stop Switch ineffective 3.26.4.2 deceleration rate <1g, anticreep must still function			Minor B	Minor B		
	8.7.3.31.11	<b>Electrical Protective Devices</b>			↓ See Below ↓			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.2 (PES) 3.26.2 Electrical Protective Devices - for specified device			Major	Major	mrr	Major
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.1 3.26.2 Electrical Protective Devices - for specified device			-	Minor A	mrr	

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.4</b>	Alterations to Elevators w/other Types of Driving Machines						
	<b>8.7.4.1</b>	Rack and Pinion Elevators			Major	-		
		4.1.	Rack and Pinion Elevators					
	<b>8.7.4.2</b>	Screw-Column Elevators			Major	-		
		4.2.	Screw-Column Elevators					
	<b>8.7.4.3</b>	Hand Elevators			Major	-		
	<b>8.7.4.3.1</b>	Hoistway Enclosures and Machinery Space			Major	-		
		4.3.1	Hoistways, H/W Enclosures, and Related Construction					
		4.3.4	Enclosures for Machines and Control Equipment					
	<b>8.7.4.3.2</b>	Top Car and Counterweight Clearances			Major	-		
		4.3.3	Top Clearances					
	<b>8.7.4.3.3</b>	Hoistway Entrances			Major	-		
		4.3.6	Hoistway Entrances					
		4.3.7	Hoistway Gates for Landing Openings					
		4.3.8	Hoistway-Door & Hoistway Gate Locking Devices					
	<b>8.7.4.3.4</b>	Car Enclosures			Major	-		
		4.3.9	Car Enclosures					
		4.3.11	Car Frames and Platforms					
	<b>8.7.4.3.5</b>	Car Frame and Platform			Major	-		
		4.3.11	Car Frames and Platforms					
		4.3.12	Car Compartments					
		4.3.13	Cars Counterbalancing One Another					
		4.3.16	Suspension Means					
	<b>8.7.4.3.6</b>	Capacity and Loading			Major	-		
		4.3.14.1	Minimum Rated Load					
		4.3.14.2	Capacity Plate					
		4.3.19.1	Drive Machine & Sheaves - Factors or Safety					
		4.3.19.2	Driving-Machines					
		4.3.16	Suspension Means					
	<b>8.7.4.3.7</b>	Increase in Rise			Major	-		
		4.3.3.1	Top Car Clearances					
		4.3.3.2	Top Counterweight Clearance					
		4.3.15	Car Safeties					
		4.3.16	Suspension Means					
	<b>8.7.4.3.8</b>	Guide Rails and Fastenings			Major	-		
		4.3.18.1	Guide Rails - Material and Finish					
		4.3.18.2	Strength of Rails and Fastenings					
		4.3.18.3	Extension of Guide Rails at Top & Bottom of H/W					
	<b>8.7.4.3.9</b>	Overhead Beams and Supports			Major	-		
		4.3.5.1	Overhead Beams and Supports					
		4.3.5.2	Access to Machines and Sheaves					
	<b>8.7.4.3.10</b>	Power Attachments			Major	-		

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					Alteration		Replacement with			
					Modification Change	Addition	Same	Different Make/Model		
					Type of Submission Required					
	<b>8.7.5</b>	Alterations to Special Application Elevators								
	<b>8.7.5.1</b>	Inclined Elevators			Major	-				
		5.1.	Inclined Elevators compliance to specific 5.1 sections based on alteration scope							
	<b>8.7.5.2</b>	Limited Use/Limited Application Elevators			See Electric or Hydraulic Elevator					
	CAD 8.7.5.2★1	★	<a href="#">8.7.2</a>	Alterations to Electric Elevator & as modified in Section 5.2						
	CAD 8.7.5.2★2	★	<a href="#">8.7.3</a>	Alterations to Hydraulic Elevator & as modified in Section 5.2						
	<b>8.7.5.5</b>	Power Sidewalk Elevators			Major	-				
	<b>8.7.5.5.1</b>	Changes in Electrical Wiring or Electrical Equipment			Major	-				
		5.5.1.8	Equipment in Hoistways & Machine Rooms							
	<b>8.7.5.5.2</b>	Sidewalk Door			Major	-				
		5.5.1.11.2	Horizontal Openings in Sidewalks and Exterior Areas							
		5.5.1.11.3	Hinged Type Swing Sidewalk Doors							
		5.5.1.11.4	Vertical Lifting Sidewalk Covers							
	<b>8.7.5.5.3</b>	Change in Car Enclosure, Car Doors, and Gates			Major	-				
		5.5.1.14	Car Enclosure, Car Doors and Gates, Illumination							
	<b>8.7.5.5.4</b>	Bow-Irons and Stanchions			Major	-				
		5.5.1.15.2	Bow-Irons and Stanchions							
	<b>8.7.5.5.5</b>	Increase in Rated Load			Major	-				
		5.5.1.16	Capacity and Loading							
		5.5.1.18	Speed Governors							
		5.5.1.21	Buffers and Bumpers							
		5.5.1.25.4	Maximum Rated Speed							
	<b>8.7.5.5.6</b>	Increase in Rated Speed			Major	-				
		5.5.1.15	Car Frames and Platforms							
		5.5.1.16	Capacity and Loading							
		5.5.1.19	Suspension Ropes							
		5.5.1.22	Guide Rails							
	<b>8.7.5.5.7</b>	Existing Driving Machine			Major	-				
		5.5.1.8	Equipment in Hoistways & Machine Rooms							
		5.5.1.9	Machinery and Sheave Beams, Supports, and Foundations							
		5.5.1.23	Driving Machines and Sheaves							
		5.5.1.25	Operating Devices and Control Equipment							
	<b>8.7.5.5.8</b>	Change in Type of Operating Devices and/or Control Equipment			Major	-				
		5.5.1.8	Equipment in Hoistways & Machine Rooms							
		5.5.1.25	Operating Devices and Control Equipment							
	<b>8.7.5.6</b>	Rooftop Elevators			Major	-				
		5.6.	Rooftop Elevators							
	<b>8.7.5.7</b>	Special Purpose Personnel Elevators			see CAN/CSA B311					



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		Scope of Alteration - B44 - 2010 as amended by CAD 250/11			Alteration		Replacement with		
		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model	
		Job Reference:							Type of Submission Required
	<b>8.7.6.1</b>	Alterations to Escalators							
	8.7.6.1.1	Change to component parts			mrr	-		mrr	
		8.6.12.4.1.1 Replacement parts or components							
		8.6.12.4.1.2 Quality of Work							
	8.7.6.1.1	Addition of Components or Devices			see <a href="#">8.7.6.1</a>			-	
		see applicable <a href="#">8.7.6.1</a> requirements for that device							
	<b>8.7.6.1.2 (a)</b>	Relocation of Escalator			New	-			
		6.1. Escalators							
	<b>8.7.6.1.2 (b)</b>	Repositioning of Escalator			Major				
	CAD 3.18	★ Repositioning of Escalator (within the same building)							
		6.1.3.3.11 Guard at ceiling intersection							
		6.1.3.3.12 AntiSlide Devices							
		6.1.3.3.13 Deck Barricades							
		6.1.3.4.3 Guards							
		6.1.3.6.3 Adjacent Floor Surfaces							
		6.1.3.6.4 Safety Zone							
		6.1.3.12 Headroom							
		6.1.3.13 Welding							
		6.1.6.9 Signs							
		6.1.7.4.1 Electrical equipment							
		8.7.6.1.3 Protection of Floor Openings							
	<b>8.7.6.1.3</b>	Protection of Floor Openings			Minor A	-			
		6.1.1.1 Protection Required							
	<b>8.7.6.1.4</b>	Protection of Trusses and Machinery Spaces Against Fire			Minor A	-			
		6.1.2.1 Protection Required							
	<b>8.7.6.1.5</b>	Construction Requirements							
	8.7.6.1.5(a)	Construction Requirements - Angle of Inclination			Major	-			
	8.7.6.1.5(b)	Construction Requirements - Geometry			Major	-			
		6.1.3.2 Geometry							
	8.7.6.1.5(c)	Any Alteration to the Balustrades			Minor A	Minor A			
		6.1.3.3 Balustrades							
		6.1.3.3.1 Construction							
		6.1.3.3.2 Strength							
		6.1.3.3.3 Use of Glass or Plastic							
		6.1.3.3.4 Interior Low Deck							
		6.1.3.3.5 Loaded Gap between Skirt & Step							
		6.1.3.3.6 Skirt Panels							
		6.1.3.3.7 Dynamic Skirt Panels							
		6.1.3.3.8 Dynamic Skirt Panel Loaded Gap							
		6.1.3.3.9 Step/Skirt Performance Index							
		6.1.3.3.10 Skirt Deflector Devices							
		6.1.3.3.11 Guard at ceiling intersection							
		6.1.3.3.12 AntiSlide Devices							
		6.1.3.3.13 Deck Barricades							
	8.7.6.1.5(d)	Deflector Devices			Minor B			mrr	
		6.1.3.3.10 Skirt Deflector Devices							
	<b>8.7.6.1.6</b>	Handrails or Handrail System			Minor A	-			
		6.1.3.2.2 Geometry - Handrail							
		6.1.3.4.1 Handrails - Type Required							
		6.1.3.4.2 Extension Beyond Combplate							
		6.1.3.4.3 Guards (hand or finger)							
		6.1.3.4.4 Handrails - Splicing							
		6.1.3.4.6 Handrail Clearance							
		6.1.6.3.12 Handrail Entry Device							
		6.1.6.4 Handrail Speed Monitoring Device							
	CAD 8.7.6.1★1	★ Addition of Handrail Advertising			mrr	variance			
		Variance to 6.1.6.9.2							

0 Conforms to B44 Mark with 'X'	1	2a	2b	2c	3	4	5	6
	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.1.7</b>	Step System - any alteration to the step system			Major	-	mrr	Minor B
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5 (*)	Steps					
		6.1.3.6	Entrance and Egress Ends					
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.4	Factor of Safety - Steps					
		6.1.3.11	Chains					
		6.1.6.3.3	Broken Step-Chain Device					
		6.1.6.3.9	Step Upthrust Device					
		6.1.6.3.11	Step Level Device					
		6.1.6.3.14	Step Lateral Displacement Device					
		6.1.6.5	Missing Step Device					
	<b>8.7.6.1.8</b>	Complates			Minor A	-		
		6.1.6.3.13	Comb-Step Impact Devices					
	<b>8.7.6.1.9</b>	Trusses and Girders			Major	-		
		<a href="#">8.7.1.4</a>	Welding					
		6.1.3.7	Trusses of Girders					
		6.1.3.9.1	Structural Load					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
	<b>8.7.6.1.9</b>	New Escalator into Existing Trusses			New	-		
		6.1.	Escalators					
	<b>8.7.6.1.10</b>	Step Wheel Tracks			Major	-		
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
		<a href="#">8.7.1.4</a>	Welding					
	<b>8.7.6.1.11</b>	Rated Load and Speed			Major	-		
		6.1.	Escalators					
	<b>8.7.6.1.12</b>	Driving Machine, Motor, and Brake						
	8.7.6.1.12(a)	Driving Machine			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.4	Broken Drive-Chain Device					
		6.1.6.3.8	reversal Stop Device					
	8.7.6.1.12(b)	Driving Motor			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.2	Speed Governor					
		6.1.6.3.8	reversal Stop Device					
		6.1.6.3.10	Disconnected Motor Safety Device					
	8.7.6.1.12(c)	Machine Brake			Major	-		
		6.1.3.9.3	Brake					
		6.1.3.10.2	Factor of Safety - Driving Machine Parts					
		6.1.5.3.1	Escalator Driving-Machine Brake					

Superseded by Rev

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.1.13</b>	<b>Operating and Safety Devices</b>			Minor A	Minor A		
		6.1.6	Operating and Safety Devices (for that device)					
	CAD 8.7.6.1★2	★	Removal of step demarcation lights		Minor A	-		-
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5.4	Clearance between Steps					
		6.1.3.5.5	Slotting of Steps and Treads					
		6.1.3.5.6	Step Demarcation					
		6.1.3.6.2	Distinction Between Comb and Step					
	<b>8.7.6.1.14</b>	<b>Lighting, Access, and Electrical Work</b>			Minor B	Minor B		
		6.1.7	Lighting, Access, and Electrical Work					
	<b>8.7.6.1.15</b>	<b>Entrance and Egress</b>			Major	-		
		6.1.3.6.1	Combplates					
		6.1.3.6.2	Distinction Between Comb and Step					
		6.1.3.6.3	Adjacent Floor Surfaces					
		6.1.3.6.4	Safety Zone					
	<b>8.7.6.1.16</b>	<b>Controller - Installed as part of an alteration</b>			Major	-		-
		6.1.6.10	Control and Operating Circuits					
		6.1.6.11	Electrically Power Safety Devices					
		6.1.6.12	Installation of Capacitors.. To Make EPD's Ineffective					
		6.1.6.13	Completion of Maintenance Circuits					
		6.1.6.14	Escalator Manual Reset					
		6.1.6.15	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.1★3	★	Controller - Replacement of		-	-		Major
			<a href="#">8.7.6.1.16</a> Controller					
	CAD 8.7.6.1★4	★	Relocation of Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.1★5	★	Addition of Soft start		-	Minor A		
			for control systems built to B44-00 and later					
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.1★6	★	Addition of Power Efficiency Increasing Device		-	Minor B		
			B44.1 certified					
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.2</b>	Alterations to Moving Walks						
	8.7.6.2.1	Change to component parts 8.6.12.4.1.1 Replacement parts or components 8.6.12.4.1.2 Quality of Work			mrr	-		mrr
	8.7.6.2.1	Addition of Components or Devices see applicable <a href="#">8.7.6.2</a> requirements for that device			see <a href="#">8.7.6.2</a>			-
	<b>8.7.6.2.2</b>	Relocation of Moving Walk 6.2. Moving Walks			New	-		
	<b>8.7.6.2.3</b>	Protection of Floor Openings 6.2.1.1 Protection Required			Minor A	-		
	<b>8.7.6.2.4</b>	Protection of Trusses and Machinery Spaces Against Fire 6.2.2.1 Protection of Supports - Protection Required			Minor A	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Angle of Inclination 6.2. Moving Walks			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Geometry 6.2.3.2 Geometry			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Balustrades 6.2.3.3 Balustrades			Minor A	Minor A		
	<b>8.7.6.2.6</b>	Handrails 6.2.3.2.3 Geometry - Handrail 6.2.3.4 Handrails 6.2.6.3.10 Handrail Entry Device 6.2.6.4 Handrail Speed Monitoring Device			Minor A	-		
	<b>8.7.6.2.7</b>	Treadway System 6.2.3.2.3 Geometry - Handrail 6.2.3.3.5 Skirtless Balustrade 6.2.3.3.6 Skirt Panels 6.2.3.5 Pallet-Type Treadway 6.2.3.6(*) Belt-Type Treadway 6.2.3.8 Entrance and Egress Ends 6.2.3.9 Supporting Structure 6.2.3.10.4 Pallet 6.2.3.11.4 Pallet Factor of Safety 6.2.3.11.5 Belt Factor of Safety 6.2.3.12 Chains 6.2.6.3.3 Broken Treadway Device 6.2.6.5 Missing Pallet Device 6.2.6.3.9 Pallet Level Device			Major	-		
	<b>8.7.6.2.8</b>	Combplates 6.2.3.8 Entrance and Egress Ends 6.2.6.3.11 Comb-Pallet Impact Devices			Minor A	-		
	<b>8.7.6.2.9</b>	Trusses and Girders <a href="#">8.7.1.4</a> Welding 6.2.3.9 Supporting Structure 6.2.3.10.1 Structural Load 6.2.3.12.1 Trusses & Supports based on max static load			Major	-		
	<b>8.7.6.2.9</b>	New Moving Walk into Existing Truss 6.2. Moving Walks			New	-		
	<b>8.7.6.2.10</b>	Track System 6.2.3.9 Supporting Structure 6.2.3.10 Rated Load 6.2.3.11.1 Trusses & Supports based on max static load <a href="#">8.7.1.4</a> Welding			Major	-		
	<b>8.7.6.2.11</b>	Rated Load and Speed 6.2. Moving Walks			Major	-		

0 Conforms to B44 Mark with 'X'	1	2a	2b	2c	3	4	5	6
	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement  Job Reference:			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.6.2.12	Driving Machine			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.3.14	V-Belt Drives					
		6.2.3.15	Headroom					
		6.2.4	Rated Speed					
		6.2.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
		6.2.6.3.4	Broken Drive-Chain Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Drive Motor			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.4	Rated Speed					
		6.2.5.2	Driving Motor					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.6.3.2	Speed Governor					
		6.2.6.3.7	Reversal Stop Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Machine Brake			Major	-		
		6.2.3.10.3	Brake					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
	8.7.6.2.13	Operating and Safety Devices			Minor A	Minor A		
		6.2.6	Operating and Safety Devices (for that device)					
	8.7.6.2.14	Lighting, Access, and Electrical Work			Minor B	Minor B		
		6.2.7	Lighting, Access, and Electrical Work					
	8.7.6.2.15	Controller - Installed as part of an alteration			Major	-	-	
		6.2.6.9	Control and Operating Circuits					
		6.2.6.10	Electrically Power Safety Devices					
		6.2.6.11	Installation of Capacitors.. To Make EPD's Ineffective					
		6.2.6.12	Completion of Maintenance Circuits					
		6.2.6.13	Moving Walk Manual Reset					
		6.2.6.14	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.2★1	★ Controller - Replacement of			-	-	Major	
		<a href="#">8.7.6.1.16</a>	Controller					
	CAD 8.7.6.2★2	Relocation of	Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.2★3	★ Addition of Soft start			-	Minor A		
			for control systems built to B44-00 and later					
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.2★4	★ Addition of Power Efficiency Increasing Device						
			B44.1 certified					
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 250/11</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.7</b>	Alterations to Dumbwaiters and Material Lifts						
	<b>8.7.7.1</b>	Dumbwaiters and Material Lifts Without Automatic Transfer Devices			Major	-		
		Alteration to a Power and Hand Dumbwaiters			Major	-		
		7.1.	Power and Hand Dumbwaiters					
		7.2.	Electric and Hand Dumbwaiters					
		7.3.	Hydraulic Dumbwaiters					
		Alteration to a Material Lifts			Major	-		
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.1.1</b>	General Alterations other than 8.7.7.1.2			Major	-		
		Part 7	Dumbwaiters and Material Lifts					
	<b>8.7.7.1.2</b>	Increase in Rated Load			Major	-		
		7.2.(*)	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.(*)	Hydraulic Dumbwaiters w/o Transfer Devices					
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.2</b>	Addition of Automatic Transfer Device			Major	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.1</b>	Material Lifts and Dumbwaiters With Automatic Transfer Devices			N/A	N/A		
		exempt if requirements of CAD 2.3(j) are met						
	<b>8.7.7.3.2</b>	Material Lifts and Dumbwaiters - remove Transfer Device			New	-		
		7.1. to 7.3.	for Dumbwaiters					
		7.4. to 7.6	Material Lifts w/o Transfer Devices					
	<b>8.7.7.3.3</b>	Material Lifts altered to an Elevator			New	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.4</b>	Material Lift or Dumbwaiter w/ Transfer Device Altered to a D/W			New	-		
		7.1.	Power and Hand Dumbwaiters w/Auto Transfer Devices					
		7.2.	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.	Hydraulic Dumbwaiters w/o Transfer Devices					
		Alterations to Freight Platform Lifts						
	CAD 8.7.7★1	★ Alteration to a Type 'A' Freight Platform Lift			Major	-		
		7.4.	as applicable to Material Lifts Type 'B' +					
		7.5.	as applicable to Material Lifts Type 'B' +					
		7.6.	as applicable to Material Lifts Type 'B' +					
		+ excluding requirements related to in-car operating devices & Riders						
	CAD 8.7.7★2	★ Alteration to a Type 'B' Freight Platform Lift			Major	-		
		7.4.	as applicable to Material Lifts Type 'B'					
		7.5.	as applicable to Material Lifts Type 'B'					
		7.6.	as applicable to Material Lifts Type 'B'					

<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.:	Rev. No.:
	251 / 11	1
<b>GUIDELINE</b>	Date:	Date:
	February 13, 2012	May 1, 2013

**Subject:** Alterations Guideline and Alteration Checklist for  
A17.1-2010 / CSA B44-10 Safety Code for Elevators and Escalators as amended by 261/13

**Sent to:** All Elevator Contractors

### 1. Effective Date

- 1.1 This Directors Guideline – revision 1 becomes effective May 1, 2013 and is to be used in conjunction with alterations performed under the 2010 edition of A17.1/B44, as adopted in Code Adoption Document (CAD) Amendment 261/13.

### 2. Introduction

- 2.1 The purpose of this Director's Guideline, in conjunction with Code Adoption Document (CAD) Amendment 261/13, is to;
- (a) advise which types of upgrades are classified as alterations
  - (b) indicate the format of the design submission required (see O.Reg 209/01 s.15), by categorizing the scope of work as “major”, “minor A” or “minor B”
  - (c) provide instruction on the use and submittal of the alteration checklist,
  - (d) provide a summarized list of requirements associated with a given alteration scope via a checklist
  - (e) supplement the adoption of section **8.7 Alterations** in A17.1/B44 as detailed in Section 3.4 of the CAD.

### 3. Alterations

- 3.1 Work performed on an elevating device other than worked performed as maintenance, repair, or replacement is an alteration. Part 8, Section 8.6 of B44-10 as amended in CAD 261/13 deals with “Maintenance, Repairs, Replacements and Testing”, while Section 8.7 as amended in CAD 261/13 deals with “Alterations”.
- 3.2 This guideline captures the Alteration requirements of Section 8.7 (as amended in CAD 261/13) and displays these requirements in a checklist format (see figure 2).
- 3.3 Type of Alteration Work

Columns 3 to 6 of the Alteration Checklist (see figure 2 for sample) classify the type of work as one of the following types:

- (a) **Alteration: Modification / Change** (column 3)  
means a change to the original design or characteristics of a component, assembly or the device as a whole, such as material, strength, size, dimension, rating, setting, function, operational mode, design parameters etc., whereby the change may be made on existing equipment or by substituting new modified equipment.  
Note that a change of the component make or model, without any other change, may constitute an alteration under requirements of CAD 261/13 (see item (d) below).
- (b) **Alteration: Addition** (column 4)  
means addition of a new component or a design feature, not previously provided e.g. addition of top-of-car operating devices.
- (c) **Replacement with same** (column 5)

- means the substituted device, assembly or component is the same as the original, and either;
- (i) requirements within B44 Section 8.6.3 as amended by CAD 261/13 classify the specific replacement as an alteration and require that the substituted component and/or the elevating device as a whole meet the specific requirements of the latest Code edition, or
  - (ii) sections 8.6 of B44 as amended by CAD 261/13 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission

- (d) **Replacement with different make and model** (column 6)  
means that the substituted device, assembly or component is the same as the original in its design, performance and safety characteristics, except that it is of a different make and/or model and the B44 code as amended by CAD 261/13 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission.

*Note: In addition to the work described in 3.3 and listed in the Alteration Checklist, any other work performed on an elevating device that results in a change to the inherent safety or operational characteristics **constitutes an alteration** per 2.6.2 of the CAD, even though there may be no change in the original design. The list of alterations in the attached Alteration Checklist is not all-inclusive.*

#### 4. **Type of Design Submission**

- 4.1 Columns 3, 4, 5, and 6 of the alteration checklist contain information needed to determine the type of submission required.
- 4.2 By selecting the alteration scope (see column 1 of the Alteration checklist, see also B44 Section 8.7 as amended by CAD 261/13), the submission type is identified in columns 3, 4, 5, & 6. These entries are may be listed as one of the following:

Major	-	means Major alteration
Minor A	-	means Minor alteration type A
Minor B	-	means Minor alteration type B
<i>Blanks (columns 5&amp;6)</i>	-	work that would not constitute an alteration
mrr	-	this work may proceed as a maintenance repair and replacement activity, and no submission is required
n/a	-	means TSSA has permitted an exception to a compliance requirement (for the noted alteration scope) however, if another alteration activity requires compliance, the n/a exemption no longer applies
New	-	means, not an alteration but a new installation
†	-	means that no inspection is required following the alteration
variance	-	this activity can only be considered after approval of a variance

Note: The checklist also utilizes a star symbol (★). This symbol is used to identify TSSA designated alterations or to identify a supplemental TSSA requirement.

#### 5. **Requirements for Design Submissions and Inspections**

- 5.1 A design submission or notification (in the case of a Minor B) must clearly specify, for each alteration covered, whether the type of the alteration work is a "modification", or "addition", or "replacement".
- 5.2 Where multiple alterations scopes are undertaken, the "highest ranking" submission shall define the submission type.  
Example: An alteration combination of Minor B and Major will be designated as a Major alteration.

##### 5.2.1 **Major Alteration:**

- 5.2.1.1 The design submission shall be registered before the major alteration commences, except as permitted in subsection 7(2) of O.Reg 209/01.
- 5.2.1.2 The alteration shall be inspected by TSSA prior to returning the device to service for public use.



## 5.2.2 Minor Alteration type A and B:

- 5.2.1.1 According to Section 19 of O.Reg 209/01, the design submission shall be submitted for registration not later than 30 days after returning the elevating device to service. Contractors are advised to submit alteration documents in advance of the work start to ensure that no expense will be incurred should the registration of the proposed design or a requested variance be rejected.

Minor A and B alterations are permitted to be returned to service after work completion, however, the contractor who completed the alteration shall ensure that a “special inspection” has been requested within 60 days after returning the elevator to service. The contractor shall arrange and conduct any tests required by the inspector. A registered design submission or notification shall be available at the time of inspection.

## 5.3 Signatures

- 5.3.1 According to subsection 15.(6) of O.Reg 209/01, all individual documents composing the design submission for any Major or Minor A alteration shall bear the **signature and seal, or electronic equivalent, of the professional engineer** who prepared or approved the design submission.
- 5.3.2 In the case of Minor B alterations, per O.Reg 15.(9), the design submission documents (or Notification) may be signed by an officer or director of the company applying for registration if the officer or director is a mechanic or if the document is signed by a mechanic with an appropriate certificate who either performed or supervised the work to which the design submission relates.
- 5.3.3 Minor B’s that are electronically transmitted shall be deemed acceptable provided that the signature box of the Minor B Notification form contains the name, designation and mechanic license number of a registered and licensed mechanic who supervised and is competent to oversee the scope of the minor B alteration.  
Example: Signature: John Smith, EDM-A, 00999999

## 5.4 Specification Forms

- 5.4.1 Alterations should be submitted on the appropriate Specification Sheets (depending on device type) and should itemize all entries that are **Directly** and **Indirectly** affected by the alteration scope.

Example: Cab Interior Modification resulting in an increase in cab weight

- Directly affected are interior finishes and flame ratings
- Indirectly affected are items such as: rope factor of safety (for electric & roped hydraulic elevators) or cylinder column strength (for hydraulic elevators)
- Sufficient details are to be provided to show compliance verification.

A list of altered components must also be summarized on the submission (typically box 4000).

- 5.4.2 Items which are not affected by the alterations should be noted with either:
- **N/C** or **No Change** or
  - The **Original Entry** followed by **Existing**. Example Car Wt.: **1812 kg - Existing**
- 5.4.3 Where a “major alteration” or “minor alteration” affects only a very few items, the abridged form may be used instead of the full specification form provided clarity of the submission is not compromised. The Abridged form should specify: box numbers, descriptions, and new entry values.  
(Example: 1670. Maximum System Pressure: 3445 kPa)
- 5.4.4 Some predefined templates exist for Minor B type alterations and are available from the TSSA web site. These templates shall be utilized where appropriate to ensure all relevant entries are completed and included in the submission. Multiple Minor B notification templates may be utilized to fully cover the scope of work and only one Minor B fee shall apply.

## 5.5 Submitting an Alteration Checklist

- 5.5.1 The design submission for a Major or Minor A alteration must include an Alteration Checklist to assist in demonstrating compliance with Section 8.7 of the code as amended by CAD 261/13 or any other items listed in Column 1 of the Checklist and must clearly specify the following:

- (a) The scope of the alteration shall be identified with an 'X' in column 0 adjacent to each column 1 item that is part of the primary scope of the alteration
- (b) All relevant sub requirements identified in column 2b shall be identified with an 'x' placed in column 0 to signify the sub requirement was has been given engineering consideration and/or modified. Optional: If desired items which where given engineering consideration but not changed, or deemed not applicable to a given installation may be marked with 'r' to indicate reviewed.

5.5.2 An Alteration Checklist is not required for Minor B Notifications.

5.5.3 Sections of the Alteration Checklist, which are not included in the scope of the alteration work, may be hidden (using the row-hide feature in excel) prior to printing the Checklist, in order to reduce the number of printed pages accompanying a submission.

**5.5.4 To assist our clients in completing the Alteration Checklist, TSSA will post on its Website ([www.tssa.org](http://www.tssa.org)) a fillable version of the Alteration Checklist in excel format (ED-251-11r1.xls).**

5.5.5 The **B44-10 reference numbers**, shown in column 1 and which are marked with 'X' in the Alterations Checklist, (also shown in **BOLD** font), are **those items that are required to be shown on the Code Data Plate** as per section 8.9 of B44.

5.5.6 The attached Alteration Checklist forms part of this guideline.

**6 Alteration Checklist**

6.1 The Alteration Checklist provides useful information to: contractors, submitting engineers, reviewing engineers and inspectors to assist in determining:

- the scope of the alteration,
- requirements associated with specified scope
- exemptions to a requirement (where n/a is shown)
- additional TSSA requirements (where ★ is shown)
- type of submission required (Major, Minor A or B) (See Fig 1)

**6.2 Parts of the Checklist (See Fig 2)**

**6.2.1 Column 0:**

Submitter's shall mark Column 0 with 'X' to identify the scope and applicable sub-requirements that received engineering consideration.

- Sub-requirements related to the alteration are mandatory and shall be identified with an 'x', except where the sub requirement is unrelated to the device being altered. (see Fig.2 Note E)

**6.2.2 Column 1:**

Column 1 contains the Alteration section numbers from B44 as amended by CAD 261/13, as well as specifically noted TSSA alterations.

TSSA alterations are denoted as follows;

- o 8.7.2.12★1                                   ★1 denotes the first TSSA designated alteration under section 8.7.2.12
- o 8.7.2.12★2                                   ★2 denotes the second TSSA designated alteration under section 8.7.2.12

**6.2.3 Column 2a, 2b and 2c:**

Column 2 describes the scope and applicable alteration sub requirements.

- Column 2a is the primary title of the alteration activity (e.g. interlocks)
- Column 2b is the list of sub requirements by reference number (e.g. 2.12.1, 2.12.2...)

**Fig. 1**

dition: Req'd ( )=Exemptions \* =TSSA Designated Alteration or Requirement - =min/repair/replace no submission req'd  
ED-251-11-checklist - draft - 20111025.xls 1/38

- Column 2c is a text description of the referenced sub requirement. (e.g. General, Interlocks,...)

6.2.4 Column 3, 4, 5 and 6:

The headings of Columns 3 to 6 define the “Type of Alteration Work” as Modification Change, Addition, Replacement with Same, and Replacement with Different. See 3.3 of this guideline.

The contents of Columns 3 to 6 define the “Type of Design Submission” as, Major Alteration, Minor A Alteration, or Minor B – Notification. See 4 of this guideline.

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2	Alterations to Electric Elevators						D
	8.7.2.1	Hoistway Enclosures			Major	Major		
	8.7.2.11	Hoistway Door-Locking Devices, Access Switches & Parking Devices				See Below		
X	8.7.2.11.1	Interlocks	A		-	Major	mrr	Minor B
X		2.12.1	General					
X		2.12.2	Interlocks					
X		2.12.4	Listing/Certification Locking Devices					
X		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)					
X		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	C
X		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
X	8.7.2.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
X		8.7.2.10.1	Entrances & H/W Openings - General Req'mts					
X		8.7.2.10.2	Horizontal Slide-Type Entrances					
		8.7.2.10.3	Vertical Slide-Type Entrances	E				
X		8.7.2.10.4	Marking of Entrance Assemblies					
X		2.13.	Power Operation of Hoistway Doors and Car Doors	F				
X	8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
X		2.13.	Power Operation of Hoistway Doors and Car Doors					
	8.7.2.15	Car Frames and Platforms				See Below		
	8.7.2.15.1	Alterations to Car Frames and Platforms			Major	-		Major
X	8.7.2.15★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
X		8.7.2.15★1(a)	cars weighed prior to alteration					
X		8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
X		8.7.2.15★1(c)	weight change recorded on auxilliary data tag					
X		8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					

Fig 2 – Sample Alteration Checklist

Figure 2 Notes:

- A – indicates 8.7.2.11.1 Interlocks is part of the alteration scope
- B – indicates which sub-requirements have been included (note: 2.12.5 was excluded as permitted by exemption note C)
- C – n/a denotes that TSSA has made this requirement optional (note: contractor opted to include requirement 2.12.6 & 7)
- D – specifies the submission type
  - In the Interlock example a Minor B alteration is required to be submitted
  - In the Power Operation of H/W Doors example a Minor A is required (entire submission is therefore a Minor A)
- E – this sub-requirement, related to vertical slide entrances, was not selected as it is not applicable to the installation
- F – compliance to 2.13 is a TSSA-designated supplemental requirement as denoted by the ★ symbol
- G – shows two TSSA-designated alterations, one denoted as 8.7.2.12★1, the other 8.7.2.15★1.

Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards & Safety Act, 2000*

*This Director's Guideline has been developed in consultation with the TSSA Elevating Devices Advisory Council.*

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Putting Public Safety First

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.1.2	Alterations not specifically covered in 8.7						
		1.2	Level of safety shall not be diminished					
	8.7.1.4	Welding						
		8.8	Welding					
		8.7.1.5	Design / Weld Engineer					
	8.7.1.7	Repairs and Replacements						
		8.6.2	for repairs					
		8.6.3	for replacements					
	8.7.2	<b>Alterations to Electric Elevators</b>						
	8.7.2.1	Hoistway Enclosures			Major	Major		
	8.7.2.1.1	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	8.7.2.1.2	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	8.7.2.1.3	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.4	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.5	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	8.7.2.2	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	8.7.2.2	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	8.7.2.2	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	8.7.2.2	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	8.7.2.2	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	8.7.2.2	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	8.7.2.2	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	8.7.2.3	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		2.6.	Protection of Space below H/W					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		2.4.	Vertical Clearances & Runbys for Cars & Cwts					
		<a href="#">8.7.2.17.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
		<a href="#">8.7.2.25.2</a>	Change in Location of Driving Machine					
	<b>8.7.2.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
	<b>8.7.2.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		2.6.	Protection of Space below H/W					
	<b>8.7.2.7</b>	Machinery Spaces, Machine Rooms Control Spaces and Control Rooms			↓ See Below ↓			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7						
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		-	Major		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		OESC	Electrical Equipment Clearances		Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B		mrr
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch for Machinery Space or Control Spaces					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in Machine Rooms/Spaces, Control Room/Spaces					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		(a) 2.7.2	Maintenance Path and Clearance					
		(b) 2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		(c) 2.10.1	Guarding of Equipment					
		(d)	openable/removable only with tools					
		(e)	operating/work instruction for accessing equipment					
		(f)	clearances in front of electrical control equipment (1000mm)					
			or clearance required at time of original control installation					
		(g)	access in front of / space to operate main disconnect (1000mm),					
			or (750mm) if permitted at time of original installation					
		(h)	Installation by registered contractor					
		(i)	designed to be handled by one person					
	<b>8.7.2.8</b>	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's & M/C Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.2.9</b>	Machinery and Sheave Beams, Supports, and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-	Major	Major
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	hanger /track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.12	Entrances, Vertical Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B	
		2.11.12.1	Landing Sills					
	frames (b)	2.11.12.2	Entrances Frames		Minor B		Minor B	
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	rails (c)	2.11.12.3	Rails		mrr		mrr	
	panels (d)	2.11.12.3	Rails		Minor A		Minor A	
		2.11.12.4	Panels					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	guides (e)	2.11.12.5	Guides					
	sill guard (f)	2.11.12.7	Sill Guards		mrr		mrr	
	straps (g)	<a href="#">2.11.12.8</a>	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.13	Entrances, Swing Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.10.3	Hinged Hoistway Landing Sills					
		2.11.13.1	Landing Sills					
	frames (b)	2.11.13.2	Entrance Frames		Minor B		Minor B	
		2.11.13.4	Hinges					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	panels (c)	2.11.13.3	Panels		Minor B		Minor B	
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hinges (d)	<a href="#">2.11.13.4</a>	Hinges		mrr		mrr	
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major		
			Fire Protection Rating not less than existing entrance					
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements					
	CAD 8.7.2.10★1	★	Removing Service To a Floor		Minor B			
			Bolt entrances shut					
			Remove Interlock From Safety String					
			Remove COP Floor Button					
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★	Door Safety Retainers		Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			↓ See Below ↓			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.11.4	Access Switches and Unlocking Devices						
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.2.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		<a href="#">8.7.2.10.1</a> Entrances & H/W Openings - General Req'mts <a href="#">8.7.2.10.2</a> Horizontal Slide-Type Entrances <a href="#">8.7.2.10.3</a> Vertical Slide-Type Entrances <a href="#">8.7.2.10.5</a> Marking of Entrance Assemblies * 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12*1	* Replacement of Door Operator 2.13. Power Operation of Hoistway Doors and Car Doors <a href="#">8.7.2.15*1,*2</a>			-	-	mrr	Minor B
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or replaced) 2.13.4 Closing Limitations for Power Operated HS Doors & Gates 2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI &II at time of install <a href="#">8.7.2.15*1,*2</a>			Minor B	Minor B	mrr	Minor B
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties <a href="#">8.7.2.15.1</a> Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures 2.14.1.2 Securing of Enclosures			Minor A	Minor A		
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added) 2.14.1.5 Top Emergency Exits			Minor B	Minor B		
	8.7.2.14.2(c)	Installation of Glass 2.14.1.8 Glass in Elevator Cars 2.14.1.8.1 Enclosures include glass 2.14.1.8.2 Lining of Walls or Ceilings include glass 2.14.1.8.3 Marking of each Glazing Panel			Minor B	Minor B	mrr	
	8.7.2.14.2(d)	Specific Equipment in Elevator Car 2.14.1.9 Equipment Inside Cars (a) Handrails (b) fastening devices for protective linings (c) ceiling mounted hooks/tracks (d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1 (e) conveyor tracks in freights (f) heating or cooling equipment <a href="#">8.7.2.15*1,*2</a>			Minor B	Minor B		
	CAD 8.7.2.14*1	* Car operating station verify inspection operation 'if provided' verify stop sw verify switches operate as before (eg. FS, FEO, Access) <a href="#">8.7.2.15*1,*2</a>			Minor B	Minor B	mrr	Minor B
	CAD 8.7.2.14*2	* video cameras / surveillance equipment / video monitors 2.8.2.1 electrical equipment & wiring 2.14.1.2.3 securing of enclosure equipment 2.14.2.4 Headroom in Elevator Cars <a href="#">8.7.2.15*1,*2</a>			Minor B	Minor B		



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished					
			2.14.1.7 car top railing - see CAD 8.7.2.14★4					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
		★	CAD 8.7.2.15★1					Minor B
			or					
		★	CAD 8.7.2.15★2					Minor A
	8.7.2.14.4	Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
			<b>8.7.2.15★1,★2 car weighed prior to alteration</b>					
			include testing procedure					
			include revised electrical schematics					
	8.7.2.15	Car Frames and Platforms			↓ See Below ↓			
	8.7.2.15.1	Alterations to Car Frames and Platforms			Major	-	Major	
		2.15.	Car Frames & Platforms					
	CAD 8.7.2.15★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1(a)	cars weighed prior to alteration					
		CAD 8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
		CAD 8.7.2.15★1(c)	weight change recorded on auxiliary data tag					
		CAD 8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					
	CAD 8.7.2.15★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★1	engineering assessment of related items affected by weight change					
	8.7.2.15.2	Increase or Decrease in Deadweight of Car (Car Wt+Rated Load> 5%)			Major	-		
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.15.9	Platform Guards (Aprons)					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.	Speed Governors					
		2.20.	Suspension Ropes & Connections					
		2.21.(*)	Counterweights					
		2.22.(*)	Buffers & Bumpers					
		2.23.	Car & Cwt Guides Rails, Guide Rail Support, Fastenings					
		2.24.(*)	Driving Machines & Sheaves					
		8.7.2.9	Machinery and Sheave Beams, Supports, Foundations					
	CAD 8.7.2.15★1(a) to (e)							

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Superseded by Rev</b> <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.16</b>	<b>Capacity, Loading, and Classification</b>			Major	-		
	<b>8.7.2.16.1</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22 (*)	Buffers & Bumpers					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.16.	Capacity & Loading					
		2.17.(*)	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection					
		2.20.	Suspension Ropes & Connections					
		2.24.(*)	Driving Machines & Sheaves					
		2.25.	Terminal Stopping Devices					
		2.26.	Operating Devices and Control Equipment					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.2.16.2</b>	Change in Class of Loading: [from any class to any other class ie A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		<a href="#">8.7.2.16.4</a>	Increase in Rated Load					
	<b>8.7.2.16.3</b>	Carrying of Passengers on Freight Elevators			Major	-		
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.3	conforms to 2.16.8 Passenger Overload in Down Direction					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.13.3.4					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.16.4	Increase in Rated Load  Car doors or gates shall be provided at all car entrances New Car doors and gates to: 2.14.4, 2.14.5, 2.14.6 2.14.4 Passenger & Frt Car Doors & Gates, General Req'mts 2.14.5 Passenger Car Doors 2.14.6 Freight Elevator Car Doors and Gates 2.15.(* ) Car Frames & Platforms- ★apron guard to ED CAD/as pit permits 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.(* ) Counterweights 2.22.(* ) Buffers & Bumpers 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings 2.24. Driving Machines & Sheaves 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.5 Monitor & Prevent Automatic Operation w/ Faulty Door Contacts <u>8.7.2.9</u> Machinery and Sheave Beams, Supports, Foundations			Major	-		
	8.7.2.17	Change in Rise or Rated Speed			Major	-		
	8.7.2.17.1	Increase or Decrease in Rise  2.25. Terminal Stopping Devices retain drum m/c, travel increase < 4570mm 2.4.(* ) Vertical Clearances & Runbys for Cars & Cwts If decrease in rise is at lowest end then; 2.2.4 Access to Pits 2.2.5 Illumination of Pits 2.2.6 Stop Switches			Major	-		
	8.7.2.17.2	Increase in Rated Speed			Major	-		
	8.7.2.17.2(a)	Increase in Rated Speed on a Winding Drum machine  Increase in Rated Speed of a winding drum m/c prohibited <u>8.7.2.17.2(c)</u> except as permitted 8.7.2.17.2(c)			Major	-		
	8.7.2.17.2(b)	Increase in Rated Speed except as per 8.7.2.17.2(c)  2.4.2 Minimum Bottom Runby for Counterweighted Elevators 2.4.3 Minimum Bottom Runby for Uncounterweighted Elevators 2.4.4 Maximum Bottom Runby 2.4.5 Counterweight Runby Data Plate 2.4.6 Maximum Upward Movement of the Car 2.4.7 Top of Car Clearances 2.4.8 Top of Counterweight Clearances 2.4.9 Equipment on Top of Car Not Permitted to Strike O/H 2.5. Horizontal Car and Counterweight Clearances  Car doors or gates shall be provided at all car entrances New doors/gates to: Car: Enclosure, Doors, Gates, Illumination 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.4.2 Comp Rope Tie Down (if speed > 3.5 m/s) 2.22.(* ) Buffers & Bumpers 2.24. Driving Machines & Sheaves 2.25. Terminal Stopping Devices 2.26.(* ) Operating Devices and Control Equipment			Major	-		
	8.7.2.17.2(c)	Increase in Rated Speed less than 10% & less than 0.20m/s new spd < .75 for type A safeties new spd < 1 w/spring buffer, 2.18.2.1&.2 2.18.2.1 Car speed governors 2.18.2.2 counterweight speed governors <u>8.7.2.27.3</u> Change in Power Supply			Major	-		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.17.3	Decrease in Rated Speed 2.4. Vertical Clearances & Runbys for Cars & Cwts 2.18.2 Tripping Speeds for Speed Governors 2.16. Capacity & Loading 2.16.3(*) Capacity and Data Plates 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts			Major	-		
	8.7.2.18	Car and Counterweight Safeties			Major	Major	↓See Below ↓	
	8.7.2.18.1	New Car Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.2	New Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.3	Existing Car Safeties 2.17.(*) Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.18.3	Existing Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.19	Speed Governors and Governor Ropes			Major	Major	↓See Below ↓	
	8.7.2.19	2.18. Speed Governors					mrr	Minor A
	8.7.2.19	2.17.15 Governor Rope Releasing Carriers					see 8.6.3.6 mrr	mrr
	8.7.2.19	Governor Ropes of different material or Construction to: 2.18.6 Design Gov'r Rope Retarding Means for Type B Safeties 2.18.7 Traction between Speed Governor Rope & Sheave & testing to 2.17.3 Function and Stopping Distances of Safeties					see 8.6.3.9 -	Minor B
	8.7.2.20	Ascending Car Overspeed and Unintended Car Movement Protection (ACO & UCM)			Minor A	Major	mrr	Minor A
	CAD 8.7.2.20★1	★ If Elevators Controllers are pre-B44-00 & have ACO & UCM 2.19. ACO & UCM Protection, Except that; detection means to B44-M90 or the code at time of install 8.9. Code Data tag to reflect code at time of install			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★2	★ If Elevators Controllers are pre-B44-00 & have ACO ONLY 2.19.1 ACO Protection Only, Except that; 2.19.3 Emergency Brake and detection means to B44-M90 or the code at time of install 2.19.4 Emergency Brake Supports 8.9. Code Data tag to reflect code at time of install			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★3	★ Voluntary Addition of Both ACO and UCM where previously not provided 2.19. ACO & UCM Protection Except that; detection means to B44-M90 code or later 2.7. Machinery Spaces, Machine Rooms Control Spaces & Control Rooms as applicable to the equipment installation 8.9. Code Data tag to reflect code edition used for the alteration				Minor A		

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
						Type of Submission Required		
	<b>8.7.2.21</b>	Suspension Ropes and Their Connections			↓ See Below ↓			
	<b>8.7.2.21.1</b>	Change in Number of, or Diameter of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Major	-	See 8.6.3.2	
	<b>8.7.2.21.1</b>	Change in Material / Grade of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Minor A	-		
	<b>8.7.2.21.2</b>	Addition of Rope Equalizers 2.20.5 Suspension Rope Equalizers			Minor B	Minor B		
	<b>8.7.2.21.3</b>	Addition of Auxiliary Rope-Fastening Devices 2.20. Suspension Ropes & Connections			Major	Major		
	<b>8.7.2.21.4 (a)</b>	Change in Type of Suspension Means 2.20.8.1 Protection Against Traction Loss 2.20.8.2 Broken Suspension Member 2.20.8.3 Suspension-Member Residual Strength 2.20.11 Suspension-Member Test			Major	Major		
	<b>8.7.2.21.4 (b)</b>	Traction Loss Detection 2.20.8.1 Protection Against Traction Loss			Minor A	Minor A		
	<b>8.7.2.21.4 (c)</b>	Broken Suspension Means Detection 2.20.8.2 Broken Suspension Member			Minor A	Minor A		
	<b>8.7.2.22</b>	Counterweights			Minor A	-		
	<b>8.7.2.22.1</b>	Alteration to any part of a cwt except guiding members 2.21. Counterweights <a href="#">8.7.2.22.2</a> Rod Type Counterweights <a href="#">8.7.2.3</a> Location and Guarding of Counterweights						
	<b>8.7.2.22.2</b>	Rod Type Cwt - can retain if: Minimum of 2 suspension and 2 tie rods Suspension rods: 2.21.2.1 Material - Cwt Frames & Rods 2.21.2.3 Factor of Safety Tie Rods: 2.21.1.2 Retention of Weight Sections						
	<b>8.7.2.22.3</b>	Roller or similar guide shoes added safety jaws cannot touch rails if not activated			mrr		mrr	
	<b>8.7.2.23</b>	Car and Counterweight Buffers and Bumpers 2.22.(*) Buffers & Bumpers			Major	-	mrr	Minor B
	<b>8.7.2.24</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%) 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings			Major	-		
	<b>8.7.2.25</b>	Driving Machines and Sheaves			↓ See Below ↓			
	<b>8.7.2.25.1</b>	Alter / Replace Driving Machines & Sheaves			Major	Major	Major	
	<b>8.7.2.25.1(a)</b>	2.7.2 Maintenance Path and Clearance to extent existing installation permits 2.9. Machinery & Sheave Beams, Supports, Foundation 2.10.1 Guarding of Equipment 2.19. Ascending Car Overspeed & Unintended Car Movement Protection <a href="#">8.7.2.20</a> ACO & UCM Protection CAD <a href="#">8.7.2.20★1</a> Pre B44-00 ACO & UCM Protection CAD <a href="#">8.7.2.20★2</a> Pre B44-00 ACO Only Protection CAD <a href="#">8.7.2.20★3</a> Addition ACO/UCM if not required by other alteration scope 2.20. Suspension Ropes & Connections 2.24. Driving Machines & Sheaves 2.26.8 Release and Application of Driving-Machine Brakes			Major	-		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.25.1(b)	Alter / Replace	Driving Machine Components - affected component complies w/		Major		mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.24.5	Shafts Fillets and Keys					
		2.24.6	Cast-Iron Worms and Worm Gears					
		2.24.7	Friction Gearing and Clutches					
		2.24.8	Braking Systems & Driving Machine Brakes				mrr	Major
		2.24.9	Indirect-Driving Machines					
		2.26.8	Release and Application of Driving-Machine Brakes					
	8.7.2.25.1(c)	Change of	Driving Machine Sheave		Major	-	mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.20.	Suspension Ropes & Connections					
	<b>8.7.2.25.2</b>	Change in Location of Driving Machine			Major	-		
	8.7.2.25.2(a)	Change in Location of	Driving Machine w/ no change in Rise		Major	-		
		2.7.2	Maintenance Path and Clearance					
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		2.10.1	Guarding of Equipment					
		2.24.2.3	Traction					
	8.7.2.25.2(b)	Change in Location of	Driving Machine w/ change in Rise		Major	-		
		Part 2 (*)	Electric Elevators (entire installation to meet Part 2), except					
			2.5 Horizontal Car and Counterweight Clearances					
			2.11 Protection of Hoistway Openings					
			2.4 Vertical Clearances and Runbys for Cars & Cwts					
		<a href="#">8.7.2.5</a>	see also					
		<a href="#">8.7.2.10</a>	see also					
	CAD 8.7.2.25★1	★ Replacement of worm and/or gear (specify make)			-	-	mrr	Minor A
		2.24 specify compliance to the applicable requirements						
		Addition of Machine Guarding - see CAD 8.7.2.7★1						
	<b>8.7.2.26</b>	Terminal-Stopping Devices			Minor B	Minor B		
		2.25.	Terminal Stopping Devices					
	<b>8.7.2.27</b>	Operating Devices and Control Equipment			⇩ See Below ⇩			
	<b>8.7.2.27.1</b>	Top-of-Car Operating Devices			Minor A	Minor A	mrr	Minor A
		2.26.1.4	Inspection Operation					
	CAD 8.7.2.27★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4	Inspection Operation					
	CAD 8.7.2.27★2	★ Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4	Inspection Operation					
		<a href="#">8.7.2.15★1,★2</a>						
	<b>8.7.2.27.2</b>	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		2.26.1.6	Operation in Leveling or Truck Zone					
	CAD 8.7.2.27★3	★ Door By-Pass Switches			Minor A	Minor A		
		2.26.1.5	System to Prevent Auto Operation w/faulty Door Contacts					
	CAD 8.7.2.27★4	★ Door Monitoring System			Minor A	Minor A		
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.3	Change in Power Supply (a) voltage, frequency or # of phases or (b) AC to DC , DC to AC or (c) combination of DC & AC, then electrical to: 2.26.1.1 Types of Operation 2.26.1.2 For Car-Switch Operation Elevators 2.26.1.3 Add'l Operating Devices for Elevators carrying 1pc. load > than Rated 2.26.1.4 Inspection Operation 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.9 Control & Operating Circuits 2.26.10 Absorption of Regenerated Power new / modified equipment and wiring to: 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts brakes to: 2.24.8 Braking Systems & Driving Machine Brakes 2.26.8 Release and Application of Driving-Machine Brakes winding drum to: 2.25.3.5 Additional Req'mts for Winding Drum Machines see <a href="#">8.7.2.17.2(b)</a> Increase in Rated Speed			Major	-		
	8.7.2.27.4	Controllers Install / Replace Motion or Operation Controller (no change in method) 2.25. Terminal Stopping Devices 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.3 Contactor and Relays for Use in Critical Operating Circuits 2.26.4 Electrical Equipment and Wiring 2.26.5 System to Monitor & Prevent Automatic Operation w/ Faulty Door Contacts 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.8 Release and Application of Driving-Machine Brakes 2.26.9 Control & Operating Circuits 2.26.11 Car Platform to Hoistway Door Sills Vertical Distance levelling accuracy to 13mm (0.5 in.) 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity 2.27.2 Emergency or Standby Power systems  If FEO previously present or required by OBC; 2.27.3 Firefighters' Emergency Operation - Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's CAD 2.27.3.2.2 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see <a href="#">8.7.1.2</a> safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys 2.27.9 Elevator Corridor Call Station Pictograph If FEO NOT previously present or required by OBC; CAD 2.27.3.2.2 2.27.3.1 Provide Phase 1 Manual Recall Operation Only			Major	-		Major



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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.27★5	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring Electrical testing to verify functionality of rewired equipment					
	8.7.2.27.4(b)	Installation of	Door Controller		Minor A	-		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.4(c)	Installation of	Controller for Emergency or Standby Power		Minor A	Minor A		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.4(c)	Installation of	Controller for FEO Operation		Minor A	Minor A		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.5	Change in Type of Motion Control - AC, VVVF, DC, SCR			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6(*)	Opening of Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.11.8(*)	Hoistway Door Safety Retainers					
		2.11.12.8	Pull Straps					
		2.12.(*)	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.12.5	Restricted Opening of Hoistway or Car Doors					
		2.12.6	Hoistway Door Unlocking Devices					
		2.12.7	Hoistway Access Switches					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7	car top railing					
		2.16.8(*)	Capacity & Loading					
		2.17.(*)	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection					
		8.7.2.20	ACO & UCM Protection					
	CAD	8.7.2.20★1	Pre B44-00 ACO & UCM Protection					
	CAD	8.7.2.20★2	Pre B44-00 ACO Only Protection					
	CAD	8.7.2.20★3	Addition ACO/UCM if not required by other alteration scope					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		If FEO previously present or required by OBC;						
		2.27.	Emergency Operation and Signalling Devices					
		2.27.1	Car Emergency Signalling Devices					
		2.27.2	Emergency or Standby Power Systems					
		2.27.3	Firefighters' Emergency Operation: Automatic Elevators					
		2.27.3.1	Phase 1 Recall Operation					
		2.27.3.2	Phase 1 Recall Operation by FAID's					
		CAD 2.27.3.2.2						
		2.27.3.3	Phase 2 Emergency In-Car Operation					
		2.27.3.4	Interruption of Power					
		2.27.3.5	Multicompartment Elevators					
		see 8.7.1.2	safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		If FEO NOT previously present or required by OBC;						
		CAD 2.27.3.2.2						
		2.27.3.1	Provide Phase 1 Manual Recall Operation Only					



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.6	Change in Type of Operation Control - CPPB, AUTOMATIC			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1	Car Emergency Signalling Devices				
			2.27.2	Emergency or Standby Power Systems				
			2.27.3	FEO: Automatic Elevators				
			CAD 2.27.3.2.2					
			2.27.4	FEO: Non-Automatic Elevators				
			2.27.5	FEO: Automatic Elevators w/Attendant				
			2.27.6	FEO: Inspection Operation				
			2.27.7	FEO: Operating Procedures				
			2.27.8	Switch Keys				
			2.27.9	Elevator Corridor Call Station Pictograph if req'd by OBC				
	CAD 8.7.2.27★6	★	Addition of Wander Patient Feature - Change in Operation Control		Minor B	Minor B		
			2.13.5.3	- door time out				
			2.27.3.1.6(l)	- shall not prevent PHI				
	CAD 8.7.2.27★7	★	Addition of Restricted Access - Security / Floor Lock Out		Minor B	Minor B		
			OBC-3.2.6.5(4) - shall not prevent floor access when on FEO					
			D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use					
			2.27.3.3.1(i)	- permit travel to all landings when on PH II				
			2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II				
	CAD 8.7.2.27★8	★	Addition of Destination Dispatch			Minor B		
			8.7.2.8	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's &M/C Rooms				
			FEO operation to 8.7.2.28 or code at time of installation or alteration					
	8.7.2.27.7		Removal of emergency stop switch on passenger elevators		Minor B	-		
			remove all related markings / engravings & provide an in-car stop switch to:					
			2.26.2.21	In-car stop switch				
		★	2.26.4.3	Positively Opened Contacts				
		★	2.26.9.3	Single failure does not render In-Car Stop Sw ineffective				

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.27.8</b>	<b>Electrical Protective Devices</b>			↓ See Below ↓			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.2 (PES)			Major	Major	mrr	Major
		2.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.1			-	Minor A	mrr	
		2.26.2 Electrical Protective Devices - for specified device						
	<b>8.7.2.28</b>	<b>Emergency Operation and Signaling Devices</b>			↓ See Below ↓			
	8.7.2.28	Car Emergency Signaling Devices			Minor B	Minor B	mrr	
		2.27.1 Car Emergency Signaling Devices						
	8.7.2.28	Emergency or Standby Power			Minor B	Minor A		
		2.27.2 Emergency Or Standby Power systems						
	8.7.2.28	Firefighter's Emergency Operation			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
	8.7.2.28	Addition of Elevator to a Group - all elevators to meet:			-	Minor A		
		2.27. Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.2.28★1	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install			Minor B			
		conformance to auto recall based on F.S. at time of install						
	CAD 8.7.2.28★2	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3</b>	<b>Alterations to Hydraulic Elevators</b>						
	<b>8.7.3.1</b>	Hoistway Enclosures			see 8.7.2.1			
	<b>8.7.2.1</b>	Hoistway Enclosures			Major	Major		
	<b>8.7.2.1.1</b>	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	<b>8.7.2.1.2</b>	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	<b>8.7.2.1.3</b>	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.4</b>	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.5</b>	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	<b>8.7.3.2</b>	Pits			see Electric Elevators			
	<b>8.7.2.2</b>	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.3.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.2</b>	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	<b>8.7.2.2</b>	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	<b>8.7.2.2</b>	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	<b>8.7.2.2</b>	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	<b>8.7.2.2</b>	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	<b>8.7.2.2</b>	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	<b>8.7.2.2</b>	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	<b>8.7.3.3</b>	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		3.5.	Horizontal car and Counterweight Clearances					
	<b>8.7.3.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.5	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					
	8.7.3.6	Protection of Spaces Below Hoistways			Minor B	Major		
		3.6.	Protection of Spaces below Hoistway					
	8.7.3.7	Machine Rooms and Machinery Spaces			see 8.7.2.7			
	8.7.2.7	Machine Rooms and Machinery Spaces			⇩ See Below ⇩			
	8.7.2.7.1	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7			-	Major		
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor B	-		
		OESC (C22.1) Electrical Equipment Clearances			Minor B	-		
	8.7.2.7.2	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	8.7.2.7.3	Access Doors and Openings			Minor B	Minor B		mrr
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch in O/H M/C Space in the H/W					
	8.7.2.7.4	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in M/C Rooms					
	8.7.2.7.5	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	8.7.2.7.6	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	8.7.2.7.7	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	CAD 8.7.2.7★1	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		2.7.2	Maintenance Path and Clearance					
		2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		2.10.1	Guarding of Equipment					
			operable/removable only with tools					
			operating/work instruction for accessing equipment					
			clearances in front of electrical control equipment (1000mm)					
			access in front of / space to operate main disconnect (750mm)					
			Installation by registered contractor					
	8.7.3.8	Electrical Wiring, Pipes, and Ducts in Hoistways and Machine Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
			also installation of Monitoring Equipment, HVAC					
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	8.7.3.9	Machinery and Sheave Beams, Supports and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		adequacy of building structure verified by P.Eng.						

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.10</b>	Hoistway Entrances and Openings - see <a href="#">8.7.2.10</a>			see <a href="#">8.7.2.10</a>			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-		
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.12	Entrances, Vertical Slide Type					
		2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B	
	frames (b)	2.11.12.1	Landing Sills					
		2.11.12.2	Entrances Frames		Minor B		Minor B	
	rails (c)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	panels (d)	2.11.12.3	Rails		mrr		mrr	
		2.11.12.4	Panels		Minor A		Minor A	
		2.11.12.3	Rails					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
	guides (e)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	sill guard (f)	2.11.12.5	Guides					
	straps (g)	2.11.12.7	Sill Guards		mrr		mrr	
		2.11.12.8	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.13	Entrances, Swing Type					
		2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.10.3	Hinged Hoistway Landing Sills					
	frames (b)	2.11.13.1	Landing Sills					
		2.11.13.2	Entrance Frames		Minor B		Minor B	
		2.11.13.4	Hinges					
	panels (c)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.3	Panels		Minor B		Minor B	
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
	hinges (d)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.4	Hinges		mrr		mrr	
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major		
			Fire Protection Rating not less than existing entrance					
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements					
	CAD 8.7.2.10★1	★ Removing Service To a Floor			Minor B			
			Bolt entrances shut					
			Remove Interlock From Safety String					
			Remove COP Floor Button					
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★ Door Safety Retainers			Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.3.11</b>	Hoistway Door-Locking Devices			See 8.7.2.11			
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			See Below			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.11.4	Access switches and Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices						
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.24.8 Braking Systems & Driving Machine Brakes 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.3.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		8.7.2.10.1 Entrances & H/W Openings - General Req'mts						
		8.7.2.10.2 Horizontal Slide-Type Entrances						
		8.7.2.10.3 Vertical Slide-Type Entrances						
		8.7.2.10.5 Marking of Entrance Assemblies						
		8.7.3.10 Hoistway Entrances and Openings						
		★ 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
		2.13. Power Operation of Hoistway Doors and Car Doors						
		8.7.2.15★1,★2						
	CAD 8.7.2.12★2	★ Replacement of Door Reopening Device			See 8.7.2.13			
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or Replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates					see	
		2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI & II at time of install					8.6.3.8	
		8.7.2.15★1,★2						
	8.7.3.13	Car Enclosures			See 8.7.2.14			
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties 8.7.2.15.1 Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures			Minor A	Minor A		
		2.14.1.2 Securing of Enclosures						
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added)			Minor B	Minor B		
		2.14.1.5 Top Emergency Exits						
	8.7.2.14.2(c)	Installation of Glass			Minor B	Minor B		
		2.14.1.8 Glass in Elevator Cars						
		2.14.1.8.1 Enclosures include glass					mrr	
		2.14.1.8.2 Lining of Walls or Ceilings include glass						
		2.14.1.8.3 Marking of each Glazing Panel						
	8.7.2.14.2(d)	Specific Equipment in Elevator Car			Minor B	Minor B		
		2.14.1.9 Equipment Inside Cars						
		(a) Handrails						
		(b) fastening devices for protective linings						
		(c) ceiling mounted hooks/tracks						
		(d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1						
		(e) conveyor tracks in freights						
		(f) heating or cooling equipment						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★1	★ Car operating station			Minor B	Minor B	mrr	Minor B
		verify inspection operation 'if provided'						
		verify stop sw						
		verify switches operate as before (eg. FS, FEO, Access)						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors			Minor B	Minor B		
		2.8.2.1 electrical equipment & wiring						
		2.14.1.2.3 securing of enclosure equipment						
		2.14.2.4 Headroom in Elevator Cars						
		8.7.2.15★1,★2						



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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to Car Enclosure other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished			Minor A		
			2.14.1.7 car top railing - see CAD 8.7.2.14★4			Minor B		
			2.14.7.1.3 auxiliary lighting			Minor B		
			2.14.7.1.4 car top light & outlet			Minor B	Minor B	
		★	CAD 8.7.2.15★1			Minor B	Minor B	
			or					
		★	CAD 8.7.2.15★2			Minor A	Minor A	
	8.7.2.14.4	Alteration to Car Door or Car Gates other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
			8.7.2.15★1,★2 car weighed prior to alteration					
	8.7.3.14	Car Frames and Platforms			Major	-	Major	
		3.15.	Car Frames & Platforms					
	8.7.3.15	Safeties	Car or Cwt (plunger gripper see 8.7.3.23.7)		↓ See Below ↓			
	8.7.3.15.1	Car Safeties			-	Major	mrr	Minor A
		3.17.1	Car Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.2	Counterweight Safeties			-	Major	mrr	Minor A
		3.17.2	Counterweight Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.3	Alteration to existing Car or Counterweight Safeties			Major	-	mrr	Minor A
		3.17(*)	Car and counterweight safeties and plunger gripper					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.16</b>	Governors and Governor Ropes			See <a href="#">8.7.2.19</a>			
	<b>8.7.2.19</b>	Speed Governors and Governor Ropes			Major	Major	↓ See Below ↓	
	8.7.2.19	2.18.	Speed Governors				mrr	Minor A
							see	
							8.6.3.6	
	8.7.2.19	2.17.15	Governor Rope Releasing Carriers				mrr	mrr
							see 8.6.3.9	
	8.7.2.19	Governor Ropes of different material or Construction to:					Minor B Minor B	
			2.18.6 Design of Gov'r Rope Retarding Means for Type B Safeties					
			2.18.7 Traction between Speed Governor Rope & Sheave					
			& testing to 2.17.3 Function and Stopping Distances of Safeties					
	<b>8.7.3.17</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22.(*)	Buffers & Bumpers					
		3.22.2	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.	Car and Counterweight Safeties					
		3.21.	Counterweights					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		2.18.(*)	Speed Governors					
		3.16.	Capacity & Loading					
		3.18.	Hydraulic Jacks					
		3.19.	Valves, Pressure Piping, and Fittings					
		3.20.	Ropes and Rope Connections					
		3.24.	Hydraulic Machines and Tanks					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.3.18</b>	Change in Class of Loading: [A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		3.16.	Capacity & Loading					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.19</b>	<b>Carrying of Passengers on Freight Elevators</b>			Major	-		
		3.16.4	2.16.4 except 2.16.4.3					
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.16.4.9(a) to (e)					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					
	<b>8.7.3.20</b>	<b>Increase in Rated Load</b>			Major	-		
		2.26.1.4	Inspection Operation					
		2.26.1.5	Inspection Operation with Open Door Circuits					
		2.26.5	Monitor & Prevent Automatic Operation w/ Faulty Door Contacts					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		<a href="#">8.7.3.23.4</a>	Increase in Working Pressure					
	<b>8.7.3.21</b>	<b>Increase in Deadweight of Car (Car Wt+Rated Load &gt;5%)</b>			Major	-		
		3.14.	Car: Enclosure, Doors, Gates, Illumination		n/a			
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.24.5	Counterweight Sheaves					
		8.7.3.23.4	Increase in Working Pressure					
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★2						

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.22</b>	<b>Change in Rise or Rated Speed</b>			Major	-		
	<b>8.7.3.22.1</b>	<b>Increase or Decrease in Rise</b>			Major	-		
		3.25.	Terminal-Stopping Devices					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.4.1	Bottom Car Clearance					
		3.4.2	Minimum Bottom and Top Car Runby					
		3.4.3	Car Top and Bottom Maximum Runby					
		3.18.2	Plungers					
			If decrease in rise is at lowest end then;					
		2.2.4	Access to Pits					
		2.2.5	Illumination of Pits					
		2.2.6	Stop Switches					
	<b>8.7.3.22.2</b>	<b>Increase in Rated Speed</b>			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	New doors/gates to: Car: Enclosure, Doors, Gates, Illumination					
		3.17.(*)	Car and Counterweight Safeties					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.20.	Ropes and Rope Connections					
	<b>8.7.3.22.3</b>	<b>Decrease in Rated Speed</b>			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		2.18.2	Tripping Speeds for Speed Governors					
		3.16.	Capacity & Loading					
		3.16.3(b)	Capacity & data plates					
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	<b>8.7.3.23</b>	<b>Hydraulic Equipment</b>				See Below		
	<b>8.7.3.23.1</b>	<b>Alter / Install / Replace Hydraulic Jacks</b>			Major	-	Major	
		3.18.	Hydraulic Jacks				see 8.6.3.10.1	
	<b>8.7.3.23.2</b>	<b>Alter / Install / Replace Plungers</b>			Major	-	Minor A	
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.3</b>	<b>Alter / Install / Replace Cylinders</b>			Major	-	Minor A	
		3.18.3	Cylinders				see 8.6.3.10.2	
		3.18.3	Cylinder is Altered					
		3.18.3	Cylinder is Sleeved		Minor A			
		3.18.4.1	Metal Stops and/or Other Means					
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.4</b>	<b>Increase in Working Pressure &gt;5%</b>			Major	-		
		3.18.(*)	Hydraulic Jacks					
		3.19.(*)	Valves, Pressure Piping, and Fittings					
		3.24.1	Marking Plates					
		3.24.2	Tanks					
		3.24.3	Atmosphere Storage and Discharge Tanks					
		3.24.4	Welding					
	<b>8.7.3.23.5</b>	<b>Change in Location of Hydraulic Jack</b>			Major	-		
		Part 3	Hydraulic Elevators					
	<b>8.7.3.23.6</b>	<b>Relocation of Hydraulic Machine (Power Unit)</b>			Minor A	-		
		3.26.8	Pressure Switch					

0	1	2a	2b	2c	3	4	5	6
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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.23.7	Plunger Gripper			Minor A	Minor A		
		3.17.3	Plunger Gripper					
		3.1.1(b)	strength of pit floor					
		3.22.1	no strike when buffers compressed					
CAD	8.7.3.23.7 ★1	Removal of Plunger Gripper			Minor A	-		
		3.18.3	Cylinders					
		3.19.4.7	Overspeed Valves					
		3.4.2.1	Bottom Car Runby					
	8.7.3.24 (a)	Alter / Replace	Control Valves		Minor A	-		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Relief Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Check Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Pressure Piping or Fittings		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.25	Suspension Ropes and Their Connections			↓ See Below ↓			
	8.7.3.25.1	Change in Number of, or Diameter of Ropes			Major	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.1	Change in Material / Grade of Ropes			Minor A	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.2	Addition of Rope Equalizers			Minor B	Minor B		
		2.20.5	Suspension Rope Equalizers					
	8.7.3.26	Counterweights - Alteration of			See 8.7.2.22			
	8.7.2.22	Counterweights			Minor A	-		
	8.7.2.22.1	Alteration to any part of a cwt except guiding members						
		2.21.	Counterweights					
		3.21.	Counterweights					
		<a href="#">8.7.2.22.2</a>	Rod Type Counterweights					
		<a href="#">8.7.2.3</a>	Location and Guarding of Counterweights					
	8.7.2.22.2	Rod Type Cwt - can retain if:						
		Minimum of 2 suspension and 2 tie rods						
		Suspension rods:						
		2.21.2.1	Material - Cwt Frames & Rods					
		2.21.2.3	Factor of Safety					
		Tie Rods:						
		2.21.1.2	Retention of Weight Sections					
	8.7.2.22.3	Roller or similar guide shoes added				mrr		mrr
		safety jaws cannot touch rails if not activated						
	8.7.3.26	Counterweights - Addition of			-	Major		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.6.	Protection of Spaces below Hoistway					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.2	Counterweight Safeties					
		3.18.	Hydraulic Jacks					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		<a href="#">8.7.3.3</a>	Location and Guarding of Counterweights					
	8.7.3.27	Car Buffers and Bumpers			Major	-	mrr	Minor B
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.28</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%)			Major	-		
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	<b>8.7.3.29</b>	Alteration to	Tanks		Minor B	-	Minor B	
		3.24.	Hydraulic Machines and Tanks				see 8.6.3.10.4	
	CAD 8.7.3.29★1	★	Addition of Oil Cooler		Minor B		Minor B	
		8.7.3.8	Electrical Wiring, Pipes, and Ducts in H/W and M/C rooms					
		2.7.2	Maintenance Path and Clearance					
		3.10.	Guarding of Exposed Auxiliary Equipment					
	<b>8.7.3.30</b>	Terminal-Stopping Devices			Minor B	Minor B		
		3.25.	Terminal-Stopping Devices					
	<b>8.7.3.31</b>	Operating Devices and Control Equipment			↓ See Below ↓			
	<b>8.7.3.31.1</b>	Top-of-Car Operating Devices			Minor A	Minor A	mrr Minor A	
		3.26.2	Inspection Operation					
	CAD 8.7.3.31★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4	Inspection Operation					
	CAD 8.7.3.31★2	Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4	Inspection Operation					
		<span style="color: red;">8.7.2.15★1,★2</span>						
	<b>8.7.3.31.2</b>	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		3.26.3.2	Operation in Leveling or Truck Zone					
	<b>8.7.3.31.3</b>	Alter / Replace	Anti-Creep Leveling Device		Minor B	-	Minor B	
		3.26.3.1	Anti-Creep Operation				see 8.6.3.10.5	
	CAD 8.7.3.31★3	★	Door By-Pass Switches		Minor A	Minor A		
		2.26.1.5	Inspection Operation with Open Door Circuits					
	CAD 8.7.3.31★4	★	Door Monitoring System		Minor A	Minor A		
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					
	<b>8.7.3.31.4</b>	Change in Power Supply			Major	-		
		(a) voltage, frequency or # of phases or						
		(b) AC to DC , DC to AC or						
		(c) combination of DC & AC, then						
		electrical to:						
		3.26.1	Operating Devices and Control Equipment					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6(*)	Control and Operating Circuits					
	CAD 8.7.3.31★5	★	Addition of Soft Start			Minor A		
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					
		3.26.5	Phase-Reversal and Failure Protection					
	CAD 8.7.3.31★6	★	Addition of Power Efficiency Increasing Device			Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.31.5</b>	Controllers			Major	-		Major
	8.7.3.31.5(a)	Install / Replace	Elevator Controller					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.26.7	Recycling Operation for Multiple or Telescopic Plungers					
		3.26.8	Pressure Switch					
		3.26.9	Low Oil Protection					
		3.26.10	Auxiliary Power Lowering Operation					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.2	when E.P. Is provided					
		3.27.1	Phase 1 Emergency Recall Operation after Device Actuation					
		3.27.2	Phase 1 Emergency Recall Operation prior to Device Actuation					
		3.27.3	Device Actuation at Recall Level					
		3.27.4	Device Actuation with Phase II Emergency In-Car in Effect					
			If FEO previously present or required by OBC;					
		2.27.3	Firefighters' Emergency Operation - Automatic Elevators					
			2.27.3.1 Phase 1 Recall Operation					
			2.27.3.2 Phase 1 Recall Operation by FAID's					
			CAD 2.27.3.2.2					
			2.27.3.3 Phase 2 Emergency In-Car Operation					
			2.27.3.4 Interruption of Power					
			2.27.3.5 Multicompartment Elevators					
			see <a href="#">8.7.1.2</a> safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		2.27.9	Elevator Corridor Call Station Pictograph					
			If FEO NOT previously present or required by OBC;					
			CAD 2.27.3.2.2					
			2.27.3.1 Provide Phase 1 Manual Recall Operation Only					
	CAD 8.7.3.31 ★7	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	8.7.3.31.5(b)	Install / Replace	Door Controller		Minor A	-		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.6	Change in Type of Motion Control			Major	-		
		2.11.1(*) Entrances and Emergency Doors Required						
		2.11.2 Types of Entrances						
		2.11.3 Closing of Hoistway Doors						
		2.11.4 Location of Horizontally Sliding or Swinging H/W Doors						
		2.11.5 Projection of Entrances & Equip. Beyond Land'g Sills						
		2.11.6(*) Opening of Hoistway Doors						
		2.11.8 Weights for Closing or Balancing Doors						
		2.11.9 Hoistway Door Locking Devices & Power Operation						
		2.11.11.8(*) Hoistway Door Safety Retainers						
		2.11.12.8 Pull Straps						
		2.12.(*) H/W-Door Locking Devices, Elec. Contacts, H/W Access						
		2.12.5 Restricted Opening of Hoistway or Car Doors						
		2.12.6 Hoistway Door Unlocking Devices						
		2.12.7 Hoistway Access Switches						
		2.13. Power Operation of H/W Doors and Car Doors						
		2.14.(*) Car: Enclosure, Doors, Gates, Illumination						
		2.14.1.7 car top railing						
		8.7.2.27.5(d) Capacity & Loading						
		2.17.(*) Car & Cwt Safeties						
		2.18.(*) Speed Governors						
		3.25. Terminal Stopping Devices						
		3.26.(*) Operating Devices and Control Equipment						
		2.29. Identification of Equipment and Floors						
		★ 2.7.9.2 Temperature and Humidity						
		If FEO previously present or required by OBC;						
		2.27. Emergency Operation and Signalling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 Firefighters' Emergency Operation: Automatic Elevators						
		2.27.3.1 Phase 1 Recall Operation						
		2.27.3.2 Phase 1 Recall Operation by FAID's						
		CAD 2.27.3.2.2						
		2.27.3.3 Phase 2 Emergency In-Car Operation						
		2.27.3.4 Interruption of Power						
		2.27.3.5 Multicompartment Elevators						
		see 8.7.1.2 safety levels shall not be diminished						
		2.27.4 FEO: Non Automatic Elevators						
		2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		If FEO NOT previously present or required by OBC;						
		CAD 2.27.3.2.2						
		2.27.3.1 Provide Phase 1 Manual Recall Operation Only						



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.7	Change in Type of Operation Control - CPPB, Automatic			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		3.11.1	Protection of Hoistway Landing Openings					
		3.12.1	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		3.13.	Power Operation of H/W Doors and Car Doors					
		3.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.(*)	Operating Devices and Control Equipment					
		★ 2.7.9.2	Temperature and Humidity					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.3.31★8	★ Addition of Wander Patient Feature - Change in Operation Control			Minor B	Minor B		
		2.11.3.2	- doors closed when not in use					
		2.27.3.1.6(l)	- shall not prevent PHI					
	CAD 8.7.3.31★9	★ Addition of Restricted Access - Security / Floor Lock Out			Minor B	Minor B		
		OBC-3.2.6.5(4) - shall not prevent floor access When on FEO						
		D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use						
		2.27.3.1.6(l)	- shall not prevent PHI					
		2.27.3.3.1(i)	- permit travel to all landings when on PH II					
		2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II					
		DR 172/02	Elevators With Phase II Operation & Floor Button Controlled by Cards/Keys					
	8.7.3.31.8	Emergency Operation and Signaling Devices						
	8.7.3.31.8(a)	Car Emergency Signaling Devices			Minor B	Minor B		mrr
		2.27.1	Car Emergency Signaling Devices					
	8.7.3.31.8(b)	Emergency or Standby Power			Minor B	Minor A		
		2.27.2	Emergency Or Standby Power systems					



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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.8(c)	Firefighter's Emergency Operation			Minor B	Minor A		
		3.27. Emergency Operation and Signaling Devices						
		3.27.1 PHI Emergency Recall Operation After Device Actuation						
		(a) low oil protection						
		(b) plunger follower guide protection						
		(c) auxiliary power lowering						
		(d) oil tank temperature shutdown						
		2.27 Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.3.31.8★10	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install			Minor B			
		conformance to auto recall based on F.S. at time of install						
	CAD 8.7.3.31.8★11	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
	8.7.3.31.9	Auxiliary Power Lowering Operation			Minor B	Minor B		
		3.26.10 Auxiliary Power Lowering Operation						
		include testing procedure						
	8.7.3.31.10	Removal of emergency stop switch on passenger elevators			Minor B	Minor B		
		remove all related markings / engravings & provide an in-car stop switch to:						
		2.26.2.21 In-car stop switch						
		2.26.4.3 Positively Opened Contacts						
		2.26.9.3.1(a) single failure does not render In-Car Stop Switch ineffective						
		3.26.4.2 deceleration rate <1g, anticreep must still function						
	8.7.3.31.11	Electrical Protective Devices					↓ See Below ↓	
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			Major	Major	mrr	Major
		if device meets 2.26.4.3.2 (PES)						
		3.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			-	Minor A	mrr	
		if device meets 2.26.4.3.1						
		3.26.2 Electrical Protective Devices - for specified device						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.4</b>	Alterations to Elevators w/other Types of Driving Machines						
	<b>8.7.4.1</b>	Rack and Pinion Elevators			Major	-		
		4.1.	Rack and Pinion Elevators					
	<b>8.7.4.2</b>	Screw-Column Elevators			Major	-		
		4.2.	Screw-Column Elevators					
	<b>8.7.4.3</b>	Hand Elevators			Major	-		
	<b>8.7.4.3.1</b>	Hoistway Enclosures and Machinery Space			Major	-		
		4.3.1	Hoistways, H/W Enclosures, and Related Construction					
		4.3.4	Enclosures for Machines and Control Equipment					
	<b>8.7.4.3.2</b>	Top Car and Counterweight Clearances			Major	-		
		4.3.3	Top Clearances					
	<b>8.7.4.3.3</b>	Hoistway Entrances			Major	-		
		4.3.6	Hoistway Entrances					
		4.3.7	Hoistway Gates for Landing Openings					
		4.3.8	Hoistway-Door & Hoistway Gate Locking Devices					
	<b>8.7.4.3.4</b>	Car Enclosures			Major	-		
		4.3.9	Car Enclosures					
		4.3.11	Car Frames and Platforms					
	<b>8.7.4.3.5</b>	Car Frame and Platform			Major	-		
		4.3.11	Car Frames and Platforms					
		4.3.12	Car Compartments					
		4.3.13	Cars Counterbalancing One Another					
		4.3.16	Suspension Means					
	<b>8.7.4.3.6</b>	Capacity and Loading			Major	-		
		4.3.14.1	Minimum Rated Load					
		4.3.14.2	Capacity Plate					
		4.3.19.1	Drive Machine & Sheaves - Factors or Safety					
		4.3.19.2	Driving-Machines					
		4.3.16	Suspension Means					
	<b>8.7.4.3.7</b>	Increase in Rise			Major	-		
		4.3.3.1	Top Car Clearances					
		4.3.3.2	Top Counterweight Clearance					
		4.3.15	Car Safeties					
		4.3.16	Suspension Means					
	<b>8.7.4.3.8</b>	Guide Rails and Fastenings			Major	-		
		4.3.18.1	Guide Rails - Material and Finish					
		4.3.18.2	Strength of Rails and Fastenings					
		4.3.18.3	Extension of Guide Rails at Top & Bottom of H/W					
	<b>8.7.4.3.9</b>	Overhead Beams and Supports			Major	-		
		4.3.5.1	Overhead Beams and Supports					
		4.3.5.2	Access to Machines and Sheaves					
	<b>8.7.4.3.10</b>	Power Attachments			Major	-		

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.5	Alterations to Special Application Elevators						
	8.7.5.1	Inclined Elevators			Major	-		
		5.1.	Inclined Elevators compliance to specific 5.1 sections based on alteration scope			variance		
	8.7.5.2	Limited Use/Limited Application Elevators			See Electric or Hydraulic Elevator			
	CAD 8.7.5.2★1	★	8.7.2	Alterations to Electric Elevator & as modified in Section 5.2				
	CAD 8.7.5.2★2	★	8.7.3	Alterations to Hydraulic Elevator & as modified in Section 5.2				
	8.7.5.5	Power Sidewalk Elevators			Major	-		
	8.7.5.5.1	Changes in Electrical Wiring or Electrical Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
	8.7.5.5.2	Sidewalk Door			Major	-		
		5.5.1.11.2	Horizontal Openings in Sidewalks and Exterior Areas					
		5.5.1.11.3	Hinged Type Swing Sidewalk Doors					
		5.5.1.11.4	Vertical Lifting Sidewalk Covers					
	8.7.5.5.3	Change in Car Enclosure, Car Doors, and Gates			Major	-		
		5.5.1.14	Car Enclosure, Car Doors and Gates, Illumination					
	8.7.5.5.4	Bow-Irons and Stanchions			Major	-		
		5.5.1.15.2	Bow-Irons and Stanchions					
	8.7.5.5.5	Increase in Rated Load			Major	-		
		5.5.1.16	Capacity and Loading					
		5.5.1.18	Speed Governors					
		5.5.1.21	Buffers and Bumpers					
		5.5.1.25.4	Maximum Rated Speed					
	8.7.5.5.6	Increase in Rated Speed			Major	-		
		5.5.1.15	Car Frames and Platforms					
		5.5.1.16	Capacity and Loading					
		5.5.1.19	Suspension Ropes					
		5.5.1.22	Guide Rails					
	8.7.5.5.7	Existing Driving Machine			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.9	Machinery and Sheave Beams, Supports, and Foundations					
		5.5.1.23	Driving Machines and Sheaves					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.5.8	Change in Type of Operating Devices and/or Control Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.6	Rooftop Elevators			Major	-		
		5.6.	Rooftop Elevators					
	8.7.5.7	Special Purpose Personnel Elevators			see CAN/CSA B311			

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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.1</b>	Alterations to Escalators						
	8.7.6.1.1	Change to component parts			mrr	-		mrr
		8.6.12.4.1.1 Replacement parts or components						
		8.6.12.4.1.2 Quality of Work						
	8.7.6.1.1	Addition of Components or Devices			see <a href="#">8.7.6.1</a>			-
		see applicable <a href="#">8.7.6.1</a> requirements for that device						
	<b>8.7.6.1.2 (a)</b>	Relocation of Escalator			New	-		
		6.1. Escalators						
	<b>8.7.6.1.2 (b)</b>	Repositioning of Escalator			Major			
	CAD 3.18	★ Repositioning of Escalator (within the same building)						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
		6.1.3.4.3 Guards						
		6.1.3.6.3 Adjacent Floor Surfaces						
		6.1.3.6.4 Safety Zone						
		6.1.3.12 Headroom						
		6.1.3.13 Welding						
		6.1.6.9 Signs						
		6.1.7.4.1 Electrical equipment						
		8.7.6.1.3 Protection of Floor Openings						
	<b>8.7.6.1.3</b>	Protection of Floor Openings			Minor A	-		
		6.1.1.1 Protection Required						
	<b>8.7.6.1.4</b>	Protection of Trusses and Machinery Spaces Against Fire			Minor A	-		
		6.1.2.1 Protection Required						
	<b>8.7.6.1.5</b>	Construction Requirements						
	8.7.6.1.5(a)	Construction Requirements - Angle of Inclination			Major	-		
	8.7.6.1.5(b)	Construction Requirements - Geometry			Major	-		
		6.1.3.2 Geometry						
	8.7.6.1.5(c)	Any Alteration to the Balustrades			Minor A	Minor A		
		6.1.3.3 Balustrades						
		6.1.3.3.1 Construction						
		6.1.3.3.2 Strength						
		6.1.3.3.3 Use of Glass or Plastic						
		6.1.3.3.4 Interior Low Deck						
		6.1.3.3.5 Loaded Gap between Skirt & Step						
		6.1.3.3.6 Skirt Panels						
		6.1.3.3.7 Dynamic Skirt Panels						
		6.1.3.3.8 Dynamic Skirt Panel Loaded Gap						
		6.1.3.3.9 Step/Skirt Performance Index						
		6.1.3.3.10 Skirt Deflector Devices						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
	8.7.6.1.5(d)	Deflector Devices			Minor B			mrr
		6.1.3.3.10 Skirt Deflector Devices						
	<b>8.7.6.1.6</b>	Handrails or Handrail System			Minor A	-		
		6.1.3.2.2 Geometry - Handrail						
		6.1.3.4.1 Handrails - Type Required						
		6.1.3.4.2 Extension Beyond Combplate						
		6.1.3.4.3 Guards (hand or finger)						
		6.1.3.4.4 Handrails - Splicing						
		6.1.3.4.6 Handrail Clearance						
		6.1.6.3.12 Handrail Entry Device						
		6.1.6.4 Handrail Speed Monitoring Device						
	CAD 8.7.6.1 ★ 1	★ Addition of Handrail Advertising			mrr	variance		
		Variance to 6.1.6.9.2						

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		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model
Job Reference:		Superseded by Rev			Type of Submission Required			
	8.7.6.1.7	Step System - any alteration to the step system			Major	-	mrr	Minor B
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5 (*)	Steps					
		6.1.3.6	Entrance and Egress Ends					
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.4	Factor of Safety - Steps					
		6.1.3.11	Chains					
		6.1.6.3.3	Broken Step-Chain Device					
		6.1.6.3.9	Step Upthrust Device					
		6.1.6.3.11	Step Level Device					
		6.1.6.3.14	Step Lateral Displacement Device					
		6.1.6.5	Missing Step Device					
	8.7.6.1.8	Combplates			Minor A	-		
		6.1.6.3.13	Comb-Step Impact Devices					
	8.7.6.1.9	Trusses and Girders			Major	-		
		8.7.1.4	Welding					
		6.1.3.7	Trusses of Girders					
		6.1.3.9.1	Structural Load					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
	8.7.6.1.9	New Escalator into Existing Trusses			New	-		
		6.1.	Escalators					
	8.7.6.1.10	Step Wheel Tracks			Major	-		
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
		8.7.1.4	Welding					
	8.7.6.1.11	Rated Load and Speed			Major	-		
		6.1.	Escalators					
	8.7.6.1.12	Driving Machine, Motor, and Brake						
	8.7.6.1.12(a)	Driving Machine			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.4	Broken Drive-Chain Device					
		6.1.6.3.8	reversal Stop Device					
	8.7.6.1.12(b)	Driving Motor			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.2	Speed Governor					
		6.1.6.3.8	reversal Stop Device					
		6.1.6.3.10	Disconnected Motor Safety Device					
	8.7.6.1.12(c)	Machine Brake			Major	-		
		6.1.3.9.3	Brake					
		6.1.3.10.2	Factor of Safety - Driving Machine Parts					
		6.1.5.3.1	Escalator Driving-Machine Brake					

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					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.1.13</b>	<b>Operating and Safety Devices</b>			Minor A	Minor A		
		6.1.6	Operating and Safety Devices (for that device)					
	CAD 8.7.6.1★2	★	Removal of step demarcation lights		Minor A	-	-	
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5.4	Clearance between Steps					
		6.1.3.5.5	Slotting of Steps and Treads					
		6.1.3.5.6	Step Demarcation					
		6.1.3.6.2	Distinction Between Comb and Step					
	<b>8.7.6.1.14</b>	<b>Lighting, Access, and Electrical Work</b>			Minor B	Minor B		
		6.1.7	Lighting, Access, and Electrical Work					
	<b>8.7.6.1.15</b>	<b>Entrance and Egress</b>			Major	-		
		6.1.3.6.1	Combplates					
		6.1.3.6.2	Distinction Between Comb and Step					
		6.1.3.6.3	Adjacent Floor Surfaces					
		6.1.3.6.4	Safety Zone					
	<b>8.7.6.1.16</b>	<b>Controller</b>			Major	-	-	
		6.1.6.10	Control and Operating Circuits					
		6.1.6.11	Electrically Power Safety Devices					
		6.1.6.12	Installation of Capacitors.. To Make EPD's Ineffective					
		6.1.6.13	Completion of Maintenance Circuits					
		6.1.6.14	Escalator Manual Reset					
		6.1.6.15	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.1★3	★	Controller - Replacement of <a href="#">8.7.6.1.16</a> Controller		-	-		Major
	CAD 8.7.6.1★4		Relocation of Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.1★5	★	Addition of Soft start for control systems built to B44-00 and later		-	Minor A		
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.1★6	★	Addition of Power Efficiency Increasing Device		-	Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.2</b>	Alterations to Moving Walks						
	8.7.6.2.1	Change to component parts 8.6.12.4.1.1 Replacement parts or components 8.6.12.4.1.2 Quality of Work			mrr	-		mrr
	8.7.6.2.1	Addition of Components or Devices see applicable <a href="#">8.7.6.2</a> requirements for that device			see <a href="#">8.7.6.2</a>			-
	<b>8.7.6.2.2</b>	Relocation of Moving Walk 6.2. Moving Walks			New	-		
	<b>8.7.6.2.3</b>	Protection of Floor Openings 6.2.1.1 Protection Required			Minor A	-		
	<b>8.7.6.2.4</b>	Protection of Trusses and Machinery Spaces Against Fire 6.2.2.1 Protection of Supports - Protection Required			Minor A	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Angle of Inclination 6.2. Moving Walks			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Geometry 6.2.3.2 Geometry			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Balustrades 6.2.3.3 Balustrades			Minor A	Minor A		
	<b>8.7.6.2.6</b>	Handrails 6.2.3.2.3 Geometry - Handrail 6.2.3.4 Handrails 6.2.6.3.10 Handrail Entry Device 6.2.6.4 Handrail Speed Monitoring Device			Minor A	-		
	<b>8.7.6.2.7</b>	Treadway System 6.2.3.2.3 Geometry - Handrail 6.2.3.3.5 Skirtless Balustrade 6.2.3.3.6 Skirt Panels 6.2.3.5 Pallet-Type Treadway 6.2.3.6(*) Belt-Type Treadway 6.2.3.8 Entrance and Egress Ends 6.2.3.9 Supporting Structure 6.2.3.10.4 Pallet 6.2.3.11.4 Pallet Factor of Safety 6.2.3.11.5 Belt Factor of Safety 6.2.3.12 Chains 6.2.6.3.3 Broken Treadway Device 6.2.6.5 Missing Pallet Device 6.2.6.3.9 Pallet Level Device			Major	-		
	<b>8.7.6.2.8</b>	Combplates 6.2.3.8 Entrance and Egress Ends 6.2.6.3.11 Comb-Pallet Impact Devices			Minor A	-		
	<b>8.7.6.2.9</b>	Trusses and Girders <a href="#">8.7.1.4</a> Welding 6.2.3.9 Supporting Structure 6.2.3.10.1 Structural Load 6.2.3.12.1 Trusses & Supports based on max static load			Major	-		
	<b>8.7.6.2.9</b>	New Moving Walk into Existing Truss 6.2. Moving Walks			New	-		
	<b>8.7.6.2.10</b>	Track System 6.2.3.9 Supporting Structure 6.2.3.10 Rated Load 6.2.3.11.1 Trusses & Supports based on max static load <a href="#">8.7.1.4</a> Welding			Major	-		
	<b>8.7.6.2.11</b>	Rated Load and Speed 6.2. Moving Walks			Major	-		

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.6.2.12	Driving Machine			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.3.14	V-Belt Drives					
		6.2.3.15	Headroom					
		6.2.4	Rated Speed					
		6.2.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
		6.2.6.3.4	Broken Drive-Chain Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Drive Motor			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.4	Rated Speed					
		6.2.5.2	Driving Motor					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.6.3.2	Speed Governor					
		6.2.6.3.7	Reversal Stop Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Machine Brake			Major	-		
		6.2.3.10.3	Brake					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
	8.7.6.2.13	Operating and Safety Devices			Minor A	Minor A		
		6.2.6	Operating and Safety Devices (for that device)					
	8.7.6.2.14	Lighting, Access, and Electrical Work			Minor B	Minor B		
		6.2.7	Lighting, Access, and Electrical Work					
	8.7.6.2.15	Controller - Installed as part of an alteration			Major	-		-
		6.2.6.9	Control and Operating Circuits					
		6.2.6.10	Electrically Power Safety Devices					
		6.2.6.11	Installation of Capacitors.. To Make EPD's Ineffective					
		6.2.6.12	Completion of Maintenance Circuits					
		6.2.6.13	Moving Walk Manual Reset					
		6.2.6.14	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.2★1	★ Controller - Replacement of			-	-		Major
		<a href="#">8.7.6.1.16</a>	Controller					
	CAD 8.7.6.2★2	Relocation of	Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.2★3	★ Addition of Soft start			-	Minor A		
			for control systems built to B44-00 and later					
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.2★4	★ Addition of Power Efficiency Increasing Device			-	Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.7</b>	Alterations to Dumbwaiters and Material Lifts						
	<b>8.7.7.1</b>	Dumbwaiters and Material Lifts Without Automatic Transfer Devices			Major	-		
		Alteration to a Power and Hand Dumbwaiters			Major	-		
		7.1.	Power and Hand Dumbwaiters					
		7.2.	Electric and Hand Dumbwaiters					
		7.3.	Hydraulic Dumbwaiters					
		Alteration to a Material Lifts			Major	-		
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.1.1</b>	General Alterations other than 8.7.7.1.2			Major	-		
		Part 7	Dumbwaiters and Material Lifts					
	<b>8.7.7.1.2</b>	Increase in Rated Load			Major	-		
		7.2.(*)	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.(*)	Hydraulic Dumbwaiters w/o Transfer Devices					
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.2</b>	Addition of Automatic Transfer Device			Major	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.1</b>	Material Lifts and Dumbwaiters With Automatic Transfer Devices			N/A	N/A		
		exempt if requirements of CAD 2.3(j) are met						
	<b>8.7.7.3.2</b>	Material Lifts and Dumbwaiters - remove Transfer Device			New	-		
		7.1. to 7.3.	for Dumbwaiters					
		7.4. to 7.6	Material Lifts w/o Transfer Devices					
	<b>8.7.7.3.3</b>	Material Lifts altered to an Elevator			New	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.4</b>	Material Lift or Dumbwaiter w/ Transfer Device Altered to a D/W			New	-		
		7.1.	Power and Hand Dumbwaiters w/Auto Transfer Devices					
		7.2.	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.	Hydraulic Dumbwaiters w/o Transfer Devices					
		Alterations to Freight Platform Lifts						
	CAD 8.7.7★1	★	Alteration to a Type 'A' Freight Platform Lift		Major	-		
		7.4.	as applicable to Material Lifts Type 'B' +					
		7.5.	as applicable to Material Lifts Type 'B' +					
		7.6.	as applicable to Material Lifts Type 'B' +					
			+ excluding requirements related to in-car operating devices & Riders					
	CAD 8.7.7★2	★	Alteration to a Type 'B' Freight Platform Lift		Major	-		
		7.4.	as applicable to Material Lifts Type 'B'					
		7.5.	as applicable to Material Lifts Type 'B'					
		7.6.	as applicable to Material Lifts Type 'B'					

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.1.2	Alterations not specifically covered in 8.7						
		1.2	Level of safety shall not be diminished					
	8.7.1.4	Welding						
		8.8	Welding					
		8.7.1.5	Design / Weld Engineer					
	8.7.1.7	Repairs and Replacements						
		8.6.2	for repairs					
		8.6.3	for replacements					
	8.7.2	<b>Alterations to Electric Elevators</b>						
	8.7.2.1	Hoistway Enclosures			Major	Major		
	8.7.2.1.1	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	8.7.2.1.2	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	8.7.2.1.3	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.4	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.5	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	8.7.2.2	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	8.7.2.2	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	8.7.2.2	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	8.7.2.2	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	8.7.2.2	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	8.7.2.2	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	8.7.2.2	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	8.7.2.3	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		2.6.	Protection of Space below H/W					

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		Job Reference: <span style="font-size: 2em; color: blue; text-decoration: underline;">Superseded by Rev</span>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		2.4.	Vertical Clearances & Runbys for Cars & Cwts					
		<a href="#">8.7.2.17.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
		<a href="#">8.7.2.25.2</a>	Change in Location of Driving Machine					
	<b>8.7.2.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
	<b>8.7.2.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		2.6.	Protection of Space below H/W					
	<b>8.7.2.7</b>	Machinery Spaces, Machine Rooms Control Spaces and Control Rooms			↓ See Below ↓			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7						
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		-	Major		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		OESC	Electrical Equipment Clearances		Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B	mrr	
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch for Machinery Space or Control Spaces					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in Machine Rooms/Spaces, Control Room/Spaces					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		(a) 2.7.2	Maintenance Path and Clearance					
		(b) 2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		(c) 2.10.1	Guarding of Equipment					
		(d)	openable/removable only with tools					
		(e)	operating/work instruction for accessing equipment					
		(f)	clearances in front of electrical control equipment (1000mm)					
			or clearance required at time of original control installation					
		(g)	access in front of / space to operate main disconnect (1000mm),					
			or (750mm) if permitted at time of original installation					
		(h)	Installation by registered contractor					
		(i)	designed to be handled by one person					
	<b>8.7.2.8</b>	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's & M/C Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.2.9</b>	Machinery and Sheave Beams, Supports, and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					

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					Modification Change	Addition	Same	Different Make/Model
						Type of Submission Required		
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-	Major	Major
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	hanger /track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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					Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.12	Entrances, Vertical Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B	
		2.11.12.1	Landing Sills					
	frames (b)	2.11.12.2	Entrances Frames		Minor B		Minor B	
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	rails (c)	2.11.12.3	Rails		mrr		mrr	
	panels (d)	2.11.12.3	Rails		Minor A		Minor A	
		2.11.12.4	Panels					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
	guides (e)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		2.11.12.5	Guides					
	sill guard (f)	2.11.12.7	Sill Guards		mrr		mrr	
	straps (g)	<a href="#">2.11.12.8</a>	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.13	Entrances, Swing Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.10.3	Hinged Hoistway Landing Sills					
		2.11.13.1	Landing Sills					
	frames (b)	2.11.13.2	Entrance Frames		Minor B		Minor B	
		2.11.13.4	Hinges					
	panels (c)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies		Minor B		Minor B	
		2.11.13.3	Panels					
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
	hinges (d)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies		mrr		mrr	
		2.11.13.4	Hinges					
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major		
			Fire Protection Rating not less than existing entrance					
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements					
	CAD 8.7.2.10★1	★	Removing Service To a Floor		Minor B			
			Bolt entrances shut					
			Remove Interlock From Safety String					
			Remove COP Floor Button					
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★	Door Safety Retainers		Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			↓ See Below ↓			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.11.4	Access Switches and Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices						
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.2.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		8.7.2.10.1 Entrances & H/W Openings - General Req'mts 8.7.2.10.2 Horizontal Slide-Type Entrances 8.7.2.10.3 Vertical Slide-Type Entrances 8.7.2.10.5 Marking of Entrance Assemblies ★ 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12★1	★ Replacement of Door Operator 2.13. Power Operation of Hoistway Doors and Car Doors 8.7.2.15★1,★2			-	-	mrr	Minor B
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or replaced) 2.13.4 Closing Limitations for Power Operated HS Doors & Gates 2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI &II at time of install 8.7.2.15★1,★2			Minor B	Minor B	mrr	Minor B
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties 8.7.2.15.1 Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures 2.14.1.2 Securing of Enclosures			Minor A	Minor A		
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added) 2.14.1.5 Top Emergency Exits			Minor B	Minor B		
	8.7.2.14.2(c)	Installation of Glass 2.14.1.8 Glass in Elevator Cars 2.14.1.8.1 Enclosures include glass 2.14.1.8.2 Lining of Walls or Ceilings include glass 2.14.1.8.3 Marking of each Glazing Panel			Minor B	Minor B	mrr	
	8.7.2.14.2(d)	Specific Equipment in Elevator Car 2.14.1.9 Equipment Inside Cars (a) Handrails (b) fastening devices for protective linings (c) ceiling mounted hooks/tracks (d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1 (e) conveyor tracks in freights (f) heating or cooling equipment 8.7.2.15★1,★2			Minor B	Minor B		
	CAD 8.7.2.14★1	★ Car operating station verify inspection operation 'if provided' verify stop sw verify switches operate as before (eg. FS, FEO, Access) 8.7.2.15★1,★2			Minor B	Minor B	mrr	Minor B
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors 2.8.2.1 electrical equipment & wiring 2.14.1.2.3 securing of enclosure equipment 2.14.2.4 Headroom in Elevator Cars 8.7.2.15★1,★2			Minor B	Minor B		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished			Minor A		
			2.14.1.7 car top railing - see CAD 8.7.2.14★4			Minor B		
			2.14.7.1.3 auxiliary lighting			Minor B		
			2.14.7.1.4 car top light & outlet			Minor B		Minor B
		★	CAD 8.7.2.15★1			Minor B		Minor B
			or					
		★	CAD 8.7.2.15★2			Minor A		Minor A
	8.7.2.14.4	Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
			<b>8.7.2.15★1,★2 car weighed prior to alteration</b>					
			include testing procedure					
			include revised electrical schematics					
	8.7.2.15	Car Frames and Platforms			↓ See Below ↓			
	8.7.2.15.1	Alterations to Car Frames and Platforms			Major	-	Major	
		2.15.	Car Frames & Platforms					
	CAD 8.7.2.15★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1(a)	cars weighed prior to alteration					
		CAD 8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
		CAD 8.7.2.15★1(c)	weight change recorded on auxiliary data tag					
		CAD 8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					
	CAD 8.7.2.15★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★1	engineering assessment of related items affected by weight change					
	8.7.2.15.2	Increase or Decrease in Deadweight of Car (Car Wt+Rated Load> 5%)			Major	-		
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.15.9	Platform Guards (Aprons)					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.	Speed Governors					
		2.20.	Suspension Ropes & Connections					
		2.21.(*)	Counterweights					
		2.22.(*)	Buffers & Bumpers					
		2.23.	Car & Cwt Guides Rails, Guide Rail Support, Fastenings					
		2.24.(*)	Driving Machines & Sheaves					
		8.7.2.9	Machinery and Sheave Beams, Supports, Foundations					
	CAD 8.7.2.15★1(a) to (e)							



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.16</b>	<b>Capacity, Loading, and Classification</b>			Major	-		
	<b>8.7.2.16.1</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22 (*)	Buffers & Bumpers					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.16.	Capacity & Loading					
		2.17.(*)	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection					
		2.20.	Suspension Ropes & Connections					
		2.24.(*)	Driving Machines & Sheaves					
		2.25.	Terminal Stopping Devices					
		2.26.	Operating Devices and Control Equipment					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.2.16.2</b>	Change in Class of Loading: [from any class to any other class ie A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		<a href="#">8.7.2.16.4</a>	Increase in Rated Load					
	<b>8.7.2.16.3</b>	Carrying of Passengers on Freight Elevators			Major	-		
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.3	conforms to 2.16.8 Passenger Overload in Down Direction					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.13.3.4					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.16.4	Increase in Rated Load Car doors or gates shall be provided at all car entrances New Car doors and gates to: 2.14.4, 2.14.5, 2.14.6 2.14.4 Passenger & Frt Car Doors & Gates, General Req'mts 2.14.5 Passenger Car Doors 2.14.6 Freight Elevator Car Doors and Gates 2.15.(* ) Car Frames & Platforms- ★apron guard to ED CAD/as pit permits 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.(* ) Counterweights 2.22.(* ) Buffers & Bumpers 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings 2.24. Driving Machines & Sheaves 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.5 Monitor & Prevent Automatic Operation w/ Faulty Door Contacts <u>8.7.2.9</u> Machinery and Sheave Beams, Supports, Foundations			Major	-		
	8.7.2.17	Change in Rise or Rated Speed			Major	-		
	8.7.2.17.1	Increase or Decrease in Rise 2.25. Terminal Stopping Devices retain drum m/c, travel increase < 4570mm 2.4.(* ) Vertical Clearances & Runbys for Cars & Cwts If decrease in rise is at lowest end then; 2.2.4 Access to Pits 2.2.5 Illumination of Pits 2.2.6 Stop Switches			Major	-		
	8.7.2.17.2	Increase in Rated Speed			Major	-		
	8.7.2.17.2(a)	Increase in Rated Speed on a Winding Drum machine Increase in Rated Speed of a winding drum m/c prohibited <u>8.7.2.17.2(c)</u> except as permitted 8.7.2.17.2(c)			Major	-		
	8.7.2.17.2(b)	Increase in Rated Speed except as per 8.7.2.17.2(c) 2.4.2 Minimum Bottom Runby for Counterweighted Elevators 2.4.3 Minimum Bottom Runby for Uncounterweighted Elevators 2.4.4 Maximum Bottom Runby 2.4.5 Counterweight Runby Data Plate 2.4.6 Maximum Upward Movement of the Car 2.4.7 Top of Car Clearances 2.4.8 Top of Counterweight Clearances 2.4.9 Equipment on Top of Car Not Permitted to Strike O/H 2.5. Horizontal Car and Counterweight Clearances Car doors or gates shall be provided at all car entrances New doors/gates to: Car: Enclosure, Doors, Gates, Illumination 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.4.2 Comp Rope Tie Down (if speed > 3.5 m/s) 2.22.(* ) Buffers & Bumpers 2.24. Driving Machines & Sheaves 2.25. Terminal Stopping Devices 2.26.(* ) Operating Devices and Control Equipment			Major	-		
	8.7.2.17.2(c)	Increase in Rated Speed less than 10% & less than 0.20m/s new spd < .75 for type A safeties new spd < 1 w/spring buffer, 2.18.2.1&.2 2.18.2.1 Car speed governors 2.18.2.2 counterweight speed governors <u>8.7.2.27.3</u> Change in Power Supply			Major	-		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <span style="color: blue; font-size: 2em; font-weight: bold;">Superseded by Rev</span>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.17.3	Decrease in Rated Speed 2.4. Vertical Clearances & Runbys for Cars & Cwts 2.18.2 Tripping Speeds for Speed Governors 2.16. Capacity & Loading 2.16.3(*) Capacity and Data Plates 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts			Major	-		
	8.7.2.18	Car and Counterweight Safeties			Major	Major	↓See Below ↓	
	8.7.2.18.1	New Car Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.2	New Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.3	Existing Car Safeties 2.17.(*) Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.18.3	Existing Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.19	Speed Governors and Governor Ropes			Major	Major	↓See Below ↓	
	8.7.2.19	2.18. Speed Governors					mrr	Minor A
	8.7.2.19	2.17.15 Governor Rope Releasing Carriers					see 8.6.3.6 mrr	mrr
	8.7.2.19	Governor Ropes of different material or Construction to: 2.18.6 Design Gov'r Rope Retarding Means for Type B Safeties 2.18.7 Traction between Speed Governor Rope & Sheave & testing to 2.17.3 Function and Stopping Distances of Safeties					see 8.6.3.9 -	Minor B
	8.7.2.20	Ascending Car Overspeed and Unintended Car Movement Protection (ACO & UCM)			Minor A	Major	mrr	Minor A
	CAD 8.7.2.20★1	★ 2.19. Ascending Car Overspd & Unintended Car Movement Protection If Elevators Controllers are pre-B44-00 & have ACO & UCM			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★2	★ 2.19. ACO & UCM Protection, Except that; detection means to B44-M90 or the code at time of install 8.9. Code Data tag to reflect code at time of install If Elevators Controllers are pre-B44-00 & have ACO ONLY			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★3	★ 2.19.1 ACO Protection Only, Except that; 2.19.3 Emergency Brake and detection means to B44-M90 or the code at time of install 2.19.4 Emergency Brake Supports 8.9. Code Data tag to reflect code at time of install Voluntary Addition of Both ACO and UCM where previously not provided				Minor A		
		2.19. ACO & UCM Protection Except that; detection means to B44-M90 code or later 2.7. Machinery Spaces, Machine Rooms Control Spaces & Control Rooms as applicable to the equipment installation 8.9. Code Data tag to reflect code edition used for the alteration						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.21</b>	<b>Suspension Ropes and Their Connections</b>			↕ See Below ↕			
	<b>8.7.2.21.1</b>	Change in Number of, or Diameter of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Major	-	See 8.6.3.2	
	<b>8.7.2.21.1</b>	Change in Material / Grade of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Minor A	-		
	<b>8.7.2.21.2</b>	Addition of Rope Equalizers 2.20.5 Suspension Rope Equalizers			Minor B	Minor B		
	<b>8.7.2.21.3</b>	Addition of Auxiliary Rope-Fastening Devices 2.20. Suspension Ropes & Connections			Major	Major		
	<b>8.7.2.21.4 (a)</b>	Change in Type of Suspension Means 2.20.8.1 Protection Against Traction Loss 2.20.8.2 Broken Suspension Member 2.20.8.3 Suspension-Member Residual Strength 2.20.11 Suspension-Member Test			Major	Major		
	<b>8.7.2.21.4 (b)</b>	Traction Loss Detection 2.20.8.1 Protection Against Traction Loss			Minor A	Minor A		
	<b>8.7.2.21.4 (c)</b>	Broken Suspension Means Detection 2.20.8.2 Broken Suspension Member			Minor A	Minor A		
	<b>8.7.2.22</b>	<b>Counterweights</b>			Minor A	-		
	<b>8.7.2.22.1</b>	Alteration to any part of a cwt except guiding members 2.21. Counterweights <a href="#">8.7.2.22.2</a> Rod Type Counterweights <a href="#">8.7.2.3</a> Location and Guarding of Counterweights						
	<b>8.7.2.22.2</b>	Rod Type Cwt - can retain if: Minimum of 2 suspension and 2 tie rods Suspension rods: 2.21.2.1 Material - Cwt Frames & Rods 2.21.2.3 Factor of Safety Tie Rods: 2.21.1.2 Retention of Weight Sections						
	<b>8.7.2.22.3</b>	Roller or similar guide shoes added safety jaws cannot touch rails if not activated			mrr	mrr		
	<b>8.7.2.23</b>	<b>Car and Counterweight Buffers and Bumpers</b> 2.22.(*) Buffers & Bumpers			Major	-	mrr	Minor B
	<b>8.7.2.24</b>	<b>Guide Rails, Supports, and Fastenings (alteration to, or stress increase &gt;5%)</b> 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings			Major	-		
	<b>8.7.2.25</b>	<b>Driving Machines and Sheaves</b>			↕ See Below ↕			
	<b>8.7.2.25.1</b>	Alter / Replace Driving Machines & Sheaves			Major	Major	Major	
	8.7.2.25.1(a)	2.7.2 Maintenance Path and Clearance to extent existing installation permits 2.9. Machinery & Sheave Beams, Supports, Foundation 2.10.1 Guarding of Equipment 2.19. Ascending Car Overspeed & Unintended Car Movement Protection <a href="#">8.7.2.20</a> ACO & UCM Protection CAD <a href="#">8.7.2.20★1</a> Pre B44-00 ACO & UCM Protection CAD <a href="#">8.7.2.20★2</a> Pre B44-00 ACO Only Protection CAD <a href="#">8.7.2.20★3</a> Addition ACO/UCM if not required by other alteration scope 2.20. Suspension Ropes & Connections 2.24. Driving Machines & Sheaves 2.26.8 Release and Application of Driving-Machine Brakes			Major	-		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.25.1(b)	Alter / Replace	Driving Machine Components - affected component complies w/	Major			mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.24.5	Shafts Fillets and Keys					
		2.24.6	Cast-Iron Worms and Worm Gears					
		2.24.7	Friction Gearing and Clutches					
		2.24.8	Braking Systems & Driving Machine Brakes				mrr	Major
		2.24.9	Indirect-Driving Machines					
		2.26.8	Release and Application of Driving-Machine Brakes					
	8.7.2.25.1(c)	Change of	Driving Machine Sheave	Major	-		mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.20.	Suspension Ropes & Connections					
	<b>8.7.2.25.2</b>	Change in Location of Driving Machine		Major	-			
	8.7.2.25.2(a)	Change in Location of Driving Machine w/ no change in Rise		Major	-			
		2.7.2	Maintenance Path and Clearance					
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		2.10.1	Guarding of Equipment					
		2.24.2.3	Traction					
	8.7.2.25.2(b)	Change in Location of Driving Machine w/ change in Rise		Major	-			
		Part 2 (*)	Electric Elevators (entire installation to meet Part 2), except					
			2.5 Horizontal Car and Counterweight Clearances					
			2.11 Protection of Hoistway Openings					
			2.4 Vertical Clearances and Runbys for Cars & Cwts					
		<a href="#">8.7.2.5</a>	see also					
		<a href="#">8.7.2.10</a>	see also					
	CAD 8.7.2.25★1	★ Replacement of worm and/or gear (specify make)		-	-		mrr	Minor A
		2.24	specify compliance to the applicable requirements					
		Addition of Machine Guarding - see CAD 8.7.2.7★1						
	<b>8.7.2.26</b>	Terminal-Stopping Devices		Minor B	Minor B			
		2.25.	Terminal Stopping Devices					
	<b>8.7.2.27</b>	Operating Devices and Control Equipment		⇩ See Below ⇩				
	<b>8.7.2.27.1</b>	Top-of-Car Operating Devices		Minor A	Minor A		mrr	Minor A
		2.26.1.4	Inspection Operation					
	CAD 8.7.2.27★1	Alteration / Addition of any type of inspection operation		Minor A	Minor A			
		2.26.1.4	Inspection Operation					
	CAD 8.7.2.27★2	★ Addition of Top-of-Car Operating Device (see CAD 3.8.3)		-	Minor A			
		2.26.1.4	Inspection Operation					
		<a href="#">8.7.2.15★1,★2</a>						
	<b>8.7.2.27.2</b>	Car-Leveling or Truck-Zoning Devices		Minor A	Minor A			
		2.26.1.6	Operation in Leveling or Truck Zone					
	CAD 8.7.2.27★3	★ Door By-Pass Switches		Minor A	Minor A			
		2.26.1.5	System to Prevent Auto Operation w/faulty Door Contacts					
	CAD 8.7.2.27★4	★ Door Monitoring System		Minor A	Minor A			
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.3	Change in Power Supply (a) voltage, frequency or # of phases or (b) AC to DC , DC to AC or (c) combination of DC & AC, then electrical to: 2.26.1.1 Types of Operation 2.26.1.2 For Car-Switch Operation Elevators 2.26.1.3 Add'l Operating Devices for Elevators carrying 1pc. load > than Rated 2.26.1.4 Inspection Operation 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.9 Control & Operating Circuits 2.26.10 Absorption of Regenerated Power new / modified equipment and wiring to: 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts brakes to: 2.24.8 Braking Systems & Driving Machine Brakes 2.26.8 Release and Application of Driving-Machine Brakes winding drum to: 2.25.3.5 Additional Req'mts for Winding Drum Machines see <a href="#">8.7.2.17.2(b)</a> Increase in Rated Speed			Major	-		
	8.7.2.27.4 8.7.2.27.4(a)	Install / Replace	Motion or Operation Controller (no change in method)		Major	-		Major
		2.25. Terminal Stopping Devices 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.3 Contactor and Relays for Use in Critical Operating Circuits 2.26.4 Electrical Equipment and Wiring 2.26.5 System to Monitor & Prevent Automatic Operation w/ Faulty Door Contacts 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.8 Release and Application of Driving-Machine Brakes 2.26.9 Control & Operating Circuits 2.26.11 Car Platform to Hoistway Door Sills Vertical Distance levelling accuracy to 13mm (0.5 in.) 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity 2.27.2 Emergency or Standby Power systems						
		If FEO previously present or required by OBC; 2.27.3 Firefighters' Emergency Operation - Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's CAD 2.27.3.2.2 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see <a href="#">8.7.1.2</a> safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys 2.27.9 Elevator Corridor Call Station Pictograph If FEO NOT previously present or required by OBC; CAD 2.27.3.2.2 2.27.3.1 Provide Phase 1 Manual Recall Operation Only						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.27★5	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring Electrical testing to verify functionality of rewired equipment					
	8.7.2.27.4(b)	Installation of	Door Controller		Minor A	-		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.4(c)	Installation of	Controller for Emergency or Standby Power		Minor A	Minor A		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.4(c)	Installation of	Controller for FEO Operation		Minor A	Minor A		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	8.7.2.27.5	Change in Type of Motion Control - AC, VVVF, DC, SCR			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6(*)	Opening of Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.11.8(*)	Hoistway Door Safety Retainers					
		2.11.12.8	Pull Straps					
		2.12.(*)	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.12.5	Restricted Opening of Hoistway or Car Doors					
		2.12.6	Hoistway Door Unlocking Devices					
		2.12.7	Hoistway Access Switches					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7	car top railing					
		2.16.8(*)	Capacity & Loading					
		2.17.(*)	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection					
		<a href="#">8.7.2.20</a>	ACO & UCM Protection					
	CAD	<a href="#">8.7.2.20★1</a>	Pre B44-00 ACO & UCM Protection					
	CAD	<a href="#">8.7.2.20★2</a>	Pre B44-00 ACO Only Protection					
	CAD	<a href="#">8.7.2.20★3</a>	Addition ACO/UCM if not required by other alteration scope					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		If FEO previously present or required by OBC;						
		2.27.	Emergency Operation and Signalling Devices					
		2.27.1	Car Emergency Signalling Devices					
		2.27.2	Emergency or Standby Power Systems					
		2.27.3	Firefighters' Emergency Operation: Automatic Elevators					
		2.27.3.1	Phase 1 Recall Operation					
		2.27.3.2	Phase 1 Recall Operation by FAID's					
		CAD 2.27.3.2.2						
		2.27.3.3	Phase 2 Emergency In-Car Operation					
		2.27.3.4	Interruption of Power					
		2.27.3.5	Multicompartment Elevators					
			see <a href="#">8.7.1.2</a> safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		If FEO NOT previously present or required by OBC;						
		CAD 2.27.3.2.2						
		2.27.3.1	Provide Phase 1 Manual Recall Operation Only					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.27.6	Change in Type of Operation Control - CPPB, AUTOMATIC			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.2.27★6	★	Addition of Wander Patient Feature - Change in Operation Control		Minor B	Minor B		
			2.13.5.3	- door time out				
			2.27.3.1.6(l)	- shall not prevent PHI				
	CAD 8.7.2.27★7	★	Addition of Restricted Access - Security / Floor Lock Out		Minor B	Minor B		
			OBC-3.2.6.5(4) - shall not prevent floor access when on FEO					
			D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use					
			2.27.3.3.1(i)	- permit travel to all landings when on PH II				
			2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II				
	CAD 8.7.2.27★8	★	Addition of Destination Dispatch			Minor B		
			8.7.2.8	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's &M/C Rooms				
			FEO operation to 8.7.2.28 or code at time of installation or alteration					
	8.7.2.27.7		Removal of emergency stop switch on passenger elevators		Minor B	-		
			remove all related markings / engravings & provide an in-car stop switch to:					
			2.26.2.21	In-car stop switch				
		★	2.26.4.3	Positively Opened Contacts				
		★	2.26.9.3	Single failure does not render In-Car Stop Sw ineffective				



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.27.8</b>	Electrical Protective Devices			⇩ See Below ⇩			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.2 (PES)			Major	Major	mrr	Major
		2.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.1			-	Minor A	mrr	
		2.26.2 Electrical Protective Devices - for specified device						
	<b>8.7.2.28</b>	Emergency Operation and Signaling Devices			⇩ See Below ⇩			
	8.7.2.28	Car Emergency Signaling Devices			Minor B	Minor B	mrr	
		2.27.1 Car Emergency Signaling Devices						
	8.7.2.28	Emergency or Standby Power			Minor B	Minor A		
		2.27.2 Emergency Or Standby Power systems						
	8.7.2.28	Firefighter's Emergency Operation			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
	8.7.2.28	Addition of Elevator to a Group - all elevators to meet:			-	Minor A		
		2.27. Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.2.28★1	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install				Minor B		
		conformance to auto recall based on F.S. at time of install						
	CAD 8.7.2.28★2	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3</b>	<b>Alterations to Hydraulic Elevators</b>						
	<b>8.7.3.1</b>	Hoistway Enclosures			see 8.7.2.1			
	<b>8.7.2.1</b>	Hoistway Enclosures			Major	Major		
	<b>8.7.2.1.1</b>	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	<b>8.7.2.1.2</b>	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	<b>8.7.2.1.3</b>	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.4</b>	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.5</b>	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	<b>8.7.3.2</b>	Pits			see Electric Elevators			
	<b>8.7.2.2</b>	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.3.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.2</b>	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	<b>8.7.2.2</b>	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	<b>8.7.2.2</b>	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	<b>8.7.2.2</b>	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	<b>8.7.2.2</b>	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	<b>8.7.2.2</b>	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	<b>8.7.2.2</b>	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	<b>8.7.3.3</b>	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		3.5.	Horizontal car and Counterweight Clearances					
	<b>8.7.3.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					
	<b>8.7.3.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		3.6.	Protection of Spaces below Hoistway					
	<b>8.7.3.7</b>	Machine Rooms and Machinery Spaces			see 8.7.2.7			
	<b>8.7.2.7</b>	Machine Rooms and Machinery Spaces			↕ See Below ↕			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7			-	Major		
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor B	-		
		OESC (C22.1) Electrical Equipment Clearances			Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B	mrr	
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch in O/H M/C Space in the H/W					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in M/C Rooms					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		2.7.2	Maintenance Path and Clearance					
		2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		2.10.1	Guarding of Equipment					
			operable/removable only with tools					
			operating/work instruction for accessing equipment					
			clearances in front of electrical control equipment (1000mm)					
			access in front of / space to operate main disconnect (750mm)					
			Installation by registered contractor					
	<b>8.7.3.8</b>	Electrical Wiring, Pipes, and Ducts in Hoistways and Machine Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
			also installation of Monitoring Equipment, HVAC					
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.3.9</b>	Machinery and Sheave Beams, Supports and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		adequacy of building structure verified by P.Eng.						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.10</b>	Hoistway Entrances and Openings - see <a href="#">8.7.2.10</a>			see <a href="#">8.7.2.10</a>			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-		
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.12	Entrances, Vertical Slide Type					
		2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B	
	frames (b)	2.11.12.1	Landing Sills					
		2.11.12.2	Entrances Frames		Minor B		Minor B	
	rails (c)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	panels (d)	2.11.12.3	Rails		mrr		mrr	
		2.11.12.4	Panels		Minor A		Minor A	
		2.11.12.3	Rails					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
	guides (e)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	sill guard (f)	2.11.12.5	Guides					
	straps (g)	2.11.12.7	Sill Guards		mrr		mrr	
		2.11.12.8	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.13	Entrances, Swing Type					
		2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.10.3	Hinged Hoistway Landing Sills					
	frames (b)	2.11.13.1	Landing Sills					
		2.11.13.2	Entrance Frames		Minor B		Minor B	
		2.11.13.4	Hinges					
	panels (c)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.3	Panels		Minor B		Minor B	
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
	hinges (d)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.4	Hinges		mrr		mrr	
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major		
			Fire Protection Rating not less than existing entrance					
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements					
	CAD 8.7.2.10★1	★ Removing Service To a Floor			Minor B			
			Bolt entrances shut					
			Remove Interlock From Safety String					
			Remove COP Floor Button					
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★ Door Safety Retainers			Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.3.11</b>	Hoistway Door-Locking Devices			See 8.7.2.11			
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			See Below			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
		Job Reference:			Type of Submission Required			
	8.7.2.11.4	Access switches and Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices						
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.24.8 Braking Systems & Driving Machine Brakes 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.3.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		8.7.2.10.1 Entrances & H/W Openings - General Req'mts						
		8.7.2.10.2 Horizontal Slide-Type Entrances						
		8.7.2.10.3 Vertical Slide-Type Entrances						
		8.7.2.10.5 Marking of Entrance Assemblies						
		8.7.3.10 Hoistway Entrances and Openings						
		★ 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
		2.13. Power Operation of Hoistway Doors and Car Doors						
		8.7.2.15★1,★2						
	CAD 8.7.2.12★2	★ Replacement of Door Reopening Device			See 8.7.2.13			
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or Replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates					see	
		2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI & II at time of install					8.6.3.8	
		8.7.2.15★1,★2						
	8.7.3.13	Car Enclosures			See 8.7.2.14			
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties 8.7.2.15.1 Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures			Minor A	Minor A		
		2.14.1.2 Securing of Enclosures						
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added)			Minor B	Minor B		
		2.14.1.5 Top Emergency Exits						
	8.7.2.14.2(c)	Installation of Glass			Minor B	Minor B		
		2.14.1.8 Glass in Elevator Cars						
		2.14.1.8.1 Enclosures include glass					mrr	
		2.14.1.8.2 Lining of Walls or Ceilings include glass						
		2.14.1.8.3 Marking of each Glazing Panel						
	8.7.2.14.2(d)	Specific Equipment in Elevator Car			Minor B	Minor B		
		2.14.1.9 Equipment Inside Cars						
		(a) Handrails						
		(b) fastening devices for protective linings						
		(c) ceiling mounted hooks/tracks						
		(d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1						
		(e) conveyor tracks in freights						
		(f) heating or cooling equipment						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★1	★ Car operating station			Minor B	Minor B	mrr	Minor B
		verify inspection operation 'if provided'						
		verify stop sw						
		verify switches operate as before (eg. FS, FEO, Access)						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors			Minor B	Minor B		
		2.8.2.1 electrical equipment & wiring						
		2.14.1.2.3 securing of enclosure equipment						
		2.14.2.4 Headroom in Elevator Cars						
		8.7.2.15★1,★2						

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					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished					
			2.14.1.7 car top railing - see CAD 8.7.2.14★4					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
		★	CAD 8.7.2.15★1		Minor B			Minor B
			or					
		★	CAD 8.7.2.15★2		Minor A			Minor A
	8.7.2.14.4	Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
			<b>8.7.2.15★1,★2 car weighed prior to alteration</b>					
	8.7.3.14	Car Frames and Platforms			Major	-	Major	
		3.15.	Car Frames & Platforms					
	8.7.3.15	Safeties	Car or Cwt (plunger gripper see 8.7.3.23.7)		↓ See Below ↓			
	8.7.3.15.1	Car Safeties			-	Major	mrr	Minor A
		3.17.1	Car Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.2	Counterweight Safeties			-	Major	mrr	Minor A
		3.17.2	Counterweight Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.3	Alteration to existing Car or Counterweight Safeties			Major	-	mrr	Minor A
		3.17(*)	Car and counterweight safeties and plunger gripper					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.16</b>	Governors and Governor Ropes			See <a href="#">8.7.2.19</a>			
	<b>8.7.2.19</b>	Speed Governors and Governor Ropes			Major	Major	↓ See Below ↓	
	8.7.2.19	2.18.	Speed Governors				mrr	Minor A
							see	
							8.6.3.6	
	8.7.2.19	2.17.15	Governor Rope Releasing Carriers				mrr	mrr
							see 8.6.3.9	
	8.7.2.19	Governor Ropes of different material or Construction to:					Minor B Minor B	
				2.18.6 Design of Gov'r Rope Retarding Means for Type B Safeties				
				2.18.7 Traction between Speed Governor Rope & Sheave				
				& testing to 2.17.3 Function and Stopping Distances of Safeties				
	<b>8.7.3.17</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22.(*)	Buffers & Bumpers					
		3.22.2	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.	Car and Counterweight Safeties					
		3.21.	Counterweights					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		2.18.(*)	Speed Governors					
		3.16.	Capacity & Loading					
		3.18.	Hydraulic Jacks					
		3.19.	Valves, Pressure Piping, and Fittings					
		3.20.	Ropes and Rope Connections					
		3.24.	Hydraulic Machines and Tanks					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.3.18</b>	Change in Class of Loading: [A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		3.16.	Capacity & Loading					



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.19</b>	<b>Carrying of Passengers on Freight Elevators</b>			Major	-		
		3.16.4	2.16.4 except 2.16.4.3					
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.16.4.9(a) to (e)					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					
	<b>8.7.3.20</b>	<b>Increase in Rated Load</b>			Major	-		
		2.26.1.4	Inspection Operation					
		2.26.1.5	Inspection Operation with Open Door Circuits					
		2.26.5	Monitor & Prevent Automatic Operation w/ Faulty Door Contacts					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		<a href="#">8.7.3.23.4</a>	Increase in Working Pressure					
	<b>8.7.3.21</b>	<b>Increase in Deadweight of Car (Car Wt+Rated Load &gt;5%)</b>			Major	-		
		3.14.	Car: Enclosure, Doors, Gates, Illumination		n/a			
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.24.5	Counterweight Sheaves					
		8.7.3.23.4	Increase in Working Pressure					
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★2						



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.22</b>	<b>Change in Rise or Rated Speed</b>			Major	-		
	<b>8.7.3.22.1</b>	<b>Increase or Decrease in Rise</b>			Major	-		
		3.25.	Terminal-Stopping Devices					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.4.1	Bottom Car Clearance					
		3.4.2	Minimum Bottom and Top Car Runby					
		3.4.3	Car Top and Bottom Maximum Runby					
		3.18.2	Plungers					
			If decrease in rise is at lowest end then;					
		2.2.4	Access to Pits					
		2.2.5	Illumination of Pits					
		2.2.6	Stop Switches					
	<b>8.7.3.22.2</b>	<b>Increase in Rated Speed</b>			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	New doors/gates to: Car: Enclosure, Doors, Gates, Illumination					
		3.17.(*)	Car and Counterweight Safeties					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.20.	Ropes and Rope Connections					
	<b>8.7.3.22.3</b>	<b>Decrease in Rated Speed</b>			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		2.18.2	Tripping Speeds for Speed Governors					
		3.16.	Capacity & Loading					
		3.16.3(b)	Capacity & data plates					
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	<b>8.7.3.23</b>	<b>Hydraulic Equipment</b>				↓ See Below ↓		
	<b>8.7.3.23.1</b>	<b>Alter / Install / Replace Hydraulic Jacks</b>			Major	-	Major	
		3.18.	Hydraulic Jacks				see 8.6.3.10.1	
	<b>8.7.3.23.2</b>	<b>Alter / Install / Replace Plungers</b>			Major	-	Minor A	
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.3</b>	<b>Alter / Install / Replace Cylinders</b>			Major	-	Minor A	
		3.18.3	Cylinders				see 8.6.3.10.2	
		3.18.3	Cylinder is Altered					
		3.18.3	Cylinder is Sleeved		Minor A			
		3.18.4.1	Metal Stops and/or Other Means					
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.4</b>	<b>Increase in Working Pressure &gt;5%</b>			Major	-		
		3.18.(*)	Hydraulic Jacks					
		3.19.(*)	Valves, Pressure Piping, and Fittings					
		3.24.1	Marking Plates					
		3.24.2	Tanks					
		3.24.3	Atmosphere Storage and Discharge Tanks					
		3.24.4	Welding					
	<b>8.7.3.23.5</b>	<b>Change in Location of Hydraulic Jack</b>			Major	-		
		Part 3	Hydraulic Elevators					
	<b>8.7.3.23.6</b>	<b>Relocation of Hydraulic Machine (Power Unit)</b>			Minor A	-		
		3.26.8	Pressure Switch					

0	1	2a	2b	2c	3	4	5	6
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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.23.7	Plunger Gripper			Minor A	Minor A		
		3.17.3	Plunger Gripper					
		3.1.1(b)	strength of pit floor					
		3.22.1	no strike when buffers compressed					
CAD	8.7.3.23.7 ★1	Removal of Plunger Gripper			Minor A	-		
		3.18.3	Cylinders					
		3.19.4.7	Overspeed Valves					
		3.4.2.1	Bottom Car Runby					
	8.7.3.24 (a)	Alter / Replace	Control Valves		Minor A	-		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Relief Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Check Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Pressure Piping or Fittings		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.25	Suspension Ropes and Their Connections			↓ See Below ↓			
	8.7.3.25.1	Change in Number of, or Diameter of Ropes			Major	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.1	Change in Material / Grade of Ropes			Minor A	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.2	Addition of Rope Equalizers			Minor B	Minor B		
		2.20.5	Suspension Rope Equalizers					
	8.7.3.26	Counterweights - Alteration of			See 8.7.2.22			
	8.7.2.22	Counterweights			Minor A	-		
	8.7.2.22.1	Alteration to any part of a cwt except guiding members						
		2.21.	Counterweights					
		3.21.	Counterweights					
		<a href="#">8.7.2.22.2</a>	Rod Type Counterweights					
		<a href="#">8.7.2.3</a>	Location and Guarding of Counterweights					
	8.7.2.22.2	Rod Type Cwt - can retain if:						
		Minimum of 2 suspension and 2 tie rods						
		Suspension rods:						
		2.21.2.1	Material - Cwt Frames & Rods					
		2.21.2.3	Factor of Safety					
		Tie Rods:						
		2.21.1.2	Retention of Weight Sections					
	8.7.2.22.3	Roller or similar guide shoes added				mrr		mrr
		safety jaws cannot touch rails if not activated						
	8.7.3.26	Counterweights - Addition of			-	Major		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.6.	Protection of Spaces below Hoistway					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.2	Counterweight Safeties					
		3.18.	Hydraulic Jacks					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		<a href="#">8.7.3.3</a>	Location and Guarding of Counterweights					
	8.7.3.27	Car Buffers and Bumpers			Major	-	mrr	Minor B
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.28</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%)			Major	-		
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	<b>8.7.3.29</b>	Alteration to	Tanks		Minor B	-	Minor B	
		3.24.	Hydraulic Machines and Tanks				see 8.6.3.10.4	
	CAD 8.7.3.29★1	★	Addition of Oil Cooler		Minor B		Minor B	
		8.7.3.8	Electrical Wiring, Pipes, and Ducts in H/W and M/C rooms					
		2.7.2	Maintenance Path and Clearance					
		3.10.	Guarding of Exposed Auxiliary Equipment					
	<b>8.7.3.30</b>	Terminal-Stopping Devices			Minor B	Minor B		
		3.25.	Terminal-Stopping Devices					
	<b>8.7.3.31</b>	Operating Devices and Control Equipment			↓ See Below ↓			
	<b>8.7.3.31.1</b>	Top-of-Car Operating Devices			Minor A	Minor A	mrr Minor A	
		3.26.2	Inspection Operation					
	CAD 8.7.3.31★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4	Inspection Operation					
	CAD 8.7.3.31★2	Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4	Inspection Operation					
		8.7.2.15★1,★2						
	<b>8.7.3.31.2</b>	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		3.26.3.2	Operation in Leveling or Truck Zone					
	<b>8.7.3.31.3</b>	Alter / Replace	Anti-Creep Leveling Device		Minor B	-	Minor B	
		3.26.3.1	Anti-Creep Operation				see 8.6.3.10.5	
	CAD 8.7.3.31★3	★	Door By-Pass Switches		Minor A	Minor A		
		2.26.1.5	Inspection Operation with Open Door Circuits					
	CAD 8.7.3.31★4	★	Door Monitoring System		Minor A	Minor A		
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					
	<b>8.7.3.31.4</b>	Change in Power Supply			Major	-		
		(a) voltage, frequency or # of phases or						
		(b) AC to DC , DC to AC or						
		(c) combination of DC & AC, then						
		electrical to:						
		3.26.1	Operating Devices and Control Equipment					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6(*)	Control and Operating Circuits					
	CAD 8.7.3.31★5	★	Addition of Soft Start			Minor A		
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					
		3.26.5	Phase-Reversal and Failure Protection					
	CAD 8.7.3.31★6	★	Addition of Power Efficiency Increasing Device			Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.31.5</b>	Controllers			Major	-		Major
	8.7.3.31.5(a)	Install / Replace	Elevator Controller					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.26.7	Recycling Operation for Multiple or Telescopic Plungers					
		3.26.8	Pressure Switch					
		3.26.9	Low Oil Protection					
		3.26.10	Auxiliary Power Lowering Operation					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.2	when E.P. Is provided					
		3.27.1	Phase 1 Emergency Recall Operation after Device Actuation					
		3.27.2	Phase 1 Emergency Recall Operation prior to Device Actuation					
		3.27.3	Device Actuation at Recall Level					
		3.27.4	Device Actuation with Phase II Emergency In-Car in Effect					
		If FEO previously present or required by OBC;						
		2.27.3	Firefighters' Emergency Operation - Automatic Elevators					
			2.27.3.1 Phase 1 Recall Operation					
			2.27.3.2 Phase 1 Recall Operation by FAID's					
			CAD 2.27.3.2.2					
			2.27.3.3 Phase 2 Emergency In-Car Operation					
			2.27.3.4 Interruption of Power					
			2.27.3.5 Multicompartment Elevators					
			see <a href="#">8.7.1.2</a> safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		2.27.9	Elevator Corridor Call Station Pictograph					
		If FEO NOT previously present or required by OBC;						
			CAD 2.27.3.2.2					
			2.27.3.1 Provide Phase 1 Manual Recall Operation Only					
	CAD 8.7.3.31 ★7	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	8.7.3.31.5(b)	Install / Replace	Door Controller		Minor A	-		Minor B
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.6	Change in Type of Motion Control			Major	-		
		2.11.1(*) Entrances and Emergency Doors Required 2.11.2 Types of Entrances 2.11.3 Closing of Hoistway Doors 2.11.4 Location of Horizontally Sliding or Swinging H/W Doors 2.11.5 Projection of Entrances & Equip. Beyond Land'g Sills 2.11.6(*) Opening of Hoistway Doors 2.11.8 Weights for Closing or Balancing Doors 2.11.9 Hoistway Door Locking Devices & Power Operation 2.11.11.8(*) Hoistway Door Safety Retainers 2.11.12.8 Pull Straps 2.12.(*) 2.12.5 Restricted Opening of Hoistway or Car Doors 2.12.6 Hoistway Door Unlocking Devices 2.12.7 Hoistway Access Switches 2.13. Power Operation of H/W Doors and Car Doors 2.14.(*) 2.14.1.7 car top railing 8.7.2.27.5(d) Capacity & Loading 2.17.(*) 2.18.(*) 3.25. Terminal Stopping Devices 3.26.(*) 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity						
		If FEO previously present or required by OBC; 2.27. Emergency Operation and Signalling Devices 2.27.1 Car Emergency Signalling Devices 2.27.2 Emergency or Standby Power Systems 2.27.3 Firefighters' Emergency Operation: Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's CAD 2.27.3.2.2 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see <a href="#">8.7.1.2</a> safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys If FEO NOT previously present or required by OBC; CAD 2.27.3.2.2 2.27.3.1 Provide Phase 1 Manual Recall Operation Only						

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.7	Change in Type of Operation Control - CPPB, Automatic			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		3.11.1	Protection of Hoistway Landing Openings					
		3.12.1	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		3.13.	Power Operation of H/W Doors and Car Doors					
		3.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.(*)	Operating Devices and Control Equipment					
		★ 2.7.9.2	Temperature and Humidity					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.3.31★8	★ Addition of Wander Patient Feature - Change in Operation Control			Minor B	Minor B		
		2.11.3.2	- doors closed when not in use					
		2.27.3.1.6(l)	- shall not prevent PHI					
	CAD 8.7.3.31★9	★ Addition of Restricted Access - Security / Floor Lock Out			Minor B	Minor B		
		OBC-3.2.6.5(4) - shall not prevent floor access When on FEO						
		D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use						
		2.27.3.1.6(l)	- shall not prevent PHI					
		2.27.3.3.1(i)	- permit travel to all landings when on PH II					
		2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II					
		DR 172/02	Elevators With Phase II Operation & Floor Button Controlled by Cards/Keys					
	8.7.3.31.8	Emergency Operation and Signaling Devices						
	8.7.3.31.8(a)	Car Emergency Signaling Devices			Minor B	Minor B		mrr
		2.27.1	Car Emergency Signaling Devices					
	8.7.3.31.8(b)	Emergency or Standby Power			Minor B	Minor A		
		2.27.2	Emergency Or Standby Power systems					

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		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.8(c)	Firefighter's Emergency Operation			Minor B	Minor A		
		3.27. Emergency Operation and Signaling Devices						
		3.27.1 PHI Emergency Recall Operation After Device Actuation						
		(a) low oil protection						
		(b) plunger follower guide protection						
		(c) auxiliary power lowering						
		(d) oil tank temperature shutdown						
		2.27 Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.3.31.8★10	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install			Minor B			
		conformance to auto recall based on F.S. at time of install						
	CAD 8.7.3.31.8★11	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
	8.7.3.31.9	Auxiliary Power Lowering Operation			Minor B	Minor B		
		3.26.10 Auxiliary Power Lowering Operation						
		include testing procedure						
	8.7.3.31.10	Removal of emergency stop switch on passenger elevators			Minor B	Minor B		
		remove all related markings / engravings & provide an in-car stop switch to:						
		2.26.2.21 In-car stop switch						
		2.26.4.3 Positively Opened Contacts						
		2.26.9.3.1(a) single failure does not render In-Car Stop Switch ineffective						
		3.26.4.2 deceleration rate <1g, anticreep must still function						
	8.7.3.31.11	Electrical Protective Devices					↓ See Below ↓	
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			Major	Major	mrr	Major
		if device meets 2.26.4.3.2 (PES)						
		3.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			-	Minor A	mrr	
		if device meets 2.26.4.3.1						
		3.26.2 Electrical Protective Devices - for specified device						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.4</b>	Alterations to Elevators w/other Types of Driving Machines						
	<b>8.7.4.1</b>	Rack and Pinion Elevators			Major	-		
		4.1.	Rack and Pinion Elevators					
	<b>8.7.4.2</b>	Screw-Column Elevators			Major	-		
		4.2.	Screw-Column Elevators					
	<b>8.7.4.3</b>	Hand Elevators			Major	-		
	<b>8.7.4.3.1</b>	Hoistway Enclosures and Machinery Space			Major	-		
		4.3.1	Hoistways, H/W Enclosures, and Related Construction					
		4.3.4	Enclosures for Machines and Control Equipment					
	<b>8.7.4.3.2</b>	Top Car and Counterweight Clearances			Major	-		
		4.3.3	Top Clearances					
	<b>8.7.4.3.3</b>	Hoistway Entrances			Major	-		
		4.3.6	Hoistway Entrances					
		4.3.7	Hoistway Gates for Landing Openings					
		4.3.8	Hoistway-Door & Hoistway Gate Locking Devices					
	<b>8.7.4.3.4</b>	Car Enclosures			Major	-		
		4.3.9	Car Enclosures					
		4.3.11	Car Frames and Platforms					
	<b>8.7.4.3.5</b>	Car Frame and Platform			Major	-		
		4.3.11	Car Frames and Platforms					
		4.3.12	Car Compartments					
		4.3.13	Cars Counterbalancing One Another					
		4.3.16	Suspension Means					
	<b>8.7.4.3.6</b>	Capacity and Loading			Major	-		
		4.3.14.1	Minimum Rated Load					
		4.3.14.2	Capacity Plate					
		4.3.19.1	Drive Machine & Sheaves - Factors or Safety					
		4.3.19.2	Driving-Machines					
		4.3.16	Suspension Means					
	<b>8.7.4.3.7</b>	Increase in Rise			Major	-		
		4.3.3.1	Top Car Clearances					
		4.3.3.2	Top Counterweight Clearance					
		4.3.15	Car Safeties					
		4.3.16	Suspension Means					
	<b>8.7.4.3.8</b>	Guide Rails and Fastenings			Major	-		
		4.3.18.1	Guide Rails - Material and Finish					
		4.3.18.2	Strength of Rails and Fastenings					
		4.3.18.3	Extension of Guide Rails at Top & Bottom of H/W					
	<b>8.7.4.3.9</b>	Overhead Beams and Supports			Major	-		
		4.3.5.1	Overhead Beams and Supports					
		4.3.5.2	Access to Machines and Sheaves					
	<b>8.7.4.3.10</b>	Power Attachments			Major	-		



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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.5	Alterations to Special Application Elevators						
	8.7.5.1	Inclined Elevators			Major	-		
		5.1.	Inclined Elevators compliance to specific 5.1 sections based on alteration scope			variance		
	8.7.5.2	Limited Use/Limited Application Elevators			See Electric or Hydraulic Elevator			
	CAD 8.7.5.2★1	★	8.7.2	Alterations to Electric Elevator & as modified in Section 5.2				
	CAD 8.7.5.2★2	★	8.7.3	Alterations to Hydraulic Elevator & as modified in Section 5.2				
	8.7.5.5	Power Sidewalk Elevators			Major	-		
	8.7.5.5.1	Changes in Electrical Wiring or Electrical Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
	8.7.5.5.2	Sidewalk Door			Major	-		
		5.5.1.11.2	Horizontal Openings in Sidewalks and Exterior Areas					
		5.5.1.11.3	Hinged Type Swing Sidewalk Doors					
		5.5.1.11.4	Vertical Lifting Sidewalk Covers					
	8.7.5.5.3	Change in Car Enclosure, Car Doors, and Gates			Major	-		
		5.5.1.14	Car Enclosure, Car Doors and Gates, Illumination					
	8.7.5.5.4	Bow-Irons and Stanchions			Major	-		
		5.5.1.15.2	Bow-Irons and Stanchions					
	8.7.5.5.5	Increase in Rated Load			Major	-		
		5.5.1.16	Capacity and Loading					
		5.5.1.18	Speed Governors					
		5.5.1.21	Buffers and Bumpers					
		5.5.1.25.4	Maximum Rated Speed					
	8.7.5.5.6	Increase in Rated Speed			Major	-		
		5.5.1.15	Car Frames and Platforms					
		5.5.1.16	Capacity and Loading					
		5.5.1.19	Suspension Ropes					
		5.5.1.22	Guide Rails					
	8.7.5.5.7	Existing Driving Machine			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.9	Machinery and Sheave Beams, Supports, and Foundations					
		5.5.1.23	Driving Machines and Sheaves					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.5.8	Change in Type of Operating Devices and/or Control Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.6	Rooftop Elevators			Major	-		
		5.6.	Rooftop Elevators					
	8.7.5.7	Special Purpose Personnel Elevators			see CAN/CSA B311			

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		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.1</b>	Alterations to Escalators						
	8.7.6.1.1	Change to component parts			mrr	-		mrr
		8.6.12.4.1.1 Replacement parts or components						
		8.6.12.4.1.2 Quality of Work						
	8.7.6.1.1	Addition of Components or Devices			see <a href="#">8.7.6.1</a>			-
		see applicable <a href="#">8.7.6.1</a> requirements for that device						
	<b>8.7.6.1.2 (a)</b>	Relocation of Escalator			New	-		
		6.1. Escalators						
	<b>8.7.6.1.2 (b)</b>	Repositioning of Escalator			Major			
	CAD 3.18	★ Repositioning of Escalator (within the same building)						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
		6.1.3.4.3 Guards						
		6.1.3.6.3 Adjacent Floor Surfaces						
		6.1.3.6.4 Safety Zone						
		6.1.3.12 Headroom						
		6.1.3.13 Welding						
		6.1.6.9 Signs						
		6.1.7.4.1 Electrical equipment						
		8.7.6.1.3 Protection of Floor Openings						
	<b>8.7.6.1.3</b>	Protection of Floor Openings			Minor A	-		
		6.1.1.1 Protection Required						
	<b>8.7.6.1.4</b>	Protection of Trusses and Machinery Spaces Against Fire			Minor A	-		
		6.1.2.1 Protection Required						
	<b>8.7.6.1.5</b>	Construction Requirements						
	8.7.6.1.5(a)	Construction Requirements - Angle of Inclination			Major	-		
	8.7.6.1.5(b)	Construction Requirements - Geometry			Major	-		
		6.1.3.2 Geometry						
	8.7.6.1.5(c)	Any Alteration to the Balustrades			Minor A	Minor A		
		6.1.3.3 Balustrades						
		6.1.3.3.1 Construction						
		6.1.3.3.2 Strength						
		6.1.3.3.3 Use of Glass or Plastic						
		6.1.3.3.4 Interior Low Deck						
		6.1.3.3.5 Loaded Gap between Skirt & Step						
		6.1.3.3.6 Skirt Panels						
		6.1.3.3.7 Dynamic Skirt Panels						
		6.1.3.3.8 Dynamic Skirt Panel Loaded Gap						
		6.1.3.3.9 Step/Skirt Performance Index						
		6.1.3.3.10 Skirt Deflector Devices						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
	8.7.6.1.5(d)	Deflector Devices			Minor B			mrr
		6.1.3.3.10 Skirt Deflector Devices						
	<b>8.7.6.1.6</b>	Handrails or Handrail System			Minor A	-		
		6.1.3.2.2 Geometry - Handrail						
		6.1.3.4.1 Handrails - Type Required						
		6.1.3.4.2 Extension Beyond Combplate						
		6.1.3.4.3 Guards (hand or finger)						
		6.1.3.4.4 Handrails - Splicing						
		6.1.3.4.6 Handrail Clearance						
		6.1.6.3.12 Handrail Entry Device						
		6.1.6.4 Handrail Speed Monitoring Device						
	CAD 8.7.6.1★1	★ Addition of Handrail Advertising			mrr	variance		
		Variance to 6.1.6.9.2						

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		Part, Section or Requirement			Modification Change	Addition	Same	Different Make/Model
Job Reference:		Superseded by Rev			Type of Submission Required			
	<b>8.7.6.1.7</b>	Step System - any alteration to the step system			Major	-	mrr	Minor B
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5 (*)	Steps					
		6.1.3.6	Entrance and Egress Ends					
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.4	Factor of Safety - Steps					
		6.1.3.11	Chains					
		6.1.6.3.3	Broken Step-Chain Device					
		6.1.6.3.9	Step Upthrust Device					
		6.1.6.3.11	Step Level Device					
		6.1.6.3.14	Step Lateral Displacement Device					
		6.1.6.5	Missing Step Device					
	<b>8.7.6.1.8</b>	Combplates			Minor A	-		
		6.1.6.3.13	Comb-Step Impact Devices					
	<b>8.7.6.1.9</b>	Trusses and Girders			Major	-		
		<a href="#">8.7.1.4</a>	Welding					
		6.1.3.7	Trusses of Girders					
		6.1.3.9.1	Structural Load					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
	<b>8.7.6.1.9</b>	New Escalator into Existing Trusses			New	-		
		6.1.	Escalators					
	<b>8.7.6.1.10</b>	Step Wheel Tracks			Major	-		
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
		<a href="#">8.7.1.4</a>	Welding					
	<b>8.7.6.1.11</b>	Rated Load and Speed			Major	-		
		6.1.	Escalators					
	<b>8.7.6.1.12</b>	Driving Machine, Motor, and Brake						
	8.7.6.1.12(a)	Driving Machine			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.4	Broken Drive-Chain Device					
		6.1.6.3.8	reversal Stop Device					
	8.7.6.1.12(b)	Driving Motor			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.2	Speed Governor					
		6.1.6.3.8	reversal Stop Device					
		6.1.6.3.10	Disconnected Motor Safety Device					
	8.7.6.1.12(c)	Machine Brake			Major	-		
		6.1.3.9.3	Brake					
		6.1.3.10.2	Factor of Safety - Driving Machine Parts					
		6.1.5.3.1	Escalator Driving-Machine Brake					

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	<b>8.7.6.1.13</b>	<b>Operating and Safety Devices</b>			Minor A	Minor A		
		6.1.6	Operating and Safety Devices (for that device)					
	CAD 8.7.6.1★2	★	Removal of step demarcation lights		Minor A	-		-
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5.4	Clearance between Steps					
		6.1.3.5.5	Slotting of Steps and Treads					
		6.1.3.5.6	Step Demarcation					
		6.1.3.6.2	Distinction Between Comb and Step					
	<b>8.7.6.1.14</b>	<b>Lighting, Access, and Electrical Work</b>			Minor B	Minor B		
		6.1.7	Lighting, Access, and Electrical Work					
	<b>8.7.6.1.15</b>	<b>Entrance and Egress</b>			Major	-		
		6.1.3.6.1	Combplates					
		6.1.3.6.2	Distinction Between Comb and Step					
		6.1.3.6.3	Adjacent Floor Surfaces					
		6.1.3.6.4	Safety Zone					
	<b>8.7.6.1.16</b>	<b>Controller</b>			Major	-		-
		6.1.6.10	Control and Operating Circuits					
		6.1.6.11	Electrically Power Safety Devices					
		6.1.6.12	Installation of Capacitors.. To Make EPD's Ineffective					
		6.1.6.13	Completion of Maintenance Circuits					
		6.1.6.14	Escalator Manual Reset					
		6.1.6.15	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.1★3	★	Controller - Replacement of <a href="#">8.7.6.1.16</a> Controller		-	-		Major
	CAD 8.7.6.1★4		Relocation of Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.1★5	★	Addition of Soft start for control systems built to B44-00 and later		-	Minor A		
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.1★6	★	Addition of Power Efficiency Increasing Device		-	Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.6.2</b>	Alterations to Moving Walks						
	8.7.6.2.1	Change to component parts 8.6.12.4.1.1 Replacement parts or components 8.6.12.4.1.2 Quality of Work			mrr	-		mrr
	8.7.6.2.1	Addition of Components or Devices see applicable <a href="#">8.7.6.2</a> requirements for that device			see <a href="#">8.7.6.2</a>			-
	<b>8.7.6.2.2</b>	Relocation of Moving Walk 6.2. Moving Walks			New	-		
	<b>8.7.6.2.3</b>	Protection of Floor Openings 6.2.1.1 Protection Required			Minor A	-		
	<b>8.7.6.2.4</b>	Protection of Trusses and Machinery Spaces Against Fire 6.2.2.1 Protection of Supports - Protection Required			Minor A	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Angle of Inclination 6.2. Moving Walks			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Geometry 6.2.3.2 Geometry			Major	-		
	<b>8.7.6.2.5</b>	Construction Requirements - Balustrades 6.2.3.3 Balustrades			Minor A	Minor A		
	<b>8.7.6.2.6</b>	Handrails 6.2.3.2.3 Geometry - Handrail 6.2.3.4 Handrails 6.2.6.3.10 Handrail Entry Device 6.2.6.4 Handrail Speed Monitoring Device			Minor A	-		
	<b>8.7.6.2.7</b>	Treadway System 6.2.3.2.3 Geometry - Handrail 6.2.3.3.5 Skirtless Balustrade 6.2.3.3.6 Skirt Panels 6.2.3.5 Pallet-Type Treadway 6.2.3.6(*) Belt-Type Treadway 6.2.3.8 Entrance and Egress Ends 6.2.3.9 Supporting Structure 6.2.3.10.4 Pallet 6.2.3.11.4 Pallet Factor of Safety 6.2.3.11.5 Belt Factor of Safety 6.2.3.12 Chains 6.2.6.3.3 Broken Treadway Device 6.2.6.5 Missing Pallet Device 6.2.6.3.9 Pallet Level Device			Major	-		
	<b>8.7.6.2.8</b>	Combplates 6.2.3.8 Entrance and Egress Ends 6.2.6.3.11 Comb-Pallet Impact Devices			Minor A	-		
	<b>8.7.6.2.9</b>	Trusses and Girders <a href="#">8.7.1.4</a> Welding 6.2.3.9 Supporting Structure 6.2.3.10.1 Structural Load 6.2.3.12.1 Trusses & Supports based on max static load			Major	-		
	<b>8.7.6.2.9</b>	New Moving Walk into Existing Truss 6.2. Moving Walks			New	-		
	<b>8.7.6.2.10</b>	Track System 6.2.3.9 Supporting Structure 6.2.3.10 Rated Load 6.2.3.11.1 Trusses & Supports based on max static load <a href="#">8.7.1.4</a> Welding			Major	-		
	<b>8.7.6.2.11</b>	Rated Load and Speed 6.2. Moving Walks			Major	-		

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11-r1 Scope of Alteration - B44 - 2010 as amended by CAD 261/13 Part, Section or Requirement			Type of Alteration Work			
		Job Reference: <b>Superseded by Rev</b>			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.6.2.12	Driving Machine			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.3.14	V-Belt Drives					
		6.2.3.15	Headroom					
		6.2.4	Rated Speed					
		6.2.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
		6.2.6.3.4	Broken Drive-Chain Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Drive Motor			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.4	Rated Speed					
		6.2.5.2	Driving Motor					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.6.3.2	Speed Governor					
		6.2.6.3.7	Reversal Stop Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Machine Brake			Major	-		
		6.2.3.10.3	Brake					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
	8.7.6.2.13	Operating and Safety Devices			Minor A	Minor A		
		6.2.6	Operating and Safety Devices (for that device)					
	8.7.6.2.14	Lighting, Access, and Electrical Work			Minor B	Minor B		
		6.2.7	Lighting, Access, and Electrical Work					
	8.7.6.2.15	Controller - Installed as part of an alteration			Major	-		-
		6.2.6.9	Control and Operating Circuits					
		6.2.6.10	Electrically Power Safety Devices					
		6.2.6.11	Installation of Capacitors.. To Make EPD's Ineffective					
		6.2.6.12	Completion of Maintenance Circuits					
		6.2.6.13	Moving Walk Manual Reset					
		6.2.6.14	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.2★1	★ Controller - Replacement of			-	-		Major
		<a href="#">8.7.6.1.16</a>	Controller					
	CAD 8.7.6.2★2	Relocation of	Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.2★3	★ Addition of Soft start			-	Minor A		
			for control systems built to B44-00 and later					
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.2★4	★ Addition of Power Efficiency Increasing Device			-	Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251-11-r1</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13</b> <b>Part, Section or Requirement</b> <b>Job Reference:</b> <span style="color: blue; font-size: 1.2em;">Superseded by Rev</span>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.7</b>	Alterations to Dumbwaiters and Material Lifts						
	<b>8.7.7.1</b>	Dumbwaiters and Material Lifts Without Automatic Transfer Devices			Major	-		
		Alteration to a Power and Hand Dumbwaiters			Major	-		
		7.1.	Power and Hand Dumbwaiters					
		7.2.	Electric and Hand Dumbwaiters					
		7.3.	Hydraulic Dumbwaiters					
		Alteration to a Material Lifts			Major	-		
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.1.1</b>	General Alterations other than 8.7.7.1.2			Major	-		
		Part 7	Dumbwaiters and Material Lifts					
	<b>8.7.7.1.2</b>	Increase in Rated Load			Major	-		
		7.2.(*)	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.(*)	Hydraulic Dumbwaiters w/o Transfer Devices					
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.2</b>	Addition of Automatic Transfer Device			Major	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.1</b>	Material Lifts and Dumbwaiters With Automatic Transfer Devices			N/A	N/A		
		exempt if requirements of CAD 2.3(j) are met						
	<b>8.7.7.3.2</b>	Material Lifts and Dumbwaiters - remove Transfer Device			New	-		
		7.1. to 7.3.	for Dumbwaiters					
		7.4. to 7.6	Material Lifts w/o Transfer Devices					
	<b>8.7.7.3.3</b>	Material Lifts altered to an Elevator			New	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.4</b>	Material Lift or Dumbwaiter w/ Transfer Device Altered to a D/W			New	-		
		7.1.	Power and Hand Dumbwaiters w/Auto Transfer Devices					
		7.2.	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.	Hydraulic Dumbwaiters w/o Transfer Devices					
		Alterations to Freight Platform Lifts						
	<b>CAD 8.7.7★1</b>	★	Alteration to a Type 'A' Freight Platform Lift		Major	-		
		7.4.	as applicable to Material Lifts Type 'B' +					
		7.5.	as applicable to Material Lifts Type 'B' +					
		7.6.	as applicable to Material Lifts Type 'B' +					
			+ excluding requirements related to in-car operating devices & Riders					
	<b>CAD 8.7.7★2</b>	★	Alteration to a Type 'B' Freight Platform Lift		Major	-		
		7.4.	as applicable to Material Lifts Type 'B'					
		7.5.	as applicable to Material Lifts Type 'B'					
		7.6.	as applicable to Material Lifts Type 'B'					



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 251 / 11	Rev. No.: 2
	<b>GUIDELINE</b>	Date: February 13, 2012

**Subject:** Alterations Guideline and Alteration Checklist for  
A17.1-2010 / CSA B44-10 Safety Code for Elevators and Escalators as amended by 261/13-r1  
**Sent to:** All Elevator Contractors

**1. Effective Date**

1.1 This Directors Guideline – revision 2 becomes effective September 15, 2013 and is to be used in conjunction with alterations performed under the 2010 edition of A17.1/B44, as adopted in Code Adoption Document (CAD) Amendment 261/13-r1.

**2. Introduction**

2.1 The purpose of this Director's Guideline, in conjunction with Code Adoption Document (CAD) Amendment 261/13-r1, is to;

- (a) advise which types of upgrades are classified as alterations
- (b) indicate the format of the design submission required (see O.Reg 209/01 s.15), by categorizing the scope of work as "major", "minor A" or "minor B"
- (c) provide instruction on the use and submittal of the alteration checklist,
- (d) provide a summarized list of requirements associated with a given alteration scope via a checklist
- (e) supplement the adoption of section 8.7 Alterations in A17.1/B44 as detailed in Section 3.4 of the CAD.

**3. Alterations**

3.1 Work performed on an elevating device other than worked performed as maintenance, repair, or replacement is an alteration. Part 8, Section 8.6 of B44-10 as amended in CAD 261/13-r1 deals with "Maintenance, Repairs, Replacements and Testing", while Section 8.7 as amended in CAD 261/13-r1 deals with "Alterations".

3.2 This guideline captures the Alteration requirements of Section 8.7 (as amended in CAD 261/13-r1) and displays these requirements in a checklist format (see figure 2).

3.3 Type of Alteration Work

Columns 3 to 6 of the Alteration Checklist (see figure 2 for sample) classify the type of work as one of the following types:

- (a) **Alteration: Modification / Change** (column 3)  
means a change to the original design or characteristics of a component, assembly or the device as a whole, such as material, strength, size, dimension, rating, setting, function, operational mode, design parameters etc., whereby the change may be made on existing equipment or by substituting new modified equipment.  
Note that a change of the component make or model, without any other change, may constitute an alteration under requirements of CAD 261/13-r1 (see item (d) below).
- (b) **Alteration: Addition** (column 4)  
means addition of a new component or a design feature, not previously provided e.g. addition of top-of-car operating devices.
- (c) **Replacement with same** (column 5)



- means the substituted device, assembly or component is the same as the original, and either;
- (i) requirements within B44 Section 8.6.3 as amended by CAD 261/13-r1 classify the specific replacement as an alteration and require that the substituted component and/or the elevating device as a whole meet the specific requirements of the latest Code edition, or
  - (ii) sections 8.6 of B44 as amended by CAD 261/13-r1 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission

- (d) **Replacement with different make and model** (column 6)  
 means that the substituted device, assembly or component is the same as the original in its design, performance and safety characteristics, except that it is of a different make and/or model and the B44 code as amended by CAD 261/13-r1 recognizes the replacement of the noted item as an alteration, and requires an appropriate submission.

*Note: In addition to the work described in 3.3 and listed in the Alteration Checklist, any other work performed on an elevating device that results in a change to the inherent safety or operational characteristics **constitutes an alteration** per 2.6.2 of the CAD, even though there may be no change in the original design. The list of alterations in the attached Alteration Checklist is not all-inclusive.*

#### 4. **Type of Design Submission**

4.1 Columns 3, 4, 5, and 6 of the alteration checklist contain information needed to determine the type of submission required.

4.2 By selecting the alteration scope (see column 1 of the Alteration checklist, see also B44 Section 8.7 as amended by CAD 261/13-r1), the submission type is identified in columns 3, 4, 5, & 6. These entries are may be listed as one of the following:

Major	-	means Major alteration
Minor A	-	means Minor alteration type A
Minor B	-	means Minor alteration type B
Blanks (columns 5&6)	-	work that would not constitute an alteration
mrr	-	this work may proceed as a maintenance repair and replacement activity, and no submission is required
n/a	-	means TSSA has permitted an exception to a compliance requirement (for the noted alteration scope) however, if another alteration activity requires compliance, the n/a exemption no longer applies
New	-	means, not an alteration but a new installation
†	-	means that no inspection is required following the alteration
variance	-	this activity can only be considered after approval of a variance

Note: The checklist also utilizes a star symbol (★). This symbol is used to identify TSSA designated alterations or to identify a supplemental TSSA requirement.

#### 5. **Requirements for Design Submissions and Inspections**

5.1 A design submission or notification (in the case of a Minor B) must clearly specify, for each alteration covered, whether the type of the alteration work is a "modification", or "addition", or "replacement".

5.2 Where multiple alterations scopes are undertaken, the "highest ranking" submission shall define the submission type.

Example: An alteration combination of Minor B and Major will be designated as a Major alteration.

##### 5.2.1 **Major Alteration:**

5.2.1.1 The design submission shall be registered before the major alteration commences, except as permitted in subsection 7(2) of O.Reg 209/01.

5.2.1.2 The alteration shall be inspected by TSSA prior to returning the device to service for public use.

## 5.2.2 Minor Alteration type A and B:

- 5.2.1.1 According to Section 19 of O.Reg 209/01, the design submission shall be submitted for registration not later than 30 days after returning the elevating device to service. Contractors are advised to submit alteration documents in advance of the work start to ensure that no expense will be incurred should the registration of the proposed design or a requested variance be rejected.

Minor A and B alterations are permitted to be returned to service after work completion, however, the contractor who completed the alteration shall ensure that a “special inspection” has been requested within 60 days after returning the elevator to service. The contractor shall arrange and conduct any tests required by the inspector. A registered design submission or notification shall be available at the time of inspection.

## 5.3 Signatures

- 5.3.1 According to subsection 15.(6) of O.Reg 209/01, all individual documents composing the design submission for any Major or Minor A alteration shall bear the **signature and seal, or electronic equivalent, of the professional engineer** who prepared or approved the design submission.
- 5.3.2 In the case of Minor B alterations, per O.Reg 15.(9), the design submission documents (or Notification) may be signed by an officer or director of the company applying for registration if the officer or director is a mechanic or if the document is signed by a mechanic with an appropriate certificate who either performed or supervised the work to which the design submission relates.
- 5.3.3 Minor B’s that are electronically transmitted shall be deemed acceptable provided that the signature box of the Minor B Notification form contains the name, designation and mechanic license number of a registered and licensed mechanic who supervised and is competent to oversee the scope of the minor B alteration.  
Example: Signature: John Smith, EDM-A, 00999999

## 5.4 Specification Forms

- 5.4.1 Alterations should be submitted on the appropriate Specification Sheets (depending on device type) and should itemize all entries that are **Directly** and **Indirectly** affected by the alteration scope.

Example: Cab Interior Modification resulting in an increase in cab weight

- Directly affected are interior finishes and flame ratings
- Indirectly affected are items such as: rope factor of safety (for electric & roped hydraulic elevators) or cylinder column strength (for hydraulic elevators)
- Sufficient details are to be provided to show compliance verification.

A list of altered components must also be summarized on the submission (typically box 4000).

- 5.4.2 Items which are not affected by the alterations should be noted with either:
- **N/C** or **No Change** or
  - The **Original Entry** followed by **Existing**. Example Car Wt.: **1812 kg - Existing**

- 5.4.3 Where a “major alteration” or “minor alteration” affects only a very few items, the abridged form may be used instead of the full specification form provided clarity of the submission is not compromised. The Abridged form should specify: box numbers, descriptions, and new entry values.  
(Example: 1670. Maximum System Pressure: 3445 kPa)

- 5.4.4 Some predefined templates exist for Minor B type alterations and are available from the TSSA web site. These templates shall be utilized where appropriate to ensure all relevant entries are completed and included in the submission. Multiple Minor B notification templates may be utilized to fully cover the scope of work and only one Minor B fee shall apply.

## 5.5 Submitting an Alteration Checklist

- 5.5.1 The design submission for a Major or Minor A alteration must include an Alteration Checklist to assist in demonstrating compliance with Section 8.7 of the code as amended by CAD 261/13-r1 or any other items listed in Column 1 of the Checklist and must clearly specify the following:

- (a) The scope of the alteration shall be identified with an 'X' in column 0 adjacent to each column 1 item that is part of the primary scope of the alteration
- (b) All relevant sub requirements identified in column 2b shall be identified with an 'x' placed in column 0 to signify the sub requirement was has been given engineering consideration and/or modified. Optional: If desired items which where given engineering consideration but not changed, or deemed not applicable to a given installation may be marked with 'r' to indicate reviewed.

5.5.2 An Alteration Checklist is not required for Minor B Notifications.

5.5.3 Sections of the Alteration Checklist, which are not included in the scope of the alteration work, may be hidden (using the row-hide feature in excel) prior to printing the Checklist, in order to reduce the number of printed pages accompanying a submission.

**5.5.4 To assist our clients in completing the Alteration Checklist, TSSA will post on its Website ([www.tssa.org](http://www.tssa.org)) a fillable version of the Alteration Checklist in excel format (ED-251-11r1.xls).**

5.5.5 The **B44-10 reference numbers**, shown in column 1 and which are marked with 'X' in the Alterations Checklist, (also shown in **BOLD** font), are **those items that are required to be shown on the Code Data Plate** as per section 8.9 of B44.

5.5.6 The attached Alteration Checklist forms part of this guideline.

## 6 Alteration Checklist

6.1 The Alteration Checklist provides useful information to: contractors, submitting engineers, reviewing engineers and inspectors to assist in determining:

- the scope of the alteration,
- requirements associated with specified scope
- exemptions to a requirement (where n/a is shown)
- additional TSSA requirements (where ★ is shown)
- type of submission required (Major, Minor A or B) (See Fig 1)

6.2 Parts of the Checklist (See Fig 2)

### 6.2.1 Column 0:

Submitter's shall mark Column 0 with 'X' to identify the scope and applicable sub-requirements that received engineering consideration.

- Sub-requirements related to the alteration are mandatory and shall be identified with an 'x', except where the sub requirement is unrelated to the device being altered. (see Fig.2 Note E)

B44-10 Reference Number	Job Reference:	Type of Alteration
8.7.1.2	Alterations not specifically covered by 1.2	Level Safety shall not be diminished
8.7.1.4	Welding	8.8 Welding
8.7.1.7	Repairs and Replacements	8.7.1.5 Design / Weld Engineer 8.6.2 for repairs 8.6.3 for replacements
8.7.2	<b>Alterations to Electric Elevators</b>	
8.7.2.1	Hoistway Enclosures	Major Major
8.7.2.1.1	Hoistway Enclosure Walls	Major Major
	2.1.1 Hoistway Enclosures	
	2.1.5 Windows and Skylights	
	2.1.6 Projections, Recesses and Setbacks in HW	
	2.5 Horizontal Car and Counterweight Clearances	
	2.7.3.4.6 Access Doors and Openings	
	2.7.3.4.7 Access Doors and Openings	
	2.8 Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms	
	8.7.2.10 Entrances and Hoistway Openings if change includes an entrance	
	2.11.1 Entrances and Emergency Doors Required (if take HW)	
8.7.2.1.2	Addition of Elevator to Existing Hoistway	Major
	8.7.2.1.2.1 New Installation	Major
	2.5 Horizontal Car and Counterweight Clearances	Major Major
8.7.2.1.3	Construction at Top of Hoistway	Major Major
	2.1.2.1 Floor Over Hoistway	
	2.1.3 Construction at Bottom of Hoistway	Major Major
8.7.2.1.4	Construction at Bottom of Hoistway	Major Major
	2.1.2.2 Strength of Pit Floor	
	2.2 Pits	
	8.7.2.4 Vertical Car & Cwt Clearances & Runbys	Major Major
8.7.2.1.5	Control of Smoke and Hot Gases	Major Major
	2.1.4 Control of Smoke and Hot Gases	
8.7.2.2	Pits	Major
	2.2 Pits	
	2.1.2.3 Strength of Pit Floor	
	8.7.2.4 Vertical Car & Cwt Clearances & Runbys	
8.7.2.2	Pit Drains & Sumps	Minor B Minor A
	2.2.2 Pit Drains	
8.7.2.2	Pit Guards	Minor B Minor A
	2.2.3 Guards Between Adjacent Pits	
8.7.2.2	Pit Access	Minor B Minor A
	2.2.4 Pit Access	
8.7.2.2	Pit Illumination	Minor B Minor A
	2.2.5 Illumination of Pits	
8.7.2.2	Pit Stop Switches	Minor B Minor A
	2.2.6 Stop Switches	
8.7.2.2	Pit Depth	Minor B Minor A
	2.2.7 Minimum Pit Depths Required	
8.7.2.2	Access to Underside of Car	Minor B Minor A
	2.2.8 Access to Underside of Car	
8.7.2.3	Location and Guarding of Counterweights	Major Major
	2.3 Location and Guarding of Counterweights	
	2.5.1.2 Between Car & Cwt and Cwt Guide	
	2.6 Protection Devices Below HW	

Fig. 1

### 6.2.2 Column 1:

Column 1 contains the Alteration section numbers from B44 as amended by CAD 261/13-r1, as well as specifically noted TSSA alterations.

TSSA alterations are denoted as follows;

- 8.7.2.12★1 ★1 denotes the first TSSA designated alteration under section 8.7.2.12
- 8.7.2.12★2 ★2 denotes the second TSSA designated alteration under section 8.7.2.12

### 6.2.3 Column 2a, 2b and 2c:

Column 2 describes the scope and applicable alteration sub requirements.

- Column 2a is the primary title of the alteration activity (e.g. interlocks)
- Column 2b is the list of sub requirements by reference number (e.g. 2.12.1, 2.12.2...)

- Column 2c is a text description of the referenced sub requirement. (e.g. General, Interlocks,...)

6.2.4 Column 3, 4, 5 and 6:

The headings of Columns 3 to 6 define the “Type of Alteration Work” as Modification Change, Addition, Replacement with Same, and Replacement with Different. See 3.3 of this guideline.

The contents of Columns 3 to 6 define the “Type of Design Submission” as, Major Alteration, Minor A Alteration, or Minor B – Notification. See 4 of this guideline.

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251-11 Scope of Alteration - B44 - 2010 as amended by CAD 250/11 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2</b>	<b>Alterations to Electric Elevators</b>						
	<b>8.7.2.1</b>	Hoistway Enclosures			Major	Major		D
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices				↓ See Below ↓		
X	<b>8.7.2.11.1</b>	Interlocks	A		-	Major	mrr	Minor B
X		2.12.1	General					
X		2.12.2	Interlocks					
X		2.12.4	Listing/Certification Locking Devices					
X		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)					
X		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	C
X		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
X	<b>8.7.2.12</b>	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
X		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts					
X		<a href="#">8.7.2.10.2</a>	Horizontal Slide-Type Entrances					
		<a href="#">8.7.2.10.3</a>	Vertical Slide-Type Entrances	E				
X		<a href="#">8.7.2.10.4</a>	Marking of Entrance Assemblies					
X		2.13.	F	Power Operation of Hoistway Doors and Car Doors				
X	<b>8.7.2.12★1</b>	★ Replacement of Door Operator			-	-	mrr	Minor B
X		2.13.	Power Operation of Hoistway Doors and Car Doors					
	<b>8.7.2.15</b>	Car Frames and Platforms				↓ See Below ↓		
	<b>8.7.2.15.1</b>	Alterations to Car Frames and Platforms			Major	-		Major
X	<b>8.7.2.15★1</b>	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
X		8.7.2.15★1(a)	cars weighed prior to alteration					
X		8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
X		8.7.2.15★1(c)	weight change recorded on auxilliary data tag					
X		8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					


 Fig 2 – Sample Alteration Checklist

Figure 2 Notes:

- A – indicates 8.7.2.11.1 Interlocks is part of the alteration scope
- B – indicates which sub-requirements have been included (note: 2.12.5 was excluded as permitted by exemption note C)
- C – n/a denotes that TSSA has made this requirement optional (note: contractor opted to include requirement 2.12.6 & 7)
- D – specifies the submission type
  - In the Interlock example a Minor B alteration is required to be submitted
  - In the Power Operation of H/W Doors example a Minor A is required (entire submission is a therefore a Minor A)
- E – this sub-requirement, related to vertical slide entrances, was not selected as it is not applicable to the installation
- F – compliance to 2.13 is a TSSA-designated supplemental requirement as denoted by the ★ symbol
- G – shows two TSSA-designated alterations, one denoted as 8.7.2.12★1, the other 8.7.2.15★1.

Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards & Safety Act, 2000*

*This Director's Guideline has been developed in consultation with the TSSA Elevating Devices Advisory Council.*

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Putting Public Safety First



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.1.2	Alterations not specifically covered in 8.7						
		1.2	Level of safety shall not be diminished					
	8.7.1.4	Welding						
		8.8	Welding					
		8.7.1.5	Design / Weld Engineer					
	8.7.1.7	Repairs and Replacements						
		8.6.2	for repairs					
		8.6.3	for replacements					
	8.7.2	<b>Alterations to Electric Elevators</b>						
	8.7.2.1	Hoistway Enclosures			Major	Major		
	8.7.2.1.1	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	8.7.2.1.2	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	8.7.2.1.3	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.4	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.1.5	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	8.7.2.2	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	8.7.2.2	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	8.7.2.2	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	8.7.2.2	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	8.7.2.2	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	8.7.2.2	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	8.7.2.2	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	8.7.2.3	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		2.6.	Protection of Space below H/W					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		2.4.	Vertical Clearances & Runbys for Cars & Cwts					
		<a href="#">8.7.2.17.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
		<a href="#">8.7.2.25.2</a>	Change in Location of Driving Machine					
	<b>8.7.2.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.2.17.2</a>	Increase in Rated Speed					
	<b>8.7.2.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		2.6.	Protection of Space below H/W					
	<b>8.7.2.7</b>	Machinery Spaces, Machine Rooms Control Spaces and Control Rooms			↓ See Below ↓			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7						
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		-	Major		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		OESC	Electrical Equipment Clearances		Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B		mrr
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch for Machinery Space or Control Spaces					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in Machine Rooms/Spaces, Control Room/Spaces					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		(a) 2.7.2	Maintenance Path and Clearance					
		(b) 2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		(c) 2.10.1	Guarding of Equipment					
		(d)	openable/removable only with tools					
		(e)	operating/work instruction for accessing equipment					
		(f)	clearances in front of electrical control equipment (1000mm)					
		(g)	or clearance required at time of original control installation					
		(g)	access in front of / space to operate main disconnect (1000mm),					
		(g)	or (750mm) if permitted at time of original installation					
		(h)	Installation by registered contractor					
		(i)	designed to be handled by one person					
	<b>8.7.2.8</b>	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's & M/C Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
			CSA Labeling (or equivalent)					
			OESC, CSA C22.1 as required					
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.2.9</b>	Machinery and Sheave Beams, Supports, and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
			adequacy of building structure verified by P.Eng.					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-	Major	Major
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
		Installed New components to meet:						
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	hanger /track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

0	1	2a	2b	2c	3	4	5	6	
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement  Job Reference:			Type of Alteration Work				
					Alteration		Replacement with		
					Modification Change	Addition	Same	Different Make/Model	
					Type of Submission Required				
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below		
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major		
		2.11.12	Entrances, Vertical Slide Type						
		Installed New components to meet:							
	sills (a)	2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B		
		2.11.12.1	Landing Sills						
	frames (b)	2.11.12.2	Entrances Frames		Minor B		Minor B		
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	rails (c)	2.11.12.3	Rails		mrr		mrr		
	panels (d)	2.11.12.3	Rails		Minor A		Minor A		
		2.11.12.4	Panels						
		2.11.12.5	Guides						
		2.11.12.6	Counterweighting or Counterbalancing						
		2.11.12.8	Pull Straps						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	guides (e)	2.11.12.5	Guides						
	sill guard (f)	2.11.12.7	Sill Guards		mrr		mrr		
	straps (g)	<a href="#">2.11.12.8</a>	Pull Straps						
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below		
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major		
		2.11.13	Entrances, Swing Type						
		Installed New components to meet:							
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B		
		2.11.10.3	Hinged Hoistway Landing Sills						
		2.11.13.1	Landing Sills						
	frames (b)	2.11.13.2	Entrance Frames		Minor B		Minor B		
		2.11.13.4	Hinges						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	panels (c)	2.11.13.3	Panels		Minor B		Minor B		
		2.11.13.4	Hinges						
		2.11.13.5	Marking						
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies						
	hinges (d)	<a href="#">2.11.13.4</a>	Hinges		mrr		mrr		
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major			
		Fire Protection Rating not less than existing entrance							
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements						
	CAD 8.7.2.10★1	★ Removing Service To a Floor			Minor B				
		Bolt entrances shut							
		Remove Interlock From Safety String							
		Remove COP Floor Button							
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II						
		2.12.7	H/W Access Switches - if floor was previously the access location						
	CAD 8.7.2.10★2	★ Door Safety Retainers			Minor B	Minor A	mrr	Minor B	
		2.11.11.8	Hoistway Door Safety Retainers						
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			⇩ See Below ⇩				
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B	
		2.12.1	General						
		2.12.2	Interlocks						
		2.12.4	Listing/Certification Locking Devices						
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a		
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a		
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a		
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B	
		2.12.1	General						
		2.12.3	H/W Door Combination Mechanical Locks & Contacts						
		2.12.4	Listing/Certification Locking Devices						
		2.12.6	Hoistway Door Unlocking Devices						
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A			
		8.7.2.11.3	requirements specified						



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2.11.4	Access Switches and Unlocking Devices						
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.2.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		8.7.2.10.1 Entrances & H/W Openings - General Req'mts 8.7.2.10.2 Horizontal Slide-Type Entrances 8.7.2.10.3 Vertical Slide-Type Entrances 8.7.2.10.5 Marking of Entrance Assemblies ★ 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
		2.13. Power Operation of Hoistway Doors and Car Doors 8.7.2.15★1,★2						
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates 2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI &II at time of install 8.7.2.15★1,★2					see 8.6.3.8	
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination			↓ See Below ↓			
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties 8.7.2.15.1 Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures 2.14.1.2 Securing of Enclosures			Minor A	Minor A		
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added) 2.14.1.5 Top Emergency Exits			Minor B	Minor B		
	8.7.2.14.2(c)	Installation of Glass 2.14.1.8 Glass in Elevator Cars 2.14.1.8.1 Enclosures include glass 2.14.1.8.2 Lining of Walls or Ceilings include glass 2.14.1.8.3 Marking of each Glazing Panel			Minor B	Minor B	mrr	
	8.7.2.14.2(d)	Specific Equipment in Elevator Car 2.14.1.9 Equipment Inside Cars (a) Handrails (b) fastening devices for protective linings (c) ceiling mounted hooks/tracks (d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1 (e) conveyor tracks in freights (f) heating or cooling equipment 8.7.2.15★1,★2			Minor B	Minor B		
	CAD 8.7.2.14★1	★ Car operating station verify inspection operation 'if provided' verify stop sw verify switches operate as before (eg. FS, FEO, Access) 8.7.2.15★1,★2			Minor B	Minor B	mrr	Minor B
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors 2.8.2.1 electrical equipment & wiring 2.14.1.2.3 securing of enclosure equipment 2.14.2.4 Headroom in Elevator Cars 8.7.2.15★1,★2			Minor B	Minor B		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			↓ See Below ↓			
	8.7.2.14.4	Alteration to <b>Car Enclosure</b> other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished			Minor A		
			2.14.1.7 car top railing - see CAD 8.7.2.14★4			Minor B		
			2.14.7.1.3 auxiliary lighting			Minor B		
			2.14.7.1.4 car top light & outlet			Minor B	Minor B	
		★	CAD 8.7.2.15★1			Minor B		
			or					
		★	CAD 8.7.2.15★2			Minor A	Minor A	
	8.7.2.14.4	Alteration to <b>Car Door</b> or <b>Car Gates</b> other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
		8.7.2.15★1,★2	car weighed prior to alteration					
			include testing procedure					
			include revised electrical schematics					
	8.7.2.15	Car Frames and Platforms			↓ See Below ↓			
	8.7.2.15.1	Alterations to Car Frames and Platforms			Major	-	Major	
		2.15.	Car Frames & Platforms					
	CAD 8.7.2.15★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1(a)	cars weighed prior to alteration					
		CAD 8.7.2.15★1(b)	In/Out weights recorded or cars weighed after alteration					
		CAD 8.7.2.15★1(c)	weight change recorded on auxiliary data tag					
		CAD 8.7.2.15★1(e)	testing prior to operation to ensure security of interior finishes					
	CAD 8.7.2.15★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★1	engineering assessment of related items affected by weight change					
	8.7.2.15.2	Increase or Decrease in Deadweight of Car (Car Wt+Rated Load> 5%)			Major	-		
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.15.9	Platform Guards (Aprons)					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.	Speed Governors					
		2.20.	Suspension Ropes & Connections					
		2.21.(*)	Counterweights					
		2.22.(*)	Buffers & Bumpers					
		2.23.	Car & Cwt Guides Rails, Guide Rail Support, Fastenings					
		2.24.(*)	Driving Machines & Sheaves					
		8.7.2.9	Machinery and Sheave Beams, Supports, Foundations					
	CAD 8.7.2.15★1(a) to (e)							

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.16</b>	<b>Capacity, Loading, and Classification</b>			Major	-		
	<b>8.7.2.16.1</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22 (*)	Buffers & Bumpers					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		2.15.(*)	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		2.16.	Capacity & Loading					
		2.17.(*)	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.19.	Ascending Car Overspeed & Unintended Car Movement Protection					
		2.20.	Suspension Ropes & Connections					
		2.24.(*)	Driving Machines & Sheaves					
		2.25.	Terminal Stopping Devices					
		2.26.	Operating Devices and Control Equipment					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.2.16.2</b>	Change in Class of Loading: [from any class to any other class ie A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		<a href="#">8.7.2.16.4</a>	Increase in Rated Load					
	<b>8.7.2.16.3</b>	Carrying of Passengers on Freight Elevators			Major	-		
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.3	conforms to 2.16.8 Passenger Overload in Down Direction					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.13.3.4					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.2.16.4	Increase in Rated Load  Car doors or gates shall be provided at all car entrances New Car doors and gates to: 2.14.4, 2.14.5, 2.14.6 2.14.4 Passenger & Frt Car Doors & Gates, General Req'mts 2.14.5 Passenger Car Doors 2.14.6 Freight Elevator Car Doors and Gates 2.15.(* ) Car Frames & Platforms- ★apron guard to ED CAD/as pit permits 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.(* ) Counterweights 2.22.(* ) Buffers & Bumpers 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings 2.24. Driving Machines & Sheaves 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.5 Monitor & Prevent Automatic Operation w/ Faulty Door Contacts <u>8.7.2.9</u> Machinery and Sheave Beams, Supports, Foundations			Major	-		
	8.7.2.17	Change in Rise or Rated Speed			Major	-		
	8.7.2.17.1	Increase or Decrease in Rise  2.25. Terminal Stopping Devices retain drum m/c, travel increase < 4570mm 2.4.(* ) Vertical Clearances & Runbys for Cars & Cwts If decrease in rise is at lowest end then; 2.2.4 Access to Pits 2.2.5 Illumination of Pits 2.2.6 Stop Switches			Major	-		
	8.7.2.17.2	Increase in Rated Speed			Major	-		
	8.7.2.17.2(a)	Increase in Rated Speed on a Winding Drum machine  Increase in Rated Speed of a winding drum m/c prohibited <u>8.7.2.17.2(c)</u> except as permitted 8.7.2.17.2(c)			Major	-		
	8.7.2.17.2(b)	Increase in Rated Speed except as per 8.7.2.17.2(c)  2.4.2 Minimum Bottom Runby for Counterweighted Elevators 2.4.3 Minimum Bottom Runby for Uncounterweighted Elevators 2.4.4 Maximum Bottom Runby 2.4.5 Counterweight Runby Data Plate 2.4.6 Maximum Upward Movement of the Car 2.4.7 Top of Car Clearances 2.4.8 Top of Counterweight Clearances 2.4.9 Equipment on Top of Car Not Permitted to Strike O/H 2.5. Horizontal Car and Counterweight Clearances  Car doors or gates shall be provided at all car entrances New doors/gates to: Car: Enclosure, Doors, Gates, Illumination 2.16. Capacity & Loading 2.17. Car & Cwt Safeties 2.18.(* ) Speed Governors 2.19. Ascending Car Overspeed & Unintended Car Movement Protection 2.20. Suspension Ropes & Connections 2.21.4.2 Comp Rope Tie Down (if speed > 3.5 m/s) 2.22.(* ) Buffers & Bumpers 2.24. Driving Machines & Sheaves 2.25. Terminal Stopping Devices 2.26.(* ) Operating Devices and Control Equipment			Major	-		
	8.7.2.17.2(c)	Increase in Rated Speed less than 10% & less than 0.20m/s new spd < .75 for type A safeties new spd < 1 w/spring buffer, 2.18.2.1&.2 2.18.2.1 Car speed governors 2.18.2.2 counterweight speed governors <u>8.7.2.27.3</u> Change in Power Supply			Major	-		

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2.17.3	Decrease in Rated Speed 2.4. Vertical Clearances & Runbys for Cars & Cwts 2.18.2 Tripping Speeds for Speed Governors 2.16. Capacity & Loading 2.16.3(*) Capacity and Data Plates 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts			Major	-		
	8.7.2.18	Car and Counterweight Safeties			Major	Major	↓See Below ↓	
	8.7.2.18.1	New Car Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.2	New Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			-	Major	mrr	Minor A
	8.7.2.18.3	Existing Car Safeties 2.17.(*) Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.18.3	Existing Cwt Safeties 2.17. Car & Cwt Safeties 2.18. Speed Governors 2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings <a href="#">8.7.2.19</a> Speed Governors and Governor Ropes			Major	-	mrr	Minor A
	8.7.2.19	Speed Governors and Governor Ropes			Major	Major	↓See Below ↓	
	8.7.2.19	2.18. Speed Governors					mrr	Minor A
	8.7.2.19	2.17.15 Governor Rope Releasing Carriers					see 8.6.3.6 mrr	mrr
	8.7.2.19	Governor Ropes of different material or Construction to: 2.18.6 Design Gov'r Rope Retarding Means for Type B Safeties 2.18.7 Traction between Speed Governor Rope & Sheave & testing to 2.17.3 Function and Stopping Distances of Safeties					see 8.6.3.9 -	Minor B
	8.7.2.20	Ascending Car Overspeed and Unintended Car Movement Protection (ACO & UCM)			Minor A	Major	mrr	Minor A
	CAD 8.7.2.20★1	★ 2.19. Ascending Car Overspd & Unintended Car Movement Protection If Elevators Controllers are pre-B44-00 & have ACO & UCM			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★2	★ 2.19. ACO & UCM Protection, Except that; detection means to B44-M90 or the code at time of install 8.9. Code Data tag to reflect code at time of install If Elevators Controllers are pre-B44-00 & have ACO ONLY			Minor A	-	mrr	Minor A
	CAD 8.7.2.20★3	★ 2.19.1 ACO Protection Only, Except that; 2.19.3 Emergency Brake and detection means to B44-M90 or the code at time of install 2.19.4 Emergency Brake Supports 8.9. Code Data tag to reflect code at time of install Voluntary Addition of Both ACO and UCM where previously not provided				Minor A		
		2.19. ACO & UCM Protection Except that; detection means to B44-M90 code or later 2.7. Machinery Spaces, Machine Rooms Control Spaces & Control Rooms as applicable to the equipment installation 8.9. Code Data tag to reflect code edition used for the alteration						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	<b>8.7.2.21</b>	Suspension Ropes and Their Connections			↓ See Below ↓			
	<b>8.7.2.21.1</b>	Change in Number of, or Diameter of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Major	-	See 8.6.3.2	
	<b>8.7.2.21.1</b>	Change in Material / Grade of Ropes 2.20. Suspension Ropes & Connections PEO to certify existing sheaves w/different ropes are satisfactory			Minor A	-		
	<b>8.7.2.21.2</b>	Addition of Rope Equalizers			Minor B	Minor B		
		2.20.5 Suspension Rope Equalizers						
	<b>8.7.2.21.3</b>	Addition of Auxiliary Rope-Fastening Devices 2.20. Suspension Ropes & Connections			Major	Major		
	<b>8.7.2.21.4 (a)</b>	Change in Type of Suspension Means			Major	Major		
		2.20.8.1 Protection Against Traction Loss						
		2.20.8.2 Broken Suspension Member						
		2.20.8.3 Suspension-Member Residual Strength						
		2.20.11 Suspension-Member Test						
	<b>8.7.2.21.4 (b)</b>	Traction Loss Detection			Minor A	Minor A		
		2.20.8.1 Protection Against Traction Loss						
	<b>8.7.2.21.4 (c)</b>	Broken Suspension Means Detection			Minor A	Minor A		
		2.20.8.2 Broken Suspension Member						
	<b>8.7.2.22</b>	Counterweights			Minor A	-		
	<b>8.7.2.22.1</b>	Alteration to any part of a cwt except guiding members 2.21. Counterweights						
		<a href="#">8.7.2.22.2</a> Rod Type Counterweights						
	<b>8.7.2.22.2</b>	<a href="#">8.7.2.3</a> Location and Guarding of Counterweights Rod Type Cwt - can retain if: Minimum of 2 suspension and 2 tie rods Suspension rods:						
		2.21.2.1 Material - Cwt Frames & Rods						
		2.21.2.3 Factor of Safety						
		Tie Rods:						
		2.21.1.2 Retention of Weight Sections						
	<b>8.7.2.22.3</b>	Roller or similar guide shoes added safety jaws cannot touch rails if not activated			mrr		mrr	
	<b>8.7.2.23</b>	Car and Counterweight Buffers and Bumpers			Major	-	mrr	Minor B
		2.22.(*) Buffers & Bumpers						
	<b>8.7.2.24</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%)			Major	-		
		2.23. Car & Cwt Guides Rails, Guide Rail Support, Fastenings						
	<b>8.7.2.25</b>	Driving Machines and Sheaves			↓ See Below ↓			
	<b>8.7.2.25.1</b>	Alter / Replace Driving Machines & Sheaves			Major	Major	Major	
	8.7.2.25.1(a)	Driving Machine Installed as part of an alteration			Major	-		
		2.7.2 Maintenance Path and Clearance to extent existing installation permits						
		2.9. Machinery & Sheave Beams, Supports, Foundation						
		2.10.1 Guarding of Equipment						
		2.19. Ascending Car Overspeed & Unintended Car Movement Protection						
		<a href="#">8.7.2.20</a> ACO & UCM Protection						
	CAD	<a href="#">8.7.2.20★1</a> Pre B44-00 ACO & UCM Protection						
	CAD	<a href="#">8.7.2.20★2</a> Pre B44-00 ACO Only Protection						
	CAD	<a href="#">8.7.2.20★3</a> Addition ACO/UCM if not required by other alteration scope						
		2.20. Suspension Ropes & Connections						
		2.24. Driving Machines & Sheaves						
		2.26.8 Release and Application of Driving-Machine Brakes						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2.25.1(b)	Alter / Replace	Driving Machine Components - affected component complies w/		Major		mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.24.5	Shafts Fillets and Keys					
		2.24.6	Cast-Iron Worms and Worm Gears					
		2.24.7	Friction Gearing and Clutches					
		2.24.8	Braking Systems & Driving Machine Brakes				mrr	Major
		2.24.9	Indirect-Driving Machines					
		2.26.8	Release and Application of Driving-Machine Brakes					
	8.7.2.25.1(c)	Change of	Driving Machine Sheave		Major	-	mrr	Major
		2.24.2	Sheaves and Drums					
		2.24.3	Factor of Safety for Driving Machines and Sheaves					
		2.24.4	Fasteners Transmitting Load					
		2.20.	Suspension Ropes & Connections					
	8.7.2.25.2	Change in Location of	Driving Machine		Major	-		
	8.7.2.25.2(a)	Change in Location of	Driving Machine w/ no change in Rise		Major	-		
		2.7.2	Maintenance Path and Clearance					
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		2.10.1	Guarding of Equipment					
		2.24.2.3	Traction					
	8.7.2.25.2(b)	Change in Location of	Driving Machine w/ change in Rise		Major	-		
		Part 2 (*)	Electric Elevators (entire installation to meet Part 2), except					
			2.5 Horizontal Car and Counterweight Clearances					
			2.11 Protection of Hoistway Openings					
			2.4 Vertical Clearances and Runbys for Cars & Cwts					
		<a href="#">8.7.2.5</a>	see also					
		<a href="#">8.7.2.10</a>	see also					
	CAD 8.7.2.25★1	★ Replacement of worm and/or gear (specify make)			-	-	mrr	Minor A
		2.24 specify compliance to the applicable requirements						
		Addition of Machine Guarding - see CAD 8.7.2.7★1						
	8.7.2.26	Terminal-Stopping Devices			Minor B	Minor B		
		2.25. Terminal Stopping Devices						
	8.7.2.27	Operating Devices and Control Equipment			⇩ See Below ⇩			
	8.7.2.27.1	Top-of-Car Operating Devices			Minor A	Minor A	mrr	Minor A
		2.26.1.4 Inspection Operation						
	CAD 8.7.2.27★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4 Inspection Operation						
	CAD 8.7.2.27★2	★ Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4 Inspection Operation						
		8.7.2.15★1, ★2						
	8.7.2.27.2	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		2.26.1.6 Operation in Leveling or Truck Zone						
	CAD 8.7.2.27★3	★ Door By-Pass Switches			Minor A	Minor A		
		2.26.1.5 System to Prevent Auto Operation w/faulty Door Contacts						
	CAD 8.7.2.27★4	★ Door Monitoring System			Minor A	Minor A		
		2.26.5 System to Prevent Auto Operation w/faulty Door Contacts						



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.2.27.3	Change in Power Supply (a) voltage, frequency or # of phases or (b) AC to DC , DC to AC or (c) combination of DC & AC, then electrical to: 2.26.1.1 Types of Operation 2.26.1.2 For Car-Switch Operation Elevators 2.26.1.3 Add'l Operating Devices for Elevators carrying 1pc. load > than Rated 2.26.1.4 Inspection Operation 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.9 Control & Operating Circuits 2.26.10 Absorption of Regenerated Power new / modified equipment and wiring to: 2.26.4.1 Electrical Equipment and Wiring 2.26.4.2 Drive Machine Controllers for Stopping/Starting/Controlling 2.26.4.3 Positively Opened Contacts brakes to: 2.24.8 Braking Systems & Driving Machine Brakes 2.26.8 Release and Application of Driving-Machine Brakes winding drum to: 2.25.3.5 Additional Req'mts for Winding Drum Machines see 8.7.2.17.2(b) Increase in Rated Speed			Major	-		
	8.7.2.27.4 8.7.2.27.4(a)	Install / Replace Motion or Operation Controller (no change in method) 2.25. Terminal Stopping Devices 2.26.1.4 Inspection Operation 2.26.1.5 Inspection Operation with Open Door Circuits 2.26.1.6 Operation in Leveling or Truck Zone 2.26.2 Electrical Protective Devices 2.26.3 Contactor and Relays for Use in Critical Operating Circuits 2.26.4 Electrical Equipment and Wiring 2.26.5 System to Monitor & Prevent Automatic Operation w/ Faulty Door Contacts 2.26.6 Phase Protection of Motors 2.26.7 Installation of Capacitors/Devices Making EPD's Ineffective 2.26.8 Release and Application of Driving-Machine Brakes 2.26.9 Control & Operating Circuits 2.26.11 Car Platform to Hoistway Door Sills Vertical Distance levelling accuracy to 13mm (0.5 in.) 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity 2.27.2 Emergency or Standby Power systems  If FEO previously present or required by OBC; 2.27.3 Firefighters' Emergency Operation - Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's CAD 2.27.3.2.2 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see 8.7.1.2 safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys 2.27.9 Elevator Corridor Call Station Pictograph If FEO NOT previously present or required by OBC; CAD 2.27.3.2.2 2.27.3.1 Provide Phase 1 Manual Recall Operation Only			Major	-		Major



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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work					
					Alteration		Replacement with			
					Modification Change	Addition	Same	Different Make/Model		
					Type of Submission Required					
	CAD 8.7.2.27★5	Relocation of		Elevator Controller (if control wiring disconnected - reconnected)	Major					
		2.8.2		Electrical Equipment and Wiring Electrical testing to verify functionality of rewired equipment						
	8.7.2.27.4(b)	Installation of		Door Controller	Minor A	-		Minor B		
		2.26.4.1		Electrical Equipment and Wiring						
		2.26.4.2		Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.4(c)	Installation of		Controller for Emergency or Standby Power	Minor A	Minor A		Minor B		
		2.26.4.1		Electrical Equipment and Wiring						
		2.26.4.2		Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.4(c)	Installation of		Controller for FEO Operation	Minor A	Minor A		Minor B		
		2.26.4.1		Electrical Equipment and Wiring						
		2.26.4.2		Drive Machine Controllers for Stopping/Starting/Controlling						
	8.7.2.27.5	Change in Type of Motion Control - AC, VVVF, DC, SCR			Major	-				
		2.11.1(*)		Entrances and Emergency Doors Required						
		2.11.2		Types of Entrances						
		2.11.3		Closing of Hoistway Doors						
		2.11.4		Location of Horizontally Sliding or Swinging H/W Doors						
		2.11.5		Projection of Entrances & Equip. Beyond Land'g Sills						
		2.11.6(*)		Opening of Hoistway Doors						
		2.11.8		Weights for Closing or Balancing Doors						
		2.11.9		Hoistway Door Locking Devices & Power Operation						
		2.11.11.8(*)		Hoistway Door Safety Retainers						
		2.11.12.8		Pull Straps						
		2.12.(*)		H/W-Door Locking Devices, Elec. Contacts, H/W Access						
		2.12.5		Restricted Opening of Hoistway or Car Doors						
		2.12.6		Hoistway Door Unlocking Devices						
		2.12.7		Hoistway Access Switches						
		2.13.		Power Operation of H/W Doors and Car Doors						
		2.14.(*)		Car: Enclosure, Doors, Gates, Illumination						
		2.14.1.7		car top railing						
		2.16.8(*)		Capacity & Loading						
		2.17.(*)		Car & Cwt Safeties						
		2.18.(*)		Speed Governors						
		2.19.		Ascending Car Overspeed & Unintended Car Movement Protection						
		<a href="#">8.7.2.20</a>		ACO & UCM Protection						
		CAD <a href="#">8.7.2.20★1</a>		Pre B44-00 ACO & UCM Protection						
		CAD <a href="#">8.7.2.20★2</a>		Pre B44-00 ACO Only Protection						
		CAD <a href="#">8.7.2.20★3</a>		Addition ACO/UCM if not required by other alteration scope						
		2.25.		Terminal Stopping Devices						
		2.26.(*)		Operating Devices and Control Equipment						
		2.29.		Identification of Equipment and Floors						
		★ 2.7.9.2		Temperature and Humidity						
		If FEO previously present or required by OBC;								
		2.27.		Emergency Operation and Signalling Devices						
		2.27.1		Car Emergency Signalling Devices						
		2.27.2		Emergency or Standby Power Systems						
		2.27.3		Firefighters' Emergency Operation: Automatic Elevators						
		2.27.3.1		Phase 1 Recall Operation						
		2.27.3.2		Phase 1 Recall Operation by FAID's						
		CAD 2.27.3.2.2								
		2.27.3.3		Phase 2 Emergency In-Car Operation						
		2.27.3.4		Interruption of Power						
		2.27.3.5		Multicompartment Elevators						
		see <a href="#">8.7.1.2</a>		safety levels shall not be diminished						
		2.27.4		FEO: Non Automatic Elevators						
		2.27.5		FEO: Automatic Elevators with Designated-Attendant Operation						
		2.27.6		FEO: Inspection Operation						
		2.27.7		FEO: Operating Procedures						
		2.27.8		Switch Keys						
		If FEO NOT previously present or required by OBC;								
		CAD 2.27.3.2.2								
		2.27.3.1		Provide Phase 1 Manual Recall Operation Only						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.27.6</b>	Change in Type of Operation Control - CPPB, AUTOMATIC			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		2.16.	Capacity & Loading					
		2.17.	Car & Cwt Safeties					
		2.18.(*)	Speed Governors					
		2.25.	Terminal Stopping Devices					
		2.26.(*)	Operating Devices and Control Equipment					
		2.29.	Identification of Equipment and Floors					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.	Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.2.27★6	★	Addition of Wander Patient Feature - Change in Operation Control		Minor B	Minor B		
			2.13.5.3	- door time out				
			2.27.3.1.6(l)	- shall not prevent PHI				
	CAD 8.7.2.27★7	★	Addition of Restricted Access - Security / Floor Lock Out		Minor B	Minor B		
			OBC-3.2.6.5(4) - shall not prevent floor access when on FEO					
			D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use					
			2.27.3.3.1(i)	- permit travel to all landings when on PH II				
			2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II				
	CAD 8.7.2.27★8	★	Addition of Destination Dispatch			Minor B		
			<a href="#">8.7.2.8</a>	Electrical Equipment, Wiring, Pipes, and Ducts in H/W's & M/C Rooms				
			FEO operation to 8.7.2.28 or code at time of installation or alteration					
	<b>8.7.2.27.7</b>		Removal of emergency stop switch on passenger elevators		Minor B	-		
			remove all related markings / engravings & provide an in-car stop switch to:					
			2.26.2.21	In-car stop switch				
		★	2.26.4.3	Positively Opened Contacts				
		★	2.26.9.3	Single failure does not render In-Car Stop Sw ineffective				

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.2.27.8</b>	<b>Electrical Protective Devices</b>			⇩ See Below ⇩			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.2 (PES)			Major	Major	mrr	Major
		2.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device if device meets 2.26.4.3.1			-	Minor A	mrr	
		2.26.2 Electrical Protective Devices - for specified device						
	<b>8.7.2.28</b>	<b>Emergency Operation and Signaling Devices</b>			⇩ See Below ⇩			
	8.7.2.28	Car Emergency Signaling Devices			Minor B	Minor B	mrr	
		2.27.1 Car Emergency Signaling Devices						
	8.7.2.28	Emergency or Standby Power			Minor B	Minor A		
		2.27.2 Emergency Or Standby Power systems						
	8.7.2.28	Firefighter's Emergency Operation			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
	8.7.2.28	Addition of Elevator to a Group - all elevators to meet:			-	Minor A		
		2.27. Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.2.28★1	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of installation conformance to auto recall based on F.S. at time of install				Minor B		
	CAD 8.7.2.28★2	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
		CAD 3.20 Fire Code Retrofits						
	<b>8.7.3.★</b>	<b>Alteration - Hydraulic to Electric Elevator</b>						
	<b>8.7.3.★1</b>	Where a hydraulic elevator operated in an existing hoistway and a new electric elevator will be installed in its place, the following conditions will apply:			New			
		★ Part 2 Electric Elevators, except:						
		★ <b>Existing building conditions</b> not in full conformance with current requirements may be retained. Identify each deviation in the submission (box 4000) ie.						
		- pit depth						
		- no pit drain						
		★ A New Installation Number will be issued						
		★ 2.15.9 Apron plate length per 2.15.9 or						
		- collapsible / telescopic / folding design utilized						

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3</b>	<b>Alterations to Hydraulic Elevators</b>						
	<b>8.7.3.1</b>	Hoistway Enclosures			see 8.7.2.1			
	<b>8.7.2.1</b>	Hoistway Enclosures			Major	Major		
	<b>8.7.2.1.1</b>	Hoistway Enclosure Walls			Major	Major		
		2.1.1	Hoistway Enclosures					
		2.1.5	Windows and Skylights					
		2.1.6	Projections, Recesses, and Setbacks in H/W					
		2.5.	Horizontal Car and Counterweight Clearances					
		2.7.3.4.6	Access Doors and Openings					
		★ 2.7.3.4.7	Access Doors and Openings					
		2.8.	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms					
		<a href="#">8.7.2.10</a>	Entrances and Hoistway Openings (if change includes an entrance)					
		2.11.1	Entrances and Emergency Doors Required (if blind H/W)					
	<b>8.7.2.1.2</b>	Addition of Elevator to Existing Hoistway			-	New		
		B44-2010	New Installation					
		2.5.	Horizontal Car and Counterweight Clearances					
	<b>8.7.2.1.3</b>	Construction at Top of Hoistway			Major	Major		
		2.1.2.1	Construction at Top of the Hoistway					
		2.1.3	Floor Over Hoistways					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.4</b>	Construction at Bottom of Hoistway			Major	Major		
		2.1.2.2	Construction at Bottom of the Hoistway					
		2.1.2.3	Strength of Pit Floor					
		2.2.	Pits					
		<a href="#">8.7.2.4</a>	Vertical Car & Cwt Clearances & Runbys					
	<b>8.7.2.1.5</b>	Control of Smoke and Hot Gases			Major	Major		
		2.1.4	Control of Smoke and Hot Gases					
	<b>8.7.3.2</b>	Pits			see Electric Elevators			
	<b>8.7.2.2</b>	Pits see other alterations below for non Major Alterations			Major	-		
		2.2.	Pits					
		2.1.2.3	Strength of Pit Floor					
		<a href="#">8.7.3.4</a>	Vertical Car & Cwt Clearances & Runbys					
	8.7.2.2	Pit Drains & Sumps			Minor B	Minor B		
		2.2.2.	Pit Drains					
	8.7.2.2	Pit Guards			Minor B	Minor A		
		2.2.3	Guards Between Adjacent Pits					
	8.7.2.2	Pit Access			Minor B	Minor A		
		2.2.4	Pit Access					
	8.7.2.2	Pit Illumination			Minor B	Minor B		
		2.2.5	Illumination of Pits					
	8.7.2.2	Pit Stop Switches			Minor B	Minor A		
		2.2.6	Stop Switches					
	8.7.2.2	Pit Depth			Minor B	Minor A		
		2.2.7	Minimum Pit Depths Required					
	8.7.2.2	Access to Underside of Car			Minor B	Minor A		
		2.2.8	Access to Underside of Car					
	<b>8.7.3.3</b>	Location and Guarding of Counterweights			Major	Major		
		2.3.	Location and Guarding of Counterweights					
		2.5.1.2	Between Car & Cwt and Cwt Guard					
		3.5.	Horizontal car and Counterweight Clearances					
	<b>8.7.3.4</b>	Vertical Car and Counterweight Clearances and Runbys (no reduction allowed)			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					

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Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.5</b>	Horizontal Car and Counterweight Clearances (no reduction allowed)			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		<a href="#">8.7.3.22.1</a>	Increase or Decrease in Rise					
		<a href="#">8.7.3.22.2</a>	Increase in Rated Speed					
		<a href="#">8.7.3.23.5</a>	Change in Location of Hydraulic Jack					
	<b>8.7.3.6</b>	Protection of Spaces Below Hoistways			Minor B	Major		
		3.6.	Protection of Spaces below Hoistway					
	<b>8.7.3.7</b>	Machine Rooms and Machinery Spaces			see 8.7.2.7			
	<b>8.7.2.7</b>	Machine Rooms and Machinery Spaces			⇩ See Below ⇩			
	<b>8.7.2.7.1</b>	Enclosures - other than specifics of 8.7.2.7.2 to 8.7.2.7.7			-	Major		
		2.7. (& 3.7.)	New - Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor A	-		
		2.7. (& 3.7.)	Altered- Machinery Spaces, Machine Rooms Control Spaces & Control Rooms		Minor B	-		
		OESC (C22.1) Electrical Equipment Clearances			Minor B	-		
	<b>8.7.2.7.2</b>	Means of Access			Minor B	-		
		2.7.3.1	General Requirements					
		2.7.3.2	Access Across Roofs					
		2.7.3.3	Means of Access					
	<b>8.7.2.7.3</b>	Access Doors and Openings			Minor B	Minor B	mrr	
		2.7.3.4	Access Doors and Openings					
		2.7.3.5	Stop Switch in O/H M/C Space in the H/W					
	<b>8.7.2.7.4</b>	Headroom (no reduction)			Minor B	Minor B		
		2.7.4	Headroom in M/C Rooms					
	<b>8.7.2.7.5</b>	Windows and Skylights			Minor B	Minor B		
		2.1.5						
	<b>8.7.2.7.6</b>	Lighting (no reduction)			Minor B	Minor A		
		2.7.9.1	Lighting					
	<b>8.7.2.7.7</b>	Ventilation			Minor B	Minor B		
		2.7.9.2	Temperature & Humidity					
	<b>CAD 8.7.2.7★1</b>	Addition of Elevator Equipment Guarding			Minor A (per m/c rm)		mrr	mrr
		2.7.2	Maintenance Path and Clearance					
		2.7.3.4.2	Size of doors and openings in cage style enclosures (750x2030)					
		2.10.1	Guarding of Equipment					
				operable/removable only with tools				
				operating/work instruction for accessing equipment				
				clearances in front of electrical control equipment (1000mm)				
				access in front of / space to operate main disconnect (750mm)				
				Installation by registered contractor				
	<b>8.7.3.8</b>	Electrical Wiring, Pipes, and Ducts in Hoistways and Machine Rooms			Minor B	Minor B	mrr	Minor B
		Installation of New (electrical equipment, wiring, raceways, cables, pipes, ducts)			-	Minor B		
		also installation of Monitoring Equipment, HVAC						
		2.8.	Equipment in Hoistways and Machine Rooms					
				CSA Labeling (or equivalent)				
				OESC, CSA C22.1 as required				
		Alteration of Existing (electrical equipment, wiring, raceways, cables, pipes, ducts...)			Minor B	-		
		2.8.	Equipment in Hoistways and Machine Rooms					
	<b>8.7.3.9</b>	Machinery and Sheave Beams, Supports and Foundations			Major	Major		
		New/Relocated Machinery & Sheave Beams, Supports, Foundation						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		Building reactions increased by more than 5%						
		2.9.	Machinery & Sheave Beams, Supports, Foundation					
		adequacy of building structure verified by P.Eng.						

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
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	<b>8.7.3.10</b>	Hoistway Entrances and Openings - see <a href="#">8.7.2.10</a>			see <a href="#">8.7.2.10</a>			
	<b>8.7.2.10</b>	Entrances and Hoistway Openings			Major	Major	see below	
	<b>8.7.2.10.1</b>	General Requirements			Major	-		
	8.7.2.10.1(a)	General Requirements - All New Entrances			Major	-		
		2.11.	Protection of H/W Openings					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(b)	General Requirements - New Entrances w/Existing Entrances			-	Major		
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.11.6	Opening of Hoistway Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(c)	General Requirements - Alteration to H/W Entrance			Major	-		
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
		Entire installation to meet:						
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.29.2	Identification of Floors					
	8.7.2.10.1(d)	General Requirements - Emergency Doors (added or altered)			Major	Major		
		2.11.1	Entrances and Emergency Doors Required					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	8.7.2.10.1(e)	General Requirements - Access Openings (installed for cleaning)			Major	Major		
		2.11.1.4	Access Opening for Cleaning of Car & H/W Enclosure					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	<b>8.7.2.10.2</b>	Horizontal Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
		2.11.11	Entrances, Horizontal Slide Type					
	sills (a)	2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.11.1	Landing Sills					
		2.11.11.6	Bottom Guides					
	track (b)	2.11.11.2	Hanger Tracks, and Track Supports		Minor B		Minor B	
	frame (c)	2.11.11.3	Entrance Frames		Minor A		Minor A	
		2.11.11.5.1	Panel Overlap					
		2.11.11.5.2	Panel Gaps Clearances					
		2.11.11.5.3	Pockets in Strike Jamb					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	hangers (d)	2.11.11.4	Hangers		Minor B		Minor B	
	panels (e)	2.11.11.5(*)	Panels		Minor A		Minor A	
		2.11.11.6	Bottom Guides					
		2.11.11.7	Multipanel Entrances					
		<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	retainers (f)	2.11.11.8	Hoistway Door Safety Retainers		Minor B		Minor B	

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					Type of Submission Required			
	<b>8.7.2.10.3</b>	Vertical-Slide-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.12	Entrances, Vertical Slide Type					
		2.11.10.3	Hinged Hoistway Landing Sills		Minor B		Minor B	
	frames (b)	2.11.12.1	Landing Sills					
		2.11.12.2	Entrances Frames		Minor B		Minor B	
	rails (c)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	panels (d)	2.11.12.3	Rails		mrr		mrr	
		2.11.12.4	Panels		Minor A		Minor A	
		2.11.12.3	Rails					
		2.11.12.5	Guides					
		2.11.12.6	Counterweighting or Counterbalancing					
		2.11.12.8	Pull Straps					
	guides (e)	<a href="#">8.7.2.10.5</a>	Marking of Entrance Assemblies					
	sill guard (f)	2.11.12.5	Guides					
	straps (g)	2.11.12.7	Sill Guards		mrr		mrr	
		2.11.12.8	Pull Straps					
	<b>8.7.2.10.4</b>	Swing-Type Entrances - new entrance and components to meet:			Major	Major	see below	
		<a href="#">8.7.2.10.1</a>	Entrances & H/W Openings - General Req'mts				Major	
	sills (a)	2.11.13	Entrances, Swing Type					
		2.11.10.1	Landing-Sill Guards		Minor B		Minor B	
		2.11.10.3	Hinged Hoistway Landing Sills					
	frames (b)	2.11.13.1	Landing Sills					
		2.11.13.2	Entrance Frames		Minor B		Minor B	
		2.11.13.4	Hinges					
	panels (c)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.3	Panels		Minor B		Minor B	
		2.11.13.4	Hinges					
		2.11.13.5	Marking					
	hinges (d)	8.7.2.10.5	Marking of Entrance Assemblies					
		2.11.13.4	Hinges		mrr		mrr	
	<b>8.7.2.10.5</b>	Marking of Entrance Assemblies (Alteration to an Entrance Door Panel)			Major	Major		
			Fire Protection Rating not less than existing entrance					
		<a href="#">8.7.2.10.5(a)</a>	NBCC requirements					
	CAD 8.7.2.10★1	★ Removing Service To a Floor			Minor B			
			Bolt entrances shut					
			Remove Interlock From Safety String					
			Remove COP Floor Button					
		2.11.6.2	Cannot Lock Out Top/Btm, Designated/Alternate, All Landing in Phase II					
		2.12.7	H/W Access Switches - if floor was previously the access location					
	CAD 8.7.2.10★2	★ Door Safety Retainers			Minor B	Minor A	mrr	Minor B
		2.11.11.8	Hoistway Door Safety Retainers					
	<b>8.7.3.11</b>	Hoistway Door-Locking Devices			See 8.7.2.11			
	<b>8.7.2.11</b>	Hoistway Door-Locking Devices, Access Switches & Parking Devices			See Below			
	<b>8.7.2.11.1</b>	Interlocks			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.2	Interlocks					
		2.12.4	Listing/Certification Locking Devices					
		2.12.5	Restricted Opening of H/W or Car Door (n/a for column 5,6)				n/a	
		2.12.6	Hoistway Door Unlocking Devices (n/a for column 5,6)				n/a	
		2.12.7	Hoistway Access Switches (n/a for column 5,6)				n/a	
	<b>8.7.2.11.2</b>	Mechanical Locks and Electric Contacts			-	Major	mrr	Minor B
		2.12.1	General					
		2.12.3	H/W Door Combination Mechanical Locks & Contacts					
		2.12.4	Listing/Certification Locking Devices					
		2.12.6	Hoistway Door Unlocking Devices					
	<b>8.7.2.11.3</b>	Parking Devices			Minor A	Minor A		
		8.7.2.11.3	requirements specified					



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					Modification Change	Addition	Same	Different Make/Model
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	8.7.2.11.4	Access switches and Unlocking Devices						
	8.7.2.11.4 (a)	Addition of Unlocking Devices 2.12.6 Hoistway Door Unlocking Devices			-	Minor B	mrr	
	8.7.2.11.4 (b)	Addition of Access Switches 2.12.7 Hoistway Access Switches 2.24.8 Braking Systems & Driving Machine Brakes 2.26.1.4 Inspection Operation			-	Minor A	mrr	
	8.7.2.11.5	Restricted Opening of H/W or Car Doors of Passenger Elevators (Restrictors) (Altered or Installed) 2.12.5 Restricted Opening of H/W or Car Door			Minor B	Minor B	mrr	Minor B
	8.7.3.12	Power Operation of Hoistway Doors (Addition / Alteration to Power Open or Close)			Minor A	Minor A		
		8.7.2.10.1 Entrances & H/W Openings - General Req'mts						
		8.7.2.10.2 Horizontal Slide-Type Entrances						
		8.7.2.10.3 Vertical Slide-Type Entrances						
		8.7.2.10.5 Marking of Entrance Assemblies						
		8.7.3.10 Hoistway Entrances and Openings						
		★ 2.13. Power Operation of Hoistway Doors and Car Doors						
	CAD 8.7.2.12★1	★ Replacement of Door Operator			-	-	mrr	Minor B
		2.13. Power Operation of Hoistway Doors and Car Doors 8.7.2.15★1,★2						
	CAD 8.7.2.12★2	★ Replacement of Door Reopening Device					See 8.7.2.13	
	8.7.2.13	Door Reopening Device (Safety Edge) (Altered or Added or Replaced)			Minor B	Minor B	mrr	Minor B
		2.13.4 Closing Limitations for Power Operated HS Doors & Gates					see	
		2.13.5 Reopening Device for Power Operated Car Doors or Gates if FEO provided, door opening & closing to PHI & II at time of install					8.6.3.8	
		8.7.2.15★1,★2						
	8.7.3.13	Car Enclosures					See 8.7.2.14	
	8.7.2.14	Car Enclosures, Car Doors and Gates, and Car Illumination					↓ See Below ↓	
	8.7.2.14.1	Installation of New Car Enclosure 2.14. Car: Enclosure, Doors, Gates, Illumination 2.15. Car Frames & Platforms 2.17. Car and counterweight safeties 8.7.2.15.1 Alterations to Car Frames and Platforms			Major	-		
	8.7.2.14.2	Alteration to Existing Cars			Minor A	Minor A		
	8.7.2.14.2(a)	Car Enclosure - Securing of Enclosures			Minor A	Minor A		
		2.14.1.2 Securing of Enclosures						
	8.7.2.14.2(b)	Top Emergency Exit (Altered or Added)			Minor B	Minor B		
		2.14.1.5 Top Emergency Exits						
	8.7.2.14.2(c)	Installation of Glass			Minor B	Minor B		
		2.14.1.8 Glass in Elevator Cars						
		2.14.1.8.1 Enclosures include glass						
		2.14.1.8.2 Lining of Walls or Ceilings include glass					mrr	
		2.14.1.8.3 Marking of each Glazing Panel						
	8.7.2.14.2(d)	Specific Equipment in Elevator Car			Minor B	Minor B		
		2.14.1.9 Equipment Inside Cars						
		(a) Handrails						
		(b) fastening devices for protective linings						
		(c) ceiling mounted hooks/tracks						
		(d) picture frames display boards, plaques <38mm protrusion secured to 2.14.1.2 material to 2.14.2.1						
		(e) conveyor tracks in freights						
		(f) heating or cooling equipment						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★1	★ Car operating station			Minor B	Minor B	mrr	Minor B
		verify inspection operation 'if provided'						
		verify stop sw						
		verify switches operate as before (eg. FS, FEO, Access)						
		8.7.2.15★1,★2						
	CAD 8.7.2.14★2	★ video cameras / surveillance equipment / video monitors			Minor B	Minor B		
		2.8.2.1 electrical equipment & wiring						
		2.14.1.2.3 securing of enclosure equipment						
		2.14.2.4 Headroom in Elevator Cars						
		8.7.2.15★1,★2						



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					Type of Submission Required			
	CAD 8.7.2.14★3	★ other equipment			Variance			
	8.7.2.14.2(e)	Side Emergency Exits - Secured Shut			Major	-		
	8.7.2.14.2(f)	Car Ventilation			Minor B	-		
		2.14.2.3	Ventilation					
	8.7.2.14.2(g)	Car Illumination			Minor B	Minor B		
		2.14.7	Illumination of Cars and Lighting Fixtures					
	8.7.2.14.2(h)	Partitions Installed in Elevator Cars			Major	Major		
		2.16.1.2	Use of Partitions for Reducing Inside Net Platform Area					
	8.7.2.14.2(i)	Installation of Car Door or Gate, Installation to meet:			Major	Major		
		2.14.4	Passenger and Freight Car Doors/Gates, General Requirements					
		2.14.5	Passenger Car Doors					
		2.14.6	Freight Elevator Car Doors and Gates					
	8.7.2.14.4	Car Enclosure / Car Door or Car Gates			⇩ See Below ⇩			
	8.7.2.14.4	Alteration to Car Enclosure other than 8.7.2.14.2 - Enclosure Materials						
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			enclosure material flame ratings shall not be diminished			Minor A		
			2.14.1.7 car top railing - see CAD 8.7.2.14★4			Minor B		
			2.14.7.1.3 auxiliary lighting			Minor B		
			2.14.7.1.4 car top light & outlet			Minor B	Minor B	
		★	CAD 8.7.2.15★1			Minor B		Minor B
			or					
		★	CAD 8.7.2.15★2			Minor A		Minor A
	8.7.2.14.4	Alteration to Car Door or Car Gates other than 8.7.2.14.2			Minor A	Minor A		
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
			2.14.1.7 car top railing					
			2.14.7.1.3 auxiliary lighting					
			2.14.7.1.4 car top light & outlet					
	0.Reg.209/01s30	★ Relocation of Elevator License to remote location			Minor B†	-		
	CAD 8.7.2.14★4	★ Car Top Guard Rail			Minor B	Minor A	-	Minor A
		CAD 8.7.2.14★4(a)	Standard Guardrail (to CAD 8.7.2.14★4(a), 2.14.1.7 & OBC)					
			or					
		CAD 8.7.2.14★4(b)	Foldable Guardrail (to CAD 8.7.2.14★4(b), 2.14.1.7 & OBC)					
			car top run buttons not enabled until extended					
			normal operation not enabled until stowed					
			electrical limits to ensure car top clearance in overhead					
			minor A submission template					
		8.7.2.15★1,★2	car weighed prior to alteration					
	8.7.3.14	Car Frames and Platforms			Major	-		Major
		3.15.	Car Frames & Platforms					
	8.7.3.15	Safeties	Car or Cwt (plunger gripper see 8.7.3.23.7)		⇩ See Below ⇩			
	8.7.3.15.1	Car Safeties			-	Major	mrr	Minor A
		3.17.1	Car Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.2	Counterweight Safeties			-	Major	mrr	Minor A
		3.17.2	Counterweight Safeties					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	8.7.3.15.3	Alteration to existing Car or Counterweight Safeties			Major	-	mrr	Minor A
		3.17(*)	Car and counterweight safeties and plunger gripper					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					

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					Modification Change	Addition	Same	Different Make/Model
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	<b>8.7.3.16</b>	Governors and Governor Ropes			See <a href="#">8.7.2.19</a>			
	<b>8.7.2.19</b>	Speed Governors and Governor Ropes			Major	Major	↓ See Below ↓	
	8.7.2.19	2.18.	Speed Governors				mrr	Minor A
							see	
							8.6.3.6	
	8.7.2.19	2.17.15	Governor Rope Releasing Carriers				mrr	mrr
							see 8.6.3.9	
	8.7.2.19	Governor Ropes of different material or Construction to:					Minor B Minor B	
			2.18.6 Design of Gov'r Rope Retarding Means for Type B Safeties					
			2.18.7 Traction between Speed Governor Rope & Sheave					
			& testing to 2.17.3 Function and Stopping Distances of Safeties					
	<b>8.7.3.17</b>	Change in Type of Service: Passenger to Freight OR Freight to Passenger			Major	-		
		2.11.1(*)	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.12.	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		2.13.	Power Operation of H/W Doors and Car Doors					
		2.22.(*)	Buffers & Bumpers					
		3.22.2	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.	Car and Counterweight Safeties					
		3.21.	Counterweights					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		2.18.(*)	Speed Governors					
		3.16.	Capacity & Loading					
		3.18.	Hydraulic Jacks					
		3.19.	Valves, Pressure Piping, and Fittings					
		3.20.	Ropes and Rope Connections					
		3.24.	Hydraulic Machines and Tanks					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	<b>8.7.3.18</b>	Change in Class of Loading: [A, B, C1, C2, C3]			Major	-		
		2.16.2	Minimum Rated Load for Freight Elevators					
		3.16.	Capacity & Loading					

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					Alteration		Replacement with	
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	<b>8.7.3.19</b>	<b>Carrying of Passengers on Freight Elevators</b>			Major	-		
		3.16.4	2.16.4 except 2.16.4.3					
		2.16.4	Carrying of Passengers on Freight Elevators					
		2.16.4.1	not accessible to general public					
		2.16.4.2	rated load not less than required by 2.16.1					
		2.16.4.4	H/W entrances to 2.12.1.1 & 2.11.2.1 or 2.11.2.2(e)					
		2.16.4.5	car doors to 2.14.5 Passenger Car Doors					
		2.16.4.6	car enclosure openings to 2.14.2.2 Prohibited Openings					
		2.16.4.7	conforms to 2.12.5 Restricted Opening of H/W or Car Door					
		2.16.4.8	Fs for suspension ropes to Table 2.20.3					
		2.16.4.9	Power Operated vertical doors to 2.16.4.9(a) to (e)					
		★	apron guard to ED CAD or extent pit permits					
		★	2.16.5 Signs Required in Freight Elevator Cars					
	<b>8.7.3.20</b>	<b>Increase in Rated Load</b>			Major	-		
		2.26.1.4	Inspection Operation					
		2.26.1.5	Inspection Operation with Open Door Circuits					
		2.26.5	Monitor & Prevent Automatic Operation w/ Faulty Door Contacts					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		<a href="#">8.7.3.23.4</a>	Increase in Working Pressure					
	<b>8.7.3.21</b>	<b>Increase in Deadweight of Car (Car Wt+Rated Load &gt;5%)</b>			Major	-		
		3.14.	Car: Enclosure, Doors, Gates, Illumination		n/a			
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to 8.7.2.14★4					
		3.15.	Car Frames & Platforms - ★apron guard to ED CAD/as pit permits					
		3.16.	Capacity & Loading					
		3.17.	Car and Counterweight Safeties					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		3.22.	Buffers and Bumpers					
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.24.5	Counterweight Sheaves					
		8.7.3.23.4	Increase in Working Pressure					
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★1	★ Decrease Deadweight <5% or Increase Deadweight of Car (115 kg or Less)			Minor B	Minor B		
		CAD 8.7.2.15★1						
	CAD 8.7.3.21★2	★ Increase Deadweight of Car (>115 kg to 5%)			Minor A	Minor A		
		CAD 8.7.2.15★2						

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.22</b>	<b>Change in Rise or Rated Speed</b>			Major	-		
	<b>8.7.3.22.1</b>	<b>Increase or Decrease in Rise</b>			Major	-		
		3.25.	Terminal-Stopping Devices					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.4.1	Bottom Car Clearance					
		3.4.2	Minimum Bottom and Top Car Runby					
		3.4.3	Car Top and Bottom Maximum Runby					
		3.18.2	Plungers					
			If decrease in rise is at lowest end then;					
		2.2.4	Access to Pits					
		2.2.5	Illumination of Pits					
		2.2.6	Stop Switches					
	<b>8.7.3.22.2</b>	<b>Increase in Rated Speed</b>			Major	-		
		2.5.	Horizontal Car and Counterweight Clearances					
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	New doors/gates to: Car: Enclosure, Doors, Gates, Illumination					
		3.17.(*)	Car and Counterweight Safeties					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.20.	Ropes and Rope Connections					
	<b>8.7.3.22.3</b>	<b>Decrease in Rated Speed</b>			Major	-		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		2.18.2	Tripping Speeds for Speed Governors					
		3.16.	Capacity & Loading					
		3.16.3(b)	Capacity & data plates					
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					
	<b>8.7.3.23</b>	<b>Hydraulic Equipment</b>				↓ See Below ↓		
	<b>8.7.3.23.1</b>	<b>Alter / Install / Replace Hydraulic Jacks</b>			Major	-	Major	
		3.18.	Hydraulic Jacks				see 8.6.3.10.1	
	<b>8.7.3.23.2</b>	<b>Alter / Install / Replace Plungers</b>			Major	-	Minor A	
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.3</b>	<b>Alter / Install / Replace Cylinders</b>			Major	-	Minor A	
		3.18.3	Cylinders				see 8.6.3.10.2	
		3.18.3	Cylinder is Altered					
		3.18.3	Cylinder is Sleeved		Minor A			
		3.18.4.1	Metal Stops and/or Other Means					
		3.18.1.2	Roped-Hydraulic Elevator					
		3.18.2	Plungers					
	<b>8.7.3.23.4</b>	<b>Increase in Working Pressure &gt;5%</b>			Major	-		
		3.18.(*)	Hydraulic Jacks					
		3.19.(*)	Valves, Pressure Piping, and Fittings					
		3.24.1	Marking Plates					
		3.24.2	Tanks					
		3.24.3	Atmosphere Storage and Discharge Tanks					
		3.24.4	Welding					
	<b>8.7.3.23.5</b>	<b>Change in Location of Hydraulic Jack</b>			Major	-		
		Part 3	Hydraulic Elevators					
	<b>8.7.3.23.6</b>	<b>Relocation of Hydraulic Machine (Power Unit)</b>			Minor A	-		
		3.26.8	Pressure Switch					

0	1	2a	2b	2c	3	4	5	6
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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.3.23.7	Plunger Gripper			Minor A	Minor A		
		3.17.3	Plunger Gripper					
		3.1.1(b)	strength of pit floor					
		3.22.1	no strike when buffers compressed					
CAD	8.7.3.23.7 ★1	Removal of Plunger Gripper			Minor A	-		
		3.18.3	Cylinders					
		3.19.4.7	Overspeed Valves					
		3.4.2.1	Bottom Car Runby					
	8.7.3.24 (a)	Alter / Replace	Control Valves		Minor A	-		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Relief Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Check Valves		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.24 (b)	Alter / Replace	Pressure Piping or Fittings		Minor A	Minor A		Minor B see 8.6.3.11
		3.19.	Valves, Pressure Piping, and Fittings					
	8.7.3.25	Suspension Ropes and Their Connections			↓ See Below ↓			
	8.7.3.25.1	Change in Number of, or Diameter of Ropes			Major	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.1	Change in Material / Grade of Ropes			Minor A	-		
		3.20.	Ropes and Rope Connections					
			PEO to certify retained sheaves w/different ropes are satisfactory					
	8.7.3.25.2	Addition of Rope Equalizers			Minor B	Minor B		
		2.20.5	Suspension Rope Equalizers					
	8.7.3.26	Counterweights - Alteration of			See 8.7.2.22			
	8.7.2.22	Counterweights			Minor A	-		
	8.7.2.22.1	Alteration to any part of a cwt except guiding members						
		2.21.	Counterweights					
		3.21.	Counterweights					
		<a href="#">8.7.2.22.2</a>	Rod Type Counterweights					
		<a href="#">8.7.2.3</a>	Location and Guarding of Counterweights					
	8.7.2.22.2	Rod Type Cwt - can retain if:						
		Minimum of 2 suspension and 2 tie rods						
		Suspension rods:						
		2.21.2.1	Material - Cwt Frames & Rods					
		2.21.2.3	Factor of Safety					
		Tie Rods:						
		2.21.1.2	Retention of Weight Sections					
	8.7.2.22.3	Roller or similar guide shoes added				mrr		mrr
		safety jaws cannot touch rails if not activated						
	8.7.3.26	Counterweights - Addition of			-	Major		
		3.4.	Bottom and Top Clearances and Runbys for Cars and Cwts					
		3.6.	Protection of Spaces below Hoistway					
		3.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.	Car: Enclosure, Doors, Gates, Illumination					
		2.14.1.7.1	car top guard rail to CAD 8.7.2.14 ★4					
		3.15.	Car Frames & Platforms					
		3.17.2	Counterweight Safeties					
		3.18.	Hydraulic Jacks					
		3.20.	Ropes and Rope Connections					
		3.21.	Counterweights					
		<a href="#">8.7.3.3</a>	Location and Guarding of Counterweights					
	8.7.3.27	Car Buffers and Bumpers			Major	-	mrr	Minor B
		3.21.	Counterweights					
		3.22.2(*)	Counterweight Buffers					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.28</b>	Guide Rails, Supports, and Fastenings (alteration to, or stress increase >5%)			Major	-		
		3.23.	Guide Rails, Guide-Rail Supports, and Fastenings					
		3.28.	Layout Data					
	<b>8.7.3.29</b>	Alteration to	Tanks		Minor B	-	Minor B	
		3.24.	Hydraulic Machines and Tanks				see 8.6.3.10.4	
	CAD 8.7.3.29★1	★	Addition of Oil Cooler		Minor B		Minor B	
		8.7.3.8	Electrical Wiring, Pipes, and Ducts in H/W and M/C rooms					
		2.7.2	Maintenance Path and Clearance					
		3.10.	Guarding of Exposed Auxiliary Equipment					
	<b>8.7.3.30</b>	Terminal-Stopping Devices			Minor B	Minor B		
		3.25.	Terminal-Stopping Devices					
	<b>8.7.3.31</b>	Operating Devices and Control Equipment			↓ See Below ↓			
	<b>8.7.3.31.1</b>	Top-of-Car Operating Devices			Minor A	Minor A	mrr	Minor A
		3.26.2	Inspection Operation					
	CAD 8.7.3.31★1	Alteration / Addition of any type of inspection operation			Minor A	Minor A		
		2.26.1.4	Inspection Operation					
	CAD 8.7.3.31★2	Addition of Top-of-Car Operating Device (see CAD 3.8.3)			-	Minor A		
		2.26.1.4	Inspection Operation					
		8.7.2.15★1,★2						
	<b>8.7.3.31.2</b>	Car-Leveling or Truck-Zoning Devices			Minor A	Minor A		
		3.26.3.2	Operation in Leveling or Truck Zone					
	<b>8.7.3.31.3</b>	Alter / Replace	Anti-Creep Leveling Device		Minor B	-	Minor B	
		3.26.3.1	Anti-Creep Operation				see 8.6.3.10.5	
	CAD 8.7.3.31★3	★	Door By-Pass Switches		Minor A	Minor A		
		2.26.1.5	Inspection Operation with Open Door Circuits					
	CAD 8.7.3.31★4	★	Door Monitoring System		Minor A	Minor A		
		2.26.5	System to Prevent Auto Operation w/faulty Door Contacts					
	<b>8.7.3.31.4</b>	Change in Power Supply			Major	-		
		(a)	voltage, frequency or # of phases or					
		(b)	AC to DC , DC to AC or					
		(c)	combination of DC & AC, then					
		electrical to:						
		3.26.1	Operating Devices and Control Equipment					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6(*)	Control and Operating Circuits					
	CAD 8.7.3.31★5	★	Addition of Soft Start			Minor A		
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					
		3.26.5	Phase-Reversal and Failure Protection					
	CAD 8.7.3.31★6	★	Addition of Power Efficiency Increasing Device			Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.5	Controllers			Major	-	Major	
	8.7.3.31.5(a)	Install / Replace	Elevator Controller					
		3.25.	Terminal-Stopping Devices					
		3.26.	Operating Devices and Control Equipment					
		3.26.1	Operating Devices and Control Equipment					
		3.26.2	Inspection Operation					
		3.26.3	Anti-Creep and Leveling Operation					
		3.26.4	Electrical Protective Devices					
		3.26.5	Phase-Reversal and Failure Protection					
		3.26.6	Control and Operating Circuits					
		3.26.7	Recycling Operation for Multiple or Telescopic Plungers					
		3.26.8	Pressure Switch					
		3.26.9	Low Oil Protection					
		3.26.10	Auxiliary Power Lowering Operation					
		★ 2.7.9.2	Temperature and Humidity					
		2.27.2	when E.P. Is provided					
		3.27.1	Phase 1 Emergency Recall Operation after Device Actuation					
		3.27.2	Phase 1 Emergency Recall Operation prior to Device Actuation					
		3.27.3	Device Actuation at Recall Level					
		3.27.4	Device Actuation with Phase II Emergency In-Car in Effect					
		If FEO previously present or required by OBC;						
		2.27.3	Firefighters' Emergency Operation - Automatic Elevators					
			2.27.3.1 Phase 1 Recall Operation					
			2.27.3.2 Phase 1 Recall Operation by FAID's					
			CAD 2.27.3.2.2					
			2.27.3.3 Phase 2 Emergency In-Car Operation					
			2.27.3.4 Interruption of Power					
			2.27.3.5 Multicompartment Elevators					
			see 8.7.1.2 safety levels shall not be diminished					
		2.27.4	FEO: Non Automatic Elevators					
		2.27.5	FEO: Automatic Elevators with Designated-Attendant Operation					
		2.27.6	FEO: Inspection Operation					
		2.27.7	FEO: Operating Procedures					
		2.27.8	Switch Keys					
		2.27.9	Elevator Corridor Call Station Pictograph					
		If FEO NOT previously present or required by OBC;						
			CAD 2.27.3.2.2					
			2.27.3.1 Provide Phase 1 Manual Recall Operation Only					
	CAD 8.7.3.31 ★7	Relocation of	Elevator Controller (if control wiring disconnected - reconnected)	Major				
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	8.7.3.31.5(b)	Install / Replace	Door Controller	Minor A	-	Minor B		
		2.26.4.1	Electrical Equipment and Wiring					
		2.26.4.2	Drive Machine Controllers for Stopping/Starting/Controlling					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.3.31.6</b>	Change in Type of Motion Control 2.11.1(*) Entrances and Emergency Doors Required 2.11.2 Types of Entrances 2.11.3 Closing of Hoistway Doors 2.11.4 Location of Horizontally Sliding or Swinging H/W Doors 2.11.5 Projection of Entrances & Equip. Beyond Land'g Sills 2.11.6(*) Opening of Hoistway Doors 2.11.8 Weights for Closing or Balancing Doors 2.11.9 Hoistway Door Locking Devices & Power Operation 2.11.11.8(*) Hoistway Door Safety Retainers 2.11.12.8 Pull Straps 2.12.(*) H/W-Door Locking Devices, Elec. Contacts, H/W Access 2.12.5 Restricted Opening of Hoistway or Car Doors 2.12.6 Hoistway Door Unlocking Devices 2.12.7 Hoistway Access Switches 2.13. Power Operation of H/W Doors and Car Doors 2.14.(*) Car: Enclosure, Doors, Gates, Illumination 2.14.1.7 car top railing 8.7.2.27.5(d) Capacity & Loading 2.17.(*) Car & Cwt Safeties 2.18.(*) Speed Governors 3.25. Terminal Stopping Devices 3.26.(*) Operating Devices and Control Equipment 2.29. Identification of Equipment and Floors ★ 2.7.9.2 Temperature and Humidity  If FEO previously present or required by OBC; <b>2.27.</b> Emergency Operation and Signalling Devices 2.27.1 Car Emergency Signalling Devices 2.27.2 Emergency or Standby Power Systems 2.27.3 Firefighters' Emergency Operation: Automatic Elevators 2.27.3.1 Phase 1 Recall Operation 2.27.3.2 Phase 1 Recall Operation by FAID's CAD 2.27.3.2.2 2.27.3.3 Phase 2 Emergency In-Car Operation 2.27.3.4 Interruption of Power 2.27.3.5 Multicompartment Elevators see <a href="#">8.7.1.2</a> safety levels shall not be diminished 2.27.4 FEO: Non Automatic Elevators 2.27.5 FEO: Automatic Elevators with Designated-Attendant Operation 2.27.6 FEO: Inspection Operation 2.27.7 FEO: Operating Procedures 2.27.8 Switch Keys  If FEO NOT previously present or required by OBC; CAD 2.27.3.2.2 2.27.3.1 Provide Phase 1 Manual Recall Operation Only			Major	-		



0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	Alteration Checklist for Director's Guideline 251/11-r2 Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1 Part, Section or Requirement			Type of Alteration Work			
		Job Reference:			Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.7	Change in Type of Operation Control - CPPB, Automatic			Major	-		
		2.11.1	Entrances and Emergency Doors Required					
		2.11.2	Types of Entrances					
		2.11.3	Closing of Hoistway Doors					
		2.11.4	Location of Horizontally Sliding or Swinging H/W Doors					
		2.11.5	Projection of Entrances & Equip. Beyond Land'g Sills					
		2.11.6	Opening of Hoistway Doors					
		2.11.7	Glass in Hoistway Doors					
		2.11.8	Weights for Closing or Balancing Doors					
		2.11.9	Hoistway Door Locking Devices & Power Operation					
		2.11.10	Landing Sill: Guards, Illumination, hinged sills, Tracks					
		2.11.11	Entrances, Horizontal Slide Type					
		2.11.12	Entrances, Vertical Slide Type					
		2.11.13	Entrances, Swing Type					
		3.11.1	Protection of Hoistway Landing Openings					
		3.12.1	H/W-Door Locking Devices, Elec. Contacts, H/W Access					
		3.13.	Power Operation of H/W Doors and Car Doors					
		3.14.(*)	Car: Enclosure, Doors, Gates, Illumination					
		3.16.	Capacity & Loading					
		3.25.	Terminal-Stopping Devices					
		3.26.(*)	Operating Devices and Control Equipment					
		★ 2.7.9.2	Temperature and Humidity					
		3.27.	Emergency Operation and Signaling Devices					
			3.27.1 PHI Emergency Recall Operation After Device Actuation					
			(a) low oil protection					
			(b) plunger follower guide protection					
			(c) auxiliary power lowering					
			(d) oil tank temperature shutdown					
			2.27 Emergency Operation & Signaling Devices					
			2.27.1 Car Emergency Signalling Devices					
			2.27.2 Emergency or Standby Power Systems					
			2.27.3 FEO: Automatic Elevators					
			CAD 2.27.3.2.2					
			2.27.4 FEO: Non-Automatic Elevators					
			2.27.5 FEO: Automatic Elevators w/Attendant					
			2.27.6 FEO: Inspection Operation					
			2.27.7 FEO: Operating Procedures					
			2.27.8 Switch Keys					
			2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC					
	CAD 8.7.3.31★8	★ Addition of Wander Patient Feature - Change in Operation Control			Minor B	Minor B		
		2.11.3.2	- doors closed when not in use					
		2.27.3.1.6(l)	- shall not prevent PHI					
	CAD 8.7.3.31★9	★ Addition of Restricted Access - Security / Floor Lock Out			Minor B	Minor B		
		OBC-3.2.6.5(4) - shall not prevent floor access When on FEO						
		D.O. Button Remain Operative Under non FEO Conditions, Door Closed When not in Use						
		2.27.3.1.6(l)	- shall not prevent PHI					
		2.27.3.3.1(i)	- permit travel to all landings when on PH II					
		2.11.6.2	Cannot Lock Out Top& Btm, Designated & Alternate or All Landings in Phase II					
		DR 172/02	Elevators With Phase II Operation & Floor Button Controlled by Cards/Keys					
	8.7.3.31.8	Emergency Operation and Signaling Devices						
	8.7.3.31.8(a)	Car Emergency Signaling Devices			Minor B	Minor B		mrr
		2.27.1	Car Emergency Signaling Devices					
	8.7.3.31.8(b)	Emergency or Standby Power			Minor B	Minor A		
		2.27.2	Emergency Or Standby Power systems					

0	1	2a	2b	2c	3	4	5	6
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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	8.7.3.31.8(c)	Firefighter's Emergency Operation			Minor B	Minor A		
		3.27. Emergency Operation and Signaling Devices						
		3.27.1 PHI Emergency Recall Operation After Device Actuation						
		(a) low oil protection						
		(b) plunger follower guide protection						
		(c) auxiliary power lowering						
		(d) oil tank temperature shutdown						
		2.27 Emergency Operation & Signaling Devices						
		2.27.1 Car Emergency Signalling Devices						
		2.27.2 Emergency or Standby Power Systems						
		2.27.3 FEO: Automatic Elevators						
		CAD 2.27.3.2.2						
		2.27.4 FEO: Non-Automatic Elevators						
		2.27.5 FEO: Automatic Elevators w/Attendant						
		2.27.6 FEO: Inspection Operation						
		2.27.7 FEO: Operating Procedures						
		2.27.8 Switch Keys						
		2.27.9 Elevator Corridor Call Station Pictograph if req'd by OBC						
	CAD 8.7.3.31.8★10	★ Emerg. Recall Upgrade - from Manual to Automatic & matching code at time of install			Minor B			
		conformance to auto recall based on F.S. at time of install						
	CAD 8.7.3.31.8★11	★ Emerg. Recall Upgrade to comply with a Fire Code Retrofit Order			Minor B	Minor A		
		2.27.3 FEO: Automatic Elevators						
	8.7.3.31.9	Auxiliary Power Lowering Operation			Minor B	Minor B		
		3.26.10 Auxiliary Power Lowering Operation						
		include testing procedure						
	8.7.3.31.10	Removal of emergency stop switch on passenger elevators			Minor B	Minor B		
		remove all related markings / engravings & provide an in-car stop switch to:						
		2.26.2.21 In-car stop switch						
		2.26.4.3 Positively Opened Contacts						
		2.26.9.3.1(a) single failure does not render In-Car Stop Switch ineffective						
		3.26.4.2 deceleration rate <1g, anticreep must still function						
	8.7.3.31.11	Electrical Protective Devices			↓ See Below ↓			
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			Major	Major	mrr	Major
		if device meets 2.26.4.3.2 (PES)						
		3.26.2 Electrical Protective Devices - for specified device						
	8.7.2.27.8	Alteration or Addition of an Electrical Protective Device			-	Minor A	mrr	
		if device meets 2.26.4.3.1						
		3.26.2 Electrical Protective Devices - for specified device						

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					Modification Change	Addition	Same	Different Make/Model	
					Type of Submission Required				
	<b>8.7.4</b>	Alterations to Elevators w/other Types of Driving Machines							
	<b>8.7.4.1</b>	Rack and Pinion Elevators			Major	-			
		4.1.	Rack and Pinion Elevators						
	<b>8.7.4.2</b>	Screw-Column Elevators			Major	-			
		4.2.	Screw-Column Elevators						
	<b>8.7.4.3</b>	Hand Elevators			Major	-			
	<b>8.7.4.3.1</b>	Hoistway Enclosures and Machinery Space			Major	-			
		4.3.1	Hoistways, H/W Enclosures, and Related Construction						
		4.3.4	Enclosures for Machines and Control Equipment						
	<b>8.7.4.3.2</b>	Top Car and Counterweight Clearances			Major	-			
		4.3.3	Top Clearances						
	<b>8.7.4.3.3</b>	Hoistway Entrances			Major	-			
		4.3.6	Hoistway Entrances						
		4.3.7	Hoistway Gates for Landing Openings						
		4.3.8	Hoistway-Door & Hoistway Gate Locking Devices						
	<b>8.7.4.3.4</b>	Car Enclosures			Major	-			
		4.3.9	Car Enclosures						
		4.3.11	Car Frames and Platforms						
	<b>8.7.4.3.5</b>	Car Frame and Platform			Major	-			
		4.3.11	Car Frames and Platforms						
		4.3.12	Car Compartments						
		4.3.13	Cars Counterbalancing One Another						
		4.3.16	Suspension Means						
	<b>8.7.4.3.6</b>	Capacity and Loading			Major	-			
		4.3.14.1	Minimum Rated Load						
		4.3.14.2	Capacity Plate						
		4.3.19.1	Drive Machine & Sheaves - Factors or Safety						
		4.3.19.2	Driving-Machines						
		4.3.16	Suspension Means						
	<b>8.7.4.3.7</b>	Increase in Rise			Major	-			
		4.3.3.1	Top Car Clearances						
		4.3.3.2	Top Counterweight Clearance						
		4.3.15	Car Safeties						
		4.3.16	Suspension Means						
	<b>8.7.4.3.8</b>	Guide Rails and Fastenings			Major	-			
		4.3.18.1	Guide Rails - Material and Finish						
		4.3.18.2	Strength of Rails and Fastenings						
		4.3.18.3	Extension of Guide Rails at Top & Bottom of H/W						
	<b>8.7.4.3.9</b>	Overhead Beams and Supports			Major	-			
		4.3.5.1	Overhead Beams and Supports						
		4.3.5.2	Access to Machines and Sheaves						
	<b>8.7.4.3.10</b>	Power Attachments			Major	-			

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
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	8.7.5	Alterations to Special Application Elevators						
	8.7.5.1	Inclined Elevators			Major	-		
		5.1.	Inclined Elevators compliance to specific 5.1 sections based on alteration scope			variance		
	8.7.5.2	Limited Use/Limited Application Elevators			See Electric or Hydraulic Elevator			
	CAD 8.7.5.2★1	★	<a href="#">8.7.2</a>	Alterations to Electric Elevator & as modified in Section 5.2				
	CAD 8.7.5.2★2	★	<a href="#">8.7.3</a>	Alterations to Hydraulic Elevator & as modified in Section 5.2				
	8.7.5.5	Power Sidewalk Elevators			Major	-		
	8.7.5.5.1	Changes in Electrical Wiring or Electrical Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
	8.7.5.5.2	Sidewalk Door			Major	-		
		5.5.1.11.2	Horizontal Openings in Sidewalks and Exterior Areas					
		5.5.1.11.3	Hinged Type Swing Sidewalk Doors					
		5.5.1.11.4	Vertical Lifting Sidewalk Covers					
	8.7.5.5.3	Change in Car Enclosure, Car Doors, and Gates			Major	-		
		5.5.1.14	Car Enclosure, Car Doors and Gates, Illumination					
	8.7.5.5.4	Bow-Irons and Stanchions			Major	-		
		5.5.1.15.2	Bow-Irons and Stanchions					
	8.7.5.5.5	Increase in Rated Load			Major	-		
		5.5.1.16	Capacity and Loading					
		5.5.1.18	Speed Governors					
		5.5.1.21	Buffers and Bumpers					
		5.5.1.25.4	Maximum Rated Speed					
	8.7.5.5.6	Increase in Rated Speed			Major	-		
		5.5.1.15	Car Frames and Platforms					
		5.5.1.16	Capacity and Loading					
		5.5.1.19	Suspension Ropes					
		5.5.1.22	Guide Rails					
	8.7.5.5.7	Existing Driving Machine			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.9	Machinery and Sheave Beams, Supports, and Foundations					
		5.5.1.23	Driving Machines and Sheaves					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.5.8	Change in Type of Operating Devices and/or Control Equipment			Major	-		
		5.5.1.8	Equipment in Hoistways & Machine Rooms					
		5.5.1.25	Operating Devices and Control Equipment					
	8.7.5.6	Rooftop Elevators			Major	-		
		5.6.	Rooftop Elevators					
	8.7.5.7	Special Purpose Personnel Elevators			see CAN/CSA B311			

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					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	<b>8.7.6.1</b>	Alterations to Escalators						
	8.7.6.1.1	Change to component parts			mrr	-		mrr
		8.6.12.4.1.1 Replacement parts or components						
		8.6.12.4.1.2 Quality of Work						
	8.7.6.1.1	Addition of Components or Devices			see <a href="#">8.7.6.1</a>			-
		see applicable <a href="#">8.7.6.1</a> requirements for that device						
	<b>8.7.6.1.2 (a)</b>	Relocation of Escalator			New	-		
		6.1. Escalators						
	<b>8.7.6.1.2 (b)</b>	Repositioning of Escalator			Major			
	CAD 3.18	★ Repositioning of Escalator (within the same building)						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
		6.1.3.4.3 Guards						
		6.1.3.6.3 Adjacent Floor Surfaces						
		6.1.3.6.4 Safety Zone						
		6.1.3.12 Headroom						
		6.1.3.13 Welding						
		6.1.6.9 Signs						
		6.1.7.4.1 Electrical equipment						
		8.7.6.1.3 Protection of Floor Openings						
	<b>8.7.6.1.3</b>	Protection of Floor Openings			Minor A	-		
		6.1.1.1 Protection Required						
	<b>8.7.6.1.4</b>	Protection of Trusses and Machinery Spaces Against Fire			Minor A	-		
		6.1.2.1 Protection Required						
	<b>8.7.6.1.5</b>	Construction Requirements						
	8.7.6.1.5(a)	Construction Requirements - Angle of Inclination			Major	-		
	8.7.6.1.5(b)	Construction Requirements - Geometry			Major	-		
		6.1.3.2 Geometry						
	8.7.6.1.5(c)	Any Alteration to the Balustrades			Minor A	Minor A		
		6.1.3.3 Balustrades						
		6.1.3.3.1 Construction						
		6.1.3.3.2 Strength						
		6.1.3.3.3 Use of Glass or Plastic						
		6.1.3.3.4 Interior Low Deck						
		6.1.3.3.5 Loaded Gap between Skirt & Step						
		6.1.3.3.6 Skirt Panels						
		6.1.3.3.7 Dynamic Skirt Panels						
		6.1.3.3.8 Dynamic Skirt Panel Loaded Gap						
		6.1.3.3.9 Step/Skirt Performance Index						
		6.1.3.3.10 Skirt Deflector Devices						
		6.1.3.3.11 Guard at ceiling intersection						
		6.1.3.3.12 AntiSlide Devices						
		6.1.3.3.13 Deck Barricades						
	8.7.6.1.5(d)	Deflector Devices			Minor B			mrr
		6.1.3.3.10 Skirt Deflector Devices						
	<b>8.7.6.1.6</b>	Handrails or Handrail System			Minor A	-		
		6.1.3.2.2 Geometry - Handrail						
		6.1.3.4.1 Handrails - Type Required						
		6.1.3.4.2 Extension Beyond Combplate						
		6.1.3.4.3 Guards (hand or finger)						
		6.1.3.4.4 Handrails - Splicing						
		6.1.3.4.6 Handrail Clearance						
		6.1.6.3.12 Handrail Entry Device						
		6.1.6.4 Handrail Speed Monitoring Device						
	CAD 8.7.6.1★1	★ Addition of Handrail Advertising			mrr	variance		
		Variance to 6.1.6.9.2						

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	<b>8.7.6.1.7</b>	Step System - any alteration to the step system			Major	-	mrr	Minor B
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5 (*)	Steps					
		6.1.3.6	Entrance and Egress Ends					
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.4	Factor of Safety - Steps					
		6.1.3.11	Chains					
		6.1.6.3.3	Broken Step-Chain Device					
		6.1.6.3.9	Step Upthrust Device					
		6.1.6.3.11	Step Level Device					
		6.1.6.3.14	Step Lateral Displacement Device					
		6.1.6.5	Missing Step Device					
	<b>8.7.6.1.8</b>	Combplates			Minor A	-		
		6.1.6.3.13	Comb-Step Impact Devices					
	<b>8.7.6.1.9</b>	Trusses and Girders			Major	-		
		<a href="#">8.7.1.4</a>	Welding					
		6.1.3.7	Trusses of Girders					
		6.1.3.9.1	Structural Load					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
	<b>8.7.6.1.9</b>	New Escalator into Existing Trusses			New	-		
		6.1.	Escalators					
	<b>8.7.6.1.10</b>	Step Wheel Tracks			Major	-		
		6.1.3.8	Step Wheel Tracks					
		6.1.3.9.4	Step					
		6.1.3.10.1	Factor of Safety - Trusses and Supporting Structures					
		<a href="#">8.7.1.4</a>	Welding					
	<b>8.7.6.1.11</b>	Rated Load and Speed			Major	-		
		6.1.	Escalators					
	<b>8.7.6.1.12</b>	Driving Machine, Motor, and Brake						
	8.7.6.1.12(a)	Driving Machine			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.4	Broken Drive-Chain Device					
		6.1.6.3.8	reversal Stop Device					
	8.7.6.1.12(b)	Driving Motor			Major	-		
		6.1.3.9.2	Machinery					
		6.1.3.10.3	Factor of Safety - Power Transmission Parts					
		6.1.4.1	Limits of Speed					
		6.1.5.2	Driving Motor					
		6.1.5.3.1	Escalator Driving-Machine Brake					
		6.1.5.3.2	Main Drive Shaft Brake					
		6.1.6.3.2	Speed Governor					
		6.1.6.3.8	reversal Stop Device					
		6.1.6.3.10	Disconnected Motor Safety Device					
	8.7.6.1.12(c)	Machine Brake			Major	-		
		6.1.3.9.3	Brake					
		6.1.3.10.2	Factor of Safety - Driving Machine Parts					
		6.1.5.3.1	Escalator Driving-Machine Brake					

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	<b>8.7.6.1.13</b>	Operating and Safety Devices			Minor A	Minor A		
		6.1.6	Operating and Safety Devices (for that device)					
	CAD 8.7.6.1★2	★	Removal of step demarcation lights		Minor A	-		-
		6.1.3.3.5	Loaded Gap Between Skirt & Step					
		6.1.3.5.4	Clearance between Steps					
		6.1.3.5.5	Slotting of Steps and Treads					
		6.1.3.5.6	Step Demarcation					
		6.1.3.6.2	Distinction Between Comb and Step					
	<b>8.7.6.1.14</b>	Lighting, Access, and Electrical Work			Minor B	Minor B		
		6.1.7	Lighting, Access, and Electrical Work					
	<b>8.7.6.1.15</b>	Entrance and Egress			Major	-		
		6.1.3.6.1	Combplates					
		6.1.3.6.2	Distinction Between Comb and Step					
		6.1.3.6.3	Adjacent Floor Surfaces					
		6.1.3.6.4	Safety Zone					
	<b>8.7.6.1.16</b>	Controller			Major	-		-
		6.1.6.10	Control and Operating Circuits					
		6.1.6.11	Electrically Power Safety Devices					
		6.1.6.12	Installation of Capacitors.. To Make EPD's Ineffective					
		6.1.6.13	Completion of Maintenance Circuits					
		6.1.6.14	Escalator Manual Reset					
		6.1.6.15	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.1★3	★	Controller - Replacement of <a href="#">8.7.6.1.16</a> Controller		-	-		Major
	CAD 8.7.6.1★4		Relocation of Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.1★5	★	Addition of Soft start for control systems built to B44-00 and later		-	Minor A		
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.1★6	★	Addition of Power Efficiency Increasing Device		-	Minor B		
			B44.1 certified					
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

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	<b>8.7.6.2</b>	Alterations to Moving Walks						
	8.7.6.2.1	Change to component parts			mrr	-		mrr
		8.6.12.4.1.1 Replacement parts or components						
		8.6.12.4.1.2 Quality of Work						
	8.7.6.2.1	Addition of Components or Devices			see <a href="#">8.7.6.2</a>			-
		see applicable <a href="#">8.7.6.2</a> requirements for that device						
	<b>8.7.6.2.2</b>	Relocation of Moving Walk			New	-		
		6.2. Moving Walks						
	<b>8.7.6.2.3</b>	Protection of Floor Openings			Minor A	-		
		6.2.1.1 Protection Required						
	<b>8.7.6.2.4</b>	Protection of Trusses and Machinery Spaces Against Fire			Minor A	-		
		6.2.2.1 Protection of Supports - Protection Required						
	<b>8.7.6.2.5</b>	Construction Requirements - Angle of Inclination			Major	-		
		6.2. Moving Walks						
	<b>8.7.6.2.5</b>	Construction Requirements - Geometry			Major	-		
		6.2.3.2 Geometry						
	<b>8.7.6.2.5</b>	Construction Requirements - Balustrades			Minor A	Minor A		
		6.2.3.3 Balustrades						
	<b>8.7.6.2.6</b>	Handrails			Minor A	-		
		6.2.3.2.3 Geometry - Handrail						
		6.2.3.4 Handrails						
		6.2.6.3.10 Handrail Entry Device						
		6.2.6.4 Handrail Speed Monitoring Device						
	<b>8.7.6.2.7</b>	Treadway System			Major	-		
		6.2.3.2.3 Geometry - Handrail						
		6.2.3.3.5 Skirtless Balustrade						
		6.2.3.3.6 Skirt Panels						
		6.2.3.5 Pallet-Type Treadway						
		6.2.3.6(*) Belt-Type Treadway						
		6.2.3.8 Entrance and Egress Ends						
		6.2.3.9 Supporting Structure						
		6.2.3.10.4 Pallet						
		6.2.3.11.4 Pallet Factor of Safety						
		6.2.3.11.5 Belt Factor of Safety						
		6.2.3.12 Chains						
		6.2.6.3.3 Broken Treadway Device						
		6.2.6.5 Missing Pallet Device						
		6.2.6.3.9 Pallet Level Device						
	<b>8.7.6.2.8</b>	Combplates			Minor A	-		
		6.2.3.8 Entrance and Egress Ends						
		6.2.6.3.11 Comb-Pallet Impact Devices						
	<b>8.7.6.2.9</b>	Trusses and Girders			Major	-		
		<a href="#">8.7.1.4</a> Welding						
		6.2.3.9 Supporting Structure						
		6.2.3.10.1 Structural Load						
		6.2.3.12.1 Trusses & Supports based on max static load						
	<b>8.7.6.2.9</b>	New Moving Walk into Existing Truss			New	-		
		6.2. Moving Walks						
	<b>8.7.6.2.10</b>	Track System			Major	-		
		6.2.3.9 Supporting Structure						
		6.2.3.10 Rated Load						
		6.2.3.11.1 Trusses & Supports based on max static load						
		<a href="#">8.7.1.4</a> Welding						
	<b>8.7.6.2.11</b>	Rated Load and Speed			Major	-		
		6.2. Moving Walks						



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					Modification Change	Addition	Same	Different Make/Model
Job Reference:					Type of Submission Required			
	8.7.6.2.12	Driving Machine			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.3.14	V-Belt Drives					
		6.2.3.15	Headroom					
		6.2.4	Rated Speed					
		6.2.5.1	Connection Between Driving Machine and Main Drive Shaft					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
		6.2.6.3.4	Broken Drive-Chain Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Drive Motor			Major	-		
		6.2.3.10.2	Machinery Load					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.4	Rated Speed					
		6.2.5.2	Driving Motor					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.6.3.2	Speed Governor					
		6.2.6.3.7	Reversal Stop Device					
		6.2.6.3.8	Disconnected Motor Safety Device					
	8.7.6.2.12	Machine Brake			Major	-		
		6.2.3.10.3	Brake					
		6.2.3.11.2	Factor of Safety for Drive Machine Parts					
		6.2.3.11.3	Factor of Safety for Power Transmission members					
		6.2.5.3.1	Moving Walk Driving-Machine Brakes					
		6.2.5.3.2	Main Drive Shaft Brake					
	8.7.6.2.13	Operating and Safety Devices			Minor A	Minor A		
		6.2.6	Operating and Safety Devices (for that device)					
	8.7.6.2.14	Lighting, Access, and Electrical Work			Minor B	Minor B		
		6.2.7	Lighting, Access, and Electrical Work					
	8.7.6.2.15	Controller - Installed as part of an alteration			Major	-		-
		6.2.6.9	Control and Operating Circuits					
		6.2.6.10	Electrically Power Safety Devices					
		6.2.6.11	Installation of Capacitors.. To Make EPD's Ineffective					
		6.2.6.12	Completion of Maintenance Circuits					
		6.2.6.13	Moving Walk Manual Reset					
		6.2.6.14	Contractors and Relays for Use in Critical Operating Circuits					
	CAD 8.7.6.2★1	★ Controller - Replacement of			-	-		Major
		<a href="#">8.7.6.1.16</a>	Controller					
	CAD 8.7.6.2★2	Relocation of	Controller (if control wiring disconnected - reconnected)		Major			
		2.8.2	Electrical Equipment and Wiring					
			Electrical testing as per the original design submission tests					
	CAD 8.7.6.2★3	★ Addition of Soft start			-	Minor A		
			for control systems built to B44-00 and later					
		6.1.7.4	Electrical Equipment and Wiring					
		6.1.6.10.1	Occurrence of a single ground					
		6.1.6.10.2	Redundancy to be checked					
		6.1.6.10.3	Motors with Static control					
			for control systems built prior to B44-00					
		6.1.7.4	Electrical Equipment and Wiring					
	CAD 8.7.6.2★4	★ Addition of Power Efficiency Increasing Device			-	Minor B		
		B44.1 certified						
		2.26.4.1 & 2	OESC, CSA C22.1 & B44.1 certified					

0	1	2a	2b	2c	3	4	5	6
Conforms to B44 Mark with 'X'	B44-10 Reference Number	<b>Alteration Checklist for Director's Guideline 251/11-r2</b> <b>Scope of Alteration - B44 - 2010 as amended by CAD 261/13-r1</b> <b>Part, Section or Requirement</b>  <b>Job Reference:</b>			Type of Alteration Work			
					Alteration		Replacement with	
					Modification Change	Addition	Same	Different Make/Model
					Type of Submission Required			
	<b>8.7.7</b>	Alterations to Dumbwaiters and Material Lifts						
	<b>8.7.7.1</b>	Dumbwaiters and Material Lifts Without Automatic Transfer Devices			Major	-		
		Alteration to a Power and Hand Dumbwaiters			Major	-		
		7.1.	Power and Hand Dumbwaiters					
		7.2.	Electric and Hand Dumbwaiters					
		7.3.	Hydraulic Dumbwaiters					
		Alteration to a Material Lifts			Major	-		
		7.4.	Material Lifts					
	<b>CAD 3.9.2</b>	<b>Lock and Contact upgrade to Interlock</b>			<b>Minor A</b>	<b>Minor A</b>		
		<b>CAD 3.9.2</b>						
		<b>7.4.14*</b>	<b>Hoistway Door Locking Devices</b>					
	<b>8.7.7.1.1</b>	General Alterations other than 8.7.7.1.2			Major	-		
		Part 7	Dumbwaiters and Material Lifts					
	<b>8.7.7.1.2</b>	Increase in Rated Load			Major	-		
		7.2.(*)	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.(*)	Hydraulic Dumbwaiters w/o Transfer Devices					
		7.4.	Material Lifts					
		7.5.	Electric Material Lifts					
		7.6.	Hydraulic Material Lifts					
	<b>8.7.7.2</b>	Addition of Automatic Transfer Device			Major	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.1</b>	Material Lifts and Dumbwaiters With Automatic Transfer Devices			N/A	N/A		
		exempt if requirements of CAD 2.3(j) are met						
	<b>8.7.7.3.2</b>	Material Lifts and Dumbwaiters - remove Transfer Device			New	-		
		7.1. to 7.3.	for Dumbwaiters					
		7.4. to 7.6	Material Lifts w/o Transfer Devices					
	<b>8.7.7.3.3</b>	Material Lifts altered to an Elevator			New	-		
		Part 2	Electric Elevators					
		Part 3	Hydraulic Elevators					
	<b>8.7.7.3.4</b>	Material Lift or Dumbwaiter w/ Transfer Device Altered to a D/W			New	-		
		7.1.	Power and Hand Dumbwaiters w/Auto Transfer Devices					
		7.2.	Electric and Hand Dumbwaiters w/o Transfer Devices					
		7.3.	Hydraulic Dumbwaiters w/o Transfer Devices					
		Alterations to Freight Platform Lifts						
	<b>CAD 8.7.7★1</b>	★ Alteration to a Type 'A' Freight Platform Lift			Major	-		
		7.4.	as applicable to Material Lifts Type 'B' +					
		7.5.	as applicable to Material Lifts Type 'B' +					
		7.6.	as applicable to Material Lifts Type 'B' +					
		+ excluding requirements related to in-car operating devices & Riders						
	<b>CAD 3.9.2</b>	<b>Lock and Contact upgrade to Interlock</b>			<b>Minor A</b>	<b>Minor A</b>		
		<b>CAD 3.9.2</b>						
		<b>7.4.14*</b>	<b>Hoistway Door Locking Devices</b>					
	<b>CAD 8.7.7★2</b>	★ Alteration to a Type 'B' Freight Platform Lift			Major	-		
		7.4.	as applicable to Material Lifts Type 'B'					
		7.5.	as applicable to Material Lifts Type 'B'					
		7.6.	as applicable to Material Lifts Type 'B'					
	<b>CAD 3.9.2</b>	<b>Lock and Contact upgrade to Interlock</b>			<b>Minor A</b>	<b>Minor A</b>		
		<b>CAD 3.9.2</b>						
		<b>7.4.14*</b>	<b>Hoistway Door Locking Devices</b>					



Elevating and Amusement Devices Safety Division	Ref. No.: 252 / 12	Rev. No.:
Guideline	Date: March 20, 2012	Date:

**Subject:** Simplified Procedure to Correct / Revise a Registered Design Submission  
**Applicable to:** Elevating Device Contractors and Consultants

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## 1. INTRODUCTION

- 1.1. On inspection of a newly installed or altered elevating device, a TSSA inspector may issue orders identifying discrepancies between the registered design submission and the actual installation.
- 1.2. In response to the inspector's orders, a contractor may change the installation to bring it in compliance with the registered design submission or the contractor may submit a revised design for registration to TSSA in accordance with Section 15 & 16 of the Regulation. Since some discrepancies may result from a typo, or may not have a significant affect on the safety, this optional simplified procedure can be used.

## 2. REQUIREMENTS

- 2.1. *Ontario Regulation 209/01 (Elevating Devices)* provides;
  - specific detailed requirements for a design submission to be accurate and complete O.Reg. 209/01,s.15:
  - a requirement for design submissions to be in the form published by the designated administrative authority, O.Reg. 209/01, s.16
  - for registration fees per the fee schedule O.Reg 209/01, s.16
- 2.2. Revisions submitted for registration must follow one of the procedures below in order to comply with the intent of Section 15 and 16 of the Regulation.

## 3. PROCEDURE

One of the following optional procedures may be followed, depending on the design submission specification items that are to be revised as a result of an inspector's order.

### 3.1. Simple Corrections by Submitting Engineer emailed to [dcreporting@tssa.org](mailto:dcreporting@tssa.org) (fee exempt)

- 3.1.1. A formal revision to a previously registered design submission with fee payment may not be required if all discrepancies on one installation can be resolved in accordance with 3.1.2.
- 3.1.2. If any of the design submission specification items listed below need changing, a formal design submission revision may be replaced with an email (to [dcreporting@tssa.org](mailto:dcreporting@tssa.org)) from the **submitting engineer**.

The email must include the following items from the ED Inspection Report:

- Service Request #,
- Reference Number, and
- Inspection Address.

and should detail the corrections (as shown in example), including the applicable box number and the original/incorrect entry followed by the new/correct data for specific items.

Example:

520 Maximum Capacity:                      was 1100kg                      should read 1110kg

The email should not be copied to TSSA engineers or [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org). If the email is addressed or copied to a TSSA registration engineer or [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org), then the revision noted in the letter will be processed as a formal design submission revision and the appropriate fee invoiced.

This procedure is applicable to the following specification items	
Item/Box	Description
General	Any data which is an obvious typo (excluding model numbers unless identified below)
190	Building function
200	Common reference to building
510	Elevator model
520	Maximum capacity (kg) if within 1%
530	Maximum capacity (persons)
580	Number of floors served, if only the specification sheet but not the layout differ from the installation
590	Car travel, if only the specification sheet but not the layout differ from the installation
660	Entrance, if either the manufacturer or model differ, but not both
700	Update to retainer identifier, but not if updated drawings are required
720	Landing door interlock, if either the manufacturer or model differ, but not both
740 / 750	Door operator, if manufacturer and/or model differ
860 / 870	Car door type
940	Firefighter's elevator
1350	Pump make and model (hydraulic only)
1420	Emergency Power Provided (Y/N) [per car]
1430	No. of Cars than can run at once on Emergency Power
1460	Recall to Alternate Level Provided? (Y/N)
3100	FIELD WELDS Cert. of Companies for Fusion Welding of Steel
3110	FIELD WELDS Name of Certified Company

3.1.3. If any discrepancy between a registered design submission and the actual installation, other than those listed in 3.1.2, is identified in the Inspector's Report and the contractor decides to revise the design submission rather than to change the installation, this simplified procedure is not applicable. All items shall be included in a design submission for a revision.

### 3.2. Revision to registered submission by Submitting Engineer emailed to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org) (fee applies)

3.2.1. If a revision is required to make the design submission documents align with the installation, and the revision can adequately be reflected without necessitating the submission of revised drawings / layouts / schematics, an email from the registration engineer (sent to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org)) will be accepted in lieu of a submission package containing a sealed transmittal. This email transmission shall;

- a) be addressed to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org),
- b) have "Subject" reading "Revision to design submission for [*new installation / major alteration / minor A / minor B*] for installation no(s) [*list installation number(s)*],
- c) list all technical specification items being changed, or any textual changes to drawings. (**indicating both the original/incorrect and the new/correct data**) and,
- d) include a copy of the inspection report if the revision is made in response to an inspection order.

## 4. BACKGROUND

Enforcement bulletin 146/99 originally introduced the simplified procedure for design submission revisions. With the introduction of new submission forms and the change in specification items, a new procedure has been created.

Rob Kremer, P.Eng.  
Engineering Manager  
Elevating & Amusement Devices Safety Program

Rene Karavas  
Regional Supervisor,  
Elevating & Amusement Devices Safety Program

This guideline has been developed in consultation with the Elevating Devices Advisory Council



Elevating and Amusement Devices Safety Division	Ref. No.: 252 / 12	Rev. No.: 1
Advisory	Date: March 20, 2012	Date: September 3, 2019

**Subject:** Simplified Revision Procedure to Correct / Revise a Registered Design Submission  
**Applicable to:** Elevating Device Contractors and Consultants

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## 1. INTRODUCTION

- 1.1. A registered design submission per Section 15 and 16 of the regulation, forms the on-file record of compliance with the regulation and consequently the information within must be complete and accurate.
- 1.2. Where errors, omissions or changes to the “**as registered**” documents” require submission updating to reflect the “**as built**” conditions, these “**discrepancies**” shall be made as revisions. Depending on the nature of the discrepancies a simplified revision procedure outlined in section 3 may be used.
- 1.3. Submitters may become aware of required revisions prior to or after an inspection. If the inspection can proceed without the **discrepancies** impacting the evaluation and testing of the installation, the revision can wait until after the initial inspection. Any revision type issues found during the inspection can be added to the revision submission.  
Note: Discrepancies can be corrected by either making the “as built” conditions meet the “as register” documentation or vice versa.

## 2. REQUIREMENTS

- 2.1. *Ontario Regulation 209/01 (Elevating Devices)* provides requirements for;
  - a design submission to be accurate and complete O.Reg. 209/01,s.15:
  - the design submissions to be in the form published by the designated administrative authority, and
  - payment of registration fees per the fee schedule O.Reg 209/01, s.16
- 2.2. Revisions submitted for registration must follow one of the procedures below in order to comply with the intent of Section 15 and 16 of the Regulation.

## 3. SIMPLIFIED PROCEDURE

One of the following procedures shall be followed, depending on the design submission specification items that are to be revised. All procedures require an email or an email plus an attachment to be sent to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org)

### 3.1. Simplified Revision Procedure to Correct: Specific Specification Items (see “Simplified Revision Procedure - List of Specification Items ) or Items commonly associated with Minor B Submissions

- 3.1.1. If a revision to a design submission is required and relates to
  - a) any of the design submission specification items listed in the table below, or
  - b) is an item that is currently accepted via a Minor B notificationa formal design submission revision is not required.

The submitting engineer may update these discrepancies by forwarding an email as outlined in 3.1.2. Additionally, items currently address via Minor B notifications may be updated via email by a mechanic as outlined in 3.1.2.

Simplified Revision Procedure - List of Specification Items	
Item/Box	Description
General	Any data which is an obvious typo (excluding model numbers unless identified below)
190	Building function
200	Common reference to building
510	Elevator model
520	Maximum capacity (kg) if within 1%
530	Maximum capacity (persons)
580	Number of floors served, if only the specification sheet but not the layout differ from the installation
590	Car travel, if only the specification sheet but not the layout differ from the installation
660	Entrance, if either the manufacturer or model differ, but not both
700	Update to retainer identifier, but not if updated drawings are required
720	Landing door interlock, if either the manufacturer or model differ, but not both
740 / 750	Door operator, if manufacturer and/or model differ
860 / 870	Car door type
940	Firefighter's elevator
1350	Pump make and model (hydraulic only)
1420	Emergency Power Provided (Y/N) [per car]
1430	No. of Cars than can run at once on Emergency Power
1460	Recall to Alternate Level Provided? (Y/N)
3100	FIELD WELDS Cert. of Companies for Fusion Welding of Steel
3110	FIELD WELDS Name of Certified Company

3.1.2. If a revision is required to make the design submission documents align with the installation, and the revision can adequately be reflected without necessitating the submission of revised drawings / layouts / schematics, an email from the registration engineer will be accepted in lieu of a submission package containing a sealed transmittal. Mechanics may also use this process to update entries typically conveyed via Minor B notifications. This email transmission shall;

- a) be addressed to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org),
- b) have "Subject" reading "SIMPLIFIED Revision to design submission for [new installation / major alteration / minor A / minor B] for installation no(s) [list installation number(s)]",
- c) list all technical specification items being changed and indicating both the original/incorrect entries and the new/correct entries and,
- d) include a copy of the inspection report if the revision is made in response to an inspection order.

3.1.3. The revision will be processed, the registered submission updated, and a fee corresponding to ½ hr @ the hourly engineering rate will be applied.

3.1.4. If any discrepancy between a registered design submission and the actual installation, other than those listed in 3.1.1, is identified in the Inspector's Report and the contractor decides to revise the design submission rather than to change the installation, a standard revision is required.





<b>Elevating and Amusement Devices Safety Program</b>	Ref. No.: 252/12-r2
<b>ADVISORY</b>	Date: November 15, 2019

**Subject:** Simplified Revision Form to Correct / Revise a Registered Design Submission  
**Distribution:** Posted on TSSA website

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## 1. INTRODUCTION

- 1.1. A registered design submission per Section 15 and 16 of the regulation forms the on-file record of compliance with the regulation and consequently the information within must be complete and accurate.
- 1.2. Where errors, omissions or changes to the “**as registered**” documents” require submission updating to reflect the “**as built**” conditions, these “**discrepancies**” shall be made as revisions. Depending on the nature of the discrepancies a simplified revision procedure outlined in section 3 may be used.
- 1.3. Submitters may become aware of required revisions prior to or after an inspection. If the inspection can proceed without the **discrepancies** impacting the evaluation and testing of the installation, the revision can wait until after the initial inspection. Any revision type issues found during the inspection can be added to the revision submission.  
Note: Discrepancies can be corrected by either making the “as built” conditions meet the “as register” documentation or vice versa.

## 2. REQUIREMENTS

- 2.1. **Ontario Regulation 209/01 (Elevating Devices)** provides requirements for;
  - a design submission to be accurate and complete O.Reg. 209/01, s.15:
  - the design submissions to be in the form published by the designated administrative authority, and
  - payment of registration fees per the fee schedule O.Reg 209/01, s.16
- 2.2. Revisions submitted for registration must follow one of the procedures below in order to comply with the intent of Section 15 and 16 of the Regulation.

## 3. SIMPLIFIED PROCEDURE

One of the following procedures shall be followed, depending on the design submission specification items that are to be revised. All procedures require an email plus an attachment to be sent to [eddesignsubmittal@tssa.org](mailto:eddesignsubmittal@tssa.org)

### 3.1. Simplified Revision Form

A Simplified Revision form has been introduced by TSSA and can be found on the TSSA website.

<https://www.tssa.org/en/about-tssa/resources/Simplified-Revision-Form.pdf>

The form may be used by the submitting engineer or a mechanic.

### 3.2. Form Usage

The first three parts of the form (A, B and C) are for use by either the submitting engineer or the mechanic. If the revision only requires the use of parts A, B and C, the revision can be signed off by the mechanic as these items are currently accepted via a Minor B.

If the revision requires changes to other specification sheet data, Part D is provided for used by the submitting engineer only. If the form is emailed to TSSA directly from the submitting engineers email

account/address the form does not need to be sealed by the submitting engineer. Any accompanying drawings / layouts / schematics or other documents must be sealed by the submitting engineer.

If only the building address or elevating device designations require changes in part A of the form the data can be submitted without the need for an engineer or mechanic.

If a revision to a design submission is required and can be completed using the Simplified Revision Form a formal design submission revision is not required.

### 3.3. Form Submission

The filled in PDF file is to be submitted by email together with any required supporting documents. This email transmission shall;

- a) be addressed to [eddesigns@tssa.org](mailto:eddesigns@tssa.org),
- b) have "Subject" reading "**SIMPLIFIED Revision to design submission for** [*new installation / major alteration / minor A / minor B*] **for installation no(s)** [*list installation number(s)*]",
- c) include a copy of the filled in Simplified Revision Form PDF file and any supporting drawings / layouts / schematics or other documents,
- d) include a copy of the inspection report if the revision is made in response to an inspection order.

### 3.4. Revision Fee

The revision will be processed, the registered submission updated. If the revision only makes changes to the data identified in Parts A, B or C a fee corresponding to a Minor B alteration will be applied. Otherwise the fee will be the regular fee for a Revision to a registered design.

This is the 'Clear Form' for a 'Revision to New Design'. It includes a notification section, a table for 'Elevating Device Designation' with columns for 'Type', 'Height', 'Speed', and 'Capacity', and a table for 'Elevating Device Type' with columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Designation' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Type' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The form also includes a section for 'Elevating Device Details' and a section for 'Elevating Device Identification'.

This is the 'Clear Form' for a 'Minor Alteration - Revision to a Design Submission'. It includes a notification section, a table for 'Elevating Device Designation' with columns for 'Type', 'Height', 'Speed', and 'Capacity', and a table for 'Elevating Device Type' with columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Designation' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Type' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The form also includes a section for 'Elevating Device Details' and a section for 'Elevating Device Identification'.

This is the 'Clear Form' for a 'Minor Alteration - Revision to a Design Submission'. It includes a notification section, a table for 'Elevating Device Designation' with columns for 'Type', 'Height', 'Speed', and 'Capacity', and a table for 'Elevating Device Type' with columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Designation' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The 'Elevating Device Type' table has columns for 'Type', 'Height', 'Speed', and 'Capacity'. The form also includes a section for 'Elevating Device Details' and a section for 'Elevating Device Identification'.





<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 253 / 12	Rev. No.:
<b>DIRECTOR'S SAFETY ORDER</b>	Date: March 12, 2012	Date:

**IN THE MATTER OF:**

**THE TECHNICAL STANDARDS AND SAFETY ACT, 2000, S.O. 2000, c. 16 (the "Act")**

**- and -**

**ONTARIO REGULATION 209/01 (Elevating Devices) made under the Act**

**Subject:** Retroactive Interlock Requirements for Freight Platform Lifts and Material Lifts  
**Applicable to:** All Owners of Freight Platform Lifts and Material Lifts  
All Elevator Contractors

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**The Director, Elevating Devices Regulation (O.Reg. 209/01) pursuant to his authority under section 14 of the *Technical Standards & Safety Act, 2000* hereby orders the following:**

**1. ORDER to Owners**

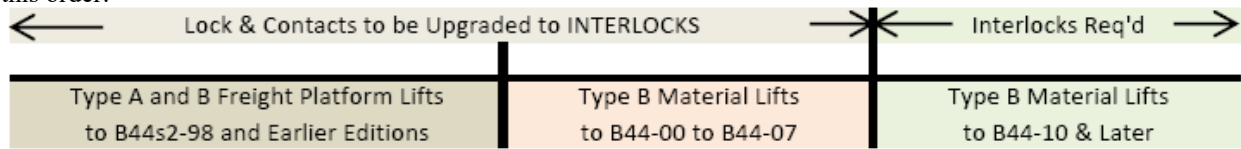
- 1.1. All type 'A' and type 'B' Freight Platform Lifts and type 'B' Material lifts utilizing hoistway door mechanical lock and contacts shall have their **mechanical lock and contacts** upgraded to **interlocks** by **May 1, 2014**.
- 1.2. The upgraded interlocks shall conform to CSA B44-2010 section 7.4.14 except as modified by (a) and (b) below.
  - a) Compliance with 2.12.3 is not permitted.
  - b) Compliance with CSA B44-1985 section 11.4 is permitted in place of CSA B44-2010 section 8.3.3.
- 1.3. New equipment installed in compliance with this safety order shall comply with CSA B44-2010 clauses 2.26.9.3.1(a) and (b). When a single ground or a failure as specified in 2.26.9.3.1(a) or (b) occurs, the car shall not be permitted to restart.
- 1.4. For the purposes of this safety order the terms "freight platform lift – type B" and "freight platform lift – type A" shall mean the same as "Material Lift – type B" used in CSA B44-2010.

**2. INSTRUCTIONS**

- 2.1. All work must be performed by a TSSA registered contractor.
- 2.2. Work carried out in order to bring a device into compliance with this order is considered an alteration and, as such, a Design Submission with related electrical schematics must be submitted by a registered contractor.
- 2.3. The installation of interlocks, door zone switch(es) and/or any relays to provide redundancy as required by 1.2 and 1.3 of this order is deemed to be a Minor A type alteration. Any other alteration work performed at the same time shall comply with Director's Order 226/07 and/or the Code Adoption Document applicable at the time of design submission. Note: Changing the controller as a means to comply with this order would be deemed a Major alteration.
- 2.4. The contractor who completed the alteration shall arrange for an inspection to be carried out as required by O.Reg. 209/01.

### 3. Background

- 3.1. Hoistway door mechanical lock and contacts were permitted on all door types for both type 'A' and type 'B' Freight Platform Lifts installed to the B44S2-98 and earlier codes. Lock and contacts were also permitted on some type 'B' Material Lifts with vertical sliding doors installed to the B44-2000 and later codes. These are the devices affected by this order:



- 3.2. There have been several recent incidents where out of adjustment mechanical locks have allowed hoistway doors to be opened without the car present at the landing. In one of these cases a person stepped into and fell down the unprotected hoistway.
- 3.3. The requirements for interlocks in the B44-2010 code ensure that the car cannot move more than 75mm (3 in.) beyond the landing without first ensuring the hall door is mechanically (physically) locked - as confirmed by a made up electrical contact. These new requirements also permit designs that do not require retiring cams and hence permit solutions that are similar to those employed on B355 devices.
- 3.4. This safety order includes permission for the interlock to be tested in accordance with the CSA B44-1985 in order to allow existing interlocks without the lock contact connected to be rewired to comply with this order.
- 3.5. Contractors who maintain these devices that utilize mechanical locks and electric contacts are reminded to pay close attention to the adjustment of the lock and contact to ensure that the electrical contact does not make up if the mechanical lock has not engaged.

**Roland Hadaller P.Eng.**

Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards and Safety Act, 2000*

This Bulletin has been developed in consultation with the Elevating Devices Advisory Council and the Field Advisory Committee.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.:	Rev. No.:
	254 / 12	
<b>Information Bulletin</b>	Date:	Date:
	April 19, 2012	

**Subject:** Operation and Maintenance Manuals for Existing Passenger Ropeways  
**Applicable to:** Owners Passenger Ropeways and Passenger Conveyors

## 1.0 Introduction

The Z98 Passenger Ropeway standard under the 1996 and 2001 editions, contained requirements for operation and maintenance manuals for existing installations and detailed these requirements in sections 3.36.3 (Operations) and 3.36.4 (Maintenance) of Z98.

These requirements have been retained in the 2007 edition of Z98 but have been relocated to section 4.38.3 and 4.38.4. To ensure that all owners of Passenger Ropeways are fully aware of these existing requirements, TSSA has issued an Information Bulletin to highlight the essential components of Operation and Maintenance documents and has provided a timeline for compliance if such documentation is not fully in place.

## 2.0 Compliance Timeline for Operation and Maintenance Manual

Operations and Maintenance manuals shall have the following components in place not later than;

Z98 REQUIREMENT	In Place By		
<b>4.38.3 Operations manual</b>		(d) detailed load test procedures;	2013
<b>4.38.3.2</b> The operations manual shall include, but not be limited to, the following:		(e) procedures to test and confirm the drive and control systems and the required testing schedule;	2013
(a) main-drive start-up and operating procedures;	2012	(f) a procedure and schedule for the periodic testing of the stopping and holding ability of the service brake, emergency brake, and anti-rollback device on the basis of the design load; and	2012
(b) auxiliary drive start-up and operating procedures;	2012	(g) instructions for checking the operation of any PLC system.	2013
(c) evacuation drive start-up and operating procedures;	2012	<b>4.38.4.3</b> The maintenance manual shall cover, but not be limited to, the following:	
(d) loading and unloading procedures;	2012	(a) all wire ropes;	2012
(e) emergency procedures for all anticipated situations;	2012	(b) line sheave assemblies, sheave bearings, and liners;	2012
(f) evacuation procedures, including those for night operation, if applicable; and	2012	(c) drive and return sheaves, bearings, and liners;	2012
(g) downhill loading procedures, where applicable.	2012	(d) counterweight or tensioning systems;	2012
<b>4.38.4 Maintenance manual</b>		(e) chains used in counterweight or tensioning systems;	2012
<b>4.38.4.2</b> The maintenance manual shall describe the manufacturer's and designer's recommended maintenance procedures, including, but not limited to, the following:		(f) drive system, including bearings and couplings;	2013
(a) the types of lubricants required and frequency of application;	2013	(g) braking system, including holding torque and test procedures;	2012
(b) the definitions and measurements required to determine excessive wear and replacement criteria;	2013	(h) electrical control systems;	2013
(c) the recommended frequency of service to specific components, including relocation of fixed grips and testing of service and emergency brakes;	2012	(i) communications systems;	2012
		(j) carriers;	2012
		(k) proper rigging procedures for splicing ropes;	2014
		(l) corrosion protection; and	2012
		(m) control of water condensation and drainage.	2012

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This Bulletin has been developed in consultation with the Elevating Devices Advisory Council.



Elevating and Amusement Devices Safety Division	Ref. No.: 255 / 12	Rev. No.:
Elevating Devices Code Adoption Document - Amendment	Date: September 14, 2012	Date:

**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: **CAD Amendment to Part 6 Construction Hoists**

Applicable to: **Construction Hoist Owners / Licensees, Contractors, and Consultants**

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 March 1, 2013 the elevating devices Code Adoption Document, dated June 1, 2001 as amended is further amended as follows;**

**A. Part 6 is supplemented with the following:**

**6.11 Maintenance Log Book** [CAD Amendment 255-12]

6.11.1 Each elevating device of a type listed in **6.1.1** shall be provided with a maintenance log book as required by O.Reg 209/01 s.34 Log books.

6.11.2 Maintenance records in the form of a log book shall document compliance with related construction hoist codes, Code Adoption Document (CAD) requirements and any manufacturer recommended tasks extracted from the manufacturers maintenance and operation manuals, and shall include records on the following activities:

- (a) description and dates of maintenance task performed;
- (b) description and dates of examinations, tests;
- (c) description and dates of adjustments, repairs, and replacements;
- (d) description and dates of any tasked noted in the Guideline for Maintenance Logs – Construction Hoists (Guideline 256/12); and
- (e) description and dates of all call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken.
- (f) log records to document compliance with the maintenance, examinations and test activities listed in (a) through (d) shall also include:

- (1) Building name and/or address;

- (2) TSSA installation number;
- (3) Contractor's (owners) name;
- (4) Contractor's Registration Number;
- (5) the code section, reference, requirement or clause number associated with a task;
- (6) a description of the task performed;
- (7) the prescribed maintenance frequency of the task;
- (8) the date the task was performed; and
- (9) upon completion of the task, the printed name, signature, and TSSA certificate number of the person who completed the maintenance, examination or tests.

6.11.3 Where a part of an elevating device which directly affects the safe operation of the device is found to be defective, the record of the relevant maintenance task shall not be signed off by the party performing the task until the defective part is adjusted, repaired or replaced, and the safety of the device restored.

**6.12 Location of the Maintenance Log Book** [CAD Amendment 255-12]

6.12.1 The maintenance log book shall be kept in the machine room or on the device or near the device location or, in the alternative if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.12.2 Log book data shall be readily available as required by O.Reg 209/01 s.34.(3)

**6.13 Manufacturers Maintenance and Operation Manual** [CAD Amendment 255-12]

6.13.1 For each construction hoist the manufacturers maintenance and operations manual shall be retained.

6.13.2 The manufacturers maintenance and operation manual shall be kept in the machine room or on the device or near the device location or in the alternative, if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.13.3 The manufacturers maintenance and operation manual shall be readily available and immediately provided to an inspector upon request.

**6.14 Operator Training** [CAD Amendment 255-12]

6.14.1 Every operator must have the required knowledge and experience to operate an elevating device and owners, licensees and/or lessees, are must ensure operators are trained to safely operate such devices and must be satisfied that the operator is aware of potential hazardous situation connected therewith as required by O.Reg 209/01 s.40.

6.14.2 Owners, licensees, lessees providing training or other trainers providers shall develop and maintain written operator training programs and written policies and procedures to ensure compliance with the regulation and **6.14.1**.

6.14.3 Written training programs shall include applicable portions of the manufacturers maintenance and operation manual to address the requirements of the regulation and **6.14.1** and shall include the minimum requirements for operator training as outlined in the Guide for Operator's Logs and Operator Training Requirements – Construction Hoists (Guideline 257/12).

6.14.4 Copies of the documentation required under **6.14.2** shall be kept on site, shall contain current and complete information and shall be readily available and immediately provided to an inspector upon request.

6.14.5 Training records shall be maintained by the training provider ("trainer") and shall include the following information:

- (a) the name of the person(s) who received the operator training;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date of training;
- (d) the signature of the trained operator; and,
- (e) the signature of the trainer.

6.14.6 A copy of the training records identified in **6.14.5** shall be maintained on site and readily available and immediately provided to an inspector upon request.

6.14.7 Individuals who are trained as operators, and have achieved sufficient competence to operate the device safely shall be issued by the trainer an “Operator’s Proof of Training” document which must certify that the operator is competent to operate the device safely and must specify the following information:

- (a) the operators name;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date the training was received; and
- (d) the signature of the trainer.

6.14.8 The trainer shall issue an “Operator’s Proof of Training” document in the form of a letter or wallet card or equivalent as per **6.14.7**.

#### **6.15 Operator’s Proof of Training** [CAD Amendment 255-12]

6.15.1 Operators are required to carry their “Operator’s Proof of Training” document whenever they operate an elevating device.

6.15.2 “Operator’s Proof of Training” shall be readily available and immediately provided to an inspector upon request.

6.15.3 An “Operator’s Proof of Training” may be immediately revoked by an Inspector, owner, licensee, lessee or trainer where there is reason to believe that the operator lacks the competence to safely operate the elevating device and the operator may no longer operate the device.

#### **6.16 Daily Operator’s Log** [CAD Amendment 255-12]

6.16.1 Each elevating device type listed in **6.1.1** shall have a corresponding “Daily Operator’s Log” in which a current and accurate record of all required start up checks as required by the device manufacturer, owner, licensee, lessee or device operator shall be kept and shall include the minimum requirements for operator’s logs as outlined in the Guideline for Operator’s Logs – Construction Hoists (Guideline 257/12).

6.16.2 Operator’s of a device must satisfy themselves, at the start of each shift, that the device is safe to operate as required by O.Reg 209/01 s.42 by conducting a series of start up checks as outlined in the Guideline for Operator’s Log – Construction Hoists and shall record and sign off these checks in the “Daily Operator’s Log”.

6.16.3 The “Daily Operator’s Log” must contain the following information:

- (a) the Building name and/or address;
- (b) the TSSA device installation number;
- (c) a list of the daily checks as required by **6.16.1**;
- (d) the Operator’s printed name and signature acknowledging completion of all daily checks after the device is found to be in safe working order and the date of such checks.



6.16.4 Where a part of the elevating device which directly affects the safe operation of the device is found to be defective, the log shall not be signed off and the device shall not be put into operation until the defect is adjusted, repaired or replaced, by a registered mechanic.

**6.17 Location of the Daily Operator's Log** [CAD Amendment 255-12]

6.17.1 The "Daily Operator's Log" shall be kept in the machine room, on the device, or near the device location, or in the alternative, if it is kept at another location on the site, a notice will be posted in the machine room or device location indicating the alternate location.

**6.18 Signage** [CAD Amendment 255-12]

6.18.1 Every car, cage or platform shall be equipped with a sign as follows:

- (a) The sign shall display the message, "Only Operators who have their valid "Operator's Proof of Training" card on their person shall operate this device";
- (b) The sign shall be of such material and construction that the letters are stamped, etched, cast or otherwise applied to remain permanently visible; and
- (c) The height of the letters shall not be less than 12mm (1/2 in.).

**6.19 Incident and Issue Reporting** [CAD Amendment 255-12]

6.19.1 Incidents shall be reported as required by O.Reg 209/01 s.36. See also Director's Guideline 230/09.

6.19.2 Device operators shall report device incidents and any safety related issues to supervisory personnel who are responsible for taking the appropriate action or following the incident report requirements required by the regulation.

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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 Construction Hoist Industry.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.:	Rev. No.:
	256 / 12	
<b>GUIDELINE</b>	Date:	Date:
	September 14, 2012	

Subject: Guideline for Maintenance Logs - Construction Hoists  
 Applicable to: Construction Hoist Owners / Licensees, Contractors, and Consultants

**1. Effective Date**

1.1 This Directors Guideline becomes effective March 1, 2013 and is to be used in conjunction with the Elevating Devices Code Adoption Document (CAD) Amendment 255/12.

**2. Applicability**

2.1 This guideline is applicable to Owners or Licensees of Construction hoists as defined under section 6.1.1 of the Elevating Devices Code Adoption Document (CAD).

**3. Minimum Requirements for Maintenance Logs – Construction Hoists**

In addition to the maintenance log book requirements noted in the Code Adoption Document (section 6.11), maintenance logs shall document the required maintenance tasks, examinations, tests, and any safety related adjustments, repairs or replacements made to the device, and as a minimum shall include the following:

**3.1 Monthly Tasks**

**3.1.1 General**

- a) 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 Regulation,
- b) lubrication of parts as required (Car gate rails, landing gates rails, rack, pinion, gearbox, safety device bearings, pipe for mast, top pulley wheel, guide rollers, roof trap door hinges.)

Note: For stated monthly tasks, manufacturers may recommend alternative frequencies as permitted by O.Reg 209/01 s.32.

**3.1.2 Mast, Rack, Foundation, Guying, Tie-in Brackets, and Fastening**

a) tower mast sections	Inspect all tower sections for loose bolts or damaged towers
b) tie-ins	Check that all bolts, pins and screw joints in the mast ties are in place and secure
c) rack	Apply adequate lubricant to rack. Ensure fastenings are tight.
d) shoring	Check the basement shoring posts and fence are in place and secure
e) rack wear	Check wear on rack and pinion gears with caliper and engagement between gears



### 3.1.3 Hoistway Enclosure and Protection Around Hoist

a) ground enclosure	Inspect enclosure
b) landing platform and platform overhead protection	Inspect for missing, loose or damaged wood and steel

### 3.1.4 Hoistway Landing and Doors

a) landing gates and locks	Check for proper gate operation and electrical contacts operate and front gate mechanical lock operates
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### 3.1.5 Car / Cage / Platform

a) cage gates and locks	Check for proper gate operation and electrical contacts operate and front gate mechanical lock operates
b) rollers / roller guides	Lubricate and check for wear, loose or missing parts and proper adjustment
c) cage/ car enclosure and assemble	Inspect for loose or missing parts, damage and proper operation of all parts

### 3.1.6 Travelling Cable, Guides, Brackets, Supports and Fastenings

a) travelling cable	Check the cable is suspended properly and free of twists and cuts
b) travelling cable guidance system	Check all guidance members are in alignment and all rubber straps are in place, in good condition and the cable is within the guides

### 3.1.7 Counterweights

a) counterweight	Check counterweight compensator is centered and rope clips are secure
b) roller / roller guides	Lubricate and check for wear, loose or missing parts and proper adjustment

### 3.1.8 Clearances and Runbys for Car and Counterweight

a) car and counterweight clearance	Check the area in which the cage and counterweight travel are clear of obstructions
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### 3.1.9 Operation and Operating and Control Devices, Electrical Protective Devices, Terminal Stopping Devices

a) car emergency stop button	Check condition and test operation
b) up/down normal limits	Test up and down normal limit switches
c) up/down final limits	Test up and down final limit switches
d) top emergency exit switch	Test switch and its connection to the exit panel
e) slack rope switch	Check that the switch is secure and test its operation
f) cage top stop switch	Check condition and test operation
g) ground fault detector	Push the test button to trip the circuit breaker and reset it

### 3.1.10 Drive Machines, Brakes, Sheaves and Drums, Valves, Pipes and Fittings

a) brakes	Check each brake for proper adjustment
b) pinion wear	Check wear on rack and pinion gears and engagement between gears
c) gear box	Check oil level and condition
d) keepers / safety hooks	Check keepers / hooks can retain rack and pinion engagement

### 3.1.11 Hoisting and Counterweight Ropes and Connections

a) wire ropes	Check for any breaks, corrosion, deformation, wear, damage or defects. Check connection points
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### 3.1.12 Machinery Spaces and Overhead Beams

a) cathead	Inspect cathead for wear, secure mounting and loose or missing parts
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### 3.1.13 Communication and Signage

a) speakers	Test speakers and inspect cables and connections
b) signage	Check all required signage is in place and legible
c) evacuation instructions	Check procedure is in place if required

## 3.2 Quarterly Tasks (Interval not greater than 3 months)

### 3.2.1 The following task shall be conducted on a quarterly basis:

a) safety test	Full load safety test required every 3 months and when hoist fully extended
b) car and counterweight buffers	Check that the buffers are in the correct position, secured and in good operating condition

## 3.3 Annual Tasks (Interval not greater than 12 months)

### 3.3.1 The following task shall be conducted on a yearly basis:

a) brake torque and cleaning	Must be inspected yearly or as per manufacturer instructions
b) relief valve test	Test the relief valve is operating to a maximum of 120% of full load pressure (if applicable)

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This Guideline has been developed in consultation with the Construction Hoist Industry.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 257 / 12	Rev. No.:
	<b>GUIDELINE</b>	Date: September 14, 2012

Subject: Guideline for  
Operator's Logs - Construction Hoists and  
Operator Training Requirements – Construction Hoists  
Applicable to: Construction Hoist Owners, Licensees, Lessees, Contractors, and Consultants

**1. Effective Date**

1.1 This Directors Guideline becomes effective March 1, 2013 and is to be used in conjunction with Elevating Devices Code Adoption Document (CAD) Amendment requirement 255/12.

**2. Applicability**

2.1 This guideline is applicable to Owners, Licensees and/or Lessees of construction hoists as defined under section 6.1.1 of the Elevating Devices Code Adoption Document (CAD).

**3. Minimum Requirements for Operator's Logs – Construction Hoists**

Further to clause 6.16.2 of the CAD and section 42 of Ontario Regulation 209/01 (Elevating Devices) and in order for the Operator to be satisfied that the device is in safe operating condition, the Operator shall perform and record the following checks and inspections daily:

**3.1 Daily Checks and Inspections – General**

3.1.1 The following checks and inspections shall be performed daily and the following standards shall be met:

- a) General housekeeping of the car / cage and areas around the landings and loading areas shall be checked (no trip or fall hazards due to construction materials or debris, etc..)
- b) Device shall be operated within prescribed limits as related to:
  - i) temperature
  - ii) winds
  - iii) ice
  - iv) operating clearance envelope has not been compromised by building construction activities, and the following clearances are available:
    - a. 1.2m (4') minimum clearance to construction activities on non-guarded sides of hoist
    - b. 2 m (6.5') clearance from the mast to any disposal bin fed by an enclosed disposal chute or
    - c. 7m (25') clearance from the mast to any disposal bin fed by an un-enclosed disposal chute
- c) Assessment to verify no new unusual noises or vibrations that were not previously present, and
- d) all incidents and safety related issues need to be reported to supervisory personnel. (see Director's Guideline 230/09).

3.1.2 An Operator must perform a visual inspection of the check points as outlined in 3.2 (below), to determine whether the device is safe to operate. A visual inspection shall include:

- a) an assessment of the general condition of all related equipment;
- b) a check for the presence of and security of visible fasteners; and

- c) a check for any damaged or broken components.

### 3.2 Daily Check - Specific Points

The following checks and inspections shall be performed daily:

#### 3.2.1 Mast, Rack, Foundation, Guying, Tie-in Brackets, and Fastening

- a) tower mast sections (visual)
- b) tie-ins, anchor bolts (visual)
- c) basement shoring, posts and fence (visual)

#### 3.2.2 Hoistway Enclosure and Protection Around Hoist

- a) landing base / ground enclosure (visual)
- b) loading ramp (visual)
- c) landing platform and platform overhead protection (visual)

#### 3.2.3 Hoistway Landing and Doors

- a) landing gates
- b) landing guard extensions on either side of gate
- c) landing gate locks

#### 3.2.4 Car / Cage / Platform

- a) cage gates and locks
- b) gate operation
- c) rollers / roller guides (visual)
- d) cage / car enclosure
- e) trap door switch

#### 3.2.5 Travelling Cable, Guides, Brackets, Supports and Fastenings

- a) travelling cable / power cable (visual)
- b) guidance system for the travelling cable / power cable (visual)

#### 3.2.6 Counterweights

- a) counterweight (visual)
- b) roller / roller guides (visual)

#### 3.2.7 Operation and Operating and Control Devices, Electrical Protective Devices, Terminal Stopping Devices

- a) in-car emergency stop button
- b) in-Car operating buttons
- c) up / down normal limits (visual)
- d) up / down final limits (visual)
- e) top emergency exit switch
- f) grounding cables (visual)

#### 3.2.8 Hoisting and Counterweight Ropes and Connections

- a) rope equalizer (visual)

#### 3.2.9 Machinery Spaces and Overhead Beams

- a) cathead (visual)

#### 3.2.10 Communication and Signage

- a) speakers
- b) "only operators with proof of training" signage
- c) evacuation procedure provided if applicable

#### 4. Minimum Requirements for Operator Training – Construction Hoists

##### 4.1 General

4.1.1 Further to 6.14 in the CAD and sections 40 and 42 Ontario Regulation 20/01 (Elevating Devices), the contents of the operator training program must include at a minimum:

- a) a review of the applicable sections of the manufacturer's maintenance and operator's manual;
- b) an understanding of the requirements related to daily general and daily specific checks (see 3.1 & 3.2);
- c) the Code Adoption Document requirement 6.15 Operator's Proof of Training;
- d) the Code Adoption Document requirement 6.16 Daily Operator's Logs;
- e) the Code Adoption Document requirement 6.17 Location of the Daily Operator's Log;
- f) the Code Adoption Document requirement 6.18 Signage;
- g) the Code Adoption Document requirement 6.19 Incident and Issue Reporting.

##### 4.2 Special

- a) An operator who is required to perform visual daily inspections on top of the cage, must be adequately trained in the safe inspection of the device. The Operator must use a "lock out tag out" procedure before climbing on top of the construction hoist. Operators shall only access the roof of the cage at the bottom landing by using the inside hoist ladder.
- b) Operator's are not permitted in the pit area.
- c) Operator's are not permitted to open the construction hoist's electrical controller.
- d) No work including but not limited to the construct, installation, alteration, repair, replacement, and maintenance of a device shall be performed on the device unless performed by a mechanic or a mechanic in training under the supervision of a mechanic.

<original signed>

Roland Hadaller, P.Eng.

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

This Guideline has been developed in consultation with the Construction Hoist Industry.



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 258 / 12	Rev. No.:
	Date: December 14, 2012	Date:
<b>Interpretation Bulletin</b>		

Subject: Independence of Normal Terminal Stopping Devices and Normal Stopping Means  
Applicable to: A17.1-2010 and B44-10 requirement 2.25.2 and Inquiry 11-2229

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**1. Background**

1.1 Inquiry 11-2229 to the A17.1 electrical committee has recently received approval of the Standards Committee. The inquiry is shown below. *Italic text in section 1.1 below denotes interpretive text or other text to support this interpretation bulletin.* This interpretation is intended to clarify to what extent normal terminal stopping devices (NTSD) and normal stopping means (NSM) must function independently.

**Inquiry 11-2229 - 2007/CSA B44-07 1996 Requirement 209.2 through ASME A17.1 – 2010/CSA B44-10 requirement 2.25.2**

**Question 1.**

Requirement 2.25.2.1.2 states "Such devices shall function independently of the operation of the normal stopping means..." Would it be correct to replace the words "normal stopping means" in this requirement with the A17.1/B44 definition of normal stopping means, which is "that portion of the operation control that initiates stopping of the car in normal operation at landings?"

Answer: Yes. [See Items \(5\) in attached Figure 1, see questions 2a thru 2d for USM](#)

**Question 2.**

Would it be a correct interpretation of the aforementioned definition that the words "portion of the operation control that initiates stopping of the car in normal operation at landings" to be only

**a.** car position sensing device(s)

Answer: No. [See Items \(1\)+\(2\) in attached Figure 1](#)

**b.** car position sensing devices and any electrical/electronic devices that transmit the signals from the position sensing device(s)?

Answer:

(b.1) Yes, [See Items \(1\) + \(2\) + \(3\) in attached Figure 1](#)

(b.2) unless there are other devices or functions that are a portion of the operation control that initiate stopping.

[See Items \(1\) + \(2\) + \(3\) + \(4\) in attached Figure 1](#)

**c.** car position sensing devices, and any electrical/electronic devices that transmit the signals from the car position sensing device(s), and other electrical/electronic devices used to cause the operation control to initiate stopping?

Answer: Yes [See Items \(1\) + \(2\) + \(3\) + \(4\) in attached Figure 1, same as response to \(b.2\)](#)

**d.** car position sensing devices, and any electrical/electronic devices that transmit the signals from the car position sensing device(s), other electrical/electronic devices used to cause the operation control to initiate stopping, and any other electrical/electronic devices that perform operation or motion control functions?

Answer: No [See Items \(1\) + \(2\) + \(3\) + \(4\) + \(9\) in attached Figure 1](#)

**Question 3:**

Are the electronic / electrical devices used to determine car position for the normal terminal stopping means [Item \(6\)](#) permitted to be common to the electronic / electrical devices required for the normal stopping means [Item \(5\)](#)

if a failure in those devices [Item \(6\)](#) or [Item \(5\)](#) could result in both the normal stopping means and normal terminal stopping device not functioning?

Answer: No [Item \(6\) cannot be common with Item \(5\). Path \(b\) or Path \(c\) not permissible. See attached Figure 1](#)

**2.25.2.1.1** Normal terminal stopping devices shall be provided and arranged to slow down and stop the car automatically, at or near the top and bottom terminal landings,...

**2.25.2.1.2** Such devices shall function independently of the operation of the normal stopping means...

Item (6) to function independently of Item (5). Item (6) arranged to slow down and stop the car, so that a failure of Item (5) does not result in both Item (5) and Item (6) not functioning. Path (b) or Path (c) not permissible. See attached Figure 1

**Question 4:**

Does the Code prohibit position signals transmitted from devices used to determine car position for the normal terminal stopping device *signal (7)* and position signals transmitted from the normal stopping means *signal (8) from item(5)* from being processed by common means *Item (9)*?

Answer: No.

Signal 7 from NTSD and signal 8 from NSM can be processed by common Item (9). Path (a) IS permissible. See attached Figure 1  
Signal 7 from NTSD and signal 3 within NSM cannot be processed by common Item (4) as a failure in Item (4) renders NTSD ineffective, and therefore violates the purpose of NTSD (2.25.2.1.1) and its requirement to be independent (2.25.2.1.2)

**8.10.2.2(ff)(1)** Test normal terminal stopping device for conformance with 2.25.2 by making inoperative the normal stopping means.

With NSM inoperative (Item 5 and/or signal 8 ineffective), NTSD(Item 6) must be arranged to slow down and stop the car for conformance to 2.25.2

**2. Interpretation**  
2.1 TSSA interprets inquiry 11-2229 as followings:

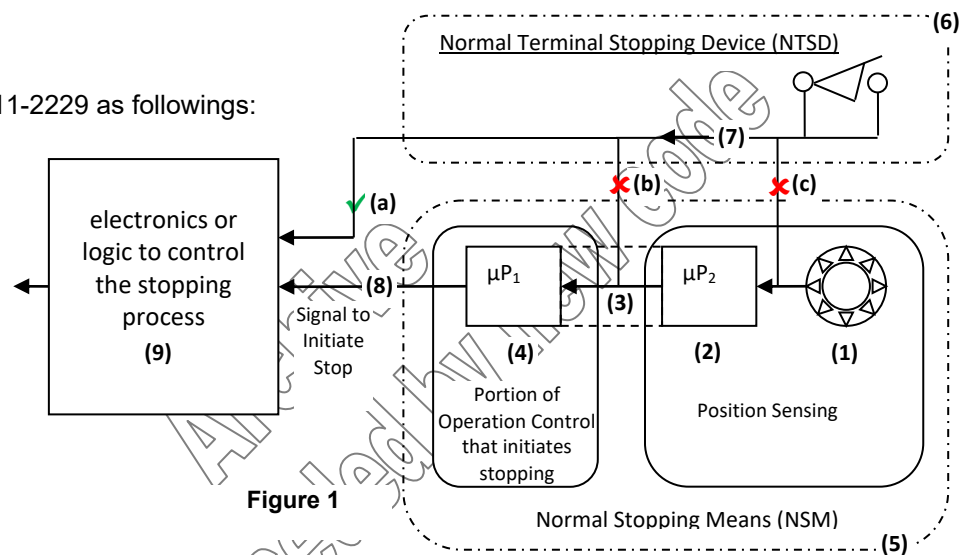


Figure 1

**Figure Notes:**

1. 'Position sensing' includes sufficient electrical/electronic devices used to determine the location of the car.
2. Normal stopping means (NSM) includes the portion of the control that initiate stopping of the car at all landings. To function effectively, NSM includes the electronic / electrical devices that transmit the signals from the car position sensing devices and other electrical / electronic devices that are used to cause the operation control to initiate a stop.
3. Normal terminal stopping devices (NTSD) shall function independently of the operation of the normal stopping means (NSM). A failure in the normal stopping means (NSM) will not affect operation of NTSD.
4. This illustration is only one example to show independence of NTSD and NSM.

**3. Enforcement**

- 3.1 TSSA is enforcing this requirement for all controls submitted to A17.1-2010 / B44-10 code.
- 3.2 Control designs reviewed to A17.1-2010 / B44-10 code must comply with this interpretation in order to receive a registration.

Rob Kremer, P.Eng.  
Manager of Engineering, Elevating and Amusement Devices safety Program



Elevating and Amusement Devices Safety Division	Ref. No.: 259 / 12	Rev. No.:
INFORMATION BULLETIN	Date: December 18, 2012	Date:

Subject: List of Data – Contractor Registration / Renewals (March 2013)  
Applicable to: Elevator Contractors

---

## 1. Background

TSSA and industry participated in an RRG to assess the safety risks of existing elevators with two speed and single speed drive types. The RRG concluded that all elevators with a single speed drive type need to be upgraded to a design that produces more accurate leveling. In order to initiate this upgrade, it is necessary to identify all existing elevators that use a single speed drive type. Most of these elevators are very old and in many cases the TSSA data base does not contain the drive type. The RRG agreed that as part of Contractor registration renewal Contractors would provide as part of their updated maintenance lists, information on the drive type for all elevators that they maintain. This bulletin provides advance notice to industry of the additional information that will be required. For this initiative to be successful, it is critical that contractors provide accurate and complete information on all elevators that they maintain. For elevating devices other than elevators an entry of NA is adequate.

## 2. List of Data

2.1 Pursuant to O.Reg 209/01, all elevator contractors who maintain an elevating device must submit annually to TSSA a list of all elevating devices maintained by the contractor.

**23.** (1) Every contractor who maintains an elevating device shall submit annually to the designated administrative authority a list, in the time and manner required by the director, that contains data on the installation numbers, class and location of each elevating device maintained by the contractor, together with information that indicates the scope of each maintenance contract. O. Reg. 209/01, s. 23 (1).

2.2 During the 2013 renewal cycle, contractors shall submit their complete maintenance lists via an excel spreadsheet (to [LicensingandRegistration@tssa.org](mailto:LicensingandRegistration@tssa.org)), that shall contain not less than the following column headings:

- Contractor registration number
- ED Installation Number
- Service contract expiry date (mm/dd/yyyy) and
- **Drive type associated with the given ED installation**

2.3 The **Drive type** entry shall reflect one of the values in the Acronym column from the table found on the next page, however Contractors are permitted to use other acronyms for the drive type if TSSA is given an appropriate cross reference table.



<b>Elevator (Passenger or Freight) Drive Type</b>	<b>Acronym</b>
Single Speed AC	AC-1S
Two Speed AC	AC-2S
DC Motor Generator	DC-MG
Dual Bridge Thyristor Control	DC-SCR
Variable Voltage Variable Frequency	VVVF
Variable Voltage AC	VVAC
Hydraulic	HYD
Other Drive Type Not Listed Above	OTHER

<b>Other Elevating Device Type</b>	<b>Acronym</b>
Device that is not an elevator (ie. Dumbwaiters, Material Lifts, Stair Chairs, etc)	NA

### 3. Notes

- 3.1 A blank excel template file (Contractor Maintenance List Form) is available on the TSSA website on the Forms & Fees page (<http://www.tssa.org/regulated/elevating/elevatingForms.asp>).
- 3.2 The complete data list must be submitted with the contractor's renewal package that is due by March 31<sup>st</sup>, 2013.
- 3.3 A Contractor renewal mailing will be sent to each contractor in early 2013.
- 3.4 It is important that accurate data be provide as it can be used to identify future control system upgrade requirements.

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Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01(Elevating Devices) made under the *Technical Standards and Safety Act, 2000*

This Bulletin has been developed in consultation with the Elevating Devices Advisory Council, and the recommendations of the Brake / Leveling Risk Reduction Group



Elevating and Amusement Devices Safety Division	Ref. No.: 259 / 12	Rev. No.: 1
INFORMATION BULLETIN	Date: December 18, 2012	Date: January 31, 2013

Subject: List of Data – Contractor Registration / Renewals (March 2013)  
Applicable to: Elevator Contractors

---

## 1. Background

TSSA and industry participated in an RRG to assess the safety risks of existing elevators with two speed and single speed drive types. The RRG concluded that all elevators with a single speed drive type need to be upgraded to a design that produces more accurate leveling. In order to initiate this upgrade, it is necessary to identify all existing elevators that use a single speed drive type. Most of these elevators are very old and in many cases the TSSA data base does not contain the drive type. The RRG agreed that as part of Contractor registration renewal Contractors would provide as part of their updated maintenance lists, information on the drive type for all elevators that they maintain. This bulletin provides advance notice to industry of the additional information that will be required. For this initiative to be successful, it is critical that contractors provide accurate and complete information on all elevators that they maintain. For elevating devices other than elevators an entry of NA is adequate.

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2.2 During the 2013 renewal cycle, contractors shall submit their complete maintenance lists via an excel spreadsheet (to [LicensingandRegistration@tssa.org](mailto:LicensingandRegistration@tssa.org)), that shall contain not less than the following column headings:

- Contractor registration number
- ED Installation Number
- ~~Service contract expiry date (mm/dd/yyyy) and~~
- **Drive type associated with the given ED installation**

2.3 The **Drive type** entry shall reflect one of the values in the Acronym column from the table found on the next page, however Contractors are permitted to use other acronyms for the drive type if TSSA is given an appropriate cross reference table.

<b>Elevator (Passenger or Freight) Drive Type</b>	<b>Acronym</b>
Single Speed AC	AC-1S
Two Speed AC	AC-2S
DC Motor Generator	DC-MG
Dual Bridge Thyristor Control	DC-SCR
Variable Voltage Variable Frequency	VVVF
Variable Voltage AC	VVAC
Hydraulic	HYD
Other Drive Type Not Listed Above	OTHER

<b>Other Elevating Device Type</b>	<b>Acronym</b>
Device that is not an elevator (ie. Dumbwaiters, Material Lifts, Stair Chairs, etc)	NA

### 3. Notes

3.1 A blank excel template file (Contractor Maintenance List Form) is available on the TSSA website on the Forms & Fees page (<http://www.tssa.org/regulation/elevating/elevatingForms.asp>). The excel form requires data to be presented in 3 columns as shown below:

<b>CONTRACTOR REGISTRATION NUMBER</b>	<b>ED INSTALLATION NUMBER</b>	<b>DRIVE TYPE</b>
		Valid entries are: <b>AC-1S</b> = Single Speed AC, <b>AC-2S</b> = Two Speed AC <b>DC-MG</b> = DC Motor Generator <b>DC-SCR</b> = Dual Bridge Thyristor Control <b>VVVF</b> = Variable Voltage Variable Frequency <b>VVAC</b> = Variable Voltage AC <b>HYD</b> = Hydraulic <b>OTHER</b> = other drive types <b>NA</b> = for Device Type other than Passenger or Freight Elevator

3.2 The complete data list must be submitted with the contractor's renewal package that is due by March 31<sup>st</sup>, 2013.

3.3 A Contractor renewal mailing will be sent to each contractor in early 2013.

3.4 It is important that accurate data be provide as it can be used to identify future control system upgrade requirements.

Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01(Elevating Devices) made under the *Technical Standards and Safety Act, 2000*

This Bulletin has been developed in consultation with the Elevating Devices Advisory Council, and the recommendations of the Brake / Leveling Risk Reduction Group



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 260 / 14	Rev. No.:
<b>DIRECTOR'S SAFETY ORDER</b>	Date: March 17, 2014	Date:

**IN THE MATTER OF:**

**THE TECHNICAL STANDARDS AND SAFETY ACT, 2000, S.O. 2000, c. 16 (the "Act")**

**- and -**

**ONTARIO REGULATION 209/01 (Elevating Devices) made under the Act**

**Subject:** Car Platform Apron Requirements for Existing Passenger Elevators

**Applicable to:** All Owners of Existing Passenger Elevators and All Elevator Contractors

**The Director, Elevating Devices Regulation (O.Reg. 209/01) pursuant to his authority under section 14 of the *Technical Standards & Safety Act, 2000* hereby orders the following:**

**1. PLATFORM APRON REQUIREMENTS**

1.1. Per the provisions of the Elevating Devices Code Adoption Document (CAD), section 3.10 establishes requirements for car platform aprons on existing passenger elevators for a given occupancy class.

**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.

**2. AFFECTED DEVICES**

2.1. This Director's Safety Order applies to all passenger elevators that:

- a) Have an Elevating Devices Installation number of **33700 or earlier; and**
- b) Operates in an
  - i. apartment building
  - ii. condominium apartment building; or
  - iii. educational institution.

Note: This order does not apply to passenger elevators in buildings with occupancies such as a place of assembly, hospital, hotel, office, mercantile or industrial.

### 3. RETROFIT ORDER

- 3.1. All affected devices (per 2.1 above), shall have a 1200\* mm long apron (48") or be retrofitted as follows:
- a) Where the pit depth and site parameters allow, aprons shall be extended to have a straight vertical face not less than 1200\* mm (48"), or
  - b) Where pit depths cannot accommodate a 1200\* mm (48") straight vertical face, the apron length may be reduced to the maximum length allowable. With the car resting on the fully compressed buffers, aprons shall be a minimum 25mm above the pit floor. These installations shall also be equipped with a car door restrictor meeting the requirements of 2.12.5 of ASME A17.1-2010/CSA B44 –10 or 2.14.5.7 of ASME A17.1-2013/CSA B44 –13 if the door restrictor requires electrical power for its functioning.
- 3.2. Where pit depths can accommodate an apron extension by at least 75mm (3") to achieve compliance with 3.1(a) or 3.1(b), apron extensions shall be performed.
- 3.3. The aprons on all affected devices (per 2.1 above) shall meet the beveling and strength requirements of CAD 3.10.
- 3.4. Where apron plates are extended, the pit fascia shall be extended flush to the bottom of the car apron when the car is resting on the fully compressed buffer.
- 3.5. For installations with swing hall doors where the corresponding car door is of a collapsible or foldable design car door restrictors per 3.1b) are not required.

\* To allow for variations in the length of existing platform aprons, the 1200 mm (48") straight vertical face dimension may have a minus 75mm (3") tolerance on length. Allowing for this tolerance, the straight vertical face of the apron on an applicable installation (measured from the car sill to the apron bevel) must not be less than 1125mm (45").

### 4. ORDER to OWNERS

- 4.1. By the dates specified in section 6, owners shall:
- a) engage the services of a registered elevator contractor to determine if a retrofit is required; and
  - b) if required, bring their installation(s) into conformance with 3.1(a) or 3.1(b) and 3.2 utilizing a registered elevator contractor to perform the work.

#### Notes:

- 1) Contractor who engage in a retrofit, are required to submit a minor alteration to TSSA and arrange for an inspection. The retrofit is not complete until it has been successfully inspected. Ask for a copy of the registered minor alteration submission and the final inspection report showing the inspection was successful.
- 2) Owners should be aware that building occupancy changes may result in these retrofit requirements becoming applicable to their elevating device at a future date.

### 5. ORDER to CONTRACTORS

- 5.1. Contractors who assess the apron plate length and can confirm the existing apron is 1200\* mm (48") or greater shall apply a sticker to the cross head of the elevator car sling in the vicinity of the cross head data tag that is permanently attached and marked with the text "**Meets 3.10 of CAD 261/13 Apron Plate Requirement**", in letters not less than 6 mm (0.25").
- 5.2. Contractors who engage in the retrofit of affected devices shall:
- a) Be responsible for establishing the maximum allowable apron length and providing compliant solutions as in part 3 of this order.

- b) Submit a minor B alteration for the apron plate extensions, fascia extensions and/or door restrictor retrofits
- c) Submit a minor A alteration if the door restrictor utilizes electrical power for its functioning complete with restrictor make and model, schematics if applicable and any relevant testing procedures.
- d) Provide a code data plate as per section 8.9 of the code which identifies alteration “8.7.2.11.5 Restricted Opening of Hoistway or Car Doors”
- e) Arrange for the appropriate inspection with TSSA following completion of the alteration after receipt of a registered design submission.

Notes:

- 1) Contractors may obtain stickers from TSSA at no charge via a request sent to eddesignsubmittal@tssa.org.
- 2) At the time of a Minor A or Minor B inspection, a TSSA inspector will arrange for a sticker to be placed on the car top cross head to acknowledge compliance has been assessed to either CAD 3.10 or Directors Safety Order 260/14.

## 6. COMPLIANCE TIMELINES

- 6.1. This order is effective as of March 17, 2014.
- 6.2. On or before November 31, 2014, owners shall determine if their elevator installations are an affected device.
- 6.3. Not later than March 31, 2016, all affected devices shall be retrofitted as required in part 3 of this order.

Note: See attached process flow guideline for a visual summary.

## BACKGROUND

A recent fatality in Ontario occurred as a result of a self rescue attempt by several trapped passengers. With the elevator stopped above floor level with the car and hall doors open, a space exists between the elevator car floor and the hall floor. This space below the car floor was partially protected by a short apron plate. A fall hazard existed due to the gap between the lower edge of the apron plate and the hall floor, and during egress one of the occupants fell into this gap. The original elevator installation (~1966 code) had no requirement for a long apron. In 1981 when the longer apron requirement came into force this building was of an occupancy that did not require the apron to be lengthened. The occupancy type of this building changed in 1987 but the apron was not lengthened as required.

This safety order is being issued to address the exposure to a fall hazard as well as prevent the possibility of self rescue by restricting egress from a car not at or near the floor for the building occupancies described.

<original signed>

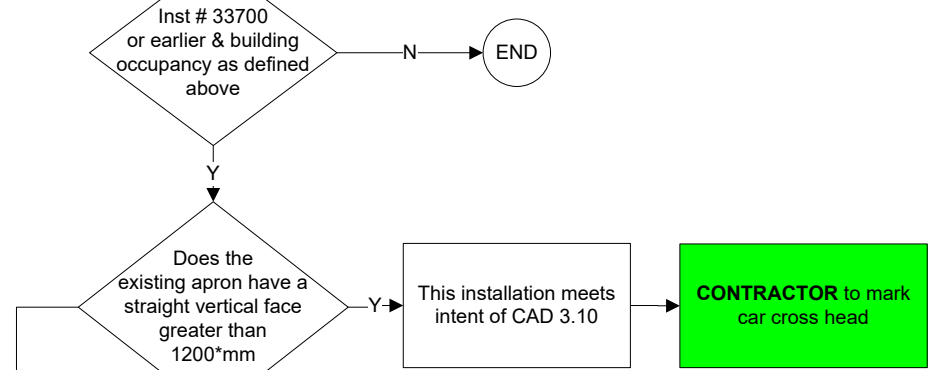
**Roland Hadaller P.Eng.**

Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards and Safety Act, 2000*

This Order has been developed in consultation with the Elevating Devices Advisory Council and the Field Advisory Committee.

**Directors Safety Order 260/14 – Process Flow Guideline**

**Determine compliance to Either CAD 3.10 or DSO 260/14**  
 For Elevating Devices with Installation Number 33700 or earlier  
 that operate in buildings with occupancy apartment building,  
 condominium apartment building or educational institution



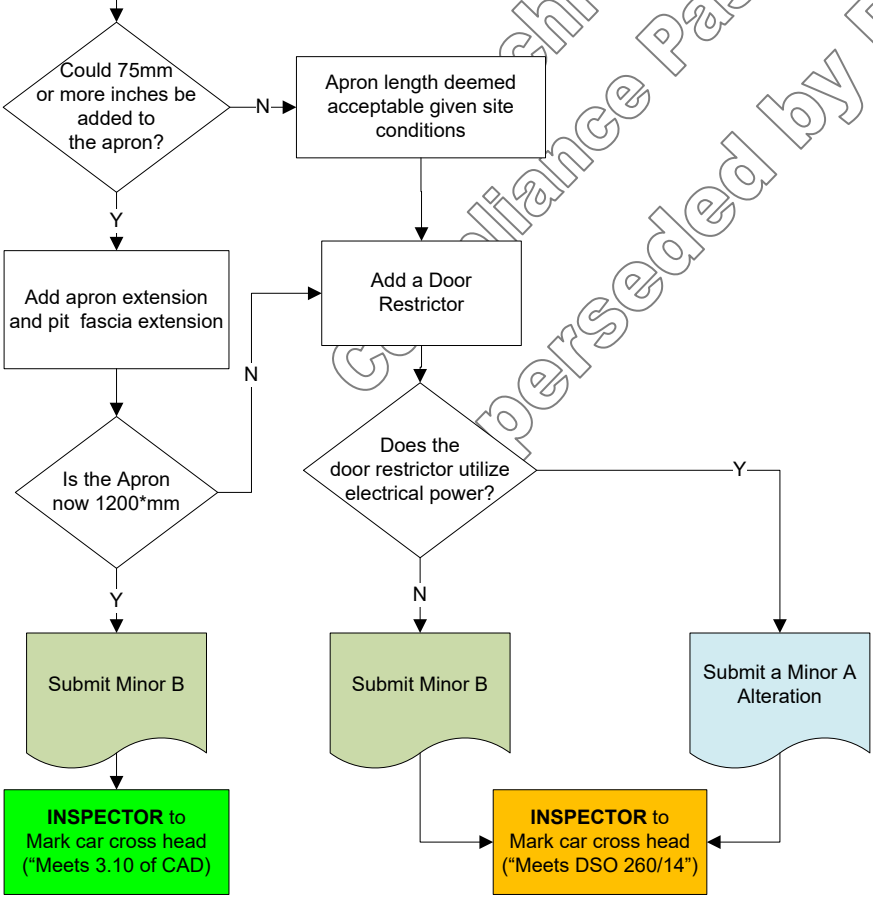
**Meets 3.10 of CAD 261/13 Platform Apron Plate**

Completion by November 31, 2014

Completion not later than March 31, 2016

Measure Existing Apron vs. Possible Apron length for site conditions: pit depth, runby and buffer stroke

\*Note: A tolerance of -75mm is permissible



**Meets DSO 260/14 Platform Apron Plate and Door Restrictor**



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 260 / 14	Rev. No.: 1
<b>DIRECTOR'S SAFETY ORDER</b>	Date: March 17, 2014	Date: April 15, 2015

**IN THE MATTER OF:**

**THE TECHNICAL STANDARDS AND SAFETY ACT, 2000, S.O. 2000, c. 16 (the "Act")**

**- and -**

**ONTARIO REGULATION 209/01 (Elevating Devices) made under the Act**

**Subject:** Car Platform Apron Requirements for Existing Passenger Elevators

**Applicable to:** All Owners of Existing Passenger Elevators and All Elevator Contractors

**The Director, Elevating Devices Regulation (O.Reg. 209/01) pursuant to his authority under section 14 of the *Technical Standards & Safety Act, 2000* hereby orders the following:**

**1. PLATFORM APRON REQUIREMENTS**

- 1.1. Per the provisions of the Elevating Devices Code Adoption Document (CAD), section 3.10 establishes requirements for car platform aprons on existing passenger elevators for a given occupancy class.

**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.

- △ 1.2. For the purpose of this order and to allow reasonable accommodation of some existing apron styles, an apron with an overall length dimension of 1125mm (44.25 in.), measured from the car sill to the bottom edge of the apron shall be deemed to comply with the dimensional requirements of 1.1 and shall not be subject to the retrofit requirements of this order.

**2. AFFECTED DEVICES**

- 2.1. This Director's Safety Order applies to all passenger elevators that:
- a) Have an Elevating Devices Installation number of **33700 or earlier; and**
  - b) Operates in an
    - i. apartment building
    - ii. condominium apartment building; or



- iii. educational institution.
- △ c) Do not have an apron in compliance with the requirements of 1.1 or 1.2 of this order.

Note: This order does not apply to passenger elevators in buildings with occupancies such as a place of assembly, hospital, hotel, office, mercantile or industrial.

### 3. RETROFIT ORDER

- △ 3.1 On affected devices, where the pit depth and site parameters allow an apron extension of 150mm (6 in.) or more, these devices shall have their apron extended to the extent site conditions allow. No further rework is required if an apron extension meets the requirements of 1.1 or 1.2.

Note: Where conditions allow, it is permissible to extend an apron less than 150mm (6 in.) in order to achieve compliance to 1.1 or 1.2.

- △ 3.2 Where apron plates do not meet the requirements of 1.1 or 1.2, these devices shall also be equipped with a car door restrictor meeting the requirements of :
  - a) 2.12.5 of ASME A17.1-2010/CSA B44 –10 or
  - b) 2.14.5.7 of ASME A17.1-2013/CSA B44 –13 if the door restrictor requires electrical power for its functioning.
- 3.3 The aprons on all affected devices shall meet the beveling and strength requirements of CAD 3.10.
- 3.4 Where apron plates are extended, the pit fascia shall be extended flush to the bottom of the car apron when the car is resting on the fully compressed buffer.
- 3.5 For installations with swing hall doors where the corresponding car door is of a collapsible or foldable design car door restrictors per 3.2 are not required.

### 4 ORDER to OWNERS

- 4.1 By the dates specified in section 6, owners shall:
  - a) Engage the services of a registered elevator contractor to determine if a retrofit is required; and
  - b) if required, bring their installation(s) into conformance with requirements in part 3 utilizing a registered elevator contractor to perform the work.

Notes:

- 1) Contractor who engage in a retrofit, are required to submit a minor alteration to TSSA and arrange for an inspection. The retrofit is not complete until it has been successfully inspected. Ask for a copy of the registered minor alteration submission and the final inspection report showing the inspection was successful.
- 2) Owners should be aware that building occupancy changes may result in these retrofit requirements becoming applicable to their elevating device at a future date.

### 5 ORDER to CONTRACTORS

- 5.1 Contractors who assess the apron plate length and can confirm the existing apron meets the requirements in part 1 shall apply a sticker to the cross head of the elevator car sling in the vicinity of the cross head data tag that is permanently attached and marked with the text “Meets 3.10 of CAD 261/13 Apron Plate Requirement”, in letters not less than 6 mm (0.25”).
- 5.2 Contractors who engage in the retrofit of affected devices shall:

- a) Be responsible for establishing the maximum allowable apron length and providing compliant solutions as in part 3 of this order.
- b) Submit a minor B alteration for the apron plate extensions, fascia extensions and/or door restrictor retrofits.
- c) Submit a minor A alteration if the door restrictor utilizes electrical power for its functioning complete with restrictor make and model, schematics if applicable and any relevant testing procedures.
- d) Provide a code data plate as per section 8.9 of the code which identifies alteration “8.7.2.11.5 Restricted Opening of Hoistway or Car Doors”.
- e) Arrange for the appropriate inspection with TSSA following completion of the alteration after receipt of a registered design submission.

Notes:

- 1) Contractors may obtain stickers from TSSA at no charge via a request sent to eddesignsubmittal@tssa.org.
- 2) At the time of a Minor A or Minor B inspection, a TSSA inspector will arrange for a sticker to be placed on the car top cross head to acknowledge compliance has been assessed to either CAD 3.10 or Directors Safety Order 260/14.

## △ 6 COMPLIANCE TIMELINES

- 6.1 Revision 1 of this order is effective April 15, 2015.
- 6.2 On or before June 30, 2015, owners shall determine if their elevator installations are an affected device.
- 6.3 Not later than June 30, 2016, all affected devices shall be retrofitted as required in part 3 of this order.

Note: See attached process flow guideline for a visual summary.

### BACKGROUND

A recent fatality in Ontario occurred as a result of a self rescue attempt by several trapped passengers. With the elevator stopped above floor level with the car and hall doors open, a space exists between the elevator car floor and the hall floor. This space below the car floor was partially protected by a short apron plate. A fall hazard existed due to the gap between the lower edge of the apron plate and the hall floor, and during egress one of the occupants fell into this gap. The original elevator installation (~1966 code) had no requirement for a long apron. In 1981 when the longer apron requirement came into force this building was of an occupancy that did not require the apron to be lengthened. The occupancy type of this building changed in 1987 but the apron was not lengthened as required.

This safety order is being issued to address the exposure to a fall hazard as well as prevent the possibility of self rescue by restricting egress from a car not at or near the floor for the building occupancies described.

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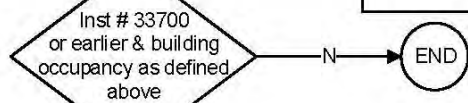
**Roger Neate**

Director, Ontario Regulation 209/01 (Elevating Devices), appointed under the *Technical Standards and Safety Act, 2000*

This Order has been developed in consultation with the Elevating Devices Advisory Council and the Field Advisory Committee.

**Directors Safety Order 260/14 – Process Flow Guideline**

**Determine compliance to Either CAD 3.10 or DSO 260/14**  
 For Elevating Devices with Installation Number 33700 or earlier that operate in buildings with occupancy apartment building, condominium apartment building or educational institution



This installation meets intent of CAD 3.10

**CONTRACTOR** to mark car cross head



Completion by **June 30, 2015**

Completion not later than **June 30, 2016**

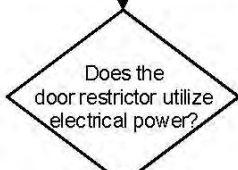
Measure Existing Apron vs. Possible Apron length for site conditions: pit depth, runby and buffer stroke



Apron length deemed acceptable given site conditions

Add apron extension and pit fascia extension

Add a Door Restrictor



Submit Minor B

Submit Minor B

Submit a Minor A Alteration

**INSPECTOR** to Mark car cross head ("Meets 3.10 of CAD")

**INSPECTOR** to Mark car cross head ("Meets DSO 260/14")



\* Note: Where conditions allow, it is permissible to extend an apron less than 150mm (6 in.) in order to achieve an apron length of >=1125 mm (44.25 in.)



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 261-13	Rev. No.:
<b>Elevating Devices Code Adoption Document - Amendment</b>	Date: May 1, 2013	Date:

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

Ontario Regulation 223/01  
(Codes and Standards Adopted by Reference)

- and -

Ontario Regulation 209/01  
(Elevating Devices)

**Subject: Elevating Devices Code Adoption Document - Amendment 261-13**

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The Director for the purposes 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, published by the Technical Standards and Safety Authority is amended as follows:

- 1. All sections of the Elevating Device Code Adoption Document dated June 1, 2001 are hereby revoked and replaced with the following:**
  - The Elevating Devices Code Adoption Document - Amendment 261-13, dated May 1, 2013 and published by the Technical Standards and Safety Authority, is hereby adopted.
- 2. This amendment is effective May 1, 2013.**

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**Roland Hadaller, P.Eng.**

Director, O. Reg. 209/01 (Elevating Devices), made 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.*





# **ELEVATING DEVICES CODE ADOPTION DOCUMENT AMENDMENT 261-13**

**May 1, 2013**

**Elevating and Amusement Devices Safety Program  
Technical Standards and Safety Authority**



## Background

This document and the codes it adopts establish requirements and minimum standards for the design, construction, installation, erection, maintenance and alteration of elevating devices.

Pursuant to s. 4(1) of O. Reg. 223/01 (Codes and Standards Adopted by Reference) made under the *Technical Standards and Safety Act, 2000*, the “Elevating Devices Code Adoption Document” published by TSSA and dated June 1, 2001 (the “CAD”) forms a part of O. Reg. 209/01 (Elevating Devices).

The CAD, in turn, adopts various codes. Since its adoption as part of O. Reg. 209/01, the CAD has been amended several times to adopt different versions of codes and to make modifications to those codes.

CAD amendment 261-13 replaces all previous CAD amendments and is a consolidation of previous CAD amendments, applicable Directors Orders.

For the user’s convenience, this CAD amendment indicates previous amendments using the colour coding and reference symbols in the following table:

### Colour Coding and Reference Symbols Used in CAD Amendment 261-13

<b>7.5</b>	is a reference to another section in this CAD amendment
<b>(197/06)</b>	is a reference to a predecessor document. (Director’s Order, Enforcement Procedure, etc.)
<b>7.2.4.</b>	is a reference to a section in an external document or code
<b>as part of</b>	is a reference to text from a published code that is not part of this code but is shown for reference only
<b>Red Text</b>	is used to identify changes from the previous CAD Amendment or TSSA-specific additions to a published code
<b>★</b>	is used to denote a TSSA-specific alteration
<b>Blue greyed</b>	denotes a <b>maintenance permission</b> that will expire <b>on January 1, 2014</b>
<b>Peach highlight</b>	-identifies new text contained in CAD Amendment-261-13 -identifies TSSA specific additions to the A17.1/B44 code -identifies text from the A17.1/B44-2013 code

Note that definitions contained in O. Reg. 209/01 apply to the code.

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# Elevating Devices Code Adoption Document Amendment 261-13

## Part 1

### 1 GENERAL

#### 1.1 Definitions

- 1.1.1 The terms in this Code Adoption Document amendment (Document) have the same meaning as in the *Act* or the Regulation unless otherwise specified herein.
- 1.1.2 Where a provision of a code or standard adopted in this Document is inconsistent with the requirements of this Document, the provision of this Document shall prevail.
- 1.1.3 In this Document,
- (a) “Regulation” means Ontario Regulation 209/01 (Elevating Devices) made under the *Technical Standards and Safety Act, 2000*.
  - (b) “CSA” means the Canadian Standards Association.
  - (c) “CAN” means a standard recognised as a National Standard of Canada and approved by the Standards Council of Canada.
  - (d) “ANSI” means the American National Standards Institute.
  - (e) “freight elevator-P” means a freight elevator upon which passengers are permitted to ride;
  - (f) “common-mode failure” means the result of an event(s) which because of dependencies, causes a coincidence of failure states of components in two or more separate channels of a redundancy system, leading to the defined system failing to perform its intended function. [CAD Amendment 216-07]
  - (g) “software system failure” means a behaviour of the software, including its support (host) hardware, that is not in accordance with the intended function. [CAD Amendment 216-07]
  - (h) “solid-state device” means an element that can control current flow without moving parts. [CAD Amendment 216-07]
  - (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] [See also definition in NFPA 72. \[CAD Amendment 261-13\]](#)
  - (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]

## 1.2 Exceptions

- 1.2.1 Except where otherwise indicated, this Document applies to all elevating devices and parts thereof.
- 1.2.2 Despite subsection [1.2.1](#) and unless otherwise specified in the Regulation, in this Document or by the director, the codes and standards referred to in this Document do not apply to existing elevating devices except for those sections respecting alterations, the inspection, testing, maintenance, operation and use of the elevating device, including signage and instructions relating to the use of the elevating device.

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## Part 2

### 2 GENERAL TECHNICAL REQUIREMENTS

#### 2.1 Welding

- 2.1.1 The welding of a steel structure on an elevating device shall conform to the requirements of CSA Standard W59-03, Welded Steel Construction (Metal Arc Welding). [CAD Amendment 246-11]
- 2.1.2 The welding of a steel structure on an elevating device shall be undertaken by a fabricator or contractor qualified to the requirements of CSA Standard W47.1-03, Certification of Companies for Fusion Welding of Steel Structures. [CAD Amendment 246-11]
- 2.1.3 The field welding of piping and fittings on an elevating device shall conform to the requirements of CSA Standard B51-03, Code for the Construction and Inspection of Boilers. [CAD Amendment 246-11]
- 2.1.4 Despite subsections **2.1.1**, **2.1.2** and **2.1.3**, an equivalent welding standard may be used if it is acceptable to the director.

#### 2.2 Electrical

- 2.2.1 Electrical equipment shall conform to the requirements of,
- (a) Ontario Electrical Safety Code as amended from time to time; and [CAD Amendment 246-11]
  - (b) CAN/CSA B44.1/ASME A17.5-04, Elevator and Escalator Electrical Equipment, or [CAD Amendment 246-11]
  - (c) CAN/CSA C22.2 No. 14, Industrial Control Equipment (applicable to elevating devices other than elevators, escalators, moving walks, dumbwaiters, material lifts, and lifts for persons with physical disabilities). [CAD Amendment 246-11]

#### 2.3 Rope Clips

- 2.3.1 Where clips are permitted to fasten metal rope in an elevating device,
- (a) the minimum number of clips to be used on each rope ends shall be,
    - (1) two clips for rope under nine millimetres in diameter,
    - (2) three clips for rope nine millimetres in diameter and over but under sixteen millimetres in diameter,
    - (3) four clips for rope sixteen millimetres in diameter and over but under nineteen millimetres in diameter;
  - (b) the rope end shall be bent over a heart-shaped thimble that has a groove of a radius equal to that of the rope or shall be provided with protection that a director considers equivalent;
  - (c) the clips shall be spaced at a distance apart equal to six times the rope diameter from the short end of the rope;

- (d) U-type clips shall be placed so that the U bolts bear on the short or dead end of the rope and the bases bear on the load part of the rope; and
- (e) the nuts on the clips shall not be fully tightened until after the rope has been under load and all nuts shall be fully tightened while the rope is still loaded.

## **2.4 Rope Replacement (17/84)(122/95)**

- 2.4.1 When changing or shortening ropes on counterweighted elevators, the installation shall be provided with a data plate permanently and securely attached in the pit, in the vicinity of the counterweight buffer, indicating the maximum designed counterweight runby. [CAD Amendment 246-11]
- 2.4.2 The minimum stranding for cables used to relate any car or landing door shall be not less than 7 x 19 construction. [CAD Amendment 246-11]

## **2.5 Relocation of an Elevating Device**

- 2.5.1 Where an elevating device is relocated it shall meet the requirements of the applicable code or standard adopted in this Document, unless otherwise specified in this Document or by the director.

## **2.6 Alteration**

- 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. [CAD Amendment 250-11]
- 2.6.1 Unless otherwise specified in this Document or by the director, and without limiting generality of the Regulation, the following alteration to an elevating device shall constitute a major alteration:
  - (a) An increase by more than 10 per cent in,
    - (1) the rated speed of the load-carrying unit,
    - (2) the maximum capacity, or
    - (3) the dead-weight of the machine, load-carrying unit or counter-weight;
  - (b) except for construction hoists, an increase or decrease in the distance of the travel of the load-carrying unit;
  - (c) a change in,
    - (1) the method or type of operation,
    - (2) the method or type of motion control,
    - (3) the type or size of guide rails or other guiding means for the load-carrying unit or counter-weight,

- (4) the type of safety device or other safety stopping device for the load-carrying unit or counter-weight,
- (5) the power supply to the machine,
- (6) the type of driving machine or brake,
- (7) the location of ;
  - a) the elevating device,
  - b) elevating device controller, [CAD Amendment 246-11]
  - c) the machine,
  - d) the load-carrying unit,
  - e) the counter-weight, or
- (8) the working pressure of a hydraulic system by more than 10 per cent;
- (d) a replacement of the controller; [CAD Amendment 246-11]
- (e) changes that would result in a reclassification of the elevating device; and
- (f) the addition of an entrance to the elevating device.

2.6.2 Unless otherwise specified in this Document or by the director, and without limiting the generality of the Regulation, any action or work performed on an elevating device that is not specified in subsection 2.6.2 and that results in a change to the original design or the operational characteristics of the elevating device or affects the inherent safety level of the elevating device, shall constitute a minor alteration.

## 2.7 Rack and Pinion Safeties [CAD Amendment 213-07]

2.7.1 Any repair or rebuild of a type 'D' rack and pinion safety where the manufacturer has stated that such work shall only be performed by the manufacturer, may either be;

- (a) repaired, rebuilt or replaced by the manufacturer; or
- (b) repaired or rebuilt in accordance with a procedure certified by a professional engineer.

2.7.2 The procedure referred to in clause 2.7.1(b) shall be filed with the director and shall be available to the inspector upon request. [CAD Amendment 213-07]

## 2.8 Format of Submission Documents

2.8.1 Where a design submission is in paper format it shall;

- (a) be submitted as one copy unless the submission includes oversized drawings;
- (b) drawings that are not legible when printed on 11" x 17" paper are considered oversized and shall be submitted as four paper copies as well as in an electronic media form that contains the oversized drawings in unprotected PDF, JPEG or TIFF format;



- (c) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding.  
[CAD Amendment 246-11]

2.8.2 Electronically submitted design submissions shall be as follows;

- (a) filled specification sheets shall be provided in excel format;
- (b) other supporting documentation shall be provided in unprotected PDF, excel or word format;
- (c) where electronic pages exceed 11"x17" paper size, the information shall be legible to the smallest detail when printed to 11"x17", otherwise they shall also be provided as four hardcopies;
- (d) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding;
- (e) documents received electronically, will be returned electronically at the conclusion of the design review.  
[CAD Amendment 246-11]

## **2.9 Hydraulic Elevating Device Oil Loss Monitoring Program** [CAD Amendment 212-07-r1]

- 2.9.1 Every contractor who maintains a hydraulic elevating device with buried cylinders or buried piping shall ensure there is a written oil loss monitoring program.
- 2.9.2 A "hydraulic elevating device" means a non-portable device for hoisting and lowering or moving persons or freight and includes an elevator, dumbwaiter, manlift, incline lift, construction hoist, stage lift, platform lift and special elevating device that incorporates one or more hydraulic cylinders.
- 2.9.3 The purpose of the oil loss monitoring program is to identify any loss of oil which cannot be accounted for in the hydraulic system.
- 2.9.4 If a contractor performs maintenance on a hydraulic elevating device with buried cylinders or buried piping, the contractor shall ensure that a written oil loss monitoring program is developed and maintained before the contractor performs work on the hydraulic elevating device.
- 2.9.5 The oil loss monitoring program shall include: [CAD Amendment 246-11]

- (a) the requirement to provide an oil loss monitoring log ("OLM log") for each hydraulic elevating device with buried cylinders or buried piping;
- (b) the requirement for the OLM log to reference the elevating device installation number;
- (c) the requirement to establish a fixed reference level for the oil and the requirement to mark the reference level on the tank, dip stick or other suitable location via permanent means;

Note: "permanent" implies affixed in such a manner so as to not be easily removed or repositioned.

- (d) the requirement to document in the OLM log the location of the mark for the fixed reference level;
- (e) the requirement to check that the oil level is at the established reference point when the device is level with the lowest landing during each scheduled maintenance visit;
- (f) if the fixed reference level needs to be intentionally adjusted, the requirement to document and record the changes to the established reference level and reason for establishing the new reference level;

- (g) the requirement to record in the OLM log any quantity of oil added or removed from the hydraulic system;
  - (h) that during each maintenance visit, even if no oil is added, the requirement to record in the OLM log the oil level and the date of the scheduled maintenance visit;
  - (i) if oil is added or removed, the requirement to record in the OLM log the dates oil was added or removed from the hydraulic system;
  - (j) the requirement to record in the OLM log the reason oil was added to or removed from the hydraulic system;
  - (k) the requirement to record in the OLM log the mechanic's printed and legible name, signature and certification number for every entry made;
  - (l) the requirement to keep the OLM log in the elevator machine room, in a readily identifiable location;
  - (m) the requirement that the OLM log be kept in the elevator machine room for a period of at least five years from the date of the last entry in the OLM log;
  - (n) the requirement to never allow oil levels to exceed the fixed reference level for the oil level;
  - (o) the requirement to record in the OLM log the frequency of oil monitoring activities;
  - (p) the requirement that, despite (o), hydraulic elevating devices with buried single bottom cylinders be monitored on a monthly basis;
  - (q) the requirement that installations registered by MCCR prior to September 4, 1978 with an installation number below 031909 shall be monitored monthly, unless a notification\* (in the form provided by the TSSA) is sent to the Director, advising why the monthly requirements should not apply, and the registered notification is posted along with the OLM log;
- \* A notification form is available from [www.tssa.org](http://www.tssa.org). The "Subject" entry should state, Non Single Bottom Cylinder and the "TSSA Reference No." should state, 212/07-r1.
- (r) if there is any oil loss which cannot be accounted for, the requirement to immediately remove a hydraulic elevating device from service until the cause for the oil loss is determined and the cause and associated remedy noted in the OLM log;
  - (s) the requirement to report in writing any oil loss attributed to leaks in buried cylinders or buried piping to the TSSA Elevating Devices Director within 7 days;
  - (t) the requirement to provide maintenance personnel adequate training related to the contractor's oil loss monitoring program;
  - (u) the requirement to maintain up-to-date written records showing who provided and who received the training referred to in (t), the nature of the training and the date when it was provided. A record of training shall be available to the TSSA upon request.
  - (v) the requirement that the contractor's oil loss monitoring program be posted or otherwise available in the machine room, and
  - (w) the requirement that the collection containers shall not exceed 19 L (5 gal) per cylinder.

- 2.9.6 Oil that is returned to the hydraulic system from recovery containers, either by manual means or automatically via scavenger pumps, need not be recorded.

Note: if oil from recovery containers is not suitable for return to the tank, it must be measured and an equivalent amount must be added to the system when recovery containers are emptied. If additional oil is needed to reach the fixed reference level it must be recorded as new oil. [CAD Amendment 212-07-r1]

## **2.10 Proper Use of Jumpers** (*Elevator Industry Field Employees' Safety Handbook*) (01/82)

- 2.10.1 Each contractor shall have written procedures for the use of jumpers when working on elevating device circuits. Each contractor is responsible for ensuring that their mechanics understand the procedure and are equipped to follow it. Each mechanic is responsible for ensuring that they adhere to the procedure. [CAD Amendment 246-11]

2.10.2 The written procedures shall contain not less than the minimum requirements prescribed in Section 6 of the 2010 edition of the *Elevator Industry Field Employees' Safety Handbook*. [CAD Amendment-261-13]

## **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 1070 mm (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 designed 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]

2.12.2 The requirement for safe passage across roof tops shall also ensure

- (a) adequate lighting is available to safely access the elevator machinery space such that where natural lighting is inadequate to ensure the safety of any worker, artificial lighting is provided and shadows and glare are reduced to a minimum
- (b) the means for safe access are maintained, including but not limited to ensuring: snow removal as needed, secure footing, no standing water, and the upkeep of safety equipment such as walkways, lifelines, and fixed ladders. [CAD Amendment-261-13]

## **2.13 Parts affecting Safe Operation** [CAD Amendment-261-13]

- 2.13.1 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.
- 2.13.2 Where a defective part that can impact the safety of the operation is identified, the part shall be adjusted, repaired or replaced, or a risk assessment carried out to determine if the device can remain in service where the work cannot be carried out immediately. The nature of the defect and the anticipated date of repair or replacement shall be noted in the log book.

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## Part 3

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

#### 3.1 Applied Codes and Standards [CAD Amendment 250-11] [CAD Amendment 261-13]

3.1.1 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 32 mm (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 **on the side sloping away from the walk** with a railing conforming to 2.10.2.1, 2.10.2.2, **and 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 and or control room shall be provided.

- (9) Requirement 2.10.2 is revoked and the following substituted (see also 3.8.2): (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 1 070 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 horizontal load applied inward or outward, of 750N/m (52 lbf/ft) or a concentrated load of 1000N (225 lbf) applied at any point, whichever governs, at the top of every guard rail
- 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).
- 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) Section 14(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 force of at least 890 N (200 lbf) applied in any lateral or downward vertical direction, at any point along the top rail.
- 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 amended and supplemented with the following (see also 3.8.2):  
(245/10)

**2.14.1.7.2** When the car has reached its maximum upward movement (2.4.6.1) or, effective for submissions received after November 1, 2013 when the car is travelling at any point in the hoistway, the following minimum clearances shall be provided from the top rail of the standard railing to building structure or equipment not attached to the car:

- (a) 100 mm (4 in.) vertically
- (b) 100 mm (4 in.) horizontally in the direction towards the hoistway enclosure
- (c) 300 mm (12 in.) horizontally towards the centerline of the car enclosure top  
[CAD Amendment 261-13]

**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, and
- (9) a suitably designed and marked fall arrest anchor point shall be provided if there is worker exposure to a fall hazard (per R.R.O. 1990, Reg. 851 (Industrial Establishments) made under the *Occupational Health and Safety Act*, s. 85) 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, and
  - (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. [CAD Amendment-250-11] Where a dedicated function fire alarm system is installed in a building with an existing fire alarm system, the systems shall be interconnected. [CAD Amendment-261-13]

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 ONLY)**

- (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) below apply, otherwise the requirements of (2) below 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) below apply, otherwise the requirements of (2) below 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 165 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:
    - (i) *only elevator personnel are permitted to unlock hoistway doors*

- (ii) *only emergency personnel are permitted to perform emergency evacuations.*
- (iii) access to the unlocking device is controlled or has a controlled procedure
- (iv) 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:
- (i) lettering shall be a minimum of 16 mm in height
  - (ii) the sign shall remain permanent and readily legible, viewable from the hall
  - (iii) the Context of the message shall convey the following information:
    - (a) a 'warning' advising of the potential fall hazard that exists below when the car is above the floor level
    - (b) lower the car prior to attempting rescue of trapped passengers
    - (c) 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.**

(a) For new installations for which a design submission is received on or after May 1, 2013 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.

(b) For existing or altered installations the Maintenance Control Program shall be fully implemented not later than January 1, 2014. [CAD Amendment-261-13]

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.

Maintenance, repair and replacement shall be performed to provide compliance with the code applicable at the time of installation or alteration.

##### **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.

Requirement (a) is applicable for

- (1) new installations submitted on or after May 1, 2013,
- (2) any existing devices where an Maintenance Control Program has been implemented, and
- (3) all devices maintained after January 1, 2014. [CAD Amendment-261-13]

Requirement (b) is applicable until January 1, 2014 for

- (1) existing installations, or
- (2) new installations submitted prior to May 1, 2013. [CAD Amendment-261-13]

**8.6.1.1.2** 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

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

#### **8.6.1.2 General Maintenance Requirements**

**8.6.1.2.1** A written Maintenance Control Program where implemented shall be in place to maintain the equipment in compliance with the requirements of 8.6 and the following, otherwise the requirements of 8.6.1.1.1(b) apply.

The MCP shall specify examinations, tests, cleaning, lubrication, and adjustments to applicable components at regular intervals (see definition for maintenance) and shall comply with the following:

(a) a Maintenance Control Program for each unit (see 8.6.1.1.1) shall be provided by the person(s) and/or firm maintaining the equipment and shall be viewable on site by elevator personnel at all times from time of acceptance inspection and test or from the time of equipment installation or alteration (see 8.10.1.5).

(b) the MCP shall include, but not be limited to, the code required maintenance tasks, maintenance procedures and examinations and tests listed with the associated requirement (see 8.6.4 to 8.6.11). Where maintenance tasks, maintenance procedures, or examinations or tests have been revised in 8.6 the MCP shall be updated.

(c) the MCP shall reference On-Site Equipment Documentation (see 8.6.1.2.2) needed to fulfill 8.6.1.2.1(b) and On-Site Maintenance Records (see 8.6.1.4.1) that record the completion of all associated maintenance tasks specified in 8.6.1.4.1(a).

(d) where the MCP is maintained remotely from the machine room, machinery space, control room, or control space (see 8.11.1.8) instructions for on-site locating or viewing the MCP either in hard copy or in electronic format shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125in) in height.

(e) **in addition to s. 32(1) of the Regulation**, the specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on

- (1) equipment age, condition, and accumulated wear ,
- (2) design and inherent quality of the equipment ,
- (3) usage,
- (4) environmental conditions,
- (5) improved technology,
- (6) the manufacturer's recommendations and original equipment certification for any SIL rated devices or circuits (see 8.6.3.12 and 8.7.1.9), and
- (7) the manufacturer's recommendations based on any A17.7/B44.7 approved components or functions.

(f) 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.

[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.]

(g) The manufacturer's or installer's procedures for tests, periodic inspections, maintenance, replacements, adjustments, and alterations repairs, of SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall be incorporated into the Maintenance Control Program. (ref TN 08-802)

#### **8.6.1.2.2 On-Site Documentation**

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

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

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

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

- (1) all procedures specifically identified in the code as required to be written (e.g. 8.6.4.20.8 check out procedure for leveling, 8.6.5.16.5 check out procedure for over speed valve, and 8.6.8.15.7 check out procedure for reversal stop switch, etc),
- (2) unique maintenance procedures or methods required for inspection, tests, and replacement of SIL rated E/E/PES electrical protective devices and circuits (see 2.26.4.3.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b)),
- (3) unique maintenance procedures or methods required for inspection, tests, and replacement of equipment applied under alternative arrangements (see 1.2.2.1) shall be provided by the manufacturer or installer, and
- (4) unique maintenance procedures or unique methods required for inspection and test of equipment specified in an A17.7/B44.7 Code Compliance Document (CCD).

(c) Written checkout procedures:

- (1) to demonstrate E/E/PES function as intended (see 8.6.4.19.10),
- (2) for elevator leveling speed with open doors (see 8.6.4.20.8),
- (3) for hydraulic elevator over speed valve (see 8.6.5.16.5),
- (4) for escalator reversal stopping device (see 8.6.8.15.7), and
- (5) for escalator handrail retarding force (see 8.6.8.15.13).

(d) Written procedures for the following:

- (1) evacuation procedures for elevators by authorized persons and emergency personnel shall be available on site. (see 8.6.11.5.2 and A17.4)
- (2) the procedure for cleaning of a car and hoistway transparent enclosures by authorized persons. (see 8.6.11.4.2)

**8.6.1.2.3** 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 On-Site Maintenance Records**

##### **8.6.1.4.1(a) Maintenance Control Program Records**

- (1) A record that shall include the maintenance tasks listed with the associated requirements of 8.6 identified in the Maintenance Control Program (8.6.1.2.1), other tests (see 8.6.1.2.2), examinations and adjustments, and the specified scheduled intervals shall be maintained.
- (2) The specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on the criteria given in 8.6.1.2.1(e).
- (3) MCP records shall be viewable on-site by elevator personnel in either hard copy or electronic format acceptable to the authority having jurisdiction and shall include but not limited to the following:
  - (a) site name and address,
  - (b) service provider (**Contractor**) name,
  - (c) conveyance identification (ID) (**TSSA or MCCR installation number**) and type,
  - (d) date of record,
  - (e) a description of the maintenance task, interval, and associated requirements of 8.6,
  - (f) indication of completion of maintenance task,

- (g) year and month when the task was performed,
- (h) Contractor's Registration Number, and
- (i) 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. (242/10)

Note [8.6.1.4.1(a)]: Recommended format for documenting maintenance control program records can be found in non-mandatory Appendix XXX. This is only an example format. A specific maintenance control program that includes all maintenance needs is required for each unit.

#### **8.6.1.4.1 (b) Repair and Replacement Records**

The repairs and replacements listed in paragraphs (1) and (2) below shall be recorded and shall be kept on-site for viewing by elevator personnel in either hard copy or electronic format. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. The record shall include an explanation of the repair or replacement, date, and name of person(s) and/or firm performing the task. The record of repairs and replacements shall be retained by the owner of the equipment for the most recent 5 years or from the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction and shall be a permanent record for the installation. These records may be kept remotely from the site.

- (1) Repairs (8.6.2.1- 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 (8.6.3.1 - 8.6.3.11 except 8.6.3.7 and 8.6.3.10) including replacements 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.

#### **8.6.1.4.1 (c) Other Records**

The written records listed in paragraphs (1) to(4) below shall be kept on-site for each unit. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 years from of the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction. The record shall include the date and name of person(s) and/or firm performing the task.

- (1) A record of oil usage (8.6.5.7).
- (2) A record of findings for firefighter's service operation required by 8.6.11.1 with identification of the person(s) that performed the operation.
- (3) Periodic tests (see 8.6.1.7) shall be documented or recorded in accordance with 8.6.1.7.2.
- (4) Written record to document compliance with replacement criteria specified in ASME A17.6 requirement 1.10.1.1(c).

#### **8.6.1.4.2 Call Backs (Trouble Calls)**

A record of call backs shall be maintained and shall include the description of reported trouble, dates, time and corrective action(s) taken that are reported by any means to elevator personnel. These records shall be made available to elevator personnel when performing corrective action. For elevator personnel other than personnel performing the corrective action, records will be available upon request and shall be maintained for a minimum of one year. Instructions on how to report any need for corrective action (trouble calls) to the responsible party shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125 in.) in height.

#### **8.6.1.5 Code Data Plate**

**8.6.1.5.1** The Code data plate shall comply with 8.9.



### **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 and Wiring**

- (a) 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.
- (b) Temporary wiring and insulators or blocks in the armatures or poles of magnetically operated switches, contactors, or relays on equipment in service are prohibited.
- (c) 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 recommended minimum jumper control procedures.
- (d) Control and operating circuits and devices shall be maintained in compliance with applicable Code requirements (see 8.6.1.1.2).
- (e) 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.

#### **8.6.1.6.5 Fire Extinguishers.**

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

#### **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 the interval between maintenance visits to an elevating device excluding wind tower elevators exceed three months, nor shall it exceed the manufacturer's specified limit or other imposed limit which is less than three months (see CAD 2.9 for example of a one month limit), and
  - (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.

(225/07-r3)

- (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 the interval between 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 Non-mandatory Appendix N.

**8.6.1.7.1 Not adopted**

~~Periodic tests shall be witnessed by an inspector employed by the authority having jurisdiction or by a person authorized by the authority having jurisdiction. The inspector shall conform to the requirements in 8.11.1.1.~~

**8.6.1.7.2 Periodic Test Records**

A periodic test record for all periodic tests containing the applicable code requirement(s) and date(s) performed, and the name of the person or firm performing the test, shall be kept readily visible adjacent to or securely attached to the controller of each unit in the form of a log book record ~~metal tag~~ or other format designated by and acceptable to the authority having

jurisdiction. If any of the alternative test methods contained in **8.6.4.20** were performed then the test record tag must indicate alternative testing was utilized for the applicable requirement.

**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)** ~~8.11.2.3.2(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).

### **8.6.2.6 Repairs involving SIL Rated Device(s)**

SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall:

- (a) not be repaired in the field
- (b) be permitted to be repaired in accordance with the provisions for repair where included in the listing/certification, and
- (c) shall not be affected by other repair(s) such that the listing/certification is invalidated.

## **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 Non-mandatory 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). ~~8.11.2.3.2(b).~~

**8.6.3.4.4** ~~A test tag indicating the~~ The date when the pull-through test was performed shall be ~~attached~~ 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 (8.6.1.4.1(b)(2)).

**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. ~~8.11.2.3.2.~~ 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 ~~8.11.2.3.1~~ 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.

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

### **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) 8.11.2.3.2(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 valves, piping, or fittings are replaced, replacements shall conform to 3.19. with the exception of 3.19.4.6. Replacement control valves must conform to the Code under which it was installed.
- (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 Rerooping 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).

#### **8.6.3.12 Replacement of Demarcation Lights**

Fluorescent lighting fixtures shall be replaced by any type light source, except incandescent sources, and shall comply with all other applicable step demarcation lighting requirements under which the escalator was installed or altered.

#### **8.6.3.13 Replacements involving SIL Rated Device(s) (See 1.3)**

(a) SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) shall not be affected by other replacement(s) such that the listing/certification is invalidated.

(b) Where a SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced, it shall be considered a replacement only when the replacement device is the original manufacturer's listed/certified SIL rated device or the original manufacturer's listed/certified SIL rated replacement device; otherwise it shall be considered an alteration (see 8.7.1.9(d)).

(c) Where a non-SIL Rated Device used to satisfy 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), or 2.26.9.6.1(a) is replaced with SIL Rated Device, it shall be considered an alteration. (see 8.7.1.9(c)).

#### **8.6.3.14 to 8.6.3.24 Reserved**

#### **8.6.3.25 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

#### **8.6.3.26 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.

#### **8.6.3.27 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. Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured. When suspension-member tension is checked or adjusted, an antirotation device conforming to the requirements of 2.20.9.8 shall be permitted.

Note: Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured.

#### **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 8.6.1.6.2. and 2.17.16).

**8.6.4.3.3** If lubricants other than those recommended by the manufacturer are used, a safety test conforming to 8.6.4.20.1 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 operations, 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. A test complying with 8.6.4.20.4 shall be performed.

**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.**

- (a) 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.
- (b) the suspension wire ropes shall conform to 2.20.7.

**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
- (b) the date on which the rope was resocketed or other types of fastening changed

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) means to restrict hoistway or car door opening and expiration date for the alternate power source, 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. Slack-Rope Devices and Stop Motion Switch on Winding Drum Machines.**

Slack-rope devices on winding drum machines shall be operated manually and tested to determine conformance with the applicable requirements. The final terminal stopping device and the machine final (stop motion switch) shall be examined and tested by disabling the normal stopping device, normal terminal stopping device and final terminal stopping device located in the hoistway and operating the unit to verify proper operation. (Item 2.20)

**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 2.20, 2.28.2.1, 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 Devices**

(a) **Examinations.** All working parts of ascending car overspeed protection and unintended car movement 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.** Ascending car overspeed protection shall be subjected to tests to demonstrate compliance with 2.19.1 with no load in the car at the slowest operating speed (inspection speed) in the up direction.

(c) **Tests.** Unintended car movement shall be subjected to tests with no load in the car. Testing shall confirm compliance with 2.19.2 due to an elevator rollaway caused by a brake and releveling failure. at the slowest operating speed in the up direction.

#### **8.6.4.19.12 Traction-Loss Detection Means.**

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

- (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.X Emergency Communications**

Emergency Communications shall be tested to determine conformance with the applicable requirements (Item 1.6)

#### **8.6.4.19.Y Means to Restrict Hoistway or Car Door Opening**

Means to restrict hoistway or car door opening shall be tested to determine conformance with the applicable requirements (Item 1.18)

#### **8.6.4.19.14 to 8.6.4.19.24 Reserved**

#### 8.6.4.19.25 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 and counterweight safeties shall be tested in accordance with **8.6.4.20.1(a)** or subject to approval by the authority having jurisdiction with **8.6.4.20.1(b)**.

##### (a) Rated Load and Rated Speed Test.

Car safeties, except those operating on wood guide rails, and their governors, shall be tested with rated load in the car. Counterweight safety tests shall be made with no load in the car. Tests shall be made by tripping the governor by hand at the rated speed. The following operational conditions shall be checked (Item 2.29.2.):

- (1) Type B safeties 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.) and the level of the platform checked for conformance to 2.17.9.2.
- (2) 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. The level of the platform shall be checked for conformance to 2.17.9.2.

##### (b) Alternative Test Method for Car Safeties.

The alternative test methods shall comply with requirement 8.6.11.10, and the following:

- (1) The testing of safeties with any load in the car, centered on each quarter of the platform symmetrically with relation to the centerlines of the platform from no load up to rated load, and at not less than rated speed shall be permitted provided that,
  - a) when the alternative test is performed, the test shall stop the car and verify that the safeties will be capable of stopping an overspeeding car in accordance with the requirements of Section 2.17 applicable to the specific classification of safeties, and
  - b) when applied the method shall verify that the safeties perform or are capable of performing in compliance with 8.6.4.20.1(a) and the platform shall not be out of level more than 30 mm/m (0.36 in/ft) in any direction.

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

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** After these tests in jurisdictions enforcing NBCC, a metal tag indicating the date of the governor tests, together with the name of the person or firm that performed the tests, shall be attached to the governor in a permanent manner.

#### 8.6.4.20.3 Oil Buffers

- (a) Car oil buffers shall be tested to determine conformance with the applicable requirements by running the car
  - (1) onto the buffer with rated load at rated speed, or
  - (2) subject to approval by the authority having jurisdiction, with
    - (a) any load, from no load up to rated load onto the buffer at rated speed when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a), except as specified in **8.6.4.20.3(b)** and (c) (Item 5.9.2.1). or,
    - (b) onto the buffer with any load, from no load up to rated load, and at less than rated speed, when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a),
- (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 compression of the buffer during the test.
- (e) After completion of the test, a metal tag, indicating the date of the test, together with the name of the person or firm who performed the test, shall be attached to the buffer [Item 5.3.2(b)].
- (f) 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), or at reduced speed if requirements of 8.6.11.10 are met.
- (g) A test **record tag** as required in 8.6.1.7.2 shall be provided.

#### 8.6.4.20.4 Driving Machine Brake(s).

For passenger elevators and all freight elevators, the driving machine brake shall be tested for compliance with applicable requirements, in accordance with **8.6.4.20.4(a)** or subject to approval by the authority having jurisdiction with **8.6.4.20.4(b)**.

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.

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

(a) Test with load per Table **8.6.4.20.4**.

Place the load as shown in Table **8.6.4.20.4** in the car. The driving machine brake, on its own, shall hold the car with this load. With no load in the car the driving machine brake shall hold the empty car at rest, and shall decelerate an empty car traveling in the up direction from governor tripping speed. The driving machine brake on freight elevators of class C-2 loading, when loaded to their maximum design load shall hold the elevator car at rest (Item 2.17.2.1).

(b) Alternative Test Method for Driving Machine Brakes.

The alternative test methods shall comply with requirement 8.6.11.10, and the following:

1) Any method of verifying conformity of the driving-machine brake with the applicable Code requirements (see 2.24.8.3 and Table **8.6.4.20.4**) shall be permitted, including the testing method of the brakes with or without any load in the car, provided that when applied the method verifies that the brake performs or is capable of performing in compliance with 8.6.4.20.4(a) and shall include,

2) A test ~~record~~ ~~tag~~ as required in **8.6.1.7.2** shall be provided.

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

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** ~~Reserved~~

**8.6.4.20.5 Emergency and Standby Power Operation.**

~~Not adopted. (see 8.6.4.19.5)~~

~~Operation of elevators equipped with emergency or standby power shall be examined and tested for conformance with the applicable requirements (Item 2.17.2.1 1.17.2.1).~~

**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 as permitted by the applicable requirements 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).

**Table 8.6.4.20.4 Brake Test Loads**

Class of Service	Not Permitted to Carry Passengers	Permitted to Carry Passengers
Passenger	Not applicable	125% rated load
Freight	Rated load	125% rated load
One Piece Load by 2.16.7	Rated load or one piece load, whichever is greater	125% rated load or one piece load, whichever is greater

#### 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 Braking System, Traction and Traction Limits.

Traction and traction limits on traction elevators shall be verified for compliance with 2.24.2.3 in accordance with 8.6.4.20.10(a) or subject to approval by the authority having jurisdiction, with 8.6.4.20.10(b).

##### (a) Dynamic Stopping Test.

Traction elevators shall be tested to ensure that:

- (1) 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 safely stop and hold the load (see 2.24.2.3.1, 2.24.2.3.2 and 2.24.2.3.3); and
- (2) if either the car or the counterweight bottoms on its buffers or becomes otherwise immovable, one of the following shall occur (see 2.24.2.3.4):
  - (a) the suspension means shall lose traction with respect to the drive sheave and not allow the car or counterweight to be raised; or
  - (b) the driving system shall stall and not allow the car or counterweight to be raised.
- (3) with a load in the car in accordance with Table 8.6.4.20.4, the braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car.

##### (b) Alternative Test Method for Braking System, Traction and Traction Limits.

Alternative test methods shall comply with requirement 8.6.11.10 and the following;

- (1) Other methods for verifying traction for compliance with 2.24.2.3, and traction limits in compliance with 2.24.2.3.4 shall be permitted provided the test method complies with the following:
  - (a) When applied, the method shall verify that the elevator traction system performs, or is capable of performing, in compliance with the performance requirements of 8.6.4.20.10(a); and
  - (b) The braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car without load in the car.
- (2) A test record tag as required in 8.6.1.7.2 shall be provided.

#### 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.

#### **8.6.4.22 Maintenance of Seismic Devices**

8.6.4.21.1 A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

8.6.4.21.2 The counterweight displacement switch components, where provided, shall be:

- a) maintained in accordance with the manufacturer's recommendations, and
- b) properly aligned and tensioned and kept free of dirt, debris and other contaminants that may interfere with proper operation.

#### **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.

For systems where the part of cylinder and/or piping is not exposed for visible examination, a written record shall be kept of the quantity of hydraulic fluid added to the system and emptied from leakage collection containers and pans. The written record shall be kept in the machine room.

(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 May 1, 2015, 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, tests shall be conducted in accordance with 8.6.5.14.1.

#### 8.6.5.10 Runby and Clearances After Reropeing 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.

Overspeed valves shall be calibrated and maintained in accordance with the manufacturer's recommendations including replacement of the valve seals or entire valves at intervals specified.

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 Verification of 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. Once this is established, test the entire system to ensure that it 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 2.28)
- (b) Governors (8.6.4.19.3) (Item 2.13)
- (c) Safeties (8.6.4.19.2) (Item 2.9)
- (d) Oil Buffers (8.6.4.19.1) (Items 3.29 and 5.8)
- (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)

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). A plunger gripper, where provided, shall be examined and tested per 8.10.3.2.5(n).~~

**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).

**8.6.5.17 Plunger Gripper.** Plunger grippers, where provided, shall be maintained in accordance with the manufacturer's recommendations.

#### **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. 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.

#### **8.6.7.3 Private Residence Elevators.**

The maintenance of private residence elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

##### **8.6.7.3.1 Periodic Test.**

Private residence elevators and lifts should be subject to the 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 5.3. Any additional requirements for this equipment should also be checked during these tests.

#### **8.6.7.4 Private Residence Inclined Elevators.**

The maintenance of private residence inclined elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

##### **8.6.7.4.1 Periodic Test.**

Private residence inclined elevators and lifts should be subject to the 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 5.4. Any additional requirements for this equipment should 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.

#### **8.6.7.7 Special Purpose Personnel Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of special purpose personnel elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6 (see Section 5.7).

##### **8.6.7.7.1 Periodic Test.**

Special purpose personnel elevators shall be subject to the applicable 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 5.7. Any additional requirements for this equipment shall also be checked during these tests.

#### **8.6.7.8 Shipboard Elevators.**

The maintenance of shipboard elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

##### **8.6.7.8.1 Periodic Test.**

Shipboard 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 5.8. Any additional requirements for this equipment shall also be checked during these tests.

#### **8.6.7.9 Mine Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of mine elevators shall conform to 8.6.7.9.1 through 8.6.7.9.3. **8.6.7.9.1** Rails on mine elevators shall be kept free of rust and scale, that will prevent proper operation of the car (or counterweight) safety device.

**8.6.7.9.2** Oil buffers that are installed on elevators where water can accumulate in the pit shall be checked every 60 days for accumulation of water.

**8.6.7.9.3** The mine elevator hoistway shall be maintained to minimize the entry of water and formation of ice, that would interfere with the operation of the elevator.

##### **8.6.7.9.4 Suspension, Compensating, and Governor Ropes.**

When elevator suspension, compensating, or governor ropes show deterioration caused by corrosion, the replacement wire ropes shall be constructed of electrogalvanized or other types of corrosion resistant material suitable for the environment and application. The installation shall conform to 8.7.2.21 for suspension ropes and 8.7.2.19 for governor ropes. Where emergency replacement of wire ropes is required, noncorrosion resistant wire ropes shall be permitted to be installed for temporary use. These emergency replacement noncorrosion resistant wire ropes shall be replaced by corrosion resistant wire ropes within one year of installation.

##### **8.6.7.9.5 Periodic Test.**

Mine 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 5.9. 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.

#### **8.6.7.11 Wind Turbine Tower Elevator**

The maintenance of wind turbine tower elevators shall conform to the applicable requirements of 8.6.7.11.1 through 8.6.7.11.3.

##### **8.6.7.11.1 Periodic Test Requirements – Category 1**

Wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor shall be tested with rated load in the car. Governor operated safeties shall be tested by manually tripping the governor at the rated speed. The overspeed switch on the governor shall be made ineffective during the test.

##### **8.6.7.11.2 Wind Turbine Tower Elevators.**

The maintenance of wind turbine tower elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

##### **8.6.7.11.3 Car and Counterweight Safeties.**

Types A, B, and C car safeties except those operating on wood guide rails, and their governors, wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor, shall be tested with rated 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 and wire rope gripping 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 2.29.2.1) and hold the car with rated load. The following operational conditions shall be checked (Item 2.29.2.1):

#### **8.6.7.12 Outside Emergency Elevators.**

The maintenance, repair, and replacement of outside emergency elevators shall conform to 8.6.1 through 8.6.3 and A17.7/B44.7 requirement 2.12.2.

##### **8.6.7.12.1 Periodic Test Requirements -- Category 1.**

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.19.1 through 8.6.4.19.5, 8.6.4.19.7, 8.6.4.19.8, 8.6.4.19.10, and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

### 8.6.7.12.2 Periodic Test Requirements -- Category 5.

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.20.1 through 8.6.4.20.11 and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

### 8.6.8 Maintenance and Testing of Escalators and Moving Walks

- (a) The maintenance of escalators submitted and registered to A17.1-2004/B44-04 and later (effective January 1, 2006) shall conform to 8.6.1 through 8.6.3 and 8.6.8.
- (b) Not later than May 1, 2015 all escalators shall be brought into conformance with the requirements of 8.6.8.2 (Step-to-Skirt Clearance) and 8.6.8.3 (Step/Skirt Performance Index).
- (c) 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 until those escalators are brought into conformance with 8.6.8.2 and 8.6.8.3.3 after which the application of friction-reducing agents will no longer be permitted, and the requirements of 8.6.8(a) apply. [241/10]

#### 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: The allowable clearances are applicable as follows:

- (a) ASME A17.1-1955 through A17.1d-1970; not more than 4.8 mm (0.1875 in.) with a total of both sides not more than 6.4 mm (0.25 in.), except where skirt obstruction devices are installed at the lower entrance for escalators installed under the ASME A17.1-1965 through A17.1d-1970.
- (b) ASME A17.1-1971 through A17.1-1979 editions: not more than 9.5 mm (0.375 in.) on each side.
- (c) ASME A17.1-1980 through A17.1c-1999 and ASME A17.3: not more than 4.8 mm (0.1875 in.) on each side.
- (d) For equipment installed under ASME A17.1d-2000 and later editions, the clearance (loaded gap) 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.

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  $\pm 11$  N. The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> and not more than 3 870 mm<sup>2</sup>.

(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  $\pm 2.5$  lbf. The load shall be distributed over a round or square area not less than 3 in.<sup>2</sup> and not more than 6 in.<sup>2</sup>

**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  $\mu\text{m}$  (32  $\mu\text{in.}$ ))
- (d) Area in contact with skirt panel: 2 900  $\pm$  325 mm<sup>2</sup> (4.5  $\pm$  0.5 in.<sup>2</sup>) 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 6.1.3.3.7 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 Combplates

**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) Damaged skirt or dynamic skirt panels shall be replaced or repaired and the installation shall conform to 8.6.8.2 and 8.6.8.3.3.

(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 combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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  $\pm 11$  N (2.5 lbf). The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> (3 in.2) and not more than 3 870 mm<sup>2</sup> (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  $\pm 2.2$  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  $\pm 11$  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 mm<sup>2</sup> (3 in.2) and no more than 3 870 mm<sup>2</sup> (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 250mm (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).

**8.6.8.15.24 Maintenance of Seismic Devices.**

A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

**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 Combplates**

**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 combplates 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 treadway does not provide a continuous unbroken treadway surface or proper engagement with the combplates 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 Antislip Devices.**

Damaged or missing antislip 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.

All elevators provided with firefighters' emergency operation shall be subjected monthly, by authorized personnel, to Phase I recall by use of the key switch, and a minimum of one floor operation on Phase II, except in jurisdictions enforcing the NBCC. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.

**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.

NOTE (8.6.11.5): See ASME A17.4, Guide for Emergency Personnel.

### 8.6.11.6 Escalators and Moving Walks Startup and Procedures

#### 8.6.11.6.1

(a) 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.

(b) **Out of service or** stopped escalators ~~shall~~ **should** not be used as a means of access or egress by non-authorized personnel and ~~shall~~ **should** be properly barricaded if accessible to the general public to prevent such use.

NOTE(S):

- (1) Proper barricades are described in the Elevator Industry Field Employee Safety Handbook-Escalator/Moving Walk Barricades.
- (2) Per provisions in OBC and NFPA 130, escalators in rapid transit facilities may form part of the pedestrian egress route.
- (3) Stationary escalators do not have uniform tread rise and may pose unique risks not associated with typical stairways.
- (4) The treadway of a stationary escalator relies on the escalators brake to ensure the treadway will not move under loading conditions (eg pedestrian traffic). Escalators should never be used as a stairway if the brakes holding capacity is suspect. See 8.6.11.6.2(c2) for confirmation of adequate breaking capacity. See CAD 3.21 for stopping distance check sign.
- (5) See CAD 2.13 for parts affecting safe operation and risk assessment for device use.

**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 treadway 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.

#### **8.6.11.13 Category 5 tests without Load via Alternative Test Methodologies**

##### **8.6.11.13.1 Where Permitted**

Alternative test methods without load are permitted for category 5 testing subject to approval by the Authority Having Jurisdiction of;

- (a) car and counterweight safeties per **8.6.4.20.1**,
- (b) oil buffers per **8.6.4.20.3**,
- (c) driving machine brakes per **8.6.4.20.4**, and
- (d) braking system, traction and traction limits per **8.6.4.20.10**

Note: See 8.10 note 2.

##### **8.6.11.13.2 Alternative Test Method and Tools**

(a) An alternative test method shall be:

- i) based on sound engineering principles,
- ii) validated and documented via engineering tests,

(b) The method, measuring devices and tools shall be capable of producing reliable and consistent measurements, suitable for the intended measurement. The monitoring and calibration of the measuring devices or tools shall be in accordance with the providers guidelines.

##### **8.6.11.13.3 Alternative Test Method Procedure**

The alternative test method shall;

- (a) include requirements to obtain and verify car and counterweight masses if necessary for the test,
- (b) have a procedure document that;
  - i) defines the permissible equipment range and limitations regarding use,
  - ii) establishes monitoring and calibration criteria for tools or measuring devices as appropriate,
  - iii) defines the test set-up procedure,

- iv) provides instructions on how to interpret results and correlate the results to pass fail criteria,
- (c) describe how to correlate no load test results with previously acquired full load and no load results,
- (d) be included in the maintenance control program (see 8.6.1.2.1(a)),
- (e) include the information required by 8.6.1.2.1(f) where applicable, and
- (f) require a report conforming to 8.6.11.13.4

**8.6.11.13.4 Alternative Test Method Report**

The alternative test method report shall;

- (a) identify the alternative test tool (make / model) used to perform the test,
- (b) identify of the company performing the tests, names of personnel conducting and witnessing the tests, and testing dates,
- (c) contain all required print outs or record of tests required to demonstrate compliance to the testing requirement that were gathered during an acceptance test,
- (d) identify which results from the baseline test are to be used for future compliance evaluation,
- (e) record the car and counterweight masses that were obtained per 8.6.11.13.3(a) during the acceptance test and during any subsequent category 5 test if required by test method,
- (f) contain all subsequent category 5 results with pass-fail conclusions regarding code compliance, and
- (g) remain on site or shall be available to elevator personnel and the authority having jurisdiction.

**8.6.11.14 Occupant Evacuation Operation.**

All elevators provided with Occupant Evacuation Operation shall be subjected, by authorized personnel, to a check of the operation in conjunction with the fire alarm system testing in accordance with the requirements of NFPA 72. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.

**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 Alteration 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.

~~In jurisdictions enforcing NBCC, repairs and replacements carried out as a part of an alteration shall conform to the requirements of 8.6.12.4, except that replacements in 8.6.12.5 shall be deemed to be alterations.~~

#### **8.7.1.8 Code Data Plate.**

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★1 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 750 mm (29.5 in.) and a minimum clear height of 2030 mm (80 in.)
- (c) 2.10.1 as a minimum
- (d) guarding shall be openable or removable only by use of common 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 1000 mm (39 in.) as per CAD requirements 2.2.1 (per Ontario Electrical Safety Code 38-005 2(c)) or the permissible clearance required at the time of the original installation.
- (g) access for the operation of the disconnecting means shall be
  - (1) 1000 mm for installations installed under the Ontario Electrical Safety Code 2000 edition or later, or
  - (2) 750mm (29.5 in.) for installations installed under Ontario Electrical Safety Code 1998 edition or prior, or
  - (3) if less than 750 mm, the existing clearances shall not be further reduced
- (h) installation by a registered contractor (O. Reg 209/01 s.15)
- (i) large or heavy sections of guards that may need to be removed or opened for maintenance access shall be designed to be removed or easily handled by one person.

#### **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 2.11.11.3, 2.11.11.5.1, 2.11.11.5.2, and 2.11.11.5.3.
- (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, and 2.24.8.3.
- (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, and 2.24.8.

#### 8.7.2.11.3 Parking Devices.

Where an alternation 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 and 2.24.8.3 for unlocking devices
- (b) requirements 2.12.7, 2.24.8, 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 and 8.7.2.15★1, or 8.7.2.15★2.

#### 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
- (d) requirements 8.7.2.15★1 or 8.7.2.15★2.



#### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. and 8.7.2.15★1 or 8.7.2.15★2 as applicable.
- (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<sup>1,2</sup> 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; and
  - (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.



<sup>1</sup> 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).

<sup>2</sup> 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★4(a)(1) is not possible due to existing overhead conditions, a foldable, collapsible or other stow able 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.

(c) Where a car top railing is installed the requirements of 8.7.2.15★1 or 8.7.2.15★2 apply.

### **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 115kg (255 Lbs.) including all weight changes since the car was originally installed the following requirements shall apply, except (a) does not apply if the cumulative increase is 11kg (25 Lbs.) or less;

- (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 or for cars without crossheads in a conspicuous location on the car top or adjacent to the original data
- (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 than 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★4 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
  - (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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

##### **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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

##### **8.7.2.27★4**

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.



### 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) In jurisdictions not enforcing NBCC, 2.27.3 through 2.27.9 apply~~
    - ~~(a) when travel is 8 m (25 ft) or more above or below the designated landing; or~~
    - ~~(b) on installations when firefighters' emergency operation was required or provided at the time of installation.~~
  - (5) In jurisdictions enforcing NBCC, 2.27.3 through 2.27.9 apply ~~only if firefighters' emergency operation was required or provided at the time of installation.~~
  - (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

Where an elevator 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.

### 8.7.2.27.5 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 2030 mm in height or 800 mm 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 ~~through 2.11.13, except 2.11.11.9,~~
  - (6) 2.12, ~~except~~
    - (a) requirement 2.12.2.4.3 to allow a minimum engagement of 6 mm
    - (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, ~~and 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, ~~and 2.14.2.4~~
  - (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) In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall be provided and shall conform to 2.27.~~
- In jurisdictions enforcing NBCC, emergency operation and signaling devices ~~where required by NBCC shall be provided and~~ where required by NBCC shall be provided and 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, and
- (d) travel to all serviced landing shall be possible per 2.27.3.3.1(i).

#### 8.7.2.27.★8

Where destination dispatch is added to an automatic operation control the following shall apply:

- (a) 8.7.2.8
- (b) changes to FEO shall apply to either 8.7.2.28 or to the code applicable at the time of the original installation or subsequent FEO related alteration.

**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, 8.7.2.12★1, 8.7.2.12★2 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 increases to the deadweight of the car by 115 kg (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 than 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 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
- (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.
- (h) Requirements 3.26.1 through 3.26.6.
- (i) Requirement 3.20.

#### **8.7.3.22.3 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 as part of an alteration, 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 3.22.2. 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 as part of an alteration 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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

##### **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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

##### **8.7.3.31★4**

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

##### **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.

Electrical equipment shall conform to 3.26.1, 3.26.4, 3.26.5, and 3.26.6 (not including 2.26.4.4).

#### **8.7.3.31★5 Addition of Soft Start**

Where there is an addition of a soft start feature the follow 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 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.

#### **8.7.3.31.5 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.
  - (2) The operating devices and control equipment shall conform to 3.26. Requirements of 2.26.1.1, 2.26.1.3, and 2.26.12 do not apply.
  - (3) Requirement 2.27.2 applies when emergency power is provided.
  - ~~(4) In jurisdictions not enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply~~
    - ~~(a) when travel is 8 m (25 ft) or more above or below the designated landing; or~~
    - ~~(b) on installations when firefighters' emergency operation was required or provided at the time of the installation.~~
  - (5) ~~In jurisdictions enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply only if firefighters' emergency operation was required or provided at the time of installation.~~
- (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★7**

Where an elevator 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.

#### **8.7.3.31.6 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 2030 mm in height or 800 mm 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
  - ~~through 2.11.13, except 2.11.11.9,~~ 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 6 mm
    - (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, ~~and 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, ~~and 2.14.2.4~~
  - (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) ~~3.16~~.
- (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) ~~In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall conform to 3.27. In jurisdictions enforcing NBCC, emergency operation and signaling devices where required by NBCC shall be provided and 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 2.27.3.3.1(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 2.26.2.21, 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.**

Reserved.

#### **8.7.5.2. ★1 Alterations to Electric Limited-Use/Limited-Application Elevators**

Alterations to Limited-Use/Limited-Application Elevators, shall conform to 8.7.2 and the requirements of Part 2 except as modified in section 5.2.

#### **8.7.5.2. ★2 Alterations to Hydraulic 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.

#### **8.7.5.3 Private Residence Elevators**

**8.7.5.3.1** 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.

#### **8.7.5.4 Private Residence Inclined Elevators**

**8.7.5.4.1** 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, 6.1.6.3.12, and 6.1.6.4.

**8.7.6.1. ★1 Addition of Handrail Advertizing**

The addition of handrail advertizing is not permitted per 6.1.6.9.2, unless otherwise permitted by a variance request.

**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, 6.1.6.3.3, 6.1.6.3.9, 6.1.6.3.11, 6.1.6.3.14, and 6.1.6.5.
- (b) Steps having a width less than 560 mm (22 in.) shall not be reduced in width by the alteration.

**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 conforming to 6.1.3.7, 6.1.3.9.1, and 6.1.3.10.1. The installation of a new escalator into an existing truss shall conform to all of the requirements of 6.1.

#### 8.7.6.1.10 Step Wheel Tracks.

Any alteration to the tracks shall result in the escalator's conforming 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 conforming 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 conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.4, and 6.1.6.3.8.
- (b) Driving Motor. An alteration to the drive motor shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.2, 6.1.6.3.8, and 6.1.6.3.10.
- (c) Machine Brake. An alteration to the machine brake shall result in the escalator's conforming to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

#### 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. ★2 Removal of Step Demarcation Lights (226/07)

The removal of step demarcation lights, shall be permitted if the device complies with the following:

- (a) requirement 6.1.3.3.5,
- (b) requirements 6.1.3.5.4, 6.1.3.5.5, 6.1.3.5.6, and
- (c) requirement 6.1.3.6.2.

#### 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 as part of an alteration, it shall conform to 6.1.6.10 through 6.1.6.15, and 6.1.7.4.

#### 8.7.6.1. ★3 Controller Replaced (226/07)

Where a controller is replaced it shall conform to 8.7.6.1.16.

#### 8.7.6.1. ★4 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. ★5 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. ★6 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 movingwalk 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**, ~~6.2.3.12.3~~, 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 1<sup>st</sup> 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 (253/12)**

- 3.9.1 Every existing power dumbwaiter or freight platform lift that was installed before the 1<sup>st</sup> 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]

3.9.2 All type ‘A’ and type ‘B’ freight platform lifts and type ‘B’ material lifts utilizing hoistway door mechanical lock and contracts shall have their mechanical lock and contacts upgraded to interlocks by May 1, 2014. [CAD Amendment 261-13]

### **3.10 Platform Apron Requirements (166/01)**

- 3.10.1 Every passenger elevator installed before the 1<sup>st</sup> 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 16 mm 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 300 mm
  - (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 **or persons inside the elevator**, unless the hoistways are separated **by a structure supported and braced so as to not deflect into the code required running clearance of the adjacent operating car or its counterweight** [CAD Amendment-261-13].
- 3.13.2 Where the separating structure referred to in subsection **3.13.1** is made of perforated material, it shall reject a ball **25** millimetres in diameter. [CAD Amendment-261-13].

### **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 Requirements (85/91) (247/11)**

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]

3.19.3 Every escalator shall have device specific brake adjustment procedures or instruction that provides instruction for the maintenance mechanics to correctly adjust and check the escalator brake(s).

3.19.4 The instructions or procedures shall

- (a) be posted or made otherwise available in the upper escalator pit;
- (b) include detailed instructions for setting the escalator brake;
- (c) include all information provided on the existing brake data tag;
- (d) be of durable material such that the information contained therein will remain legible;
- (e) as a minimum include the maximum no-load stopping distance as related to the manufacturer's specified brake torque, spring length etc. Where this information is missing and cannot be obtained from the original manufacturer, it is acceptable for a professional engineer in the province of Ontario to determine the no-load stopping distance; and
- (f) include the method of checking the brake setting such as the 'minimum torque', or the 'maximum spring length', or other method.

### 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.
- (f) An FEO-K1 key for each switch location. [CAD Amendment 250-11]

### 3.21 Escalator Stopping Distance Check (247/11)

3.21.1 All escalators shall have a "Daily Stopping Distance Check" sign posted at each end of the escalator near the stop button or start switch.

3.21.2 The check sign shall communicate the following:

- (a) Stop the empty running escalator. If the escalator travels more than "X" step(s) before stopping, do not restart. Barricade and call for service.
  - (1) The value of "X" in 3.21.2(a) shall be replaced with 1 or 2, and shall indicate the permitted number of steps, rounded to the nearest whole number, that was determined by the elevator contractor, that reflects the needed no load stopping distance required by the escalator brake.

3.21.3 The person(s) authorized by the owner to carry out the daily prestart checks of the escalator shall also perform the daily stopping distance check to verify the escalator braking capability aligns with the information contained on the stopping distance check sign. [CAD Amendment-261-13]

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## Part 4

### 4 MANLIFTS

#### 4.1 Applied Code (174/02)

- 4.1.1 Every newly installed or altered manlift shall conform to the requirements of CSA Standard B311-02, Safety Code for Manlifts and any applicable changes set out in this document.
- 4.1.2 Conformance to Appendix A, B, & C is mandatory.
- 4.1.3 Section 7.32.9 of B311 applies to all Power-Type Manlifts. Top-of-car operating stations are not limited to lifts with wireless control and shall be provided on each power-type manlift.
- 4.1.4 Section 7.32 of B311: Note that requirements of section 7.36, Control and Operating Circuits, apply to "Wireless Control" as well. [CAD Amendment 246-11]

#### 4.2 Top of Car Requirements for Power Type Manlift

- 4.2.1 Every power type manlift shall be provided with,
  - (a) a top-of-car operating device, and
  - (b) a protective guard railing on the top of the car.

#### 4.3 Inspection and Testing of Safety Brake

- 4.3.1 The inspection and testing of a safety brake on an endless belt type manlift required in subsection 33.(2) of the Regulation shall ensure compliance with clause 5.2.2.3 of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.
- 4.3.2 The inspection and testing of a safety device and overspeed governor on a counter-balanced or power type manlift required in subsection 33.(3) of the Regulation shall ensure compliance with clause 6.11.8 or 7.6.8.2, as the case may be, of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.

#### 4.4 Authorized Persons

- 4.4.1 No person shall use a manlift except those persons designated by the owner of the manlift as being properly trained in its operation and use.

#### 4.5 Maintenance Log Book

- 4.5.1 The log book shall, as a minimum, contain the following information :
  - (a) Building name and/or address,
  - (b) TSSA or MCCR installation number,
  - (c) Contractor's and Owner's name,

- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 246-11]

4.5.2 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 defect is adjusted repaired or replaced. [CAD Amendment 246-11]

#### **4.6 Location of the Log Book**

4.6.1 The log book will be retained in the machine room 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. [CAD Amendment 246-11]

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## Part 5

### 5 PASSENGER ROPEWAYS AND PASSENGER CONVEYOR [CAD Amendment 246-11]

#### 5.1 Applied Code

- 5.1.1 Every passenger ropeway and passenger conveyor shall conform to the requirements of CSA-Z98-07, Passenger ropeways and passenger conveyors, including Update No. 1 Z98-07 February 2010, and any additional applicable changes set out in this document.
- 5.1.2 Annexes “A, B, C, D, E, F, G, H, I, J and K” referenced in the Z98 standard are also adopted and apply to “post-2011” installations (as defined in 5.3).

#### 5.2 General Technical Requirements for Passenger Ropeways and Passenger Conveyors

- 5.2.1 The general technical requirements in Part 2 of the Code Adoption Document do not apply to passenger ropeways and passenger conveyors.
- 5.2.2 Passenger Ropeways and Passenger Conveyors shall conform to the following general technical requirements,
- (a) Electrical equipment shall conform to the Ontario Electrical Safety Code as amended from time to time;
  - (b) In addition to CSA-Z98-07 requirements, welding on a passenger ropeway or passenger conveyor shall conform to the requirements of CSA W59-03 (R2008) Welded Steel Construction (Metal Arc Welding);
  - (c) Where a passenger ropeway or passenger conveyor is relocated it shall meet the requirements of 5.5 for post-2011 installations;
  - (d) Where an alteration is made to a passenger ropeway or passenger conveyor the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of 5.5.

#### 5.3 Definitions

- 5.3.1 In Part 5 of this document,
- (a) “safety circuits” means E/E/PES of a passenger ropeway or passenger conveyor having an ability to carry out the functions necessary for mitigation of unacceptable failures by preventing movement or limiting speed of passenger ropeway or conveyor.
  - (b) NOTE:
    - 1) Preventing movement may require a passenger ropeway or conveyor to stop or to prevent unwanted start-up
    - 2) Limiting speed may require appropriate acceleration, deceleration or speed.
  - (c) “electrical/electronic/programmable electronic system” or “(E/E/PES)” means a system for control, protection, or monitoring based on one or more electrical/electronic/programmable electronic (E/E/PE) devices, including all elements of the system such as power supplies, sensors and other input devices, data highways and other communication paths, and actuators and other output devices.

- (d) “electrical/electronic/programmable electronic” or “(E/E/PE)” means that based on electrical (E), and/or electronic (E), and/or programmable electronic (PE) technology.
- (e) “programmable electronic” or “(PE)” means that based on computer technology which may be comprised of hardware, software, and of input and/or output units
- (f) “pre-2011” means a passenger ropeway or passenger conveyor for which a design submission (initial or alteration) was registered before October 1, 2011.
- (g) “post-2011” means a passenger ropeway or passenger conveyor for which a design submission (initial or alteration) was registered on or after October 1, 2011.

#### 5.4 Requirements for PRE-2011 Passenger Ropeways and Passenger Conveyors

5.4.1 In the case of pre-2011 passenger ropeways or passenger conveyors the application of the code adopted in 5.1 is restricted to:

- (a) Clause 11 “Ropes and chains” as further detailed in 5.4.2;
- (b) Clause 12 “Inspection, testing, and maintenance” as further detailed in 5.4.3;
- (c) Clause 13 “Operation of passenger ropeways and passenger conveyors” as further detailed in 5.4.4;
- (d) Annex’s “B, C, D, E, F, G, H, I, J and K”, and any changes set out in part 5 of this document, and
- (e) any applicable requirements in 5.16 through 5.31.

5.4.2 The following requirements within Clause 11 “Ropes and chains” apply to “pre-2011” installations:

- (a) Clause 11.8.2 “Wire rope tows”,
- (b) Clause 11.9.5 “Wire rope clips and thimbles”
- (c) Clause 11.10 “Non-destructive testing of ropes, sleeves, and sockets”,
- (d) Clause 11.11 “Wire rope maintenance”,
- (e) Clause 11.12 “Protruding broken wires”,
- (f) Clause 11.13 “Replacement of repair of wire rope”,
- (g) Clause 11.14 “Locked coil track rope broken wires”,
- (h) Clause 11.15 “Wire rope log”,
- (i) Clause 11.16 “Splice Certificate”,
- (j) Clause 11.18 “Maintenance” for chains used in tensioning systems.

5.4.3 The requirements of Clause 12 “Inspection, testing, and maintenance” shall be complemented and supplemented with a maintenance manual produced in accordance with clause 4.38.4 “Maintenance manual”.

5.4.4 The requirements of Clause 13 “Operation of passenger ropeways and passenger conveyors” shall be complemented and supplemented with the following:

- (a) an operations manual produced in accordance with clause 4.38.3 “Operations manual”
- (b) loading and unloading areas shall be maintained during the operation of passenger ropeways and passenger conveyors in accordance with clause 4.26 “Loading and unloading areas”

#### 5.5 Requirements for POST-2011 and Altered Passenger Ropeways and Passenger Conveyors

5.5.1 Post-2011 and altered passenger ropeways or passenger conveyors, shall conform to the code adopted in 5.1, except as modified by 5.6 to 5.31 excluding 5.17.

## 5.6 Protection Against Overspeed for Surface Ropeways & Conveyors

- 5.6.1 Surface ropeways and conveyors shall incorporate protection against the possibility of the device speed exceeding more than 10% of the maximum design speed.

## 5.7 Z98 clause 4.23.2.4 “Evacuation drive”

- 5.7.1 Clause 4.23.2.4 of Z98 is revoked and replaced with the following;

### **CAD 4.23.2.4**

*The emergency brake, antirollback device, deropement switches required in clauses 4.30.6.1 through 4.30.6.4 inclusive, and emergency stops required in clause 4.30.5 shall be capable of operation while the evacuation drive is in operation.*

## 5.8 Z98 clause 4.24.3.2(c) “Emergency Brake”

- 5.8.1 Clause 4.24.3.2(c) of Z98 is revoked and replaced with the following;

### **CAD 4.24.3.2(c)**

*(c) 15% overspeed, as detected from the speed of the drive sheave or haul rope; and*

## 5.9 Z98 clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” (General Applicability)

- 5.9.1 The general applicability of clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” shall not apply if all applicable prescriptive requirements of the code are met.
- 5.9.2 Any variance to or deviation from the prescriptive requirements related to the design of safety circuits (see definitions) shall comply with clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.
- 5.9.3 New configurations or novel designs which cannot be precisely classified in CSA Z98-07, shall ensure that their safety circuit designs comply with 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.
- 5.9.4 Where feature(s) of safety circuits for a passenger ropeway or conveyor is not specified in CSA Z98-07, safety circuits shall comply with 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.

## 5.10 Z98 clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” (Compliance to)

- 5.10.1 Where conformance to clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” is required as specified in 5.9, compliance shall be demonstrated as required in 5.10.2 or 5.10.3.
- 5.10.2 Safety circuits function shall conform to highest requirement class (RC/AK) specific to hazard situation/safety function tabulated in Annex C of EN 13243:2004 or,
- 5.10.3 Safety circuits function shall conform to EN 12929:2004, EN 13243:2004 and EN 13223:2004 or equivalent.

**5.11 Z98 clause 4.30.1.11 “Safety circuits”**

5.11.1 Clause 4.30.1.11 of Z98 is revoked and replaced with the following;

**CAD 4.30.1.11 “Safety circuits”**

*Safety circuits shall incorporate redundancy and monitoring mechanisms. Monitoring of redundancy incorporated in safety circuits shall be done as a minimum, once per day. Relays and contactors used in safety circuits shall have force guided, mirrored, or mechanically linked contacts for monitoring purposes. Redundancy in safety circuits using software systems shall use diversification to avoid common mode failure.*

**5.12 Z98 clause 4.30.1.13 “Contactors, relays or magnetically operated switches”**

5.12.1 An acceptable deviation from clause 4.30.1.12 “Redundancy” as allowed by Z98 shall comply with 5.10.3.

**5.13 Z98 clause 4.30.8.3 “Photoelectric safety switches”**

5.13.1 An acceptable use of photoelectric safety switches as allowed by Z98 shall comply with 5.10.2 or 5.10.3.

**5.14 Z98 clause 4.32.3 “Two-Way Communication”**

5.14.1 Clause 4.32.3 “Two-Way Communication” of Z98 is revoked and replaced with the following;

**CAD 4.32.3**

An audible two-way voice communication system shall be provided for machine rooms when the ropeway can be operated from those areas.

**5.15 Z98 clause 5.10.2(c) “Service Brake”**

5.15.1 Clause 5.10.2(c) of Z98 is revoked and replaced with the following;

**CAD 5.10.2(c)**

(c) when a service stop in a cabin is actuated;

**5.16 Z98 clauses 13.15.1 and 13.15.2 “Evacuation with evacuation drive”**

5.16.1 Clause 13.15.1 and 13.15.2 of Z98 is revoked and replaced with the following;

**CAD 13.15.1**

*The deropement switches and emergency stops required in clause 4.30.5 shall be operable while operating with the evacuation drive.*

**CAD 13.15.1**

*If deropement switches and/or emergency stops are not operational due to a malfunction, the ropeway may be evacuated with the evacuation drive if the;*

- (a) full length of the ropeway is kept under surveillance; and
- (b) observers are in communication with the operator throughout the evacuation.

## 5.17 Single Failure Protection

- 5.17.1 Every passenger ropeway installed before June 1, 2001 shall be so constructed and installed that the failure of any single, magnetically operated switch, contactor containing metal-to-metal contacts or relay to release does not prevent the passenger ropeway from stopping in response to an emergency stopping device nor permit the passenger ropeway to start or run if any emergency stopping device is activated.
- 5.17.2 Every passenger ropeway installed on or after June 1, 2001 that is considered a “pre-2011” device shall be so constructed and installed that none of the following events prevents the passenger ropeway from stopping in response to an emergency stopping device nor permits the passenger ropeway to start or run if any emergency stopping device is activated;
- (a) the occurrence of a single ground;
  - (b) the failure of a single magnetically operated switch, contactor or relay;
  - (c) the failure of a single solid-state device; or
  - (d) a software system failure.
- 5.17.3 The devices used to satisfy the requirements of 5.17.2 shall be checked prior to starting of the passenger ropeway, as a minimum, once per day.
- 5.17.4 Where a single ground is detected as set out in clause 5.17.2(a) or an event referred to in 5.17.2(b) to 5.17.2 (d) is detected, the passenger ropeway shall not restart.
- 5.17.5 Implementation of redundancy in a passenger ropeway by a software system is permitted provided that there is diversification to avoid common mode failure.

## 5.18 Log Books

- 5.18.1 In addition to data specified in section 34 of the Regulation, the log book of a passenger ropeway or passenger conveyor shall contain,
- (a) all data required in the code adopted in section 5.1 of this document;
  - (b) all data on any increases or decreases to the mass of the carriers;
  - (c) a record of all pre-season inspections carried out in accordance with section 5.19 of this document;
  - (d) a record of all major and minor alterations; and
  - (e) a record of all five-year periodic tests referred to in section 5.30 of this document.
- 5.18.2 In addition to the requirements of subsection 34.(2) of the Regulation,
- (a) non-destructive testing (NDT) records shall be kept from a historical reference date of October 1, 2001 or from the date any passenger ropeway or passenger conveyor was commissioned if after October 1, 2001, until the passenger ropeway or passenger conveyor is dismantled.
  - (b) major and minor alteration records shall be kept until the passenger ropeway or passenger conveyor is dismantled.
  - (c) a record of all engineering and assessment reports referred to in 5.20 of this document shall be kept until the above-surface passenger ropeway is dismantled.

## **5.19 Preseason Inspection (168/02)**

- 5.19.1 The holder of a licence for a passenger ropeway shall perform a preseason inspection prior to the start of each ski season to ensure that the lift is in compliance with requirements as set out in [part 5](#) of this document.
- 5.19.2 The results of the inspection shall be recorded in a form acceptable to the director.

## **5.20 Aging Ski Lift Assessment**

- 5.20.1 Every above-surface passenger ropeway shall be subjected periodically to a complete engineering review and assessment to ensure its continued operational safety in accordance with guidelines set by the director. Note: see Director's guideline [224/07](#).

## **5.21 Requirements to Limit Tube Tow Detachment (178/03 & 182/03)**

- 5.21.1 The word "tube(s)" has the same meaning as "secondary carrier(s)" used in Z98.
- 5.21.2 In addition to Parts [5.4](#) and [5.5](#), tube tows shall comply with the requirements of [5.21.3](#) through [5.21.7](#)
- 5.21.3 The designer shall specify the method to verify the haul rope tension.
- 5.21.4 Connection of Tubes to Towing Attachments
  - (a) Manufacturers/designers of tube tows shall verify that the type of tube attachment connection is compatible for their towing attachment design.
  - (b) Manufacturers/designers of tube tows must allow for a safety margin that will ensure that the tubes will not detach as a result of changes in the tension force on the tether connecting the towing attachment to the tube. Changes of tension force on tether due to uneven tow path, foreseeable movement of passengers in tubes, passengers feet dragging on snow while seated in an acceptable position in tubes and acceleration/deceleration feature of tube tows shall be considered.
  - (c) For tube tows with automatic detachment at a predetermined unloading point, manufacturers/designers of tube tows shall specify minimum and maximum weight restrictions of tube users.
- 5.21.5 Tubes
  - (a) Tube sizes shall match tow path design so that a detached tube will slide clear of the uphill path of any of the following tubes.
  - (b) Tubes shall be designed to accommodate the passenger size.
- 5.21.6 Towing attachments
  - (a) The length of tube towing attachment shall be designed to maintain a minimum operational clearance from the snow along the tube tow-path and hauling rope while the tube is being hauled along the tow path.
  - (b) Factor of safety of all attachments to the haul rope and components for pulling tubes shall be based upon their impact strength at low temperatures.

- (c) The designer/manufacturer shall specify the maximum tension force on all attachments to the haul rope and components for pulling tubes along their tow path.
- (d) The designer/manufacturer shall specify procedures for inspection of all attachments to the haul rope and components for pulling tubes to verify their safety. Inspection procedures shall include criteria to evaluate the necessity of their replacement.

#### 5.21.7 Tow Path, Crossfall and Containment Barriers

- (a) Means to protect passenger in a tube against contacting any part of tube tow including grips shall be provided along the entire length of the tow path.
- (b) Means shall be provided to keep tubes on the pre-defined tow path.

### 5.22 Alterations

5.22.1 Where an alteration is made to a passenger ropeway or passenger conveyor the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of 5.5.

5.22.2 One or more of the following actions on a passenger ropeway or passenger conveyor shall constitute a major alteration:

- (a) an increase or decrease in,
  - (1) the rated speed of the carriers,
  - (2) the maximum capacity of the ropeway;
- (b) an increase or decrease by more than ten per cent, or an accumulated increase or decrease by more than ten per cent, of the dead weight of the carriers or counter-weight system;
- (c) an increase or decrease in the length or rise of the travel of the passenger ropeway;
- (d) a change,
  - (1) in the carrier design or manufacturer,
  - (2) in the line sheaves and sheave assemblies design,
  - (3) in the type of power supply to the machine,
  - (4) in the type of driving machine,
  - (5) in the location of a machine or tensioning system,
  - (6) in the type of tensioning system,
  - (7) that would result in a reclassification of the passenger ropeway,
  - (8) in tower length or an addition of a new tower.



- (e) a change in,
  - (1) the method or type of operation,
  - (2) the method or type of motion control
  - (3) location of the controller
- (f) a replacement of the controller,
- (g) an alteration to the controller, other than an alteration to the motor starters.

5.22.3 Any action or work performed on a passenger ropeway that results in a change to the original design or the operational characteristics of the passenger ropeway or affects the inherent safety of the passenger ropeway and not listed in subsection 5.22.2 shall constitute a minor alteration.

5.22.4 Minor alterations shall be reported and inspected as required by section 19 of the Regulation.

### 5.23 Bar Lift Requirements

5.23.1 Every bar lift shall,

- (a) be equipped with an anti-rollback device in accordance with 7.8 of Z98;
- (b) have a tow path designed and maintained in accordance with 7.2.4 of Z98;
- (c) be so constructed that maximum stopping shall be maintained in accordance with 7.7.1.2 of Z98 ; and
- (d) be so constructed that, where a brake is used in order to obtain conformance with the requirement of subsection 5.23.1(c) the brake shall conform to code adopted in part 5.

### 5.24 Rope Tow Requirements

5.24.1 Every rope tow shall,

- (a) be equipped with an anti-rollback device in accordance with 8.13 of Z98;
- (b) have a tow path designed and maintained in accordance with 8.2.5 of Z98;
- (c) be so constructed that maximum stopping shall be maintained in accordance with 8.12.1.2 of Z98 ; and
- (d) be so constructed that, where a brake is used in order to obtain conformance with the requirement of subsection 5.24.1(c) the brake shall conform to code adopted in part 5.

### 5.25 Fibre Rope Tow Requirements

5.25.1 The return rope on a fibre rope tow shall have vertical clearances in accordance with 8.4.1 of Z98.



## 5.26 Chair Lift or Gondola Lift Requirements

- 5.26.1 Every chair lift or gondola lift shall,
- (a) have a service brake that is located in accordance with 4.24.2.1 of Z98;
  - (b) be so equipped that the evacuation drive that drives the circulating rope is rendered inoperative in accordance with section 5.7 (CAD 4.23.2.4)
  - (c) be equipped with a readily available work carrier in accordance with 4.27.10 and Annex B of Z98.

## 5.27 Carrier Grip Requirements

- 5.27.1 Where a work carrier is affixed to a lift line by means of rope grips that use friction as a gripping method, rope grips shall be installed in accordance with the code adopted in part 5.
- 5.27.2 A grip referred to in subsection 5.27.1 shall be so designed so as not to cause any damage to the hauling rope sheave, bullwheel or the liners of the sheave or bullwheel in accordance with the code adopted in part 5.

## 5.28 Restraining Bar Requirements

- 5.28.1 Each chair of a chair lift shall be equipped with a restraining device in accordance with 6.13.2 of Z98.

## 5.29 Haul Rope Retention on Chairlifts

- 5.29.1 Support, hold-down, and combination sheave assemblies on all chair lifts shall meet the requirements of the code adopted in part 5.

## 5.30 Load Test Requirements (111/93)

- 5.30.1 All above-surface passenger ropeways shall be load-tested periodically at intervals not exceeding five (5) years. The periodic load testing of the ropeway shall be carried out under the direction and supervision of the designer/manufacture of the ropeway or a qualified professional engineer.
- 5.30.2 The results of five-year periodic tests shall be performed in accordance with the code adopted in part 5 and recorded on the form provided in Annex H of Z98.
- 5.30.3 Original copies of the test shall be signed by either the designer/manufacture of the ropeway or a qualified professional engineer and shall be kept on site in the log book.

## 5.31 Manufacturers/Designers Bulletins

- 5.31.1 Manufacturer(s) of passenger ropeway(s) or conveyor(s) shall inform owners about the requirements associated with their safety bulletins or alerts in addition to the requirement of Section 35 of the Regulation.
- 5.31.2 In addition to the requirement of Section 35 of the Regulation, owner(s) of passenger ropeway(s) or conveyor(s) shall inform manufacturer(s) about findings which may require the issuing of a safety bulletin or alerts.
- 5.31.3 Owners are responsible to carry out the requirements of manufacturer's safety bulletin or alerts.

## Part 6

### 6 CONSTRUCTION HOISTS

#### 6.1 Applied Code [CAD Amendment 216-07]

6.1.1 Every construction hoist shall conform to the following:

- (a) workers' rail guided construction hoists shall conform to CAN/CSA Standard Z185-M87(R2001), Safety Code for Personnel Hoists; [CAD Amendment 216-07]
- (b) workers' rope-guided construction hoist shall conform to, American National Standard ANSI/ASSE A10.22 – 2007 Safety Requirements for Rope-guided and Non-guided Workers' Hoist; and [CAD Amendment 216-07]
- (c) material construction hoist, CSA Standard Z 256-M87(R2006), Safety Code for Material Hoists, [CAD Amendment 216-07]

and any applicable changes set out in this document. [CAD Amendment 246-11]

#### 6.2 Rated Load

6.2.1 For the purpose of this Document and subsection 31.(3) of the Regulation, "rated load" or "rated loading" in the codes referred to in section 6.1 means "maximum capacity".

#### 6.3 Continuously Controlled by Power

6.3.1 Every construction hoist shall be so designed that the car movement in both the up and down direction is continuously controlled by power.

#### 6.4 Broken Rope Safety

6.4.1 A material construction hoist that is equipped with a broken rope type safety shall not be registered unless a type test indicates that the safety is capable of stopping the car when it is free falling with its rated load.

#### 6.5 Limitation on Speed

6.5.1 Where the load-carrying unit of a workers' rope-guided construction hoist passes through a restricted area at a platform or floor, a control device that positively and automatically lowers the speed of the load-carrying unit to that specified in the related design submission while the load-carrying unit passes through the restricted area shall be installed on the hoist, except where the design submission indicates that no speed limitation is required.

6.5.2 In lieu of the control device referred to in subsection 6.5.1, an operator utilising a system of signals may be used to manually control the speed of the hoist.

## 6.6 Attendant Operation

- 6.6.1 Every workers' rail-guided construction hoist, shall while in operation, be attended by an attendant who shall be stationed in the load-carrying unit, and who shall operate the construction hoist and also supervise the loading, passage and unloading of persons and freight.
- 6.6.2 Every material construction hoist shall while in operation be,
- (a) attended by one or more attendants stationed at each location where freight is being loaded or unloaded; and
  - (b) operated by,
    - (1) an attendant stationed at the location of the operating devices, provided that the operating devices can be automatically rendered inoperative should an unsafe condition for operation of the construction hoist exist, or
    - (2) an operator stationed at the driving unit where the driving unit and its operating devices cannot automatically be rendered inoperative should an unsafe condition for operation of the construction hoist exist.
- 6.6.3 Subsections 6.6.1 and 6.6.2 apply with necessary modifications to the providing of attendants and operators for workers' rope-guided construction hoists.

## 6.7 Up Overspeed Protection

- 6.7.1 Every workman's construction hoist that is equipped with a counterweight having a mass greater than the mass of the empty car shall be provided with a means for protecting against uncontrolled car speed in the up direction and such means shall conform to the following:
- (a) It shall detect any uncontrolled movement of the car prior to or at least when the car reaches a predetermined overspeed and shall cause the car to stop prior to the time when the counterweight strikes its buffers, or at least reduce car speed to the speed for which the buffers are designed.
  - (b) It shall be capable of performing as required in paragraph (a) without assistance from any hoist component which solely without built in redundancy, controls the speed, or deceleration, or stops the car during normal operation.
  - (c) It shall not develop an average retardation of the car in excess of 9.81 m/sec<sup>2</sup> during the stopping phase.
  - (d) It shall prevent uncontrolled movement of the car through control of the speed of, and acting upon the,
    - (1) car;
    - (2) counterweight;
    - (3) suspension or compensating rope system; and
    - (4) drive sheave, provided that the traction between the suspension ropes and the drive sheave are continuously monitored and the construction hoist is automatically removed from service when the rope slippage exceeds a predetermined amount.

- (e) When it is activated or during the stopping phase, it or another hoist component shall cause the power supply of the driving machine to be interrupted.
- (f) It shall be capable of performing at least ten operations without any adjustments.
- (g) All components that require periodic examination and maintenance for the purpose of maintaining their operational reliability, shall be readily accessible.
- (h) Its performance shall be checked during the initial and periodic inspections unless its performance reliability is substantiated otherwise.
- (i) It shall be provided with a making plate indicating maximum capacity for which it may be used and the speed at which it is set to operate.

## 6.8 Additional Requirements for Workers' Rail Guided Construction Hoists [CAD Amendment 216-07]

6.8.1 In addition to the requirements of 6.1.1(a), workers' rail-guided construction hoists shall conform to the following:

(a) Clause 14.4.2 of CAN/CSA-Z185-M87 (R2001) shall be replaced with the following;

(1) The occurrence of a single ground or a software system failure or the failure of

- a) a switch which does not have contacts that are positively separated;
- b) a contactor;
- c) a relay; or
- d) a solid state device;

shall not render any electrical protective device ineffective.

- (b) Redundant software systems used to satisfy the requirements of (a) shall have a level of diversification sufficient to avoid common mode failures.
- (c) Clause 18.1.1(c) of CAN/CSA-Z185-M87 (R2001) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

- (d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.
- (e) Workers' construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216-07]

## 6.9 Additional Requirements for Workers' Rope-Guided Construction Hoists [CAD Amendment 216-07]

6.9.1 In addition to the requirements of **6.1.1(b)**, workers' rope-guided construction hoists shall conform to the following:

- (a) The occurrence of a single ground or a software system failure or the failure of
  - (1) a switch which does not have contacts that are positively separated;
  - (2) a contactor;
  - (3) a relay; or
  - (4) a solid state device;

shall not render the, deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake ineffective.

Note: Requirements only apply to the circuits in which the deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake are used and not to the devices themselves.

- (b) Redundant software systems used to satisfy the requirements of **(a)** shall have a level of diversification sufficient to avoid common mode failures.
- (c) Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render the Deadman Control Switch, Limit Switches, or the Automatic Friction Brake ineffective and shall not cause the cage to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.
- (d) All references to NFPA 70 (Clause **2.1**, Clause **3.24**, and Clause **4.13** of ANSI A10.22-2007) shall be replaced with Ontario Electrical Safety Code as referenced in **2.2.1(b)** of this document. [CAD Amendment 216-07], [CAD Amendment 246-11]

## 6.10 Additional Requirements for Material Construction Hoist [CAD Amendment 216-07]

6.10.1 In addition to the requirements of **6.1.1(c)**, material construction hoists shall conform to the following:

- (a) Clause **15.3.2** of CAN/CSA-Z256-M87 (R2006) shall be replaced with the following;
  - (1) The occurrence of a single ground or a software system failure or the failure of
    - a) a switch which does not have contacts that are positively separated;
    - b) a contactor;
    - c) a relay; or
    - d) a solid state device;

shall not render any electrical protective device ineffective.

- (b) Redundant software systems used to satisfy the requirements of (a) shall have a level of diversification sufficient to avoid common mode failures.
- (c) Clause 19.1.3 of CAN/CSA-Z256-M87 (R2006) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

- (d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.
- (e) Material construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216-07]

#### 6.11 Maintenance Log Book [CAD Amendment 255-12]

6.11.1 Each elevating device of a type listed in 6.1.1 shall be provided with a maintenance log book as required by O.Reg 209/01 s.34 Log books.

6.11.2 Maintenance records in the form of a log book shall document compliance with related construction hoist codes, Code Adoption Document (CAD) requirements and any manufacturer recommended tasks extracted from the manufacturers maintenance and operation manuals, and shall include records on the following activities:

- (a) description and dates of maintenance task performed;
- (b) description and dates of examinations, tests;
- (c) description and dates of adjustments, repairs, and replacements;
- (d) description and dates of any tasked noted in the Guideline for Maintenance Logs – Construction Hoists (Guideline 256/12); and
- (e) description and dates of all call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken.
- (f) log records to document compliance with the maintenance, examinations and test activities listed in (a) through (d) shall also include:
  - (1) Building name and/or address;
  - (2) TSSA installation number;
  - (3) Contractor's (owners) name;
  - (4) Contractor's Registration Number;
  - (5) the code section, reference, requirement or clause number associated with a task;
  - (6) a description of the task performed;
  - (7) the prescribed maintenance frequency of the task;
  - (8) the date the task was performed; and

- (9) upon completion of the task, the printed name, signature, and TSSA certificate number of the person who completed the maintenance, examination or tests.

6.11.3 Where a part of an elevating device which directly affects the safe operation of the device is found to be defective, the record of the relevant maintenance task shall not be signed off by the party performing the task until the defective part is adjusted, repaired or replaced, and the safety of the device restored.

**6.12 Location of the Maintenance Log Book** [CAD Amendment 255-12]

6.12.1 The maintenance log book shall be kept in the machine room or on the device or near the device location or, in the alternative if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.12.2 Log book data shall be readily available as required by O.Reg 209/01 s.34.(3)

**6.13 Manufacturers Maintenance and Operation Manual** [CAD Amendment 255-12]

6.13.1 For each construction hoist the manufacturers maintenance and operations manual shall be retained.

6.13.2 The manufacturers maintenance and operation manual shall be kept in the machine room or on the device or near the device location or in the alternative, if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.13.3 The manufacturers maintenance and operation manual shall be readily available and immediately provided to an inspector upon request.

**6.14 Operator Training** [CAD Amendment 255-12]

6.14.1 Every operator must have the required knowledge and experience to operate an elevating device and owners, licensees and/or lessees, must ensure operators are trained to safely operate such devices and must be satisfied that the operator is aware of potential hazardous situation connected therewith as required by O.Reg 209/01 s.40.

6.14.2 Owners, licensees, lessees providing training or other trainers providers shall develop and maintain written operator training programs and written policies and procedures to ensure compliance with the regulation and **6.14.1**.

6.14.3 Written training programs shall include applicable portions of the manufacturers maintenance and operation manual to address the requirements of the regulation and **6.14.1** and shall include the minimum requirements for operator training as outlined in the Guide for Operator's Logs and Operator Training Requirements – Construction Hoists (Guideline 257/12).

6.14.4 Copies of the documentation required under **6.14.2** shall be kept on site, shall contain current and complete information and shall be readily available and immediately provided to an inspector upon request.

6.14.5 Training records shall be maintained by the training provider ("trainer") and shall include the following information:

- (a) the name of the person(s) who received the operator training;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date of training;
- (d) the signature of the trained operator; and,



(e) the signature of the trainer.

- 6.14.6 A copy of the training records identified in **6.14.5** shall be maintained on site and readily available and immediately provided to an inspector upon request.
- 6.14.7 Individuals who are trained as operators, and have achieved sufficient competence to operate the device safely shall be issued by the trainer an “Operator’s Proof of Training” document which must certify that the operator is competent to operate the device safely and must specify the following information:
- (a) the operators name;
  - (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
  - (c) the date the training was received; and
  - (d) the signature of the trainer.
- 6.14.8 The trainer shall issue an “Operator’s Proof of Training” document in the form of a letter or wallet card or equivalent as per **6.14.7**.

**6.15 Operator’s Proof of Training** [CAD Amendment 255-12]

- 6.15.1 Operators are required to carry their “Operator’s Proof of Training” document whenever they operate an elevating device.
- 6.15.2 “Operator’s Proof of Training” shall be readily available and immediately provided to an inspector upon request.
- 6.15.3 An “Operator’s Proof of Training” may be immediately revoked by an Inspector, owner, licensee, lessee or trainer where there is reason to believe that the operator lacks the competence to safely operate the elevating device and the operator may no longer operate the device.

**6.16 Daily Operator’s Log** [CAD Amendment 255-12]

- 6.16.1 Each elevating device type listed in **6.1.1** shall have a corresponding “Daily Operator’s Log” in which a current and accurate record of all required start up checks as required by the device manufacturer, owner, licensee, lessee or device operator shall be kept and shall include the minimum requirements for operator’s logs as outlined in the Guideline for Operator’s Logs – Construction Hoists (Guideline 257/12).
- 6.16.2 Operator’s of a device must satisfy themselves, at the start of each shift, that the device is safe to operate as required by O.Reg 209/01 s.42 by conducting a series of start up checks as outlined in the Guideline for Operator’s Log – Construction Hoists and shall record and sign off these checks in the “Daily Operator’s Log”.
- 6.16.3 The “Daily Operator’s Log” must contain the following information:
- (a) the Building name and/or address;
  - (b) the TSSA device installation number;
  - (c) a list of the daily checks as required by **6.16.1**;
  - (d) the Operator’s printed name and signature acknowledging completion of all daily checks after the device is found to be in safe working order and the date of such checks.



6.16.4 Where a part of the elevating device which directly affects the safe operation of the device is found to be defective, the log shall not be signed off and the device shall not be put into operation until the defect is adjusted, repaired or replaced, by a registered mechanic.

**6.17 Location of the Daily Operator's Log** [CAD Amendment 255-12]

6.17.1 The "Daily Operator's Log" shall be kept in the machine room, on the device, or near the device location, or in the alternative, if it is kept at another location on the site, a notice will be posted in the machine room or device location indicating the alternate location.

**6.18 Signage** [CAD Amendment 255-12]

6.18.1 Every car, cage or platform shall be equipped with a sign as follows:

- (a) The sign shall display the message, "Only Operators who have their valid "Operator's Proof of Training" card on their person shall operate this device";
- (b) The sign shall be of such material and construction that the letters are stamped, etched, cast or otherwise applied to remain permanently visible; and
- (c) The height of the letters shall not be less than 12 mm (1/2 in.).

**6.19 Incident and Issue Reporting** [CAD Amendment 255-12]

6.19.1 Incidents shall be reported as required by O.Reg 209/01 s.36. See also Director's Guideline 230/09.

6.19.2 Device operators shall report device incidents and any safety related issues to supervisory personnel who are responsible for taking the appropriate action or following the incident report requirements required by the regulation.

Supersedes - by revision

## Part 7

### 7 ELEVATING DEVICES FOR PERSONS WITH PHYSICAL DISABILITIES

#### 7.1 Applied Code [CAD Amendment 238-09]

7.1.1 Each newly installed elevating device for persons with physical disabilities shall conform to the requirements of CSA Standard B355-09, Lifts for persons with physical disabilities including and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.2 Maintenance [CAD Amendment 238-09]

7.2.1 All lifts for persons with physical disabilities shall conform to the maintenance requirements of CSA-B355-09 Lifts for persons with physical disabilities including Annex B and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.3 Maintenance Log Book [CAD Amendment 238-09]

7.3.1 The log book shall, as a minimum, contain the following information:

- (a) Building name and/or address,
- (b) TSSA or MCCR installation number,
- (c) Contractor's and Owner's name,
- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 238-09]

7.3.2 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 defect is adjusted repaired or replaced. [CAD Amendment 238-09]

#### 7.4 Location of the Log Book [CAD Amendment 238-09]

7.4.1 The log book will be retained in the machine room 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. [CAD Amendment 238-09]

#### 7.5 Access to Lift

7.5.1 Every owner of an unenclosed vertical platform lift and every owner of an unenclosed stair platform lift or stairchair lift shall ensure that the public does not have access to the area where the lift is installed while the lift is in operation.

- 7.5.2 Subsection 7.5.1 does not apply in the case of an unenclosed stair platform lift or stairchair lift where,
- (a) the owner of the lift is able to control and identify persons who will be using the lift or the area where the lift is installed and the owner familiarizes those persons in advance of using the area or lift with the safety rules and procedures concerning the use of the area and the lift; and
  - (b) and the lift meets the requirements of subsection 7.6.

## 7.6 Lift Operation with Persons Nearby

- 7.6.1 Where an unenclosed stair platform lift or stairchair lift is being operated at the same time that other persons are using the area in which the lift is installed,
- (a) audio-visual signals shall be emitted that warn persons using the lift and persons in the area where the lift is installed at all times when the platform is unfolded and until the lift is parked in a safe position at a terminal; and
  - (b) every leading edge or surface of that portion of the lift and its carriage that carries the passengers in both directions of travel shall be equipped with sensitive devices that meet the requirements of clause 7.2.4. and 8.5.4. of the standard adopted in section 7.1 of this Document and that are operational whenever the carriage is in motion.

## 7.7 Usage of Device

- 7.7.1 The owner of a lift for persons with physical disabilities shall ensure that,
- (a) the device is used primarily for the transportation of persons with physical disabilities;
  - (b) detailed operating instructions are posted at every operating station;
  - (c) the operation of the device is restricted to attendants designated by the owner or those persons who in the opinion of the owner are able to use the device without an attendant; and
  - (d) the persons using the device receive instruction and training that emphasizes the hazards associated with improper use of the device.

## 7.8 Requirements for Restricted Operation

- 7.8.1 The operation of a lift for persons with physical disabilities shall be restricted by means of a key-control for the operating device as set out in subsection 7.8.2 and 7.8.3 or by a method acceptable to the director that provides the same degree of safety.
- 7.8.2 A key-control for an operating device may be by means of an on/off lockable switch located near and controlling one or more operating devices or each operating device may be directly key-controlled.
- 7.8.3 The key for a key-control for an operating device shall be removable only when the switch is in an "off" position.
- 7.8.4 Folding down of a platform on a stair platform lift shall be restricted to persons authorised to use the lift, by the following means:

- (a) in the case of a platform that is folded down by power – by means of a key-controlled switch or by a method acceptable to the director; and
- (b) in the case of a platform that is folded down manually – by means of a keyed lock or by a method acceptable to the director.

7.8.5 Lowering of a barrier arm, if provided, shall be restricted to persons authorised to use the lift by means of a keyed switch or lock or by a method acceptable to the director.

## 7.9 Instructions for Use and Owner Requirements

7.9.1 Every owner of an elevating device for persons with physical disabilities shall,

- (a) ensure that the instructions for the device are posted at the location of each operating device that will inform a person with physical disabilities of the established procedure to gain access to and to use the device and, in the case of unenclosed devices, that such instructions include, but are not limited to, cautioning the user to observe the lift runway for possible obstructions;
- (b) ensure that an attendant is available to operate the device when a person with physical disabilities requires assistance;
- (c) where an attendant is required and is not permanently stationed at the location of the operating device ensure that a notice is posted at the entrance to the elevating device that indicates the procedure to be followed to obtain assistance; and
- (d) provide instruction that an unoccupied platform of an unenclosed stair platform lift should not be called or sent from a landing station unless it is in the raised and folded position. [CAD Amendment 238-09]

7.9.2 A person shall only operate an unenclosed vertical platform lift, an unenclosed stair platform lift or a stairchair lift, if the person is satisfied that only persons using the lift have access to the area where the lift is installed.

7.9.3 Subsection 7.9.2 does not apply to a person operating an unenclosed stair platform lift or a stairchair lift while other persons are using the area in which the lift is installed where,

- (a) the conditions set out in subsection 7.5.2 exist;
- (b) the person operating the lift is an attendant and has, while operating the lift in the folded down position, a clear view of the lift runway in the direction of its movement by walking along with the carriage while it is in motion or has by being stationed at a point, a clear view of the runway;
- (c) the person using the lift has, while using the lift, a clear view of the lift runway in the direction of travel; and
- (d) the audio-visual signals required under subsection 7.6.1(a) are operational.

## 7.10 Notice Required Regarding Restricted Use

7.10.1 A notice that the use of a lift for persons with physical disabilities is restricted to persons with physical disabilities shall be posted at each location of a device, at landing or runway entrances of the device and at the load-carrying unit of the device.

## 7.11 Supplementary Owners Report

7.11.1 In addition to those requirements set out in sections 15 and 16 of the Regulation, the design submission for a lift for persons with physical disabilities shall include a detailed report, completed on a form provided by the director, from the owner of the elevating device, in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.12 Change of Ownership & Supplementary Owners Report

7.12.1 In addition to the requirements of section 29 of the Regulation, where there is change in the ownership of a lift for persons with physical disabilities or a substantive change in the type of occupancy of a building in which a lift for persons with physical disabilities is installed, the new owner of the lift shall submit to the director, a detailed report on a form provided by the director in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.13 Pressure Sensor Requirement for Vertical Platform Lifts (248/11)

7.13.1 All vertical platforms, where any part of the hydraulic cylinder is above the top of the hydraulic oil storage tank, shall be equipped with a pressure sensor that when activated shall prevent the operation of the lowering valve or valves in conformance with clause 6.6.8 of CSA B355-09 Lifts for Persons with Physical Disabilities [CAD Amendment-261-13]

Archived  
Superseded  
- by revision



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 261/13	Rev. No.: 1
<b>Elevating Devices Code Adoption Document - Amendment</b>	Date: May 1, 2013	Date: <b>September 15, 2013</b>

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

Ontario Regulation 223/01  
(Codes and Standards Adopted by Reference)

- and -

Ontario Regulation 209/01  
(Elevating Devices)

**Subject: Elevating Devices Code Adoption Document - Amendment 261/13-r1**

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The Director for the purposes 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, published by the Technical Standards and Safety Authority is amended as follows:

- All sections of the Elevating Device Code Adoption Document dated June 1, 2001 are hereby revoked and replaced with the following:**
  - The Elevating Devices Code Adoption Document - Amendment 261/13-r1, dated **September 15, 2013** and published by the Technical Standards and Safety Authority, is hereby adopted.
- This amendment is effective **September 15, 2013**.**

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**Roland Hadaller, P.Eng.**

Director, O. Reg. 209/01 (Elevating Devices), made under the *Technical Standards and Safety Act, 2000*

Archive  
Superseded by Rev



# **ELEVATING DEVICES CODE ADOPTION DOCUMENT AMENDMENT 261/13-r1**

**September 15, 2013**

Archive  
Superseded by Rev

**Elevating and Amusement Devices Safety Program  
Technical Standards and Safety Authority**





## Background

This document and the codes it adopts establish requirements and minimum standards for the design, construction, installation, erection, maintenance and alteration of elevating devices. It has been developed in consultation with the Elevating Devices Advisory Council, the Field Advisory Committee, and various industry stakeholders.

Pursuant to s. 4(1) of O. Reg. 223/01 (Codes and Standards Adopted by Reference) made under the *Technical Standards and Safety Act, 2000*, the “Elevating Devices Code Adoption Document” published by TSSA and dated June 1, 2001 (the “CAD”) forms a part of O. Reg. 209/01 (Elevating Devices).

The CAD, in turn, adopts various codes. Since its adoption as part of O. Reg. 209/01, the CAD has been amended several times to adopt different versions of codes and to make modifications to those codes.

CAD amendment 261/13, adopted May 1, 2013, replaced all previous CAD amendments and is a consolidation of previous CAD amendments and applicable Directors Orders.

This revision, 261/13-r1, makes minor revisions to CAD amendment 261/13. Highlights of changes introduced in this revision are as follows:

- clarify collapsible handrails (if used) must extend to 42" when opened
- clearance from car top handrail to shear hazards in the hoistway must be 4" after Nov 1, 2013
- dedicated function fire alarms (DFFA) if used in building with existing systems must be integrated as one system
- DFFA if used in buildings not requiring alarm systems must be marked as elevator recall systems
- owners must annually test DFFA used solely as elevator recall systems
- transit facilities may stop escalators as permitted by NFPA 130
- existing installations must have MCP's in place by March 31, 2014
- car top railing compliance has been revised to May 1, 2014
- a hydraulic elevator to electric elevator alteration scope has been added
- clarify if FCR retrofits where missed, autorecall is now required for all cars
- A summary table of pending compliance due dates has been added to end of Part 3

For the user's convenience, this CAD amendment indicates previous amendments using the colour coding and reference symbols in the following table:

### Colour Coding and Reference Symbols Used in CAD Amendment 261/13-r1

<b>7.5</b>	is a reference to another section in this CAD amendment
<b>(197/06)</b>	is a reference to a predecessor document (Director's Order, Enforcement Procedure, etc.)
<b>7.2.4.</b>	is a reference to a section in an external document or code
<b>as part of</b>	is a reference to text from a published code that is not part of this code but is shown for reference only
<b>Red Text</b>	is used to identify changes from the previous CAD amendment or TSSA-specific additions to a published code
<b>★</b>	is used to denote a TSSA-specific alteration
<b>Blue greyed</b>	denotes a maintenance permission that will expire on <b>March 31</b> , 2014
<b>Peach highlight</b>	-identifies new text contained in CAD Amendment 261/13-r1 -identifies text from the A17.1/B44-2013 code introduced in Amendment 261/13-r1

Note that definitions contained in O. Reg. 209/01 apply to the code.

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# Elevating Devices Code Adoption Document Amendment 261/13-r1

## Part 1

### 1 GENERAL

#### 1.1 Definitions

- 1.1.1 The terms in this Code Adoption Document amendment (Document) have the same meaning as in the *Act* or the Regulation unless otherwise specified herein.
- 1.1.2 Where a provision of a code or standard adopted in this Document is inconsistent with the requirements of this Document, the provision of this Document shall prevail.
- 1.1.3 In this Document,
- (a) “Regulation” means Ontario Regulation 209/01 (Elevating Devices) made under the *Technical Standards and Safety Act, 2000*.
  - (b) “CSA” means the Canadian Standards Association.
  - (c) “CAN” means a standard recognised as a National Standard of Canada and approved by the Standards Council of Canada.
  - (d) “ANSI” means the American National Standards Institute.
  - (e) “freight elevator-P” means a freight elevator upon which passengers are permitted to ride;
  - (f) “common-mode failure” means the result of an event(s) which because of dependencies, causes a coincidence of failure states of components in two or more separate channels of a redundancy system, leading to the defined system failing to perform its intended function. [CAD Amendment 216-07]
  - (g) “software system failure” means a behaviour of the software, including its support (host) hardware, that is not in accordance with the intended function. [CAD Amendment 216-07]
  - (h) “solid-state device” means an element that can control current flow without moving parts. [CAD Amendment 216-07]
  - (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] See also definition in NFPA 72. [CAD Amendment 261/13]
  - (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]

## **1.2 Exceptions**

- 1.2.1 Except where otherwise indicated, this Document applies to all elevating devices and parts thereof.
- 1.2.2 Despite subsection [1.2.1](#) and unless otherwise specified in the Regulation, in this Document or by the director, the codes and standards referred to in this Document do not apply to existing elevating devices except for those sections respecting alterations, the inspection, testing, maintenance, operation and use of the elevating device, including signage and instructions relating to the use of the elevating device.

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## Part 2

### 2 GENERAL TECHNICAL REQUIREMENTS

#### 2.1 Welding

- 2.1.1 The welding of a steel structure on an elevating device shall conform to the requirements of CSA Standard W59-03, Welded Steel Construction (Metal Arc Welding). [CAD Amendment 246-11]
- 2.1.2 The welding of a steel structure on an elevating device shall be undertaken by a fabricator or contractor qualified to the requirements of CSA Standard W47.1-03, Certification of Companies for Fusion Welding of Steel Structures. [CAD Amendment 246-11]
- 2.1.3 The field welding of piping and fittings on an elevating device shall conform to the requirements of CSA Standard B51-03, Code for the Construction and Inspection of Boilers. [CAD Amendment 246-11]
- 2.1.4 Despite subsections **2.1.1**, **2.1.2** and **2.1.3**, an equivalent welding standard may be used if it is acceptable to the director.

#### 2.2 Electrical

- 2.2.1 Electrical equipment shall conform to the requirements of,
- (a) Ontario Electrical Safety Code as amended from time to time; and [CAD Amendment 246-11]
  - (b) CAN/CSA B44.1/ASME A17.5-04, Elevator and Escalator Electrical Equipment, or [CAD Amendment 246-11]
  - (c) CAN/CSA C22.2 No. 14, Industrial Control Equipment (applicable to elevating devices other than elevators, escalators, moving walks, dumbwaiters, material lifts, and lifts for persons with physical disabilities). [CAD Amendment 246-11]

#### 2.3 Rope Clips

- 2.3.1 Where clips are permitted to fasten metal rope in an elevating device,
- (a) the minimum number of clips to be used on each rope ends shall be,
    - (1) two clips for rope under nine millimetres in diameter,
    - (2) three clips for rope nine millimetres in diameter and over but under sixteen millimetres in diameter,
    - (3) four clips for rope sixteen millimetres in diameter and over but under nineteen millimetres in diameter;
  - (b) the rope end shall be bent over a heart-shaped thimble that has a groove of a radius equal to that of the rope or shall be provided with protection that a director considers equivalent;
  - (c) the clips shall be spaced at a distance apart equal to six times the rope diameter from the short end of the rope;

- (d) U-type clips shall be placed so that the U bolts bear on the short or dead end of the rope and the bases bear on the load part of the rope; and
- (e) the nuts on the clips shall not be fully tightened until after the rope has been under load and all nuts shall be fully tightened while the rope is still loaded.

## **2.4 Rope Replacement (17/84)(122/95)**

- 2.4.1 When changing or shortening ropes on counterweighted elevators, the installation shall be provided with a data plate permanently and securely attached in the pit, in the vicinity of the counterweight buffer, indicating the maximum designed counterweight runby. [CAD Amendment 246-11]
- 2.4.2 The minimum stranding for cables used to relate any car or landing door shall be not less than 7 x 19 construction. [CAD Amendment 246-11]

## **2.5 Relocation of an Elevating Device**

- 2.5.1 Where an elevating device is relocated it shall meet the requirements of the applicable code or standard adopted in this Document, unless otherwise specified in this Document or by the director.

## **2.6 Alteration**

- 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. [CAD Amendment 250-11]
- 2.6.1 Unless otherwise specified in this Document or by the director, and without limiting generality of the Regulation, the following alteration to an elevating device shall constitute a major alteration:
  - (a) An increase by more than 10 per cent in,
    - (1) the rated speed of the load-carrying unit,
    - (2) the maximum capacity, or
    - (3) the dead-weight of the machine, load-carrying unit or counter-weight;
  - (b) except for construction hoists, an increase or decrease in the distance of the travel of the load-carrying unit;
  - (c) a change in,
    - (1) the method or type of operation,
    - (2) the method or type of motion control,
    - (3) the type or size of guide rails or other guiding means for the load-carrying unit or counter-weight,

- (4) the type of safety device or other safety stopping device for the load-carrying unit or counter-weight,
- (5) the power supply to the machine,
- (6) the type of driving machine or brake,
- (7) the location of ;
  - a) the elevating device,
  - b) elevating device controller, [CAD Amendment 246-11]
  - c) the machine,
  - d) the load-carrying unit,
  - e) the counter-weight, or
- (8) the working pressure of a hydraulic system by more than 10 per cent;

(d) a replacement of the controller; [CAD Amendment 246-11]

(e) changes that would result in a reclassification of the elevating device; and

(f) the addition of an entrance to the elevating device.

2.6.2 Unless otherwise specified in this Document or by the director, and without limiting the generality of the Regulation, any action or work performed on an elevating device that is not specified in subsection 2.6.2 and that results in a change to the original design or the operational characteristics of the elevating device or affects the inherent safety level of the elevating device, shall constitute a minor alteration.

## 2.7 Rack and Pinion Safeties [CAD Amendment 213-07]

2.7.1 Any repair or rebuild of a type 'D' rack and pinion safety where the manufacturer has stated that such work shall only be performed by the manufacturer, may either be:

- (a) repaired, rebuilt or replaced by the manufacturer, or
- (b) repaired or rebuilt in accordance with a procedure certified by a professional engineer.

2.7.2 The procedure referred to in clause 2.7.1(b) shall be filed with the director and shall be available to the inspector upon request. [CAD Amendment 213-07]

## 2.8 Format of Submission Documents

2.8.1 Where a design submission is in paper format it shall;

- (a) be submitted as one copy unless the submission includes oversized drawings;
- (b) drawings that are not legible when printed on 11" x 17" paper are considered oversized and shall be submitted as four paper copies as well as in an electronic media form that contains the oversized drawings in unprotected PDF, JPEG or TIFF format;

- (c) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding. [CAD Amendment 246-11]

2.8.2 Electronically submitted design submissions shall be as follows;

- (a) filled specification sheets shall be provided in excel format;
- (b) other supporting documentation shall be provided in unprotected PDF, excel or word format;
- (c) where electronic pages exceed 11"x17" paper size, the information shall be legible to the smallest detail when printed to 11"x17", otherwise they shall also be provided as four hardcopies;
- (d) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding;
- (e) documents received electronically, will be returned electronically at the conclusion of the design review. [CAD Amendment 246-11]

## **2.9 Hydraulic Elevating Device Oil Loss Monitoring Program** [CAD Amendment 212-07-r1]

- 2.9.1 Every contractor who maintains a hydraulic elevating device with buried cylinders or buried piping shall ensure there is a written oil loss monitoring program.
- 2.9.2 A "hydraulic elevating device" means a non-portable device for hoisting and lowering or moving persons or freight and includes an elevator, dumbwaiter, manlift, incline lift, construction hoist, stage lift, platform lift and special elevating device that incorporates one or more hydraulic cylinders.
- 2.9.3 The purpose of the oil loss monitoring program is to identify any loss of oil which cannot be accounted for in the hydraulic system.
- 2.9.4 If a contractor performs maintenance on a hydraulic elevating device with buried cylinders or buried piping, the contractor shall ensure that a written oil loss monitoring program is developed and maintained before the contractor performs work on the hydraulic elevating device.
- 2.9.5 The oil loss monitoring program shall include: [CAD Amendment 246-11]
  - (a) the requirement to provide an oil loss monitoring log ("OLM log") for each hydraulic elevating device with buried cylinders or buried piping;
  - (b) the requirement for the OLM log to reference the elevating device installation number;
  - (c) the requirement to establish a fixed reference level for the oil and the requirement to mark the reference level on the tank, dip stick or other suitable location via permanent means;  

Note: "permanent" implies affixed in such a manner so as to not be easily removed or repositioned.
  - (d) the requirement to document in the OLM log the location of the mark for the fixed reference level;
  - (e) the requirement to check that the oil level is at the established reference point when the device is level with the lowest landing during each scheduled maintenance visit;
  - (f) if the fixed reference level needs to be intentionally adjusted, the requirement to document and record the changes to the established reference level and reason for establishing the new reference level;

- (g) the requirement to record in the OLM log any quantity of oil added or removed from the hydraulic system;
- (h) that during each maintenance visit, even if no oil is added, the requirement to record in the OLM log the oil level and the date of the scheduled maintenance visit;
- (i) if oil is added or removed, the requirement to record in the OLM log the dates oil was added or removed from the hydraulic system;
- (j) the requirement to record in the OLM log the reason oil was added to or removed from the hydraulic system;
- (k) the requirement to record in the OLM log the mechanic's printed and legible name, signature and certification number for every entry made;
- (l) the requirement to keep the OLM log in the elevator machine room, in a readily identifiable location;
- (m) the requirement that the OLM log be kept in the elevator machine room for a period of at least five years from the date of the last entry in the OLM log;
- (n) the requirement to never allow oil levels to exceed the fixed reference level for the oil level;
- (o) the requirement to record in the OLM log the frequency of oil monitoring activities;
- (p) the requirement that, despite (o), hydraulic elevating devices with buried single bottom cylinders be monitored on a monthly basis;
- (q) the requirement that installations registered by MCCR prior to September 4, 1978 with an installation number below 031909 shall be monitored monthly, unless a notification\* (in the form provided by the TSSA) is sent to the Director, advising why the monthly requirements should not apply, and the registered notification is posted along with the OLM log;
 

\* A notification form is available from [www.tssa.org](http://www.tssa.org). The "Subject" entry should state, Non Single Bottom Cylinder and the "TSSA Reference No." should state, 212/07-r1.
- (r) if there is any oil loss which cannot be accounted for, the requirement to immediately remove a hydraulic elevating device from service until the cause for the oil loss is determined and the cause and associated remedy noted in the OLM log;
- (s) the requirement to report in writing any oil loss attributed to leaks in buried cylinders or buried piping to the TSSA Elevating Devices Director within 7 days;
- (t) the requirement to provide maintenance personnel adequate training related to the contractor's oil loss monitoring program;
- (u) the requirement to maintain up-to-date written records showing who provided and who received the training referred to in (t), the nature of the training and the date when it was provided. A record of training shall be available to the TSSA upon request.
- (v) the requirement that the contractor's oil loss monitoring program be posted or otherwise available in the machine room, and
- (w) the requirement that the collection containers shall not exceed 19 L (5 gal) per cylinder.

- 2.9.6 Oil that is returned to the hydraulic system from recovery containers, either by manual means or automatically via scavenger pumps, need not be recorded.

Note: if oil from recovery containers is not suitable for return to the tank, it must be measured and an equivalent amount must be added to the system when recovery containers are emptied. If additional oil is needed to reach the fixed reference level it must be recorded as new oil. [CAD Amendment 212-07-r1]

## **2.10 Proper Use of Jumpers** (*Elevator Industry Field Employees' Safety Handbook*) (01/82)

- 2.10.1 Each contractor shall have written procedures for the use of jumpers when working on elevating device circuits. Each contractor is responsible for ensuring that their mechanics understand the procedure and are equipped to follow it. Each mechanic is responsible for ensuring that they adhere to the procedure. [CAD Amendment 246-11]
- 2.10.2 The written procedures shall contain not less than the minimum requirements prescribed in Section 6 of the 2010 edition of the Elevator Industry Field Employees' Safety Handbook. [CAD Amendment-261/13]

## **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 1070 mm (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 designed 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]

2.12.2 The requirement for safe passage across roof tops shall also ensure

- (a) adequate lighting is available to safely access the elevator machinery space such that where natural lighting is inadequate to ensure the safety of any worker, artificial lighting is provided and shadows and glare are reduced to a minimum
- (b) the means for safe access are maintained, including but not limited to ensuring: snow removal as needed, secure footing, no standing water, and the upkeep of safety equipment such as walkways, lifelines, and fixed ladders. [CAD Amendment-261/13]

**2.13 Parts affecting Safe Operation** [CAD Amendment-261/13]

2.13.1 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.

2.13.2 Where a defective part that can impact the safety of the operation is identified, the part shall be adjusted, repaired or replaced, or a risk assessment carried out to determine if the device can remain in service where the work cannot be carried out immediately. The nature of the defect and the anticipated date of repair or replacement shall be noted in the log book.

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## Part 3

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

#### 3.1 Applied Codes and Standards [CAD Amendment 250-11] [CAD Amendment 261/13]

3.1.1 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 32 mm (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 **on the side sloping away from the walk** with a railing conforming to 2.10.2.1, 2.10.2.2, **and 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 and/or control room shall be provided.

- (9) Requirement 2.10.2 is revoked and the following substituted (see also 3.8.2): (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 1 070 mm (42 in.) from the working surface. **For alterations only:** On elevator car tops of existing devices where a non collapsible 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 1000N (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) Section 14(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 amended and supplemented with the following (see also 3.8.2):  
(245/10)

**2.14.1.7.2** When the car has reached its maximum upward movement (2.4.6.1), The following minimum clearances shall be provided to mitigate shearing hazards caused by relative motion between ~~from the top rail of the standard railing and the~~ building structure or equipment not attached to the car:

(a) when the car has reached its maximum upward movement (2.4.6.1):

- (1) 100 mm (4 in.) vertically
- (2) 300 mm (12 in.) horizontally towards the centerline of the car enclosure top
- (3) 100 mm (4 in.) horizontally in the direction towards the hoistway enclosure

(b) throughout the hoistway 100 mm (4 in.) horizontally in the direction towards the hoistway enclosure for submissions received after November 1, 2013. [CAD Amendment 261/13-r1]

**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 not be less than 1 070 mm (42 in.) in height and shall meet the requirements of 2.10.2, and
- (9) a suitably designed and marked fall arrest anchor point shall be provided if there is worker exposure to a fall hazard (per R.R.O. 1990, Reg. 851 (Industrial Establishments) made under the *Occupational Health and Safety Act*, s. 85) 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, and
  - (3) in elevator and dumbwaiter shafts per,
    - (i) 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., or
    - (ii) O. Reg. 332/12 Article 3.2.4.11.(e) if a fire alarm system is required by O. Reg. 332/12 Article 3.2.4.1, except as provided in O. Reg. 332/12 Article 3.2.4.16.
- (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 O.Reg 350/06 article 3.2.4.14.(3) or O. Reg. 332/12 article 3.2.4.15.(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 (DFFA). The installation of this control panel shall conform to the following:
  - (1) in a building with an existing fire alarm system, the building fire alarm system and the Dedicated Function Fire Alarm system shall be interconnected. [CAD Amendment-261/13]
  - (2) in a building without an existing fire alarm system, the Dedicated Function Fire Alarm control panel used to initiate elevator recall shall be permanently identified as "Elevator Recall Control and Supervisory Control Unit" in lettering not less than 6mm (0.25in.) in height.
  - (3) the installation or alteration of any fire alarm systems or DFFA system must be installed in accordance with CAN/ULC-S524 (Installation of Fire Alarm Systems), and
  - (4) where a DFFA has been installed to serve as an Elevator Recall Control and Supervisory Control Unit, the system shall be subject to inspection and testing in accordance with CAN/ULC-S536 (Inspection and Testing of Fire Alarm Systems). For these systems the owner or contractor shall provide written confirmation of testing at the initial inspection, and confirmation of annual testing shall be available to an inspector upon request.

NOTE(S):

1. (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.
2. The installation or alteration of a fire alarm system, including dedicated function fire alarm systems require permits and installation by qualified personnel.
3. See 8.6.11.1 for notes related to DFFA testing.

**(ALTERATIONS ONLY)**

(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) below apply, otherwise the requirements of (2) below 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) below apply, otherwise the requirements of (2) below 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 165 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:

- (i) *only elevator personnel are permitted to unlock hoistway doors*
- (ii) *only emergency personnel are permitted to perform emergency evacuations.*
- (iii) *access to the unlocking device is controlled or has a controlled procedure*
- (iv) *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:

- (i) *lettering shall be a minimum of 16 mm in height*
- (ii) *the sign shall remain permanent and readily legible, viewable from the hall*
- (iii) *the Context of the message shall convey the following information:*
  - (a) *a 'warning' advising of the potential fall hazard that exists below when the car is above the floor level*
  - (b) *lower the car prior to attempting rescue of trapped passengers*
  - (c) *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) Requirement 6.1.6.3.1(a) is supplemented with the following:

Additionally, escalator operation in accordance with Section 5.5.2 of NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems (2010 Edition), shall be permitted for transit facilities.

- (25) "Material lift – type B" shall mean the same as the term "freight platform lift – type B" used in Ontario Regulation 209/01;
- (26) 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.
- (27) Requirement 7.4.14.8 is added:

**7.4.14.8**

Requirement 2.12.3 applies only to Type A Material Lifts.

- (28) 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.

- (29) 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;
- (30) 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;
- (31) The requirements of Section **8.7** – Alterations, is adopted, as modified and clarified in **3.4** of the Code Adoption Document;

- (32) Section 8.7.7.3 Material Lifts and Dumbwaiters with Automatic Transfer Devices, is not adopted, except 8.7.7.3.2 is adopted;
- (33) 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;
- (34) 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](#).
  - (a) For new installations for which a design submission is received on or after May 1, 2013 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.
  - (b) For existing or altered installations the Maintenance Control Program shall be fully implemented not later than **March 31**, 2014. [CAD Amendment-261/13-r1]
- 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.

Maintenance, repair and replacement shall be performed to provide compliance with the code applicable at the time of installation or alteration.

#### 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.



Requirement (a) is applicable for

- (1) new installations submitted on or after May 1, 2013,
- (2) any existing devices where an Maintenance Control Program has been implemented, and
- (3) all devices maintained after March 31, 2014. [CAD Amendment-261/13]

Requirement (b) is applicable until March 31, 2014 for

- (1) existing installations, or
- (2) new installations submitted prior to May 1, 2013. [CAD Amendment-261/13-r1]

**8.6.1.1.2** 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

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

### **8.6.1.2 General Maintenance Requirements**

**8.6.1.2.1** A written Maintenance Control Program where implemented shall be in place to maintain the equipment in compliance with the requirements of 8.6 and the following, otherwise the requirements of 8.6.1.1.1(b) apply.

The MCP shall specify examinations, tests, cleaning, lubrication, and adjustments to applicable components at regular intervals (see definition for maintenance) and shall comply with the following:

- (a) A Maintenance Control Program for each unit (see 8.6.1.1.1) shall be provided by the person(s) and/or firm maintaining the equipment and shall be viewable on site by elevator personnel at all times from time of acceptance inspection and test or from the time of equipment installation or alteration (see 8.10.1.5).
- (b) The MCP shall include, but not be limited to, the code required maintenance tasks, maintenance procedures and examinations and tests listed with the associated requirement (see 8.6.4 to 8.6.11). Where maintenance tasks, maintenance procedures, or examinations or tests have been revised in 8.6 the MCP shall be updated.
- (c) The MCP shall reference On-Site Equipment Documentation (see 8.6.1.2.2) needed to fulfill 8.6.1.2.1(b) and On-Site Maintenance Records (see 8.6.1.4.1) that record the completion of all associated maintenance tasks specified in 8.6.1.4.1(a).
- (d) Where the MCP is maintained remotely from the machine room, machinery space, control room, or control space (see 8.11.1.8) instructions for on-site locating or viewing the MCP either in hard copy or in electronic format shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125in) in height.
- (e) In addition to s. 32(1) of the Regulation, the specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on
  - (1) equipment age, condition, and accumulated wear ,
  - (2) design and inherent quality of the equipment ,
  - (3) usage,
  - (4) environmental conditions,
  - (5) improved technology,
  - (6) the manufacturer's recommendations and original equipment certification for any SIL rated devices or circuits (see 8.6.3.12 and 8.7.1.9), and



- (7) the manufacturer's recommendations based on any A17.7/B44.7 approved components or functions.
- (f) 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.  
[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.]
- (g) The manufacturer's or installer's procedures for tests, periodic inspections, maintenance, replacements, adjustments, and alterations repairs, of SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall be incorporated into the Maintenance Control Program. (ref TN 08-802)

**8.6.1.2.2 On-Site Documentation**

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

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

- (a) Up-to-date wiring diagrams detailing circuits of all electrical protective devices (see 2.26.2) and critical operating circuits (see 2.26.3).
- (b) Procedures for inspections and tests not described in A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements and adjustments, as follows:
  - (1) all procedures specifically identified in the code as required to be written (e.g. 8.6.4.20.8 check out procedure for leveling, 8.6.5.16.5 check out procedure for over speed valve, and 8.6.8.15.7 check out procedure for reversal stop switch, etc),
  - (2) unique maintenance procedures or methods required for inspection, tests, and replacement of SIL rated E/E/PES electrical protective devices and circuits (see 2.26.4.3.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b)),
  - (3) unique maintenance procedures or methods required for inspection, tests, and replacement of equipment applied under alternative arrangements (see 1.2.2.1) shall be provided by the manufacturer or installer, and
  - (4) unique maintenance procedures or unique methods required for inspection and test of equipment specified in an A17.7/B44.7 Code Compliance Document (CCD).
- (c) Written checkout procedures:
  - (1) to demonstrate E/E/PES function as intended (see 8.6.4.19.10),
  - (2) for elevator leveling speed with open doors (see 8.6.4.20.8),
  - (3) for hydraulic elevator over speed valve (see 8.6.5.16.5),
  - (4) for escalator reversal stopping device (see 8.6.8.15.7), and
  - (5) for escalator handrail retarding force (see 8.6.8.15.13).
- (d) Written procedures for the following:
  - (1) evacuation procedures for elevators by authorized persons and emergency personnel shall be available on site. (see 8.6.11.5.2 and A17.4)
  - (2) the procedure for cleaning of a car and hoistway transparent enclosures by authorized persons. (see 8.6.11.4.2)

**8.6.1.2.3** 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

Maintenance records shall document compliance with 8.6. Instructions for locating the maintenance records of each unit, for viewing on site, shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 years or from the date of installation or adoption of this code edition, whichever is less or as specified by the authority having jurisdiction. Existing maintenance records up to 5 years shall be retained.

#### 8.6.1.4.1 On-Site Maintenance Records

##### 8.6.1.4.1(a) Maintenance Control Program Records

- (1) A record that shall include the maintenance tasks listed with the associated requirements of 8.6 identified in the Maintenance Control Program (8.6.1.2.1), other tests (see 8.6.1.2.2), examinations and adjustments, and the specified scheduled intervals shall be maintained.
- (2) The specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on the criteria given in 8.6.1.2.1(e).
- (3) MCP records shall be viewable on-site by elevator personnel in either hard copy or electronic format acceptable to the authority having jurisdiction and shall include but not limited to the following:
  - (a) site name and address,
  - (b) service provider (Contractor) name,
  - (c) conveyance identification (ID) (TSSA or MCCR installation number) and type,
  - (d) date of record,
  - (e) a description of the maintenance task, interval, and associated requirements of 8.6,
  - (f) indication of completion of maintenance task,
  - (g) year and month when the task was performed,
  - (h) Contractor's Registration Number, and
  - (i) the printed name, signature and mechanic certification number of the person(s) 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. (242/10)

Note [8.6.1.4.1(a)]: Recommended format for documenting maintenance control program records can be found in non-mandatory Appendix Y. This is only an example format. A specific maintenance control program that includes all maintenance needs is required for each unit.

##### 8.6.1.4.1 (b) Repair and Replacement Records

The repairs and replacements listed in paragraphs (1) and (2) below shall be recorded and shall be kept on-site for viewing by elevator personnel in either hard copy or electronic format. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. The record shall include an explanation of the repair or replacement, date, and name of person(s) and/or firm performing the task. The record of repairs and replacements shall be retained by the owner of the equipment for the most recent 5 years or from the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction and shall be a permanent record for the installation. These records may be kept remotely from the site.

- (1) Repairs (8.6.2.1- 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 (8.6.3.1 - 8.6.3.11 except 8.6.3.7 and 8.6.3.10) including replacements 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.

#### **8.6.1.4.1 (c) Other Records**

The written records listed in paragraphs (1) to(4) below shall be kept on-site for each unit. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 years from of the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction. The record shall include the date and name of person(s) and/or firm performing the task.

- (1) A record of oil usage (8.6.5.7).
- (2) A record of findings for firefighter's service operation required by 8.6.11.1 with identification of the person(s) that performed the operation.
- (3) Periodic tests (see 8.6.1.7) shall be documented or recorded in accordance with 8.6.1.7.2.
- (4) Written record to document compliance with replacement criteria specified in ASME A17.6 requirement 1.10.1.1(c).

#### **8.6.1.4.1 (d) Acceptance Tests**

A permanent record of the results of all Acceptance tests as required by 8.10.1.1.4 and 8.10.1.1.5 shall be kept with the on-site records.

#### **8.6.1.4.2 Call Backs (Trouble Calls)**

A record of call backs shall be maintained and shall include the description of reported trouble, dates, time and corrective action(s) taken that are reported by any means to elevator personnel. These records shall be made available to elevator personnel when performing corrective action. For elevator personnel other than personnel performing the corrective action, records will be available upon request **and shall be maintained for a minimum of one year**. Instructions on how to report any need for corrective action (trouble calls) to the responsible party shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125 in.) in height.

#### **8.6.1.5 Code Data Plate**

~~8.6.1.5.1 The Code data plate shall comply with 8.9.~~

#### **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 and Wiring**

- (a) 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.
- (b) Temporary wiring and insulators or blocks in the armatures or poles of magnetically operated switches, contactors, or relays on equipment in service are prohibited.

- (c) 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 recommended minimum jumper control procedures.
- (d) Control and operating circuits and devices shall be maintained in compliance with applicable Code requirements (see 8.6.1.1.2).
- (e) 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.

**8.6.1.6.5 Fire Extinguishers.**

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

**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 the interval between maintenance visits to an elevating device excluding wind tower elevators exceed three months, nor shall it exceed the manufacturer’s specified limit or other imposed limit which is less than three months (see CAD 2.9 for example of a one month limit), and
  - (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.

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(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 the interval between 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 Non-mandatory Appendix N.

#### 8.6.1.7.1 Not adopted

~~Periodic tests shall be witnessed by an inspector employed by the authority having jurisdiction or by a person authorized by the authority having jurisdiction. The inspector shall conform to the requirements in 8.11.1.1.~~

#### 8.6.1.7.2 Periodic Test Records

A periodic test record for all periodic tests containing the applicable code requirement(s) and date(s) performed, and the name of the person or firm performing the test, shall be kept readily visible adjacent to or securely attached to the controller of each unit in the form of a **log book record** ~~metal tag~~ or other format designated by and acceptable to the authority having jurisdiction. If any of the alternative test methods contained in **8.6.4.20** were performed then the test **record tag** must indicate alternative testing was utilized for the applicable requirement.

**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)** ~~8.11.2.3.2(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).

#### **8.6.2.6 Repairs involving SIL Rated Device(s)**

SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall:

- (a) not be repaired in the field
- (b) be permitted to be repaired in accordance with the provisions for repair where included in the listing/certification, and
- (c) shall not be affected by other repair(s) such that the listing/certification is invalidated.

### **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 Non-mandatory 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). ~~8.11.2.3.2(b)~~.

**8.6.3.4.4** ~~A test tag indicating the~~ The date when the pull-through test was performed shall be ~~attached~~ 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 (8.6.1.4.1(b)(2)).

#### **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, ~~8.11.2.3.2~~. 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~~ ~~8.11.2.3.1~~ 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.

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

#### **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) ~~8.11.2.3.2(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 valves, piping, or fittings are replaced, replacements shall conform to 3.19. ~~with the exception of 3.19.4.6. Replacement control valves must conform to the Code under which it was installed.~~
- (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 Reropeing 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 Demarcation Lights**

Fluorescent lighting fixtures shall be permitted to be replaced by any type light source, except incandescent sources, and shall comply with all other applicable step demarcation lighting requirements under which the escalator was installed or altered.

#### **8.6.3.14 Replacements involving SIL Rated Device(s) (See 1.3)**

- (a) SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) shall not be affected by other replacement(s) such that the listing/certification is invalidated.



(b) Where a SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced, it shall be considered a replacement only when the replacement device is the original manufacturer's listed/certified SIL rated device or the original manufacturer's listed/certified SIL rated replacement device; otherwise it shall be considered an alteration (see 8.7.1.9(d)).

(c) Where a non-SIL Rated Device used to satisfy 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), or 2.26.9.6.1(a) is replaced with SIL Rated Device, it shall be considered an alteration. (see 8.7.1.9(c)).

#### **8.6.3.15 to 8.6.3.24 Reserved**

#### **8.6.3.25 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

#### **8.6.3.26 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.

#### **8.6.3.27 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. ~~Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured.~~ When suspension-member tension is checked or adjusted, an antirotation device conforming to the requirements of 2.20.9.8 shall be permitted.

**Note:** Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured.

#### **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 8.6.1.6.2. and 2.17.16).

**8.6.4.3.3** If lubricants other than those recommended by the manufacturer are used, a safety test conforming to 8.6.4.20.1 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 8.6.4.20.1.

#### **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 operations, 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. A test complying with 8.6.4.20.4 shall be performed.

**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.**

- (a) 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.
- (b) the suspension wire ropes shall conform to 2.20.7.

**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
  - (b) the date on which the rope was resocketed or other types of fastening changed
- 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) means to restrict hoistway or car door opening ~~and expiration date for the alternate power source~~, 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. **Where a dedicated function fire alarm system has been added to comply with CAD requirement 2.27.3.2.2(c) the owner shall ensure that testing of the "Elevator Recall Control and Supervisory Control Unit" is performed annually.**

#### **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.(d)).

- (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 and Stop Motion Switch on Winding Drum Machines.**

Slack-rope devices on winding drum machines shall be operated manually and tested to determine conformance with the applicable requirements. The final terminal stopping device and the machine final (stop motion switch) shall be examined and tested by disabling the normal stopping device, normal terminal stopping device and final terminal stopping device located in the hoistway and operating the unit to verify proper operation. (Item 2.20)

#### **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 2.20, 2.28.2.1, 3.5.2.1 and 3.6.2.1).

#### **8.6.4.19.6 Firefighters' Emergency Operation.**

Firefighters' emergency operation (Phase I and II) shall be tested **annually to the requirements of 8.6.11.1.** **Additional testing may be performed** to determine conformance with the applicable requirements. Phase I recall shall be tested by individually activating fire alarm initiating device inputs to the elevator control, the three position switch at the designated landing and where provided, the two position switch at the building fire control station. (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 Functional Safety of SIL Rated Devices.**

Verify SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) are as identified on wiring diagrams (8.6.1.6.3) with part identification, SIL, and certification identification information.

The person or firm maintaining the equipment shall provide a written checkout procedure and demonstrate that SIL Rated Devices, Safety Functions (see table 2.26.4.3.2), and related circuits operate as intended.

#### **8.6.4.19.11 Ascending Car Overspeed Protection and Unintended Car Movement Devices**

(a) **Examinations.** All working parts of ascending car overspeed protection and unintended car movement 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.** Ascending car overspeed protection shall be subjected to tests to demonstrate compliance with 2.19.1 with no load in the car at the slowest operating speed (inspection speed) in the up direction.
- (c) **Tests.** Unintended car movement shall be subjected to tests with no load in the car. Testing shall confirm compliance with 2.19.2 due to an elevator rollaway caused by a brake and releveling failure. ~~at the slowest operating speed in the up direction.~~

**8.6.4.19.12 Traction-Loss Detection Means.**

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

- (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(f)]

**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 Occupant Evacuation Operation.**

Occupant Evacuation Operation shall be tested to determine conformance with the applicable requirements. Deficiencies shall be corrected. A record of findings shall be available to the building owner and the authority having jurisdiction.

**8.6.4.19. 15 Emergency Communications**

Emergency Communications shall be tested to determine conformance with the applicable requirements (Item 1.6)

**8.6.4.19. 16 Means to Restrict Hoistway or Car Door Opening**

Means to restrict hoistway or car door opening shall be tested to determine conformance with the applicable requirements (Item 1.18)

**8.6.4.19.17 to 8.6.4.19.24 Reserved**

**8.6.4.19.25 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.

For new installations and where the annual testing per 8.6.4.19.25 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, in which case a marking tag to indicate spring force shall be utilized / retained to provide an interim brake checking method.
- (b) Except as permitted in (a)(3), 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 and counterweight safeties shall be tested in accordance with 8.6.4.20.1(a) or subject to approval by the authority having jurisdiction with 8.6.4.20.1(b).

###### (a) Rated Load and Rated Speed Test.

Car safeties, except those operating on wood guide rails, and their governors, shall be tested with rated load in the car. Counterweight safety tests shall be made with no load in the car. Tests shall be made by tripping the governor by hand at the rated speed. The following operational conditions shall be checked (Item 2.29.2.):

- (1) Type B safeties 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.) and the level of the platform checked for conformance to 2.17.9.2.
- (2) 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. The level of the platform shall be checked for conformance to 2.17.9.2.

###### (b) Alternative Test Method for Car Safeties.

The alternative test methods shall comply with requirement 8.6.11.10, and the following:

- (1) The testing of safeties with any load in the car, centered on each quarter of the platform symmetrically with relation to the centerlines of the platform from no load up to rated load, and at not less than rated speed shall be permitted provided that,
  - a) when the alternative test is performed, the test shall stop the car and verify that the safeties will be capable of stopping an overspeeding car in accordance with the requirements of Section 2.17 applicable to the specific classification of safeties, and
  - b) when applied the method shall verify that the safeties perform or are capable of performing in compliance with 8.6.4.20.1(a) and the platform shall not be out of level more than 30 mm/m (0.36 in/ft) in any direction.

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

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** After these tests in jurisdictions enforcing NBCC, a metal tag indicating the date of the governor tests, together with the name of the person or firm that performed the tests, shall be attached to the governor in a permanent manner.

#### 8.6.4.20.3 Oil Buffers

- (a) Car oil buffers shall be tested to determine conformance with the applicable requirements by running the car
  - (1) onto the buffer with rated load at rated speed, or
  - (2) subject to approval by the authority having jurisdiction, with
    - (a) any load, from no load up to rated load onto the buffer at rated speed when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a), except as specified in **8.6.4.20.3(b)** and (c) (Item 5.9.2.1). or,
    - (b) onto the buffer with any load, from no load up to rated load, and at less than rated speed, when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a),
- (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 compression of the buffer during the test.
- (e) After completion of the test, a metal tag, indicating the date of the test, together with the name of the person or firm who performed the test, shall be attached to the buffer [Item 5.3.2(b)].
- (f) 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), or at reduced speed if requirements of 8.6.11.10 are met.
- (g) A test **record** tag as required in 8.6.1.7.2 shall be provided.

#### 8.6.4.20.4 Driving Machine Brake(s).

For passenger elevators and all freight elevators, the driving machine brake shall be tested for compliance with applicable requirements, in accordance with **8.6.4.20.4(a)** or subject to approval by the authority having jurisdiction with **8.6.4.20.4(b)**. 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.

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

- (a) Test with load per Table **8.6.4.20.4**.  
Place the load as shown in Table **8.6.4.20.4** in the car. The driving machine brake, on its own, shall hold the car with this load. With no load in the car the driving machine brake shall hold the empty car at rest, and shall decelerate an empty car traveling in the up direction from governor tripping speed. The driving machine brake on freight elevators of class C-2 loading, when loaded to their maximum design load shall hold the elevator car at rest (Item 2.17.2.1).
- (b) Alternative Test Method for Driving Machine Brakes.  
The alternative test methods shall comply with requirement 8.6.11.10, and the following:

- 1) Any method of verifying conformity of the driving-machine brake with the applicable Code requirements (see 2.24.8.3 and Table 8.6.4.20.4) shall be permitted, including the testing method of the brakes with or without any load in the car, provided that when applied the method verifies that the brake performs or is capable of performing in compliance with 8.6.4.20.4(a) and shall include,
- 2) A test record tag as required in 8.6.1.7.2 shall be provided.

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

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 Reserved**

**8.6.4.20.5 Emergency and Standby Power Operation.**

Not adopted. (see 8.6.4.19.5)

Operation of elevators equipped with emergency or standby power shall be examined and tested for conformance with the applicable requirements (Item 2.17.2.1 1.17.2.1).

**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 as permitted by the applicable requirements 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).

**Table 8.6.4.20.4 Brake Test Loads**

Class of Service	Not Permitted to Carry Passengers	Permitted to Carry Passengers
Passenger	Not applicable	125% rated load
Freight	Rated load	125% rated load
One Piece Load by 2.16.7	Rated load or one piece load, whichever is greater	125% rated load or one piece load, whichever is greater

**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 Braking System, Traction and Traction Limits.**

Traction and traction limits on traction elevators shall be verified for compliance with 2.24.2.3 in accordance with 8.6.4.20.10(a) or subject to approval by the authority having jurisdiction, with 8.6.4.20.10(b).

**(a) Dynamic Stopping Test.**

Traction elevators shall be tested to ensure that:

- (1) 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 safely stop and hold the load (see 2.24.2.3.1, 2.24.2.3.2 and 2.24.2.3.3); and
- (2) if either the car or the counterweight bottoms on its buffers or becomes otherwise immovable, one of the following shall occur (see 2.24.2.3.4):
  - (a) the suspension means shall lose traction with respect to the drive sheave and not allow the car or counterweight to be raised; or
  - (b) the driving system shall stall and not allow the car or counterweight to be raised.
- (3) with a load in the car in accordance with Table **8.6.4.20.4**, the braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car.

**(b) Alternative Test Method for Braking System, Traction and Traction Limits.**

Alternative test methods shall comply with requirement 8.6.11.10 and the following;

- (1) Other methods for verifying traction for compliance with 2.24.2.3, and traction limits in compliance with 2.24.2.3.4 shall be permitted provided the test method complies with the following:
  - (a) When applied, the method shall verify that the elevator traction system performs, or is capable of performing, in compliance with the performance requirements of **8.6.4.20.10(a)**; and
  - (b) The braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car without load in the car.
- (2) A test record tag as required in 8.6.1.7.2 shall be provided.

**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.

**8.6.4.22 Maintenance of Seismic Devices**

8.6.4.22.1 A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

8.6.4.22.2 The counterweight displacement switch components, where provided, shall be:

- a) maintained in accordance with the manufacturer's recommendations, and
- b) properly aligned and tensioned and kept free of dirt, debris and other contaminants that may interfere with proper operation.

**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.**

For systems where the part of cylinder and/or piping is not exposed for visible examination, a written record shall be kept of the quantity of hydraulic fluid added to the system and emptied from leakage collection containers and pans. The written record shall be kept in the machine room.

#### **(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 May 1, 2015**, 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, tests shall be conducted in accordance with 8.6.5.14.1.

#### **8.6.5.10 Runby and Clearances After Reropeing 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.**

Overspeed valves shall be calibrated and maintained in accordance with the manufacturer's recommendations including replacement of the valve seals or entire valves at intervals specified.

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 Verification of 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. Once this is established, test the entire system to ensure that it 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 2.28)
  - (b) Governors (8.6.4.19.3) (Item 2.13)
  - (c) Safeties (8.6.4.19.2) (Item 2.9)
  - (d) Oil Buffers (8.6.4.19.1) (Items 3.29 and 5.8)
  - (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)
- 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 3.18.1.2.5 (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). A plunger gripper, where provided, shall be examined and tested per 8.10.3.2.5(n).

**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).

**8.6.5.17 Plunger Gripper.** Plunger grippers, where provided, shall be maintained in accordance with the manufacturer's recommendations.

## **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. 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.

### **8.6.7.3 Private Residence Elevators.**

The maintenance of private residence elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

#### **8.6.7.3.1 Periodic Test.**

Private residence elevators and lifts should be subject to the 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 5.3. Any additional requirements for this equipment should also be checked during these tests.

### **8.6.7.4 Private Residence Inclined Elevators.**

The maintenance of private residence inclined elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

#### **8.6.7.4.1 Periodic Test.**

Private residence inclined elevators and lifts should be subject to the 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 5.4. Any additional requirements for this equipment should 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.

### **8.6.7.7 Special Purpose Personnel Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of special purpose personnel elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6 (see Section 5.7).

#### **8.6.7.7.1 Periodic Test.**

Special purpose personnel elevators shall be subject to the applicable 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 5.7. Any additional requirements for this equipment shall also be checked during these tests.



### **8.6.7.8 Shipboard Elevators.**

The maintenance of shipboard elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

#### **8.6.7.8.1 Periodic Test.**

Shipboard 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 5.8. Any additional requirements for this equipment shall also be checked during these tests.

### **8.6.7.9 Mine Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of mine elevators shall conform to 8.6.7.9.1 through 8.6.7.9.5. ~~8.6.7.9.1~~ Rails on mine elevators shall be kept free of rust and scale, that will prevent proper operation of the car (or counterweight) safety device.

~~8.6.7.9.2~~ Oil buffers that are installed on elevators where water can accumulate in the pit shall be checked every 60 days for accumulation of water.

~~8.6.7.9.3~~ The mine elevator hoistway shall be maintained to minimize the entry of water and formation of ice, that would interfere with the operation of the elevator.

#### **8.6.7.9.4 Suspension, Compensating, and Governor Ropes.**

When elevator suspension, compensating, or governor ropes show deterioration caused by corrosion, the replacement wire ropes shall be constructed of electrogalvanized or other types of corrosion resistant material suitable for the environment and application. The installation shall conform to 8.7.2.21 for suspension ropes and 8.7.2.19 for governor ropes. Where emergency replacement of wire ropes is required, noncorrosion resistant wire ropes shall be permitted to be installed for temporary use. These emergency replacement noncorrosion resistant wire ropes shall be replaced by corrosion resistant wire ropes within one year of installation.

#### **8.6.7.9.5 Periodic Test.**

Mine 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 5.9. 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.

### **8.6.7.11 Wind Turbine Tower Elevator**

The maintenance of wind turbine tower elevators shall conform to the applicable requirements of 8.6.7.11.1 through 8.6.7.11.3.

#### **8.6.7.11.1 Periodic Test Requirements – Category 1**

Wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor shall be tested with rated load in the car. Governor operated safeties shall be tested by manually tripping the governor at the rated speed. The overspeed switch on the governor shall be made ineffective during the test.

#### **8.6.7.11.2 Wind Turbine Tower Elevators.**

The maintenance of wind turbine tower elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

#### **8.6.7.11.3 Car and Counterweight Safeties.**

Types A, B, and C car safeties except those operating on wood guide rails, and their governors, wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor, shall be tested with rated 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 and wire rope gripping 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 2.29.2.1) and hold the car with rated load. The following operational conditions shall be checked (Item 2.29.2.1):

#### **8.6.7.12 Outside Emergency Elevators.**

The maintenance, repair, and replacement of outside emergency elevators shall conform to 8.6.1 through 8.6.3 and A17.7/B44.7 requirement 2.12.2.

##### **8.6.7.12.1 Periodic Test Requirements -- Category 1.**

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.19.1 through 8.6.4.19.5, 8.6.4.19.7, 8.6.4.19.8, 8.6.4.19.10, and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

##### **8.6.7.12.2 Periodic Test Requirements -- Category 5.**

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.20.1 through 8.6.4.20.11 and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

### **8.6.8 Maintenance and Testing of Escalators and Moving Walks**

(a) The maintenance of escalators submitted and registered to A17.1-2004/B44-04 and later (effective January 1, 2006) shall conform to 8.6.1 through 8.6.3 and 8.6.8.

(b) Not later than May 1, 2015 all escalators shall be brought into conformance with the requirements of 8.6.8.2 (Step-to-Skirt Clearance) and 8.6.8.3 (Step/Skirt Performance Index).

(c) 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 until those escalators are brought into conformance with 8.6.8.2 and 8.6.8.3.3 after which the application of friction-reducing agents will no longer be permitted, and the requirements of 8.6.8(a) apply. [241/10]

### 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: The allowable clearances are applicable as follows:

- (a) ASME A17.1 1955 through A17.1d 1970; not more than 4.8 mm (0.1875 in.) with a total of both sides not more than 6.4 mm (0.25 in.), except where skirt obstruction devices are installed at the lower entrance for escalators installed under the ASME A17.1 1965 through A17.1d 1970.
- (b) ASME A17.1 1971 through A17.1 1979 editions; not more than 9.5 mm (0.375 in.) on each side.
- (c) ASME A17.1 1980 through A17.1c 1999 and ASME A17.3; not more than 4.8 mm (0.1875 in.) on each side.
- (d) For equipment installed under ASME A17.1d 2000 and later editions, the clearance (loaded gap) 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.

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  $\pm 11$  N. The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> and not more than 3 870 mm<sup>2</sup>.

(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  $\pm 2.5$  lbf. The load shall be distributed over a round or square area not less than 3 in.<sup>2</sup> and not more than 6 in.<sup>2</sup>

**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  $\mu\text{m}$  (32  $\mu\text{in.}$ )
- (d) Area in contact with skirt panel:  $2\,900 \pm 325$  mm<sup>2</sup> ( $4.5 \pm 0.5$  in.<sup>2</sup>) 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 6.1.3.3.7 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 Combplates**

**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) Damaged skirt or dynamic skirt panels shall be replaced or repaired and the installation shall conform to 8.6.8.2 and 8.6.8.3.3.

(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 combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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.**

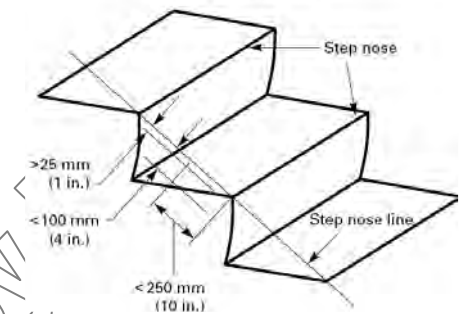
For escalator or moving walks required to comply with Rules 805.1u, 805.3n, 905.1r, or 905.3k in A17.1d-2000 or earlier editions, or requirements 6.1.6.3.13 or 6.2.6.3.11, the comb-step/pallet-impact devices shall be tested in both the vertical and horizontal directions by placing a vertical and horizontal 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  $\pm 11$  N (2.5 lbf). The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> (3 in.2) and not more than 3 870 mm<sup>2</sup> (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  $\pm 2.2$  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).

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  $\pm 11$  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 mm<sup>2</sup> (3 in.2) and no more than 3 870 mm<sup>2</sup> (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 250mm (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).

#### **8.6.8.15.24 Maintenance of Seismic Devices.**

A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

#### **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 Combplates**

**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 combplates 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 treadway does not provide a continuous unbroken treadway surface or proper engagement with the combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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. **Not later than May 1, 2014, all type 'B' material lifts and all type 'A' and type 'B' freight platform lifts shall be retrofitted as required by CAD requirement 3.9.2.**

##### **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.
- 3) Where a dedicated function fire alarm system has been added to comply with CAD requirement 2.27.3.2.2(c) the owner shall ensure that testing of the "Elevator Recall Control and Supervisory Control Unit" is performed annually in accordance with CAN/ULC-S536 (Inspection and Testing of Fire Alarm Systems), and written confirmation of testing kept in the machine room or location of the elevator's log books.

~~All elevators provided with firefighters' emergency operation shall be subjected monthly, by authorized personnel, to Phase I recall by use of the key switch, and a minimum of one floor operation on Phase II, except in jurisdictions enforcing the NBCC. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.~~

**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 and wind turbine tower 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.

NOTE (8.6.11.5): See ASME A17.4, Guide for Emergency Personnel.

#### **8.6.11.6 Escalators and Moving Walks Startup and Procedures**

##### **8.6.11.6.1**

(a) 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.

(b) **Out of service or** stopped escalators ~~shall~~ **should** not be used as a means of access or egress by non-authorized personnel and ~~shall~~ **should** be properly barricaded if accessible to the general public to prevent such use.

NOTE(S):

- (1) Proper barricades are described in the Elevator Industry Field Employee Safety Handbook-Escalator/Moving Walk Barricades.
- (2) **Per provisions in OBC and NFPA 130, escalators in rapid transit facilities may form part of the pedestrian egress route.**
- (3) **Stationary escalators do not have uniform tread rise and may pose unique risks not associated with typical stairways.**
- (4) **The treadway of a stationary escalator relies on the escalators brake to ensure the treadway will not move under loading conditions (eg pedestrian traffic). Escalators should never be used as a stairway if the brakes holding capacity is suspect. See 8.6.11.6.2(c2) for confirmation of adequate breaking capacity. See CAD 3.21 for stopping distance check sign.**
- (5) **See CAD 2.13 for parts affecting safe operation and risk assessment for device use.**

**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 treadway 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 Category 5 tests without Load via Alternative Test Methodologies**

**8.6.11.10.1 Where Permitted**

Alternative test methods without load are permitted for category 5 testing subject to approval by the Authority Having Jurisdiction of;

- (a) car and counterweight safeties per **8.6.4.20.1**,
- (b) oil buffers per **8.6.4.20.3**,
- (c) driving machine brakes per **8.6.4.20.4**, and
- (d) braking system, traction and traction limits per **8.6.4.20.10**

Note: See 8.10 note 2.

**8.6.11.10.2 Alternative Test Method and Tools**

- (a) An alternative test method shall be:
  - i) based on sound engineering principles,
  - ii) validated and documented via engineering tests,

- (b) The method, measuring devices and tools shall be capable of producing reliable and consistent measurements, suitable for the intended measurement. The monitoring and calibration of the measuring devices or tools shall be in accordance with the providers guidelines.

#### **8.6.11.10.3 Alternative Test Method Procedure**

The alternative test method shall;

- (a) include requirements to obtain and verify car and counterweight masses if necessary for the test,
- (b) have a procedure document that;
  - i) defines the permissible equipment range and limitations regarding use,
  - ii) establishes monitoring and calibration criteria for tools or measuring devices as appropriate,
  - iii) defines the test set-up procedure,
  - iv) provides instructions on how to interpret results and correlate the results to pass fail criteria,
- (c) describe how to correlate no load test results with previously acquired full load and no load results,
- (d) be included in the maintenance control program (see 8.6.1.2.1(a)),
- (e) include the information required by 8.6.1.2.1(f) where applicable, and
- (f) require a report conforming to 8.6.11.10.4

#### **8.6.11.10.4 Alternative Test Method Report**

The alternative test method report shall;

- (a) identify the alternative test tool (make / model) used to perform the test,
- (b) identify of the company performing the tests, names of personnel conducting and witnessing the tests, and testing dates,
- (c) contain all required print outs or record of tests required to demonstrate compliance to the testing requirement that were gathered during an acceptance test,
- (d) identify which results from the baseline test are to be used for future compliance evaluation,
- (e) record the car and counterweight masses that were obtained per 8.6.11.10.3(a) during the acceptance test and during any subsequent category 5 test if required by test method,
- (f) contain all subsequent category 5 results with pass-fail conclusions regarding code compliance, and
- (g) remain on site or shall be available to elevator personnel and the authority having jurisdiction.

#### **8.6.11.11 Examination After Shutdown Due to Traction Loss.**

Where the traction-loss detection means has been actuated [see 2.20.8.1 and 8.6.1.2.1(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.

#### **8.6.11.12 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.

#### **8.6.11.13 Occupant Evacuation Operation.**

All elevators provided with Occupant Evacuation Operation shall be subjected, by authorized personnel, to a check of the operation in conjunction with the fire alarm system testing in accordance with the requirements of NFPA 72. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.

#### **8.6.11.14 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 Alteration 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.

#### **8.7.1.9 Alterations involving SIL Rated Device(s) (See 1.3)**

(a) A SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) shall not be:

- (1) modified such that the modification invalidates the listing/certification; or
- (2) affected by other alteration(s) such that the listing/certification is invalidated,

(b) Where a SIL Rated Device (See 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced with a non SIL Rated Device, the replacement shall meet the applicable requirements of 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), and 2.26.9.6.1(a).

(c) Where a non-SIL Rated Device used to satisfy 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), or 2.26.9.6.1(a) is replaced with a SIL Rated Device, the replacement shall meet the applicable requirements of 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b).

(d) Where a SIL rated device used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced with a SIL Rated Device that is not the original manufacturer's listed/certified SIL rated device or the original manufacturer's listed/certified SIL rated replacement device the replacement shall meet the applicable requirements of 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b).

(e) An up-to-date Maintenance Control Program (8.6.1.2.1) and wiring diagrams (8.6.1.6.3) shall be provided where they are affected by an alteration involving a SIL Rated Device (see 1.3).

### **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, machinery space, control space or control room 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★1 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 750 mm (29.5 in.) and a minimum clear height of 2030 mm (80 in.)
- (c) 2.10.1 as a minimum
- (d) guarding shall be openable or removable only by use of common 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 1000 mm (39 in.) as per CAD requirements 2.2.1 (per Ontario Electrical Safety Code 38-005 2(c)) or the permissible clearance required at the time of the original installation.
- (g) access for the operation of the disconnecting means shall be
  - (1) 1000 mm for installations installed under the Ontario Electrical Safety Code 2000 edition or later, or
  - (2) 750mm (29.5 in.) for installations installed under Ontario Electrical Safety Code 1998 edition or prior, or
  - (3) if less than 750 mm, the existing clearances shall not be further reduced
- (h) installation by a registered contractor (O.Reg 209/01 s.24)
- (i) large or heavy sections of guards that may need to be removed or opened for maintenance access shall be designed to be removed or easily handled by one person.

#### **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 2.11.11.3, 2.11.11.5.1, 2.11.11.5.2, and 2.11.11.5.3.
- (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, and 2.24.8.3.
- (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, and 2.24.8.

##### **8.7.2.11.3 Parking Devices.**

Where an alternation 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 2 108 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 and 2.24.8.3 for unlocking devices
- (b) requirements 2.12.7, 2.24.8, 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 2.14.5.7.

##### **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 and 8.7.2.15★1, or 8.7.2.15★2.

### 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
- (d) requirements 8.7.2.15★1 or 8.7.2.15★2.

### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. **and 8.7.2.15★1 or 8.7.2.15★2 as applicable.**
- (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<sup>1,2</sup> 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; and
- (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.

<sup>1</sup> 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).

<sup>2</sup> 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★4(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.
- (c) Where a car top railing is installed the requirements of 8.7.2.15★1 or 8.7.2.15★2 apply.

### 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 115kg (255 Lbs.) including all weight changes since the car was originally installed the following requirements shall apply, except (a) does not apply if the cumulative increase is 11kg (25 Lbs.) or less;

- (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 or for cars without crossheads in a conspicuous location on the car top or adjacent to the original data
- (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 than 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★4 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
  - (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

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

#### 8.7.2.27★4

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

#### 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) In jurisdictions not enforcing NBCC, 2.27.3 through 2.27.9 apply~~
    - ~~(a) when travel is 8 m (25 ft) or more above or below the designated landing; or~~
    - ~~(b) on installations when firefighters' emergency operation was required or provided at the time of installation.~~
  - (5) In jurisdictions enforcing NBCC, 2.27.3 through 2.27.9 apply ~~only if firefighters' emergency operation was required or provided at the time of installation.~~
  - (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

Where an elevator 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.

#### 8.7.2.27.5 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 2030 mm in height or 800 mm 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
  - ~~through 2.11.13, except 2.11.11.9,~~

- (6) 2.12, except
    - (a) requirement 2.12.2.4.3 to allow a minimum engagement of 6 mm
    - (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, and 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, and 2.14.2.4
  - (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) In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall be provided and shall conform to 2.27.~~
- In jurisdictions enforcing NBCC, emergency operation and signaling devices where required by NBCC shall be provided and where required by NBCC shall be provided and 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, and
- (d) travel to all serviced landing shall be possible per 2.27.3.3.1(i).

#### 8.7.2.27.★8

Where destination dispatch is added to an automatic operation control the following shall apply:

- (a) 8.7.2.8
- (b) changes to FEO shall apply to either 8.7.2.28 or to the code applicable at the time of the original installation or subsequent FEO related alteration.

**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.★ Alteration Hydraulic to Electric Elevator [CAD Amendment-261/13-r1]

Where a hydraulic elevator that operated in an existing hoistway is being replaced with an electric elevator, the installation shall conform to Part 2, Electric Elevators, except for the following:

- (a) Existing building conditions not in conformance to the latest code may be permitted to be retained
- (b) Apron plates must conform to 2.15.9 or where a 1220 mm (48 in.) apron is not possible due to existing pit depth, an engineered solution providing 1220 mm (48 in.) of guarding shall be permitted.

Note: Existing building conditions may include items such as pit depth or no pit drains. Items not in conformance with Part 2 shall be noted in the design submission.

### **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, 8.7.2.12★1, 8.7.2.12★2 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 increases to the deadweight of the car by 115 kg (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 than 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 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
- (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.
- (h) Requirements 3.26.1 through 3.26.6.
- (i) Requirement 3.20.

#### **8.7.3.22.3 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 **as part of an alteration**, 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~~ 3.22.1 and 3.22.2. 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 ~~as part of an alteration~~ 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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

##### **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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

#### 8.7.3.31★4

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

#### 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.

Electrical equipment shall conform to 3.26.1, 3.26.4, 3.26.5, and 3.26.6 (not including 2.26.4.4).

#### 8.7.3.31★5 Addition of Soft Start

Where there is an addition of a soft start feature the follow 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 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.

#### 8.7.3.31.5 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.
  - (2) The operating devices and control equipment shall conform to 3.26. Requirements of 2.26.1.1, 2.26.1.3, and 2.26.12 do not apply.
  - (3) Requirement 2.27.2 applies when emergency power is provided.
  - (4) In jurisdictions not enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply
    - (a) when travel is 8 m (25 ft) or more above or below the designated landing; or
    - (b) on installations when firefighters' emergency operation was required or provided at the time of the installation.
  - (5) In jurisdictions enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply only if firefighters' emergency operation was required or provided at the time of installation.
- (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★7

Where an elevator 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.

#### 8.7.3.31.6 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 2030 mm in height or 800 mm 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  
through 2.11.13, except 2.11.11.9, 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 6 mm
  - (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, and 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, and 2.14.2.4
  - (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) 3.16.
- (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) In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall conform to 3.27. In jurisdictions enforcing NBCC, emergency operation and signaling devices where required by NBCC shall be provided and 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 2.27.3.3.1(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 2.26.2.21, 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.**

Reserved.

#### **8.7.5.2.★1 Alterations to Electric Limited-Use/Limited-Application Elevators**

Alterations to Limited-Use/Limited-Application Elevators, shall conform to 8.7.2 and the requirements of Part 2 except as modified in section 5.2.

#### **8.7.5.2.★2 Alterations to Hydraulic 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.

### **8.7.5.3 Private Residence Elevators**

**8.7.5.3.1** 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.

### **8.7.5.4 Private Residence Inclined Elevators**

**8.7.5.4.1** 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 runways 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, 6.1.6.3.12, and 6.1.6.4.

#### **8.7.6.1.★1 Addition of Handrail Advertizing**

The addition of handrail advertizing is not permitted per 6.1.6.9.2, unless otherwise permitted by a variance request.

#### **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, 6.1.6.3.3, 6.1.6.3.9, 6.1.6.3.11, 6.1.6.3.14, and 6.1.6.5.
- (b) Steps having a width less than 560 mm (22 in.) shall not be reduced in width by the alteration.

#### **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 conforming to 6.1.3.7, 6.1.3.9.1, and 6.1.3.10.1. The installation of a new escalator into an existing truss shall conform to all of the requirements of 6.1.

#### **8.7.6.1.10 Step Wheel Tracks.**

Any alteration to the tracks shall result in the escalator's conforming 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 conforming 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 conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.4, and 6.1.6.3.8.
- (b) Driving Motor. An alteration to the drive motor shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.2, 6.1.6.3.8, and 6.1.6.3.10.
- (c) Machine Brake. An alteration to the machine brake shall result in the escalator's conforming to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

#### **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.★2 Removal of Step Demarcation Lights (226/07)**

The removal of step demarcation lights, shall be permitted if the device complies with the following:

- (a) requirement 6.1.3.3.5,
- (b) requirements 6.1.3.5.4, 6.1.3.5.5, 6.1.3.5.6, and
- (c) requirement 6.1.3.6.2.

#### **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 as part of an alteration, it shall conform to 6.1.6.10 through 6.1.6.15, and 6.1.7.4.

#### **8.7.6.1.★3 Controller Replaced (226/07)**

Where a controller is replaced it shall conform to 8.7.6.1.16.

#### **8.7.6.1.★4 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. ★5 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. ★6 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 movingwalk 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, ~~6.2.3.12.3~~, 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 1<sup>st</sup> 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 **May 1**, 2014, 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 (253/12)

- 3.9.1 Every existing power dumbwaiter or freight platform lift that was installed before the 1<sup>st</sup> 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]
- 3.9.2 All type ‘A’ and type ‘B’ freight platform lifts and type ‘B’ material lifts utilizing hoistway door mechanical lock and contracts shall have their mechanical lock and contracts upgraded to interlocks by **May 1, 2014**. New or modified circuits relevant to this upgrade shall be arranged such as to comply with A17.1-2010/B44-10, requirement 2.26.9.3.1(a) and (b). When a single ground or failure as specified in 2.26.9.3.1 occurs, the car shall not be permitted to restart.

### 3.10 Platform Apron Requirements (166/01)

- 3.10.1 Every passenger elevator installed before the 1<sup>st</sup> 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 16 mm 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 300 mm
- (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 or persons inside the elevator, unless the hoistways are separated by a structure supported and braced so as to not deflect into the code required running clearance of the adjacent operating car or its counterweight [CAD Amendment-261/13].



3.13.2 Where the separating structure referred to in subsection **3.13.1** is made of perforated material, it shall reject a ball 25 millimetres in diameter. [CAD Amendment-261/13].

### **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 Requirements (85/91) (247/11)**

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]

3.19.3 Every escalator shall have device specific brake adjustment procedures or instruction that provides instruction for the maintenance mechanics to correctly adjust and check the escalator brake(s).

3.19.4 The instructions or procedures shall

- (a) be posted or made otherwise available in the upper escalator pit;
- (b) include detailed instructions for setting the escalator brake;
- (c) include all information provided on the existing brake data tag;
- (d) be of durable material such that the information contained therein will remain legible;
- (e) as a minimum include the maximum no-load stopping distance as related to the manufacturer's specified brake torque, spring length etc. Where this information is missing and cannot be obtained from the original manufacturer, it is acceptable for a professional engineer in the province of Ontario to determine the no-load stopping distance; and
- (f) include the method of checking the brake setting such as the 'minimum torque', or the 'maximum spring length', or other method.

### **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.
- (f) An FEO-K1 key for each switch location. [CAD Amendment 250-11]

3.20.2 Where Fire Alarm Initiating Devices need to be added to facilitate recall their installation shall be as required in 2.27.3.2.2(a) through (c) as revised in this CAD.

Note: Where a yellow hat designation was provided on an elevator that received an FCR upgrade, the yellow hat designation is required to remain, even if a subsequent alteration occurred that introduced a newer form of FEO Operation; switch markings, however, shall be upgraded from yellow to red.

### 3.21 Escalator Stopping Distance Check (247/11)

- 3.21.1 All escalators shall have a “Daily Stopping Distance Check” sign posted at each end of the escalator near the stop button or start switch.
- 3.21.2 The check sign shall communicate the following:
- (a) Stop the empty running escalator. If the escalator travels more than “ X” step(s) before stopping, do not restart. Barricade and call for service.
    - (1) The value of “X” in 3.21.2(a) shall be replaced with 1 or 2, and shall indicate the permitted number of steps, rounded to the nearest whole number, that was determined by the elevator contractor, that reflects the needed no load stopping distance required by the escalator brake.
- 3.21.3 The person(s) authorized by the owner to carry out the daily prestart checks of the escalator shall also perform the daily stopping distance check to verify the escalator braking capability aligns with the information contained on the stopping distance check sign. [CAD Amendment-261/13]

### Summary of Pending Compliance Due Dates

Subject	Reference	Due Date
MCP for all existing devices (B44.2 no longer applicable)	CAD 3.3.2(b)	March 31, 2014
Single bottom cylinders	CAD 3.3.4 see 8.6.5.9	May 1, 2015
Escalators to meet Step/Skirt Performance Index	CAD 3.3.4 see 8.6.8(b)	May 1, 2015
4” railing clearance on new & alteration installs	CAD 3.1.1(c) (10)	November 1, 2013
Car top railing requirements	CAD 3.8.2	May 1, 2014
Material lifts/Freight platform lifts require interlocks	CAD 3.9.2	May 1, 2014

## Part 4

### 4 MANLIFTS

#### 4.1 Applied Code (174/02)

- 4.1.1 Every newly installed or altered manlift shall conform to the requirements of CSA Standard B311-02, Safety Code for Manlifts and any applicable changes set out in this document.
- 4.1.2 Conformance to Appendix A, B, & C is mandatory.
- 4.1.3 Section 7.32.9 of B311 applies to all Power-Type Manlifts. Top-of-car operating stations are not limited to lifts with wireless control and shall be provided on each power-type manlift.
- 4.1.4 Section 7.32 of B311: Note that requirements of section 7.36, Control and Operating Circuits, apply to "Wireless Control" as well. [CAD Amendment 246-11]

#### 4.2 Top of Car Requirements for Power Type Manlift

- 4.2.1 Every power type manlift shall be provided with,
  - (a) a top-of-car operating device; and
  - (b) a protective guard railing on the top of the car.

#### 4.3 Inspection and Testing of Safety Brake

- 4.3.1 The inspection and testing of a safety brake on an endless belt type manlift required in subsection 33.(2) of the Regulation shall ensure compliance with clause 5.2.2.3 of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.
- 4.3.2 The inspection and testing of a safety device and overspeed governor on a counter-balanced or power type manlift required in subsection 33.(3) of the Regulation shall ensure compliance with clause 6.11.8 or 7.6.8.2, as the case may be, of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.

#### 4.4 Authorized Persons

- 4.4.1 No person shall use a manlift except those persons designated by the owner of the manlift as being properly trained in its operation and use.

#### 4.5 Maintenance Log Book

- 4.5.1 The log book shall, as a minimum, contain the following information :
  - (a) Building name and/or address,
  - (b) TSSA or MCCR installation number,
  - (c) Contractor's and Owner's name,

- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 246-11]

4.5.2 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 defect is adjusted repaired or replaced. [CAD Amendment 246-11]

#### **4.6 Location of the Log Book**

4.6.1 The log book will be retained in the machine room 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. [CAD Amendment 246-11]

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## Part 5

### 5 PASSENGER ROPEWAYS AND PASSENGER CONVEYOR [CAD Amendment 246-11]

#### 5.1 Applied Code

- 5.1.1 Every passenger ropeway and passenger conveyor shall conform to the requirements of CSA-Z98-07, Passenger ropeways and passenger conveyors, including Update No. 1 Z98-07 February 2010, and any additional applicable changes set out in this document.
- 5.1.2 Annexes “A, B, C, D, E, F, G, H, I, J and K” referenced in the Z98 standard are also adopted and apply to “post-2011” installations (as defined in 5.3).

#### 5.2 General Technical Requirements for Passenger Ropeways and Passenger Conveyors

- 5.2.1 The general technical requirements in Part 2 of the Code Adoption Document do not apply to passenger ropeways and passenger conveyors.
- 5.2.2 Passenger Ropeways and Passenger Conveyors shall conform to the following general technical requirements,
- (a) Electrical equipment shall conform to the Ontario Electrical Safety Code as amended from time to time;
  - (b) In addition to CSA-Z98-07 requirements, welding on a passenger ropeway or passenger conveyor shall conform to the requirements of CSA W59-03 (R2008) Welded Steel Construction (Metal Arc Welding);
  - (c) Where a passenger ropeway or passenger conveyor is relocated it shall meet the requirements of 5.5 for post-2011 installations;
  - (d) Where an alteration is made to a passenger ropeway or passenger conveyor the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of 5.5.

#### 5.3 Definitions

- 5.3.1 In Part 5 of this document,
- (a) “safety circuits” means E/E/PES of a passenger ropeway or passenger conveyor having an ability to carry out the functions necessary for mitigation of unacceptable failures by preventing movement or limiting speed of passenger ropeway or conveyor.
  - (b) NOTE:
    - 1) Preventing movement may require a passenger ropeway or conveyor to stop or to prevent unwanted start-up
    - 2) Limiting speed may require appropriate acceleration, deceleration or speed.
  - (c) “electrical/electronic/programmable electronic system” or “(E/E/PES)” means a system for control, protection, or monitoring based on one or more electrical/electronic/programmable electronic (E/E/PE) devices, including all elements of the system such as power supplies, sensors and other input devices, data highways and other communication paths, and actuators and other output devices.

- (d) “electrical/electronic/programmable electronic” or “(E/E/PE)” means that based on electrical (E), and/or electronic (E), and/or programmable electronic (PE) technology.
- (e) “programmable electronic” or “(PE)” means that based on computer technology which may be comprised of hardware, software, and of input and/or output units
- (f) “pre-2011” means a passenger ropeway or passenger conveyor for which a design submission (initial or alteration) was registered before October 1, 2011.
- (g) “post-2011” means a passenger ropeway or passenger conveyor for which a design submission (initial or alteration) was registered on or after October 1, 2011.

#### 5.4 Requirements for PRE-2011 Passenger Ropeways and Passenger Conveyors

5.4.1 In the case of pre-2011 passenger ropeways or passenger conveyors the application of the code adopted in 5.1 is restricted to:

- (a) Clause 11 “Ropes and chains” as further detailed in 5.4.2;
- (b) Clause 12 “Inspection, testing, and maintenance” as further detailed in 5.4.3;
- (c) Clause 13 “Operation of passenger ropeways and passenger conveyors” as further detailed in 5.4.4;
- (d) Annex’s “B, C, D, E, F, G, H, I, J and K”, and any changes set out in part 5 of this document, and
- (e) any applicable requirements in 5.16 through 5.31.

5.4.2 The following requirements within Clause 11 “Ropes and chains” apply to “pre-2011” installations:

- (a) Clause 11.8.2 “Wire rope tows”,
- (b) Clause 11.9.5 “Wire rope clips and thimbles”
- (c) Clause 11.10 “Non-destructive testing of ropes, sleeves, and sockets”,
- (d) Clause 11.11 “Wire rope maintenance”,
- (e) Clause 11.12 “Protruding broken wires”,
- (f) Clause 11.13 “Replacement of repair of wire rope”,
- (g) Clause 11.14 “Locked coil track rope broken wires”,
- (h) Clause 11.15 “Wire rope log”,
- (i) Clause 11.16 “Splice Certificate”,
- (j) Clause 11.18 “Maintenance” for chains used in tensioning systems.

5.4.3 The requirements of Clause 12 “Inspection, testing, and maintenance” shall be complemented and supplemented with a maintenance manual produced in accordance with clause 4.38.4 “Maintenance manual”.

5.4.4 The requirements of Clause 13 “Operation of passenger ropeways and passenger conveyors” shall be complemented and supplemented with the following:

- (a) an operations manual produced in accordance with clause 4.38.3 “Operations manual”
- (b) loading and unloading areas shall be maintained during the operation of passenger ropeways and passenger conveyors in accordance with clause 4.26 “Loading and unloading areas”

#### 5.5 Requirements for POST-2011 and Altered Passenger Ropeways and Passenger Conveyors

5.5.1 Post-2011 and altered passenger ropeways or passenger conveyors, shall conform to the code adopted in 5.1, except as modified by 5.6 to 5.31 excluding 5.17.

## 5.6 Protection Against Overspeed for Surface Ropeways & Conveyors

5.6.1 Surface ropeways and conveyors shall incorporate protection against the possibility of the device speed exceeding more than 10% of the maximum design speed.

## 5.7 Z98 clause 4.23.2.4 “Evacuation drive”

5.7.1 Clause 4.23.2.4 of Z98 is revoked and replaced with the following;

### **CAD 4.23.2.4**

*The emergency brake, antirollback device, deropement switches required in clauses 4.30.6.1 through 4.30.6.4 inclusive, and emergency stops required in clause 4.30.5 shall be capable of operation while the evacuation drive is in operation.*

## 5.8 Z98 clause 4.24.3.2(c) “Emergency Brake”

5.8.1 Clause 4.24.3.2(c) of Z98 is revoked and replaced with the following;

### **CAD 4.24.3.2(c)**

*(c) 15% overspeed, as detected from the speed of the drive sheave or haul rope; and*

## 5.9 Z98 clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” (General Applicability)

5.9.1 The general applicability of clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” shall not apply if all applicable prescriptive requirements of the code are met.

5.9.2 Any variance to or deviation from the prescriptive requirements related to the design of safety circuits (see definitions) shall comply with clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.

5.9.3 New configurations or novel designs which cannot be precisely classified in CSA Z98-07, shall ensure that their safety circuit designs comply with 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.

5.9.4 Where feature(s) of safety circuits for a passenger ropeway or conveyor is not specified in CSA Z98-07, safety circuits shall comply with 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations”.

## 5.10 Z98 clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” (Compliance to)

5.10.1 Where conformance to clauses 4.30.1.8 “Safety levels” and 4.30.1.9 “Safety Considerations” is required as specified in 5.9, compliance shall be demonstrated as required in 5.10.2 or 5.10.3.

5.10.2 Safety circuits function shall conform to highest requirement class (RC/AK) specific to hazard situation/safety function tabulated in Annex C of EN 13243:2004 or,

5.10.3 Safety circuits function shall conform to EN 12929:2004, EN 13243:2004 and EN 13223:2004 or equivalent.

**5.11 Z98 clause 4.30.1.11 “Safety circuits”**

5.11.1 Clause 4.30.1.11 of Z98 is revoked and replaced with the following;

**CAD 4.30.1.11 “Safety circuits”**

*Safety circuits shall incorporate redundancy and monitoring mechanisms. Monitoring of redundancy incorporated in safety circuits shall be done as a minimum, once per day. Relays and contactors used in safety circuits shall have force guided, mirrored, or mechanically linked contacts for monitoring purposes. Redundancy in safety circuits using software systems shall use diversification to avoid common mode failure.*

**5.12 Z98 clause 4.30.1.13 “Contactors, relays or magnetically operated switches”**

5.12.1 An acceptable deviation from clause 4.30.1.12 “Redundancy” as allowed by Z98 shall comply with 5.10.3.

**5.13 Z98 clause 4.30.8.3 “Photoelectric safety switches”**

5.13.1 An acceptable use of photoelectric safety switches as allowed by Z98 shall comply with 5.10.2 or 5.10.3.

**5.14 Z98 clause 4.32.3 “Two-Way Communication”**

5.14.1 Clause 4.32.3 “Two-Way Communication” of Z98 is revoked and replaced with the following;

**CAD 4.32.3**

An audible two-way voice communication system shall be provided for machine rooms when the ropeway can be operated from those areas.

**5.15 Z98 clause 5.10.2(c) “Service Brake”**

5.15.1 Clause 5.10.2(c) of Z98 is revoked and replaced with the following;

**CAD 5.10.2(c)**

(c) when a service stop in a cabin is actuated;

**5.16 Z98 clauses 13.15.1 and 13.15.2 “Evacuation with evacuation drive”**

5.16.1 Clause 13.15.1 and 13.15.2 of Z98 is revoked and replaced with the following;

**CAD 13.15.1**

*The deropement switches and emergency stops required in clause 4.30.5 shall be operable while operating with the evacuation drive.*

**CAD 13.15.1**

*If deropement switches and/or emergency stops are not operational due to a malfunction, the ropeway may be evacuated with the evacuation drive if the;*

- (a) full length of the ropeway is kept under surveillance; and
- (b) observers are in communication with the operator throughout the evacuation.



## 5.17 Single Failure Protection

- 5.17.1 Every passenger ropeway installed before June 1, 2001 shall be so constructed and installed that the failure of any single, magnetically operated switch, contactor containing metal-to-metal contacts or relay to release does not prevent the passenger ropeway from stopping in response to an emergency stopping device nor permit the passenger ropeway to start or run if any emergency stopping device is activated.
- 5.17.2 Every passenger ropeway installed on or after June 1, 2001 that is considered a “pre-2011” device shall be so constructed and installed that none of the following events prevents the passenger ropeway from stopping in response to an emergency stopping device nor permits the passenger ropeway to start or run if any emergency stopping device is activated;
- (a) the occurrence of a single ground;
  - (b) the failure of a single magnetically operated switch, contactor or relay;
  - (c) the failure of a single solid-state device; or
  - (d) a software system failure.
- 5.17.3 The devices used to satisfy the requirements of 5.17.2 shall be checked prior to starting of the passenger ropeway, as a minimum, once per day.
- 5.17.4 Where a single ground is detected as set out in clause 5.17.2(a) or an event referred to in 5.17.2(b) to 5.17.2 (d) is detected, the passenger ropeway shall not restart.
- 5.17.5 Implementation of redundancy in a passenger ropeway by a software system is permitted provided that there is diversification to avoid common mode failure.

## 5.18 Log Books

- 5.18.1 In addition to data specified in section 34 of the Regulation, the log book of a passenger ropeway or passenger conveyor shall contain,
- (a) all data required in the code adopted in section 5.1 of this document;
  - (b) all data on any increases or decreases to the mass of the carriers;
  - (c) a record of all pre-season inspections carried out in accordance with section 5.19 of this document;
  - (d) a record of all major and minor alterations; and
  - (e) a record of all five-year periodic tests referred to in section 5.30 of this document.
- 5.18.2 In addition to the requirements of subsection 34.(2) of the Regulation,
- (a) non-destructive testing (NDT) records shall be kept from a historical reference date of October 1, 2001 or from the date any passenger ropeway or passenger conveyor was commissioned if after October 1, 2001, until the passenger ropeway or passenger conveyor is dismantled.
  - (b) major and minor alteration records shall be kept until the passenger ropeway or passenger conveyor is dismantled.
  - (c) a record of all engineering and assessment reports referred to in 5.20 of this document shall be kept until the above-surface passenger ropeway is dismantled.

## **5.19 Preseason Inspection (168/02)**

- 5.19.1 The holder of a licence for a passenger ropeway shall perform a preseason inspection prior to the start of each ski season to ensure that the lift is in compliance with requirements as set out in **part 5** of this document.
- 5.19.2 The results of the inspection shall be recorded in a form acceptable to the director.

## **5.20 Aging Ski Lift Assessment**

- 5.20.1 Every above-surface passenger ropeway shall be subjected periodically to a complete engineering review and assessment to ensure its continued operational safety in accordance with guidelines set by the director. Note: see Director's guideline **224/07**.

## **5.21 Requirements to Limit Tube Tow Detachment (178/03 & 182/03)**

- 5.21.1 The word "tube(s)" has the same meaning as "secondary carrier(s)" used in Z98.
- 5.21.2 In addition to Parts **5.4** and **5.5**, tube tows shall comply with the requirements of **5.21.3** through **5.21.7**
- 5.21.3 The designer shall specify the method to verify the haul rope tension.
- 5.21.4 Connection of Tubes to Towing Attachments
  - (a) Manufacturers/designers of tube tows shall verify that the type of tube attachment connection is compatible for their towing attachment design.
  - (b) Manufacturers/designers of tube tows must allow for a safety margin that will ensure that the tubes will not detach as a result of changes in the tension force on the tether connecting the towing attachment to the tube. Changes of tension force on tether due to uneven tow path, foreseeable movement of passengers in tubes, passengers feet dragging on snow while seated in an acceptable position in tubes and acceleration/deceleration feature of tube tows shall be considered.
  - (c) For tube tows with automatic detachment at a predetermined unloading point, manufacturers/designers of tube tows shall specify minimum and maximum weight restrictions of tube users.
- 5.21.5 Tubes
  - (a) Tube sizes shall match tow path design so that a detached tube will slide clear of the uphill path of any of the following tubes.
  - (b) Tubes shall be designed to accommodate the passenger size.
- 5.21.6 Towing attachments
  - (a) The length of tube towing attachment shall be designed to maintain a minimum operational clearance from the snow along the tube tow-path and hauling rope while the tube is being hauled along the tow path.
  - (b) Factor of safety of all attachments to the haul rope and components for pulling tubes shall be based upon their impact strength at low temperatures.

- (c) The designer/manufacture shall specify the maximum tension force on all attachments to the haul rope and components for pulling tubes along their tow path.
- (d) The designer/manufacture shall specify procedures for inspection of all attachments to the haul rope and components for pulling tubes to verify their safety. Inspection procedures shall include criteria to evaluate the necessity of their replacement.

#### 5.21.7 Tow Path, Crossfall and Containment Barriers

- (a) Means to protect passenger in a tube against contacting any part of tube tow including grips shall be provided along the entire length of the tow path.
- (b) Means shall be provided to keep tubes on the pre-defined tow path.

### 5.22 Alterations

5.22.1 Where an alteration is made to a passenger ropeway or passenger conveyor the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of 5.5.

5.22.2 One or more of the following actions on a passenger ropeway or passenger conveyor shall constitute a major alteration:

- (a) an increase or decrease in,
  - (1) the rated speed of the carriers,
  - (2) the maximum capacity of the ropeway;
- (b) an increase or decrease by more than ten per cent, or an accumulated increase or decrease by more than ten per cent, of the dead weight of the carriers or counter-weight system;
- (c) an increase or decrease in the length or rise of the travel of the passenger ropeway;
- (d) a change,
  - (1) in the carrier design or manufacturer,
  - (2) in the line sheaves and sheave assemblies design,
  - (3) in the type of power supply to the machine,
  - (4) in the type of driving machine,
  - (5) in the location of a machine or tensioning system,
  - (6) in the type of tensioning system,
  - (7) that would result in a reclassification of the passenger ropeway,
  - (8) in tower length or an addition of a new tower.

- (e) a change in,
  - (1) the method or type of operation,
  - (2) the method or type of motion control
  - (3) location of the controller
- (f) a replacement of the controller,
- (g) an alteration to the controller, other than an alteration to the motor starters.

5.22.3 Any action or work performed on a passenger ropeway that results in a change to the original design or the operational characteristics of the passenger ropeway or affects the inherent safety of the passenger ropeway and not listed in subsection 5.22.2 shall constitute a minor alteration.

5.22.4 Minor alterations shall be reported and inspected as required by section 19 of the Regulation.

### 5.23 Bar Lift Requirements

5.23.1 Every bar lift shall,

- (a) be equipped with an anti-rollback device in accordance with 7.8 of Z98;
- (b) have a tow path designed and maintained in accordance with 7.2.4 of Z98;
- (c) be so constructed that maximum stopping shall be maintained in accordance with 7.7.1.2 of Z98 ; and
- (d) be so constructed that, where a brake is used in order to obtain conformance with the requirement of subsection 5.23.1(c) the brake shall conform to code adopted in part 5.

### 5.24 Rope Tow Requirements

5.24.1 Every rope tow shall,

- (a) be equipped with an anti-rollback device in accordance with 8.13 of Z98;
- (b) have a tow path designed and maintained in accordance with 8.2.5 of Z98;
- (c) be so constructed that maximum stopping shall be maintained in accordance with 8.12.1.2 of Z98 ; and
- (d) be so constructed that, where a brake is used in order to obtain conformance with the requirement of subsection 5.24.1(c) the brake shall conform to code adopted in part 5.

### 5.25 Fibre Rope Tow Requirements

5.25.1 The return rope on a fibre rope tow shall have vertical clearances in accordance with 8.4.1 of Z98.

## 5.26 Chair Lift or Gondola Lift Requirements

5.26.1 Every chair lift or gondola lift shall,

- (a) have a service brake that is located in accordance with 4.24.2.1 of Z98;
- (b) be so equipped that the evacuation drive that drives the circulating rope is rendered inoperative in accordance with section 5.7 (CAD 4.23.2.4)
- (c) be equipped with a readily available work carrier in accordance with 4.27.10 and Annex B of Z98.

## 5.27 Carrier Grip Requirements

5.27.1 Where a work carrier is affixed to a lift line by means of rope grips that use friction as a gripping method, rope grips shall be installed in accordance with the code adopted in part 5.

5.27.2 A grip referred to in subsection 5.27.1 shall be so designed so as not to cause any damage to the hauling rope sheave, bullwheel or the liners of the sheave or bullwheel in accordance with the code adopted in part 5.

## 5.28 Restraining Bar Requirements

5.28.1 Each chair of a chair lift shall be equipped with a restraining device in accordance with 6.13.2 of Z98.

## 5.29 Haul Rope Retention on Chairlifts

5.29.1 Support, hold-down, and combination sheave assemblies on all chair lifts shall meet the requirements of the code adopted in part 5.

## 5.30 Load Test Requirements (111/93)

5.30.1 All above-surface passenger ropeways shall be load-tested periodically at intervals not exceeding five (5) years. The periodic load testing of the ropeway shall be carried out under the direction and supervision of the designer/manufacture of the ropeway or a qualified professional engineer.

5.30.2 The results of five-year periodic tests shall be performed in accordance with the code adopted in part 5 and recorded on the form provided in Annex H of Z98.

5.30.3 Original copies of the test shall be signed by either the designer/manufacture of the ropeway or a qualified professional engineer and shall be kept on site in the log book.

## 5.31 Manufacturers/Designers Bulletins

5.31.1 Manufacturer(s) of passenger ropeway(s) or conveyer(s) shall inform owners about the requirements associated with their safety bulletins or alerts in addition to the requirement of Section 35 of the Regulation.

5.31.2 In addition to the requirement of Section 35 of the Regulation, owner(s) of passenger ropeway(s) or conveyer(s) shall inform manufacturer(s) about findings which may require the issuing of a safety bulletin or alerts.

5.31.3 Owners are responsible to carry out the requirements of manufacturer's safety bulletin or alerts.

## Part 6

### 6 CONSTRUCTION HOISTS

#### 6.1 Applied Code [CAD Amendment 216-07]

6.1.1 Every construction hoist shall conform to the following:

- (a) workers' rail guided construction hoists shall conform to CAN/CSA Standard Z185-M87(R2001), Safety Code for Personnel Hoists; [CAD Amendment 216-07]
- (b) workers' rope-guided construction hoist shall conform to, American National Standard ANSI/ASSE A10.22 – 2007 Safety Requirements for Rope-guided and Non-guided Workers' Hoist; and [CAD Amendment 216-07]
- (c) material construction hoist, CSA Standard Z 256-M87(R2006), Safety Code for Material Hoists, [CAD Amendment 216-07]

and any applicable changes set out in this document. [CAD Amendment 246-11]

#### 6.2 Rated Load

6.2.1 For the purpose of this Document and subsection 31.(3) of the Regulation, "rated load" or "rated loading" in the codes referred to in section 6.1 means "maximum capacity".

#### 6.3 Continuously Controlled by Power

6.3.1 Every construction hoist shall be so designed that the car movement in both the up and down direction is continuously controlled by power.

#### 6.4 Broken Rope Safety

6.4.1 A material construction hoist that is equipped with a broken rope type safety shall not be registered unless a type test indicates that the safety is capable of stopping the car when it is free falling with its rated load.

#### 6.5 Limitation on Speed

6.5.1 Where the load-carrying unit of a workers' rope-guided construction hoist passes through a restricted area at a platform or floor, a control device that positively and automatically lowers the speed of the load-carrying unit to that specified in the related design submission while the load-carrying unit passes through the restricted area shall be installed on the hoist, except where the design submission indicates that no speed limitation is required.

6.5.2 In lieu of the control device referred to in subsection 6.5.1, an operator utilising a system of signals may be used to manually control the speed of the hoist.

## 6.6 Attendant Operation

- 6.6.1 Every workers' rail-guided construction hoist, shall while in operation, be attended by an attendant who shall be stationed in the load-carrying unit, and who shall operate the construction hoist and also supervise the loading, passage and unloading of persons and freight.
- 6.6.2 Every material construction hoist shall while in operation be,
- (a) attended by one or more attendants stationed at each location where freight is being loaded or unloaded; and
  - (b) operated by,
    - (1) an attendant stationed at the location of the operating devices, provided that the operating devices can be automatically rendered inoperative should an unsafe condition for operation of the construction hoist exist, or
    - (2) an operator stationed at the driving unit where the driving unit and its operating devices cannot automatically be rendered inoperative should an unsafe condition for operation of the construction hoist exist.
- 6.6.3 Subsections 6.6.1 and 6.6.2 apply with necessary modifications to the providing of attendants and operators for workers' rope-guided construction hoists.

## 6.7 Up Overspeed Protection

- 6.7.1 Every workman's construction hoist that is equipped with a counterweight having a mass greater than the mass of the empty car shall be provided with a means for protecting against uncontrolled car speed in the up direction and such means shall conform to the following:
- (a) It shall detect any uncontrolled movement of the car prior to or at least when the car reaches a predetermined overspeed and shall cause the car to stop prior to the time when the counterweight strikes its buffers, or at least reduce car speed to the speed for which the buffers are designed.
  - (b) It shall be capable of performing as required in paragraph (a) without assistance from any hoist component which solely without built in redundancy, controls the speed, or deceleration, or stops the car during normal operation.
  - (c) It shall not develop an average retardation of the car in excess of  $9.81 \text{ m/sec}^2$  during the stopping phase.
  - (d) It shall prevent uncontrolled movement of the car through control of the speed of, and acting upon the,
    - (1) car;
    - (2) counterweight;
    - (3) suspension or compensating rope system; and
    - (4) drive sheave, provided that the traction between the suspension ropes and the drive sheave are continuously monitored and the construction hoist is automatically removed from service when the rope slippage exceeds a predetermined amount.

- (e) When it is activated or during the stopping phase, it or another hoist component shall cause the power supply of the driving machine to be interrupted.
- (f) It shall be capable of performing at least ten operations without any adjustments.
- (g) All components that require periodic examination and maintenance for the purpose of maintaining their operational reliability, shall be readily accessible.
- (h) Its performance shall be checked during the initial and periodic inspections unless its performance reliability is substantiated otherwise.
- (i) It shall be provided with a making plate indicating maximum capacity for which it may be used and the speed at which it is set to operate.

## 6.8 Additional Requirements for Workers' Rail Guided Construction Hoists [CAD Amendment 216-07]

6.8.1 In addition to the requirements of **6.1.1(a)**, workers' rail-guided construction hoists shall conform to the following:

(a) Clause **14.4.2** of CAN/CSA-Z185-M87 (R2001) shall be replaced with the following;

- (1) The occurrence of a single ground or a software system failure or the failure of
  - a) a switch which does not have contacts that are positively separated;
  - b) a contactor;
  - c) a relay; or
  - d) a solid state device;

shall not render any electrical protective device ineffective

- (b) Redundant software systems used to satisfy the requirements of **(a)** shall have a level of diversification sufficient to avoid common mode failures.
- (c) Clause **18.1.1(c)** of CAN/CSA-Z185-M87 (R2001) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

- (d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.
- (e) Workers' construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216-07]



## 6.9 Additional Requirements for Workers' Rope-Guided Construction Hoists [CAD Amendment 216-07]

6.9.1 In addition to the requirements of 6.1.1(b), workers' rope-guided construction hoists shall conform to the following:

(a) The occurrence of a single ground or a software system failure or the failure of

- (1) a switch which does not have contacts that are positively separated;
- (2) a contactor;
- (3) a relay; or
- (4) a solid state device;

shall not render the, deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake ineffective.

Note: Requirements only apply to the circuits in which the deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake are used and not to the devices themselves.

- (b) Redundant software systems used to satisfy the requirements of (a) shall have a level of diversification sufficient to avoid common mode failures.
- (c) Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render the Deadman Control Switch, Limit Switches, or the Automatic Friction Brake ineffective and shall not cause the cage to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.
- (d) All references to NFPA 70 (Clause 2.1, Clause 3.24, and Clause 4.13 of ANSI A10.22-2007) shall be replaced with Ontario Electrical Safety Code as referenced in 2.2.1(b) of this document. [CAD Amendment 216-07], [CAD Amendment 246-11]

## 6.10 Additional Requirements for Material Construction Hoist [CAD Amendment 216-07]

6.10.1 In addition to the requirements of 6.1.1(c), material construction hoists shall conform to the following:

(a) Clause 15.3.2 of CAN/CSA-Z256-M87 (R2006) shall be replaced with the following;

- (1) The occurrence of a single ground or a software system failure or the failure of
  - a) a switch which does not have contacts that are positively separated;
  - b) a contactor;
  - c) a relay; or
  - d) a solid state device;

shall not render any electrical protective device ineffective.

- (b) Redundant software systems used to satisfy the requirements of (a) shall have a level of diversification sufficient to avoid common mode failures.
- (c) Clause 19.1.3 of CAN/CSA-Z256-M87 (R2006) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for “safety circuits.” The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

- (d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.
- (e) Material construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216-07]

#### 6.11 Maintenance Log Book [CAD Amendment 255-12]

6.11.1 Each elevating device of a type listed in 6.1.1 shall be provided with a maintenance log book as required by O.Reg 209/01 s.34 Log books.

6.11.2 Maintenance records in the form of a log book shall document compliance with related construction hoist codes, Code Adoption Document (CAD) requirements and any manufacturer recommended tasks extracted from the manufacturers maintenance and operation manuals, and shall include records on the following activities:

- (a) description and dates of maintenance task performed;
- (b) description and dates of examinations, tests;
- (c) description and dates of adjustments, repairs, and replacements;
- (d) description and dates of any tasks noted in the Guideline for Maintenance Logs – Construction Hoists (Guideline 256/12); and
- (e) description and dates of all call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken.
- (f) log records to document compliance with the maintenance, examinations and test activities listed in (a) through (d) shall also include:
  - (1) Building name and/or address;
  - (2) TSSA installation number;
  - (3) Contractor's (owners) name;
  - (4) Contractor's Registration Number;
  - (5) the code section, reference, requirement or clause number associated with a task;
  - (6) a description of the task performed;
  - (7) the prescribed maintenance frequency of the task;
  - (8) the date the task was performed; and

- (9) upon completion of the task, the printed name, signature, and TSSA certificate number of the person who completed the maintenance, examination or tests.

6.11.3 Where a part of an elevating device which directly affects the safe operation of the device is found to be defective, the record of the relevant maintenance task shall not be signed off by the party performing the task until the defective part is adjusted, repaired or replaced, and the safety of the device restored.

**6.12 Location of the Maintenance Log Book** [CAD Amendment 255-12]

6.12.1 The maintenance log book shall be kept in the machine room or on the device or near the device location or, in the alternative if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.12.2 Log book data shall be readily available as required by O.Reg 209/01 s.34.(3)

**6.13 Manufacturers Maintenance and Operation Manual** [CAD Amendment 255-12]

6.13.1 For each construction hoist the manufacturers maintenance and operations manual shall be retained.

6.13.2 The manufacturers maintenance and operation manual shall be kept in the machine room or on the device or near the device location or in the alternative, if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.13.3 The manufacturers maintenance and operation manual shall be readily available and immediately provided to an inspector upon request.

**6.14 Operator Training** [CAD Amendment 255-12]

6.14.1 Every operator must have the required knowledge and experience to operate an elevating device and owners, licensees and/or lessees, must ensure operators are trained to safely operate such devices and must be satisfied that the operator is aware of potential hazardous situation connected therewith as required by O.Reg 209/01 s.40.

6.14.2 Owners, licensees, lessees providing training or other trainers providers shall develop and maintain written operator training programs and written policies and procedures to ensure compliance with the regulation and **6.14.1**.

6.14.3 Written training programs shall include applicable portions of the manufacturers maintenance and operation manual to address the requirements of the regulation and **6.14.1** and shall include the minimum requirements for operator training as outlined in the Guide for Operator's Logs and Operator Training Requirements – Construction Hoists (Guideline 257/12).

6.14.4 Copies of the documentation required under **6.14.2** shall be kept on site, shall contain current and complete information and shall be readily available and immediately provided to an inspector upon request.

6.14.5 Training records shall be maintained by the training provider ("trainer") and shall include the following information:

- (a) the name of the person(s) who received the operator training;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date of training;
- (d) the signature of the trained operator; and,

(e) the signature of the trainer.

6.14.6 A copy of the training records identified in **6.14.5** shall be maintained on site and readily available and immediately provided to an inspector upon request.

6.14.7 Individuals who are trained as operators, and have achieved sufficient competence to operate the device safely shall be issued by the trainer an “Operator’s Proof of Training” document which must certify that the operator is competent to operate the device safely and must specify the following information:

- (a) the operators name;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date the training was received; and
- (d) the signature of the trainer.

6.14.8 The trainer shall issue an “Operator’s Proof of Training” document in the form of a letter or wallet card or equivalent as per **6.14.7**.

### **6.15 Operator’s Proof of Training** [CAD Amendment 255-12]

6.15.1 Operators are required to carry their “Operator’s Proof of Training” document whenever they operate an elevating device.

6.15.2 “Operator’s Proof of Training” shall be readily available and immediately provided to an inspector upon request.

6.15.3 An “Operator’s Proof of Training” may be immediately revoked by an Inspector, owner, licensee, lessee or trainer where there is reason to believe that the operator lacks the competence to safely operate the elevating device and the operator may no longer operate the device.

### **6.16 Daily Operator’s Log** [CAD Amendment 255-12]

6.16.1 Each elevating device type listed in **6.1.1** shall have a corresponding “Daily Operator’s Log” in which a current and accurate record of all required start up checks as required by the device manufacturer, owner, licensee, lessee or device operator shall be kept and shall include the minimum requirements for operator’s logs as outlined in the Guideline for Operator’s Logs – Construction Hoists (Guideline 257/12).

6.16.2 Operator’s of a device must satisfy themselves, at the start of each shift, that the device is safe to operate as required by O.Reg 209/01 s.42 by conducting a series of start up checks as outlined in the Guideline for Operator’s Log – Construction Hoists and shall record and sign off these checks in the “Daily Operator’s Log”.

6.16.3 The “Daily Operator’s Log” must contain the following information:

- (a) the Building name and/or address;
- (b) the TSSA device installation number;
- (c) a list of the daily checks as required by **6.16.1**;
- (d) the Operator’s printed name and signature acknowledging completion of all daily checks after the device is found to be in safe working order and the date of such checks.

6.16.4 Where a part of the elevating device which directly affects the safe operation of the device is found to be defective, the log shall not be signed off and the device shall not be put into operation until the defect is adjusted, repaired or replaced, by a registered mechanic.

**6.17 Location of the Daily Operator's Log** [CAD Amendment 255-12]

6.17.1 The "Daily Operator's Log" shall be kept in the machine room, on the device, or near the device location, or in the alternative, if it is kept at another location on the site, a notice will be posted in the machine room or device location indicating the alternate location.

**6.18 Signage** [CAD Amendment 255-12]

6.18.1 Every car, cage or platform shall be equipped with a sign as follows:

- (a) The sign shall display the message, "Only Operators who have their valid "Operator's Proof of Training" card on their person shall operate this device";
- (b) The sign shall be of such material and construction that the letters are stamped, etched, cast or otherwise applied to remain permanently visible; and
- (c) The height of the letters shall not be less than 12 mm (1/2 in.).`

**6.19 Incident and Issue Reporting** [CAD Amendment 255-12]

6.19.1 Incidents shall be reported as required by O.Reg 209/01 s.36. See also Director's Guideline 230/09.

6.19.2 Device operators shall report device incidents and any safety related issues to supervisory personnel who are responsible for taking the appropriate action or following the incident report requirements required by the regulation.

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## Part 7

### 7 ELEVATING DEVICES FOR PERSONS WITH PHYSICAL DISABILITIES

#### 7.1 Applied Code [CAD Amendment 238-09]

- 7.1.1 Each newly installed elevating device for persons with physical disabilities shall conform to the requirements of CSA Standard B355-09, Lifts for persons with physical disabilities including and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.2 Maintenance [CAD Amendment 238-09]

- 7.2.1 All lifts for persons with physical disabilities shall conform to the maintenance requirements of CSA-B355-09 Lifts for persons with physical disabilities including Annex B and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.3 Maintenance Log Book [CAD Amendment 238-09]

- 7.3.1 The log book shall, as a minimum, contain the following information:

- (a) Building name and/or address,
- (b) TSSA or MCCR installation number,
- (c) Contractor's and Owner's name,
- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 238-09]

- 7.3.2 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 defect is adjusted repaired or replaced. [CAD Amendment 238-09]

#### 7.4 Location of the Log Book [CAD Amendment 238-09]

- 7.4.1 The log book will be retained in the machine room 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. [CAD Amendment 238-09]

#### 7.5 Access to Lift

- 7.5.1 Every owner of an unenclosed vertical platform lift and every owner of an unenclosed stair platform lift or stairchair lift shall ensure that the public does not have access to the area where the lift is installed while the lift is in operation.

- 7.5.2 Subsection 7.5.1 does not apply in the case of an unenclosed stair platform lift or stairchair lift where,
- (a) the owner of the lift is able to control and identify persons who will be using the lift or the area where the lift is installed and the owner familiarizes those persons in advance of using the area or lift with the safety rules and procedures concerning the use of the area and the lift; and
  - (b) and the lift meets the requirements of subsection 7.6.

## 7.6 Lift Operation with Persons Nearby

- 7.6.1 Where an unenclosed stair platform lift or stairchair lift is being operated at the same time that other persons are using the area in which the lift is installed,
- (a) audio-visual signals shall be emitted that warn persons using the lift and persons in the area where the lift is installed at all times when the platform is unfolded and until the lift is parked in a safe position at a terminal; and
  - (b) every leading edge or surface of that portion of the lift and its carriage that carries the passengers in both directions of travel shall be equipped with sensitive devices that meet the requirements of clause 7.2.4. and 8.5.4. of the standard adopted in section 7.1 of this Document and that are operational whenever the carriage is in motion.

## 7.7 Usage of Device

- 7.7.1 The owner of a lift for persons with physical disabilities shall ensure that,
- (a) the device is used primarily for the transportation of persons with physical disabilities;
  - (b) detailed operating instructions are posted at every operating station;
  - (c) the operation of the device is restricted to attendants designated by the owner or those persons who in the opinion of the owner are able to use the device without an attendant; and
  - (d) the persons using the device receive instruction and training that emphasizes the hazards associated with improper use of the device.

## 7.8 Requirements for Restricted Operation

- 7.8.1 The operation of a lift for persons with physical disabilities shall be restricted by means of a key-control for the operating device as set out in subsection 7.8.2 and 7.8.3 or by a method acceptable to the director that provides the same degree of safety.
- 7.8.2 A key-control for an operating device may be by means of an on/off lockable switch located near and controlling one or more operating devices or each operating device may be directly key-controlled.
- 7.8.3 The key for a key-control for an operating device shall be removable only when the switch is in an "off" position.
- 7.8.4 Folding down of a platform on a stair platform lift shall be restricted to persons authorised to use the lift, by the following means:

- (a) in the case of a platform that is folded down by power – by means of a key-controlled switch or by a method acceptable to the director; and
- (b) in the case of a platform that is folded down manually – by means of a keyed lock or by a method acceptable to the director.

7.8.5 Lowering of a barrier arm, if provided, shall be restricted to persons authorised to use the lift by means of a keyed switch or lock or by a method acceptable to the director.

## 7.9 Instructions for Use and Owner Requirements

7.9.1 Every owner of an elevating device for persons with physical disabilities shall,

- (a) ensure that the instructions for the device are posted at the location of each operating device that will inform a person with physical disabilities of the established procedure to gain access to and to use the device and, in the case of unenclosed devices, that such instructions include, but are not limited to, cautioning the user to observe the lift runway for possible obstructions;
- (b) ensure that an attendant is available to operate the device when a person with physical disabilities requires assistance;
- (c) where an attendant is required and is not permanently stationed at the location of the operating device ensure that a notice is posted at the entrance to the elevating device that indicates the procedure to be followed to obtain assistance; and
- (d) provide instruction that an unoccupied platform of an unenclosed stair platform lift should not be called or sent from a landing station unless it is in the raised and folded position. [CAD Amendment 238-09]

7.9.2 A person shall only operate an unenclosed vertical platform lift, an unenclosed stair platform lift or a stairchair lift, if the person is satisfied that only persons using the lift have access to the area where the lift is installed.

7.9.3 Subsection 7.9.2 does not apply to a person operating an unenclosed stair platform lift or a stairchair lift while other persons are using the area in which the lift is installed where,

- (a) the conditions set out in subsection 7.5.2 exist;
- (b) the person operating the lift is an attendant and has, while operating the lift in the folded down position, a clear view of the lift runway in the direction of its movement by walking along with the carriage while it is in motion or has by being stationed at a point, a clear view of the runway;
- (c) the person using the lift has, while using the lift, a clear view of the lift runway in the direction of travel; and
- (d) the audio-visual signals required under subsection 7.6.1(a) are operational.

## 7.10 Notice Required Regarding Restricted Use

7.10.1 A notice that the use of a lift for persons with physical disabilities is restricted to persons with physical disabilities shall be posted at each location of a device, at landing or runway entrances of the device and at the load-carrying unit of the device.



## 7.11 Supplementary Owners Report

- 7.11.1 In addition to those requirements set out in sections 15 and 16 of the Regulation, the design submission for a lift for persons with physical disabilities shall include a detailed report, completed on a form provided by the director, from the owner of the elevating device, in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.12 Change of Ownership & Supplementary Owners Report

- 7.12.1 In addition to the requirements of section 29 of the Regulation, where there is change in the ownership of a lift for persons with physical disabilities or a substantive change in the type of occupancy of a building in which a lift for persons with physical disabilities is installed, the new owner of the lift shall submit to the director, a detailed report on a form provided by the director in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.13 Pressure Sensor Requirement for Vertical Platform Lifts (248/11)

- 7.13.1 All vertical platforms, where any part of the hydraulic cylinder is above the top of the hydraulic oil storage tank, shall be equipped with a pressure sensor that when activated shall prevent the operation of the lowering valve or valves in conformance with clause 6.6.8 of CSA B355-09 Lifts for Persons with Physical Disabilities [CAD Amendment-261/13]

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Elevating and Amusement Devices Safety Division	Ref. No.: 262 / 13	Rev. No.:
DIRECTOR'S INFORMATION BULLETIN	Date: April 19, 2013	Date:

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

ONTARIO REGULATION 209/01  
(Elevating Devices)

- and -

ONTARIO REGULATION 222/01  
(Certification and Training of Elevating Device Mechanics)

Subject: Maintenance and Repair of Elevating Devices by Qualified Mechanics

## 1. Introduction

All elevator contractors and consultants are reminded that if personnel, other than those whose regular duties include servicing of elevating devices, are assigned to this work in the event of a labour disruption on elevating devices, they must be qualified in accordance with the TSS Act, Regulation 209/01 and Regulation 222/01. Specific requirements are provided as follows for clarification.

## 2. Regulatory Extracts

### Ontario Regulation 209/01 (Elevating Devices)

1. (1) In this Regulation,

“mechanic” means a person who holds a certificate referred to in section 4 of Ontario Regulation 222/01 made under the Act;

“mechanic-in-training” means a person who works under the supervision of a mechanic for the purpose of obtaining the qualifying time and experience required to obtain a certificate referred to in section 4 of Ontario Regulation 222/01;

24. (1) No person shall undertake any work on an elevating device unless the person is employed by a contractor and is either a mechanic or a mechanic-in-training working under the supervision of a mechanic. O. Reg. 252/08, s. 15.

(2) No person shall be involved in a task that is necessarily ancillary or incidental to the installation or maintenance of an elevating device unless he or she is supervised by a mechanic. O. Reg. 209/01, s. 24 (2).

(3) No mechanic shall be assigned or undertake work beyond the scope of his or her certificate or, in the case of passenger ropeway mechanics, beyond the scope of his or her experience or training. O. Reg. 209/01, s. 24 (3).

### Ontario Regulation 222/01 (Certification and Training of Elevating Device Mechanics)

1. (1) In this Regulation,

“mechanic” has the same meaning as in Ontario Regulation 209/01;

“direct supervision” means, with respect to a mechanic-in-training, that a supervising certificate holder is on site and available to assist and supervise the mechanic-in-training;

3. (3) A supervising certificate holder shall not certify that a mechanic has met experience requirements required under this Regulation unless he or she has ensured that the mechanic has in fact met those requirements. O. Reg. 222/01, s. 3 (3).

4. (1) No person shall work on an elevating device as a mechanic without first having obtained a certificate from the director designating the person as one or more of the following:

1. An elevating device mechanic, class A (an “EDM-A certificate”). ...

9. An elevating device mechanic-in-training, Class T (an “EDM-T certificate”). O. Reg. 222/01, s. 4 (1).

16. A person who holds an EDM-T certificate,

(a) may perform the same range and scope of work allowed under the scope of the certificate of the supervising certificate holder if those skills have been documented and signed by a qualified EDM; and

(b) may not work on any device or job function for which the EDM-T certificate holder does not have the documented skills, except under the direct supervision of the supervising elevating device mechanic. O. Reg. 222/01, s. 16.

### 3. Worker Qualifications

Maintenance and repair of elevators, escalators, and other elevating devices must be performed in accordance with the requirements of the Ontario Regulation 209/01, and Ontario Regulation 222/01, under the Technical Standards and Safety Act, 2000.

Individuals who are assigned work on an elevating device must be certified for that class of device or be a TSSA registered elevating devices mechanic-in-training (EDM-T) under the appropriate supervision.

To meet this requirement an EDM-T must;

- Carry their EDM-T certificate on their person
- Possess a “Practical Skills / Experience Sign-Off Document” or possess an “ATS/Skills Passport – Elevating Device Mechanic”, that is readily available if requested by an inspector
- Work under direct supervision or ensure the appropriate “skills set / passport entry” is signed off if the work task is being performed under general supervision.

The TSSA Practical Skills / Experience Sign-Off Document” is available for download at [www.tssa.org](http://www.tssa.org).

The Ontario “ATS/Skills Passport – Elevating Device Mechanic” passport is available free of charge from <https://www.publications.serviceontario.ca/esom/> (enter “231848” in the publication search field.)

### 4. Notes Related to Skills Passport Sign-off.

- Skills Passport can only be signed off by a current/valid certified supervising mechanic.
- An EDM-T cannot sign off or supervise another EDM-T.
- The signed off sections should accurately reflect the individual’s duties throughout his/her period of training.
- Not all sections of the passport are mandatory.

Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01(Elevating Devices) and Ontario Regulation 222/01(Certification and Training of Elevating Device Mechanics) made under the *Technical Standards and Safety Act, 2000*



Elevating and Amusement Devices Safety Division	Ref. No.: 263 / 13	Rev. No.:
DIRECTOR'S INFORMATION BULLETIN	Date: June 7, 2013	Date:

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

ONTARIO REGULATION 209/01  
(Elevating Devices)

- and -

ONTARIO REGULATION 222/01  
(Certification and Training of Elevating Device Mechanics)

Subject: Elevating Devices Owners Bulletin – Owner Responsibilities

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## 1. Introduction

All elevating device owners (including licensees, owner's reps, or property managers acting on behalf of the owner), must be aware that the elevating devices which they own/ operate must conform to specific regulatory requirements, and it is their responsibility to ensure that these requirements are being properly adhered to irrespective of the current labour disruption.

Where devices cannot be maintained in safe operating condition or where non-compliances may pose safety risk to the general public, elevators must be removed from service until such time as they are in compliance with the regulatory requirements.

## 2. Governing Documents

All owners should be aware of the regulatory documents impacting elevator ownership and safe operation including:

- Ontario Regulation 209/01 Elevating Devices
- Ontario Regulation 222/01 Certification and Training of Elevating Device Mechanics
  - available from [www.e-laws.gov.on.ca](http://www.e-laws.gov.on.ca) or [www.tssa.org/regulated/elevating/elevatingSafety.asp](http://www.tssa.org/regulated/elevating/elevatingSafety.asp)
- The latest elevating devices Code Adoption Document (CAD) amendment , CAD-261-13
  - available from [www.tssa.org/regulated/elevating/elevatingSafety.asp](http://www.tssa.org/regulated/elevating/elevatingSafety.asp)

## 3. Work or Maintenance by Licensed Contractors

Owners are reminded that all elevator work must be undertaken by licensed contractors utilizing the services of certified & properly trained mechanics who have experience in the tasks being undertaken. These requirements are contained in the Elevating Device Regulation, O.Reg 209/01, and in the Certification and Training of Elevating Device Mechanics Regulation, O.Reg 222/01.

As a reminder of the above points, TSSA released Director's Information Bulletin 262/13 on April 19, 2013 and posted it on the TSSA web site. This notification was issued to all ED Web subscribers and highlights pertinent regulatory requirement for Contractor Licensing and Mechanic Certification.

#### **4. Worker Qualifications**

Individuals who are assigned work on an elevating device must be TSSA certified for that class of device or be a TSSA registered elevating devices mechanic-in-training (EDM-T) under the appropriate supervision of an elevating device mechanic. As well as being outlined in the regulations, worker qualifications requirements are described again in Director's Information Bulletin 262/13. Should there be any question related to worker qualifications, it is important to note that all elevating device mechanics (EDM's) must carry on their person a copy of their EDM certificate (similar in appearance to previous paper driver licences). TSSA inspectors require this documentation to be presented to establish credentials. Owners may wish to request the same. Director's information bulletin 262/13 clearly communicates that elevating device mechanics with a "T" designation (EDM-T) are permitted to only perform tasks for which they have been signed off to perform, or must work under direct supervision of a mechanic.

#### **5. Incident Reporting**

Owner's (and contractors) are reminded that incidents must be reported in accordance with the requirements of O.Reg 209/01 section 36.

To obtain additional clarification of these requirements a copy of the incident reporting guideline 230/09 is posted on the TSSA web site. This guideline provides several FAQ style questions and includes quick reference tables to identify "incident type" and the corresponding reporting requirements and reporting timelines.

#### **6. Maintenance of Elevating Devices and Maintenance Frequency**

Owners are reminded that all elevating devices in the province must be maintained by licensed contractors. Per the elevator code (A17.1/B44) the frequency of maintenance for elevating devices is typically determined by the contractor using factors such as design, inherent quality, usage, environmental factors, improved technology, and manufacturer recommendations. The authority having jurisdiction may mandate maintenance and inspection frequencies where required.

The position of TSSA is maintenance intervals must not exceed three months (tasks at three month intervals are not specifically identified) and the maintenance of door systems must not exceed six months. Hydraulic elevating devices with single bottom cylinders, however, must have their oil levels monitored monthly. These frequencies are defined in CAD-261-13. For high buildings (per the Ontario Building Code), the Fire Code requires elevator testing at three month intervals. See section 7.2 of the Fire Code.

The completion of a maintenance task must be recorded (signed off and dated) in the elevator's log book. The log book is typically kept in the elevator machine room. It is important to note that a maintenance task can only be signed off once the component being maintained is in a compliant state. 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. It is the owners responsibility to ensure that log books are being updated and the required maintenance is being performed. Contractors and mechanics also have a responsibility to ensure the work they perform is recorded in the log book. Maintenance task such as oil loss monitoring if not being performed may pose significant safety risks and this may require a device being removed from service.

Generally speaking improvements in elevator technology have increased elevator reliability over the years and have resulted in extended preventative maintenance intervals.

## 7. Entrapments

Should a passenger entrapment occur, the owner should contact their maintenance company for rescue assistance, and owners should ensure that no attempts at self rescue are being performed. If the maintaining contractor is unavailable owners may contact other elevating device contractors to see if they are in a position to assist with a rescue. If this possibility exists it is unlikely this contractor would be in a position to return the elevating device service following the rescue. In emergencies owners may need to utilize the services of emergency personnel to perform a rescue.

## 8. Fire Fighter's Elevators

For high buildings, the building code typically requires one elevator to be designated as the Fire Fighter's Elevator. The firefighter's car is generally that elevator in the group which services the most number of floors. In some instances multiple elevators in a bank can perform this function - yet one is typically selected as the Firefighter's Car.

If you are experiencing problems with the identified firefighter's elevator you may wish to determine if another car can serve that function in the event of an emergency situation. You may also wish to notify the local fire department of your situation so that alternate plans can be developed in advance of a life safety issue.

Roland Hadaller, P.Eng.

Director, Ontario Regulation 209/01(Elevating Devices) and Ontario Regulation 222/01(Certification and Training of Elevating Device Mechanics) made under the *Technical Standards and Safety Act, 2000*

Archive



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.:	Rev. No.:
	264 / 13	
<b>ADVISORY</b>	Date:	Date:
	August 22, 2013	

Subject: Independence of Normal Terminal Stopping Devices (NTSD) and Normal Stopping Means (NSM)  
Applicable to: A17.1-2010 / B44-10 requirement 2.25.2 and Inquiry 11-2229

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**1. Background**

1.1 With the adoption of the 2010 code effective for submissions received on or after May 1, 2012, TSSA began enforcement of requirement 2.25.2 through the design submission and engineering review process. Since that date, if controls were observed to have non-conformances or if compliance was not clearly conveyed in the design submission TSSA permitted conditional registrations if a commitment for conformance was received from the submitter.

In parallel with TSSA engineering enforcement of requirement 2.25.2, an interpretation was sought from A17.1 on the requirements related to independence of NTSD and NSM. The outcome of this inquiry resulted in the release of Interpretation Bulletin 258/12 that was first circulated amongst industry in Dec 2012 as further awareness to our 2010 Code enforcement activities.

The content of Bulletin 258/12 - posted to the TSSA web site on July 2, 2013 - is consistent with TSSA engineering enforcement activities which began 14 months prior, and aligns with those requirements that were communicated to control manufacturers during the design review process.

**2. Enforcement**

- 2.1 The current state of conformance to requirement 2.25.2 for **A17.1-2010 / B44-10** installations is varied, with a number of projects requesting conditional registrations to prevent project stoppages while upgrades were being developed or planned for retrofit.
- 2.2 To facilitate the transition to fully compliant controls designs (as interpreted in 258/12) TSSA is revising its enforcement dates as follows:
- a) All submissions received after **July 2, 2013** must be in full compliance to 2.25.2 at time of registration or must be retrofitted not later than **March 1, 2014**.
  - b) Submissions received prior to July 2, 2013, that carried a requirement to comply with 2.25.2 will be permitted to remain as installed, effectively implying that no upgrade actions for 2.25.2 independence will be required and existing engineering orders retracted if issued prior to this date.
- 2.3 TSSA continues to work with control manufacturers to review equipment conformance to 2.25.2. Where control designs have been submitted that demonstrate compliance through proposed upgrades TSSA will continue to conditionally register and release submissions.
- 2.4 Where manufacturers are still developing solutions, or where documentation has not been provided to adequately demonstrate compliance, TSSA will continue to permit conditional registrations (upon request) – but only until **January 1, 2014**. If conformance is not demonstrated by **January 1, 2014**, TSSA will not register the design.

Rob Kremer, P.Eng.  
Manager of Engineering, Elevating and Amusement Devices safety Program



<b>Elevating and Amusement Devices Safety Division</b>	Ref. No.: 265/14	Rev. No.:
<b>Enforcement Procedure Bulletin</b>	Date: January 7, 2014	Date:

**Subject:** Construction Hoist Hoistway Door Interlocks, Z185 Clause 7.5

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## 1.0 Hoistway Door Interlocks per Clause 7.5 of Z185

Per the requirements of clause 7.5 of Z185 "Safety Code for Personnel Hoists" (published in 1987 and reaffirmed in 2001), hoistway doors must be secured with interlocks meeting the following requirements;

### 7.5 Hoistway Door Interlocks

- 7.5.1 *Hoistway doors shall be provided with interlocks.*
- 7.5.2 *If the hoistway door at the lowest landing is locked automatically when closed with the car at the landing, it shall be provided with means to unlock it from the landing side to permit access to the car. The means provided shall be accessible only to authorized persons.*
- 7.5.3 *Interlock contacts shall be positively opened by the locking member or by a member connected to and mechanically operated by the locking member, and the contacts shall be maintained in the open position by the action of gravity or by a restrained compression spring, or by both, or by means of the opening member.*
- 7.5.4 *The interlock shall hold the door in the locked position by means of gravity or by a restrained compression spring, or by both, or by means of a positive linkage.*
- 7.5.5 *The interlock shall lock the door in the closed position before the drive machine can be operated. Devices that permit operation of the driving machine by the normal operating device when the door is closed, but before it is locked, are not permitted. \**

*\*Such devices are known as "lock and contact" and are not true interlocks.*

## 2.0 Enforcement

Unlike interlocks used for elevating devices regulated under ASME A17.1/CSA B44, construction hoist interlocks per Z185 are not required to be evaluated, tested and marked by certifying organizations prior to being allowed for use on a construction hoist. Given the gap of not having a certification agency evaluate interlocks used on construction hoists, TSSA is looking to ensure that the locking devices being provided meet the intent of the requirements of clause 7.5 before registering design submissions for future construction hoist installations.

## 3.0 Action by Contractors

The construction hoist industry is advised to begin a review of the interlocks that they currently use on their construction hoist entrances, in order to determine if they are in compliance with the interlock requirements.

**Effective immediately and prior to any new site specific installations being processed via a design submission**, contractors will first need to demonstrate compliance of their interlock arrangement so that TSSA can independently gage compliance to the requirements of clause 7.5.

This documentation should include photo's, conformance write-ups, evaluation of strength, etc, to explain how compliance to clause 7.5 is achieved, and how this equipment is arranged to secure hoistway landing doors.



If the interlocks being provided are branded with a make / model and are compliant to requirements of clause 7.5, that make / model shall be included in all future submission where that interlock is being used.

If the locks are not branded, TSSA will issue a component filing number to compliant devices, and that component filing number shall be referenced on all future submissions.

#### 4.0 Background

Despite design submissions indicating “interlock” in response to the submission entry for “door locking device type”, TSSA is observing installations where the devices used to secure hoistway landing doors are not in full compliance with the requirements of clause 7.5.

Rob Kremer, P.Eng  
Engineering Manager  
Elevating Devices Safety Program

Dave Parks  
Supervisor, Region 4  
Elevating Devices Safety Program

This Bulletin has been developed in consultation with the Construction Hoist Industry.



Elevating and Amusement Devices Safety Division	Ref. No.: 266/14
<b>DIRECTOR'S ORDER</b>	Date: June 1, 2014

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

Ontario Regulation 209/01 (Elevating Devices)

**Re: GALaxy Elevator Controllers - Field Wiring Issue**

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Applicable to: All Owners of Elevators with GALaxy Controllers  
All Elevator Contractors

*Under the authority of s. 14 of the Technical Standards and Safety Act, 2000, the Director under O. Reg. 209/01 (Elevating Devices) hereby orders that:*

**1. ORDER to Owners of Elevators with GALaxy Controllers**

Within 90 days of issuance of this order, you shall have a registered elevator contractor ensure that your device is in compliance to **G.A.L. Important Notice RE: GALaxy Elevator Control Field Wiring** dated April 29, 2014. Compliance with this requirement shall be entered in the log book.

**2. Order to Contractors**

Elevators with GALaxy controllers shall comply with **G.A.L. Important Notice RE: GALaxy Elevator Control Field Wiring** dated April 29, 2014. Compliance with this requirement shall be entered in the log book.

**Attachment: G.A.L. Important Notice – Galaxy Elevator Control Field Wiring**

Background

Elevators with GALaxy controllers, manufactured by GAL, may not have had field wiring installed properly. In some cases, field wires may not have been carefully inserted into their terminal blocks such that individual wire strands may be raised or exposed such that they are making contact with wiring from an adjacent terminal. This may cause an unsafe condition such as permitting elevators to run with open doors under certain circumstances, thereby putting mechanics or inspectors at risk to injury. Note: The affected devices have door lock monitoring in place to protect the public.

**This order is effective immediately.**

DATED this 1<sup>st</sup> day of June, 2014

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**Roland Hadaller P.Eng.**  
Director, O. Reg. 209/01

APPENDIX A:  
G.A.L. Important Notice – Galaxy Elevator Control Field Wiring



G.A.L. Manufacturing Corporation  
50 East 153<sup>rd</sup> Street, Bronx, N.Y. 10451  
Phone (718) 292-9000 Fax (718) 292-2034



## IMPORTANT NOTICE

RE: GALaxy Elevator Control Field Wiring

Date: April 29, 2014

To: All GALaxyCustomers:

Most of the field connections to GALaxy controls are made using stranded wire. When inserting this stranded wire into the terminals – especially those for EPD's (Electrical Protective Devices) – care must be taken to ensure that all the strands are properly inserted in to the terminals. Improper stripping and insertion may leave strands outside the terminals. Strands not in the terminals may make contact with the wires from an adjacent terminal.

The danger associated with an occurrence such as this has led us to recommend that, for all connections to Safety Devices - those listed in A17.1 – 2013, Requirements 2.26.2.1 thru 2.26.2.39 as applicable.

- Inspect all terminals used to connect safety devices. Ensure that the cage clamp is fully open before inserting a wire into the terminal block.
- Perform corrective action for wires with stray strands by one of the following methods:
  - o Reconnect the wire with all wire strands correctly installed into the terminal. Visually verify that **no wire** strands are outside of the terminal. **The conductor should be stripped and inserted completely into the terminal in such a manner that no more than two millimeters of bare wire is visible;** or
  - o Use an acceptable method such as tinning; or
  - o Attach a ferrule to the end of field wire for safety devices (as pictured below) and insert the ferrule into the terminal.
- After removal and replacement of any of these field wires, the actual safety device should also be checked for proper operation.



Crimp tool for Ferrule



Stranded Wire with Ferrule Attached



Elevating and Amusement Devices Safety Division	Ref. No.: 267/14
<b>DIRECTOR'S ORDER</b>	Date: May 15, 2014

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

Ontario Regulation 209/01 (Elevating Devices)

**Re: Retroactive Leveling Requirement for Passenger Elevators with Single Speed Controls**

Applicable to: All Owners of Electric Passenger Elevators with Single Speed Controls  
All Elevator Contractors

*Under the authority of s. 31 of the Technical Standards and Safety Act, 2000, the Director under O. Reg. 209/01 (Elevating Devices) hereby orders that:*

**1. ORDER to Owners**

- 1.1. All Electric Passenger Elevators with Single Speed Control systems that;
- (a) have a single speed AC drive motor,
  - (b) use an open loop motion control system, and
  - (c) stop using the brake, whether the brake is modulated or continuously applied.

shall have the motion control system upgraded to a closed loop control and comply with CSA B44-10 - Safety Code for Elevators and Escalators (the "B44 Code"), section **2.26.11 - Car Platform to Hoistway Door Sills Vertical Distance**.

The requirements from the B44 Code are as follows:

**2.26.11 Car Platform to Hoistway Door Sills Vertical Distance**

*Where ANSI/ICC A117.1 or ADAAG is not applicable, the vertical distance between the car platform sill and the hoistway door sill on passenger elevators shall be in accordance with the following:*

- (a) it shall not exceed 13 mm (0.5 in.) on initial stop at a landing
- (b) the car shall relevel if the vertical distance exceeds 25 mm (1 in.) while loading or unloading

This leveling requirement is being applied retroactively to existing installations of passenger elevators with single speed controls.

- 1.2. The compliance dates for this order are based on the installation number of the elevating device. The following table indicates the compliance date for each range of elevating device installation numbers.

Compliance Requirements	
Installation Number	Compliance Date
1 – 9481	January 1, 2018
9482 - 13371	January 1, 2019
13372 – 18161	January 1, 2020
18162 – 35418	January 1, 2021
35419 and higher	January 1, 2022

- 1.3. Where the above leveling requirement is met by an alteration that changes the type of motion control, the following alteration requirements (8.7.2.27.5★1) may be used as an alternative to the requirements of B44 Code section 8.7.2.27.5 (Change in the Type of Motion Control):

**8.7.2.27.5★1 Change in type of motion control for single speed passenger elevators**

Where there is a change in the type of motion control of a single speed elevator, the installation shall conform to the following:

- (a) The terminal stopping devices shall conform to 2.25
  - (b) New and altered 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.
  - (c) Car overspeed protection and unintended movement protection shall conform to 2.19 as required by 8.7.2.20 or permitted by 8.7.2.20★1.
- 1.4. An alteration in accordance with alternative requirement 8.7.2.27.5★1 (above) is deemed to be a Major Alteration.
- 1.5. Where the leveling requirement is met by an alteration that changes the type of motion control in accordance with the requirements of B44 Code section 8.7.2.27.5, sub requirements 8.7.2.20★2 and 8.7.2.20★3 are not applicable. Both ascending car overspeed and unintended movement protection are required.

## 2. INSTRUCTIONS

- 2.1. All work must be performed by a TSSA registered contractor.
- 2.2. Work carried out in order to bring a device into compliance with this order is an alteration and a design submission with related electrical schematics shall be submitted to TSSA by a registered contractor.
- 2.3. The contractor who completes the alteration shall arrange for an inspection to be carried out as required by O. Reg. 209/01.

## Background

TSSA formed a Risk Reduction Group (RRG) in 2010 to review the risks associated with aging elevators. The RRG, called the "Elevator Overspeed and Unintended Movement RRG", was tasked with examining the risks associated with devices having no emergency brakes and devices with leveling accuracy

problems, and to make recommendations on how these risks could be reduced. The group consisted of members representing TSSA, the elevator industry and elevating device owners.

The RRG data analysis indicated that the primary risk with aging elevators was with single speed devices. These devices typically do not have an emergency brake and experience problems with leveling accurately. Analysis of inspection and incident data determined that there was an unacceptable public risk of injury from single speed devices that will occur in 2020.

The new alteration requirement (8.7.2.27.5★1) introduced by this order focuses on the leveling aspects of B44 Code requirement 8.7.2.27.5 and is only permitted to be used on single speed devices. This new alteration requirement offers a more economical method to address the leveling risk identified by the RRG.

The compliance dates were determined based on the time period required to reach an unacceptable level of risk. It is estimated that 1100 devices are affected by this order. The affected devices have been split into five groups with the older devices requiring compliance before the newer devices. Dividing the devices into five groups with different compliance dates is intended to ensure that higher risk devices are in compliance sooner and to help spread out the work over a larger period of time to manage industry workload.

\* \* \*

Any person involved in an activity, process or procedure to which this document applies shall comply with this document

**This order is effective immediately.**

DATED this 15<sup>th</sup> day of May, 2014

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**Roland Hadaller P. Eng.**  
Director, O. Reg. 209/01

*This order has been developed in consultation with the Elevating Devices Advisory Council and the Field Advisory Committee.*



Elevating and Amusement Devices Safety Division	Ref. No.: 268-14
<b>DIRECTOR'S ORDER (TEMPORARY AUTHORIZATION)</b>	Date: December 5, 2014

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16*

- and -

Ontario Regulation 209/01 (Elevating Devices)

**Re: Requirements for Transport Platforms**

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Under the authority of s. 36(3)(a) of the *Technical Standards and Safety Act, 2000*, the Director for the purposes of O. Reg. 209/01 (Elevating Devices) hereby orders that:

**Transport platforms used in Ontario shall comply with the following requirements:**

**1.1 Standard for Transport Platforms**

Transport platforms shall conform with the design requirements of ANSI A92.10 - 2009 Standard for Transport Platforms.

**1.2 Additional Requirements**

**1.2.1 Definitions**

"transport platform" means a temporarily installed elevating device equipped with a car or platform that moves vertically in guides, is tied to the building or structure that is used for hoisting, lowering or otherwise moving authorized persons or materials and necessary tools to various access levels on a building or structure for construction, renovation, alteration, maintenance, demolition or other types of work of a building or structure.

**1.2.2 General**

In addition to the design requirements in section 1.1, transport platforms and their operation shall also conform to the following CAD requirements:

- a) Requirements 6.2 to 6.4, 6.6 to 6.8.1 and 6.11 to 6.19 of CAD 261/13-r1 Note: A reference to construction hoist in section 6 of the CAD shall be replaced with transport platform
- b) Requirement 2.2 of CAD 261/13-r1 and all electrical equipment shall be CSA approved.
- c) Maximum speed shall be as per ANSI A92.10 requirement 1.1c), 0.2 m/s (40 fpm)
- d) The distance from the moving platform to the building or any structure, including loading ramps shall be as per ANSI A92.10 requirement 1.1d), 460mm (18 in.).
- e) Only persons authorized by the owner, licensee or lessee are permitted to operate and ride transport platforms
- f) The maximum number of authorized persons permitted on the platform shall be as per ANSI A92.10 1.1b)
- g) Platform signage shall be provided to display the platform capacity in kg, and the maximum number of authorized persons.
- h) Habitable space below the hoist and footings shall be provided with shoring. A Professional Engineer shall design all shoring and drawings of any shoring requirements and shall be submitted with the design submission.
- i) Landings and platform shall have a minimum 50 lx of light at floor level when in active use.



- j) The top rack section shall be either milled or a manufacturer recommended means shall be provided to prevent travelling beyond mast top.
- k) No operation shall be permitted when wind speeds exceed manufacturer recommendations.
- l) Landing communication devices are not required.
- m) The platform mast shall be electrically grounded.
- n) A ground fault interrupter shall be provided for electrical protection.
- o) The braking system shall hold and stop up to 125% load moving in the down direction.
- p) A full load safety test shall be performed during initial inspection, when fully extended, and after every 90 days. For transport platforms that do not have an overspeed safety device and use two or more independent and identical direct drive units fitted to each mast, each brake shall be tested separately at 110% load. With the platform running at full speed, each brake shall stop and hold the platform with 110% load.
- q) Electrical redundancy procedure of critical components is required on each Design Submission.
- r) Grounding of the safety circuit shall stop the device.
- s) Unenclosed disposal chutes shall not be located within 7m (25 ft.) of the hoist mast, and garbage containers shall not be located within 2m (6.5 ft.) of the hoist mast.
- t) Acoustic warning devices used during platform descent are not mandatory where fencing enclosures meet 1.2.3

### 1.2.3 Fencing Enclosures

- a) A fence a minimum of 2 m (6.5 ft.) high shall be around the hoist base.
- b) Fencing shall be located a minimum of 460 mm (18 in.) from any moving components.
- c) If openwork fencing is used, it shall reject a 25 mm (1 in.) ball.
- d) The fencing entrance to the platform shall be locked when platform is moving.
- e) Fence heights may be reduced to minimum 1070 mm (42 in.) in areas where materials are loaded from a loading platform.

### 1.2.4 Loading Platforms

- a) If a loading platform is used, overhead protection is required above the loading platform.
- b) The loading platform shall be located a minimum of 460 mm (18 in.) from any moving components and be surrounded by fencing a minimum 1070 mm (42 in.) high.
- c) If fencing is openwork, it shall reject a 25 mm (1 in.) ball.
- d) Stairs with handrails shall be provided to the loading platform. The entry to the stair shall be outside the fencing enclosure.
- e) If a loading platform is located inside the fencing enclosure, no workers shall be permitted to stand on the loading platform when the transport platform is moving.
- f) If the loading platform contains a minimum of 2 m (6.5 ft.) high solid fencing on the side adjacent to the transport platform, persons may remain on the loading platform provided that:
  - i) the fencing contains a landing gate a minimum 2 m (6.5 ft.) high to provide access for loading the transport platform that is mechanically locked and unlocked by the action of the car gate/ramp (where the ramp is not be retractable until the landing safety gate is in the closed position);
  - ii) the landing gate contains a mechanical lock operable from the Transport platform;
  - iii) if the landing gate is openwork, it rejects a 25 mm (1 in.) ball; and
  - iv) if a solid landing door is used, it is provided with a vision panel opening having a width not exceeding 150 mm (6 in.) and an area not exceeding 500 cm<sup>2</sup> (80 in<sup>2</sup>), and the vision panel is covered with wire mesh having openings that rejects a 25 mm (1 in.) ball, and made of steel wire at least 1.6 mm (No. 16 steel wire gauge).

### 1.2.5 Landing Safety Gates (Landing Doors)

Landing safety gates shall:



- a) Have a minimum height of 2 m (6.5 ft). The hoistway enclosure does not need to be enclosed above the landing gates.
- b) Not exceed the width of the car platform opening
- c) Be equipped with side guards extending 600 mm (24 in.) horizontally on both sides to a minimum height of 2m (6.5 ft.)
- d) Landing doors shall be so supported and braced that when they are subjected to a force of 450 N (100 lbf.) applied horizontally at any 50 x 50 mm (2 in. x 2 in.) area of the enclosure, the deflection will not exceed 2% of width of the enclosure.
- e) Landing doors, if of openwork, shall reject a 25 mm (1 in.) ball; and be made of steel wire of at least 1.6 mm diameter (No. 16 steel wire gauge).
- f) Solid doors, where used, shall be provided with a vision panel opening having a width not exceeding 150 mm (6 in.) and an area not exceeding 500 cm<sup>2</sup> (80 in<sup>2</sup>). The vision panel shall be covered with wire mesh having openings that reject a ball not greater than 25 mm (1 in.) diameter and made of steel wire of at least 1.6 mm diameter (No. 16 steel wire gauge).
- g) Be mechanically locked and unlocked by the action of the car gate/ramp. The ramp shall not be retractable until the landing safety gate is in the closed position.
- h) The mechanical landing door lock shall be accessible from the hoistway side only.
- i) Fold down ramps when in the lowered position shall address fall hazards with no horizontal gaps greater than 100 mm (4 in.)
- j) The fold down ramp must overlap building slab by not less than 100 mm (4 in.) or the manufacturer's recommended overlap, whichever is greater.
- k) The door shall open inward to building.
- l) No landing door electrical contact is required.
- m) Landing doors types shall be approved by TSSA before being registered.
- n) Standard construction hoist landing doors with interlocks with electrical contacts and meeting the requirements of CSA Z185-2001 "Safety Code for Personnel Hoists" shall be permitted.

#### 1.2.6 Overhead Protection Requirements

- a) Overhead protection shall be provided above the transport platform.
- b) It shall be non-perforated and capable of supporting a load of at least 2.4 kilonewtons per square metre without exceeding the allowable unit stress for the material used.
- c) It shall have an unobstructed height of not less than 2 m (6.5 ft) above the platform.
- d) All operators and attendants shall remain under platform protective overhead structure during transport.
- e) If the overhead protection on the transport platform has an emergency exit, it shall be provided with an electrical protective device that will prevent operation of the transport platform if the exit is opened more than 50 mm (2 in.). It shall be positively opened and manually reset, after the cover is closed.

Any person involved in an activity, process or procedure to which this document applies shall comply with this document.

**This order is effective December 5, 2014 and expires December 5, 2017, unless revoked or superseded earlier.**

DATED this 5<sup>th</sup> day of December, 2014

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John Marshall  
Director, O. Reg. 209/01 (Elevating Devices)

## Background

### A. General

Transport platforms are currently not associated with a specific standard adopted within TSSA's Elevating Devices Code Adoption Document (ED-CAD). As permitted by section 36.(3)(a) of the *Technical Standards and Safety Act, 2000*, transport platforms that meet the definition of an elevating devices in Ontario Regulation 209/01 shall be subject to the requirements listed herein to ensure consistency of use and application.

### B. Definitions

"elevating device" means a non-portable device for hoisting, lowering or otherwise moving persons or freight and includes any machine room, hoistway and hoistway enclosure, supporting structure, terminals and runway associated with the device.

"elevator" means an elevating device that is equipped with a car that moves vertically in guides and that serves two or more floors of a building or structure;

"transport platform" means a temporarily installed elevating device equipped with a car or platform that moves vertically in guides, is tied to the building or structure that is used for hoisting, lowering or otherwise moving authorized persons or materials and necessary tools to various access levels on a building or structure for construction, renovation, alteration, maintenance, demolition or other types of work of a building or structure.

"worker-positioning platform" means an elevating device that put workers and their equipment in position to work on the interior or exterior of buildings or other structures.

Note: this device is explicitly exempt from requirements of O.Reg 209/01.

### C. Application of Use

"Elevating devices", as defined above, come under TSSA jurisdiction if they are non-portable and move persons or freight.

Non-Portable applies if an elevating device is permanently anchored or tied into a building or structure along its rise, however Ontario regulation 209/01 s.2.(3)(u) exempts worker positioning platforms. The exemption for worker positioning platforms applies whether these devices are tied into a building or not.

As per the definitions, worker positioning platforms put workers in a position to work on the interior or exterior of a building while remaining on the platform. If materials or persons are moved from the platform into the building, the application of use is no longer "worker/material positioning".

**Once materials, persons, freight or tools are moved from the platform into the building the "application of use" changes from a worker positioning platform to an elevating devices that is regulated by TSSA.**

Any Worker Positioning Platform that TSSA finds or that is operated as such shall be removed from service as it is an unlicensed elevating device.

### D. Alternative to a Construction Hoist

Transport Platforms have become a recognized alternative to lower rise construction hoists. These devices however are not currently addressed by the requirements of the CSA Z185-2001 "Safety Code for Personnel Hoists".

At this time, there is no Canadian code for Transport Platforms, however the American National Standards Institute (ANSI) currently publish ANSI A92.10 Standard for Transport Platforms.

*Distribution: Posted to TSSA website and distribution through EDAC, FAC and the Construction Hoist Industry working group.*



<b>Elevating and Amusement Devices Safety Program</b>	Ref. No.: 275 / 18
<b>ADVISORY</b>	Date: August 31, 2018

**Subject:** Emergency Brake - Brake Lining Replacement  
**Distribution:** TSSA website

---

**This advisory is to inform that the replacement of emergency brake linings, including rope gripper pad replacement requires testing to confirm the effectiveness the new linings.**

On passenger elevators, this would require testing of the elevating devices in both directions; under Empty car up, and 125% loaded car down conditions.

**Supporting Materials:**

This advisory is supported by the following A17.1/B44 requirements:

**8.6.4 Maintenance and Testing of Electric Elevators**

**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.

The proper function and holding capacity requires:

**2.19.2 Unintended Car Movement Protection**

**2.19.2.2.(b)** upon detection of unintended car movement, stop and hold the car, with any load up to rated load [see also 2.16.8(h)], by applying an emergency brake conforming to 2.19.3. The stopped position of the car shall be limited in both directions, to a maximum of 1 220mm (48 in.) as measured from the landing sill to the car sill.

and testing to reference 2.16.8.(h) per above requires 125% of rated load.

**2.16.8 Additional Requirements for Passenger Overload in the Down Direction**

**2.16.8.(h)** requirement 2.19.2.2(b), except that 125% of the rated load shall be used in place of the rated load.

Testing without load is deemed alternative testing and requires the use of a method acceptable to the Director.\*

The testing requirements for emergency brake lining replacement (detailed above) are consistent with the requirements following a change or adjustment to the holding capacity of driving-machine brake (see below)

**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. A test complying with 8.6.4.20.4 shall be performed.

\* Note: A17.1/B44-2013 to 2016, requirement 8.6.11.10 recognizes alternative testing for driving-machine brakes. A proposal is before the A17.1/B44 committee to extend this permission to emergency brakes as it was overlooked during the development of alternative testing language.

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<b>Elevating and Amusement Devices Safety Program</b>	Ref. No.: 275 / 18-r1	Ref. No.: 275 / 18
<b>ADVISORY</b>	Date: March 30, 2019	Date: August 31, 2018

**Subject: Emergency Brake - Brake Lining Replacement**  
Distribution: TSSA website

---

**This advisory is to inform that the replacement of emergency brake linings, including rope gripper pad replacement requires testing to confirm the effectiveness the new linings.**

On passenger elevators, this would require testing of the elevating devices in both directions; under Empty car up, and 125% loaded car down conditions.

**Supporting Materials:**

This advisory is supported by the following A17.1/B44 requirements:

**8.6.4 Maintenance and Testing of Electric Elevators**

**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

The proper function and holding capacity requires:

**2.19.2 Unintended Car Movement Protection**

**2.19.2.2.(b)** upon detection of unintended car movement, stop and hold the car, with any load up to rated load [see also 2.16.8(h)], by applying an emergency brake conforming to 2.19.3. The stopped position of the car shall be limited in both directions, to a maximum of 1 220mm (48 in.) as measured from the landing sill to the car sill.

and testing to reference 2.16.8.(h) per above requires 125% of rated load.

**2.16.8 Additional Requirements for Passenger Overload in the Down Direction**

**2.16.8.(h)** requirement 2.19.2.2(b), except that 125% of the rated load shall be used in place of the rated load.

Testing without load is deemed alternative testing and requires the use of a method acceptable to the Director.\*

The testing requirements for emergency brake lining replacement (detailed above) are consistent with the requirements following a change or adjustment to the holding capacity of driving-machine brake (see below)

**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. A test complying with 8.6.4.20.4 shall be performed.

\* Note: A17.1/B44-2013 to 2016, requirement 8.6.11.10 recognizes alternative testing for driving-machine brakes. A proposal is before the A17.1/B44 committee to extend this permission to emergency brakes as it was overlooked during the development of alternative testing language.



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Date: 11/30/18

Subject: Rope Gripper Lining Replacement or Lining Wear Adjustment - Minimum Testing Requirements

To: Whom it May Concern

The following procedure refers to an existing Rope Gripper Installation that was previously properly tested for compliance and qualified to ASME A17.1/B44 Elevator Safety Codes as well as any local elevator safety codes that may be appropriate. It is also assumed that the Rope Gripper has been in service prior to needing attention due to Lining Wear.

Minimum Testing Required for Returning to Service:

Prior to returning the car to service after changing linings (or rearranging wear shims), it is extremely important to ensure that the Rope Gripper Linings are fully seated, or in other words properly worn in, so that the Rope Gripper will apply proper pressure to the ropes.

When Brake Lining inspection/shimming/replacement is complete:

1. Turn the Pump Unit valve stem to AUTOMATIC.
2. Turn the pumping unit ON.
3. Carefully remove the security set screws. If necessary, use the hand pump to prevent rotating shaft from moving when removing the security set screws.
4. Turn the Pump Unit OFF. The Rope Gripper will grip the ropes.

Check to ensure that the rotating shaft is up around the corner(s) at the bottom of the cam. This will be indicated by the connecting arm position; the arm should **match or cover the wear-in line** marked on the Rope Gripper side wall when gripping the ropes.

1. If the line has not been matched or covered, refer to the manual (Bulletin 1144) for wear-in procedures.
2. If the line has been matched or covered, proper Rope Gripper operation can be confirmed with the following minimum testing requirements.

TEST PROCEDURE FOR COMPLIANCE WITH ELEVATOR SAFETY CODES

**DURING THE FOLLOWING TWO TESTS, ALLOW THE BRAKE TO STOP THE CAR IF THE GRIPPER DOESN'T. When activated by either of these tests, the Gripper circuits must be manually reset.**

**Test 1) SLOW SPEED ASCENDING CAR TEST**

With an empty car,

- a) Run empty car up on inspection speed, hold the machine brake open and turn off the Rope Gripper test switch. The Rope Gripper should stop and hold the car

**Test 2) ASCENDING CAR OVERSPEED TEST**

With an empty car,

- a) If practical, overspeed (approximately 10% over contract speed) the car in the "UP" direction while keeping the machine brake open. The governor overspeed switch will activate the Rope Gripper.
- b) If it is impractical to overspeed the car, run the empty car up at high speed with the machine brake held open and manually trip the governor overspeed switch.

The gripper will stop the car before the counterweight strikes the buffer or, at least, reduce the car speed to the speed for which the buffer is designed.

With these two tests completed, the original stopping performance of the rope gripper is verified.

Background:

The brake linings of the Rope Gripper are designed to wear so as to protect the ropes from damage during an emergency stop. As the ropes pass between the linings, the linings will wear, especially after multiple high-speed stops.

When Rope Gripper lining wear becomes excessive, the excessive wear microswitch on the Rope Gripper will open and the Rope Gripper will not automatically reset to the loaded or ready position. At this point, it will be necessary for a licensed professional to inspect the Rope Gripper, make adjustments and/or replace parts as necessary before the Rope Gripper can be returned to service.

Instructions for adjusting the Rope Gripper for Lining Wear and for Lining Replacement after excessive wear appear in the Rope Gripper Manual, Bulletin 1144, which can be obtained at:

<https://www.hollisterwhitney.com/support>

Thank you for your interest in Hollister-Whitney products and the Rope Gripper in particular. If there are further questions or concerns, please do not hesitate to contact us.

Sincerely,

Brent Henderson  
Mechanical Engineer  
Engineering Manager  
Hollister-Whitney Elevator Co., LLC



<b>Elevating and Amusement Devices Safety Program</b>	Ref. No.: 276 / 18
<b>ADVISORY</b>	Date: August 31, 2018

**Subject:** Category 1 Testing of Emergency Power (8.6.4.19.7)  
**Distribution:** TSSA website

---

**This advisory is to inform that the Category 1 testing per 8.6.4.19.7 requires the elevator to be tested under emergency power conditions and not via simulation with the elevator operating under normal power.**

Testing of the elevator while operating under actual emergency power (not a simulation using normal power), may follow the A17.2 test procedure or where provided, may follow the maintaining contractors testing procedure as detailed in the maintenance control program.

**Supporting Material:**

A17.1/B44-2013 requires:

**8.6.4 Maintenance and Testing of Electric Elevators**

**8.6.4.19.7 Standby or Emergency Power 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.

The testing procedure in A17.2, item 1.17.2.1 requires the following:

**1.17.2.1 Electric Elevators: Category 1 Test (for A17.1-2000/B44-00 and Later Editions)**

Have the elevator(s) taken out of normal service and placed at the floor where the ELEVATOR EMERGENCY POWER selector switch is located, if provided. Otherwise, have the elevator(s) taken out of normal service and placed at the bottom terminal. Have the system transferred, by the responsible party, to standby or emergency power. (...)

Operate each elevator selected to be operated on standby or emergency power, one at a time, with no load in the car. Make several trips and stops checking for proper operation. Verify that the elevator is running at normal speed especially in the up direction (speed must not attain the governor electrical overspeed trip setting or 125% of rated speed in both directions, whichever is the lesser). (...)

Have the system transferred, by the responsible party, back to normal power and verify that the elevator(s) tested operate properly in normal service.

During the emergency power test, the elevator mechanic should verify the additional requirements of A17.2 item 1.17.2.1, in order to complete the sign off of the 8.6.4.19.7 Category 1 test.





Elevating and Amusement Devices Safety Division	Ref. No.: 277-19
<b>Elevating Devices Code Adoption Document Amendment</b>	Date: May 3, 2019

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16,*  
Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), *and*  
Ontario Regulation 209/01 (Elevating Devices)

The Director for the purposes of Ontario Regulation 209/01 (Elevating Devices), pursuant to section 4 of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), hereby provides notice that the ELEVATING DEVICES CODE ADOPTION DOCUMENT published by the Technical Standards and Safety Authority and dated June 1, 2001, as amended, is further amended as follows:

**All sections of the Elevating Devices Code Adoption Document dated June 1, 2001 are hereby replaced with the following, and all previous amendments thereto are thereby superseded:**

1. The attached Elevating Devices Code Adoption Document - Amendment 277-19, dated May 3, 2019, is hereby adopted, effective as follows:
  - a. Parts 3, 6, and 7 (which are unchanged from the previous CAD amendment\*) are effective immediately.
  - b. Parts 1, 2, 4 and 8 are effective immediately.
  - c. Part 5 is effective July 31, 2019.

Any person involved in an activity, process or procedure to which this document applies shall comply with this document.

\_\_\_\_\_  
Roger Neate  
Director, O. Reg. 209/01 (Elevating Devices)

Distribution:        Posted to TSSA website.

\*Note: Part 3 contains updated references to the Ontario Building Code.

Errata: correct 209/01 references on this page.



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# **ELEVATING DEVICES CODE ADOPTION DOCUMENT AMENDMENT 277-19**

**May 3, 2019**

**Elevating and Amusement Devices Safety Program  
Technical Standards and Safety Authority**

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Superseded by CAD 295/22

## Background

This document and the codes it adopts establish requirements and minimum standards for the design, construction, installation, erection, maintenance and alteration of elevating devices.

Pursuant to s. 4(1) of O. Reg. 223/01 (Codes and Standards Adopted by Reference) made under the *Technical Standards and Safety Act, 2000*, the “Elevating Devices Code Adoption Document” published by TSSA and dated June 1, 2001 (the “CAD”) forms a part of O. Reg. 209/01 (Elevating Devices).

The CAD, in turn, adopts various codes. Since its adoption as part of O. Reg. 209/01, the CAD has been amended several times to adopt different versions of codes and to make modifications to those codes.

CAD amendment 261-13r1 replaced all previous CAD amendments.  
CAD amendment 277-19 now replaces CAD amendment 261-13r1.

For the user’s convenience, this CAD amendment indicates previous amendments using the colour coding and reference symbols in the following table:

### Colour Coding and Reference Symbols Used in CAD Amendment 277-19

7.5	is a reference to another section in this CAD amendment
(197/06)	is a reference to a predecessor document (Director’s Order, Enforcement Procedure, etc.)
7.2.4.	is a reference to a section in an external document or code
as part of	is a reference to text from a published code that is not part of this code but is shown for reference only
Red Text	is used to identify changes from the previous CAD Amendment or TSSA-specific additions to a published code
★	is used to denote a TSSA-specific alteration
Blue greyed	denotes a maintenance permission that will expire on <b>March 31, 2014</b>
Peach highlight	-identifies new code amending text that: - was originally contained in CAD Amendment-261-13r1 or - is contained in CAD Amendment 277
Peach highlight	-identifies text from the A17.1/B44-2013 code introduced in amendment 261-13-r1

Note that definitions contained in O. Reg. 209/01 apply to the CAD and adopted codes.

For more information contact:

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# Elevating Devices Code Adoption Document Amendment 277-19

## Part 1

### 1 GENERAL

#### 1.1 Definitions

1.1.1 The terms in this Code Adoption Document amendment (Document) have the same meaning as in the Act or the Regulation unless otherwise specified herein.

1.1.2 Where a provision of a code or standard adopted in this Document is inconsistent with the requirements of this Document, the provision of this Document shall prevail.

1.1.3 In this Document,

(a) “accredited” means that an organization has been evaluated and approved by an Authorized Agency to operate a Certification program, and is designated as such in a publication of the Authorized Agency. [CAD Amendment 277-19]

(b) “ANSI” means the American National Standards Institute.

(c) “CAN” means a standard recognised as a National Standard of Canada and approved by the Standards Council of Canada.

(d) “certified” means equipment or materials accepted for inclusion in a publication by a certifying organization.

NOTE: The means for identifying certified equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as certified unless it is also marked. The authority having jurisdiction utilizes the system employed by the certifying organization to identify a certified product. [CAD Amendment 277-19]

“certifying organization” means an approved or accredited, independent organization concerned with product evaluation that maintains periodic inspection of production of certified equipment or material and whose certification states whether that equipment meets appropriate standards or has been tested and found suitable for use in a specified manner. [CAD Amendment 277-19]

(e) “common-mode failure” means the result of an event(s) which because of dependencies, causes a coincidence of failure states of components in two or more separate channels of a redundancy system, leading to the defined system failing to perform its intended function. [CAD Amendment 216-07]

(f) “CSA” means the Canadian Standards Association.

(g) “dedicated function fire alarm system” means a protected premises fire alarm system installed specifically to perform emergency control fire safety function(s) where a building fire alarm system is not required. See NFPA 72-2013. [CAD Amendment 261-13] [CAD Amendment 277-19]

(h) “fire authority” as used in A17.1 has the same meaning as Chief Fire Official in Ontario Regulation 213/07; [CAD Amendment 277-19]

- (i) “freight elevator-P” means a freight elevator upon which passengers are permitted to ride;
- (j) “marked” means equipment or material to which has been attached a symbol or other identifying mark of an approved or accredited independent certifying organization, concerned with product evaluation, that maintains periodic inspection of production of marked equipment or material, and by whose marking the manufacturer indicates compliance with appropriate standards or performance in a specified manner. [CAD Amendment 277-19]
- (k) “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, s. 15.(6)
- (l) “minor alteration – type B” means a minor alteration per O. Reg 209/01, s. 19.(1) which may be signed as per O. Reg. 209/01, s. 15.(9)
- (m) “Regulation” means Ontario Regulation 209/01 (Elevating Devices) made under the *Technical Standards and Safety Act, 2000*.
- (n) “software system failure” means a behaviour of the software, including its support (host) hardware, that is not in accordance with the intended function.
- (o) “solid-state device” means an element that can control current flow without moving parts.
- (p) “transport platform” means a temporarily installed construction hoist equipped with a car or platform that moves vertically in guides, and is tied to the building or structure, that is used for hoisting, lowering or otherwise moving authorized persons or materials and necessary tools to various access levels on a building or structure for construction, renovation, alteration, maintenance, demolition or other types of work of a building or structure. [CAD Amendment 277-19]

## 1.2 Referenced Documents

- 1.2.1 For undated references, the latest edition of the referenced document applies.
- 1.2.2 For dated references, any subsequent amendments or revisions of these referenced documents do not apply.
- 1.2.3 Where documents are referenced in reprinted materials, the edition intended by the reprinted publication shall apply. [CAD Amendment 277-19]

## 1.3 Exceptions

- 1.3.1 Except where otherwise indicated, this Document applies to all elevating devices and parts thereof.
- 1.3.2 Despite subsection 1.3.1 and unless otherwise specified in the Regulation, in this Document or by the director, the codes and standards referred to in this Document do not apply to existing elevating devices except for those sections respecting alterations, the inspection, testing, maintenance, operation and use of the elevating device, including signage and instructions relating to the use of the elevating device.

## Part 2

### 2 GENERAL TECHNICAL REQUIREMENTS

#### 2.1 Welding

- 2.1.1 The welding of a steel structure on an elevating device shall conform to the requirements of CSA Standard W59, Welded Steel Construction (Metal Arc Welding).
- 2.1.2 The welding of a steel structure on an elevating device shall be undertaken by a fabricator or contractor qualified to the requirements of CSA Standard W47.1, Certification of Companies for Fusion Welding of Steel Structures.
- 2.1.3 The field welding of piping and fittings on an elevating device shall conform to the requirements of CSA Standard B51, Code for the Construction and Inspection of Boilers.
- 2.1.4 Despite subsections 2.1.1, 2.1.2 and 2.1.3, an equivalent welding standard may be used if it is acceptable to the director.

#### 2.2 Electrical

- 2.2.1 Electrical work and electrical equipment shall conform to the requirements of, the Ontario Electrical Safety Code as amended from time to time.
- 2.2.2 Electrical equipment shall be certified / listed to the requirements of:
- (a) CAN/CSA B44.1/ASME A17.5, Elevator and Escalator Electrical Equipment; or
  - (b) CAN/CSA C22.2 No. 14, Industrial Control Equipment (applicable to elevating devices other than elevators, escalators, moving walks, dumbwaiters, material lifts, manlifts, and lifts for persons with physical disabilities).
- 2.2.3 Where certification to IEC61508 (Functional safety of electrical/electronic/programmable electronic safety-related systems) of Electrical / electronic / programmable electronic systems (E/E/PES) or of software systems is required by this CAD or by the adopted codes, the certification body shall be,
- (a) accredited by Standards Council of Canada (SCC),
  - (b) accredited by ANSI as a National Recognized Testing Laboratory (NRTL), or
  - (c) acceptable to the director. [CAD Amendment 277-19]

#### 2.3 Rope Clips

- 2.3.1 Where clips are permitted to fasten metal rope in an elevating device,
- (a) the minimum number of clips to be used on each rope ends shall be,
    - (1) two clips for rope under nine millimetres in diameter,
    - (2) three clips for rope nine millimetres in diameter and over but under sixteen millimetres in diameter,

- (3) four clips for rope sixteen millimetres in diameter and over but under nineteen millimetres in diameter;
- (b) the rope end shall be bent over a heart-shaped thimble that has a groove of a radius equal to that of the rope or shall be provided with protection that a director considers equivalent;
- (c) the clips shall be spaced at a distance apart equal to six times the rope diameter from the short end of the rope;
- (d) U-type clips shall be placed so that the U bolts bear on the short or dead end of the rope and the bases bear on the load part of the rope; and
- (e) the nuts on the clips shall not be fully tightened until after the rope has been under load and all nuts shall be fully tightened while the rope is still loaded.

## **2.4 Rope & Stranded Cable Replacement (17/84)(122/95)**

- 2.4.1 When changing or shortening ropes on counterweighted elevators, the installation shall be provided with a data plate permanently and securely attached in the pit, in the vicinity of the counterweight buffer, indicating the maximum designed counterweight runby.
- 2.4.2 The minimum stranding for cables used to relate any car or landing door shall be not less than 7 x 19 construction.

## **2.5 Relocation of an Elevating Device**

- 2.5.1 Where an elevating device is relocated it shall meet the requirements of the applicable code or standard adopted in this Document, unless otherwise specified in this Document or by the director.

## **2.6 Alteration**

- 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. [CAD Amendment 250-11]
- 2.6.1 Unless otherwise specified in this Document, the adopted code or by the director, and without limiting generality of the Regulation, the following alteration to an elevating device shall constitute a major alteration:

- (a) An increase by more than 10 per cent in,
  - (1) the rated speed of the load-carrying unit,
  - (2) the maximum capacity, or
  - (3) the dead-weight of the machine, load-carrying unit or counter-weight;
- (b) except for construction hoists, an increase or decrease in the distance of the travel of the load-carrying unit;

- (c) a change in,
- (1) the method or type of operation,
  - (2) the method or type of motion control,
  - (3) the type or size of guide rails or other guiding means for the load-carrying unit or counter-weight,
  - (4) the type of safety device or other safety stopping device for the load-carrying unit or counter-weight,
  - (5) the power supply to the machine,
  - (6) the type of driving machine or brake,
  - (7) the location of ;
    - a) the elevating device,
    - b) elevating device controller,
    - c) the machine,
    - d) the load-carrying unit,
    - e) the counter-weight, or
  - (8) the working pressure of a hydraulic system by more than 10 per cent;
- (d) a replacement of the controller;
- (e) changes that would result in a reclassification of the elevating device; and
- (f) the addition of an entrance to the elevating device.

2.6.2 Unless otherwise specified in this Document or by the director, and without limiting the generality of the Regulation, any action or work performed on an elevating device that is not specified in subsection 2.6.1 and that results in a change to the original design or the operational characteristics of the elevating device or affects the inherent safety level of the elevating device, shall constitute a minor alteration.

## 2.7 Rack and Pinion Safeties

- 2.7.1 Any repair or rebuild of a type 'D' rack and pinion safety where the manufacturer has stated that such work shall only be performed by the manufacturer, may either be;
- (a) repaired, rebuilt or replaced by the manufacturer; or
  - (b) repaired or rebuilt in accordance with a procedure certified by a professional engineer.
- 2.7.2 The procedure referred to in clause 2.7.1(b) shall be filed with the director and shall be available to the inspector upon request.

## 2.8 Format of Submission Documents

2.8.1 Where a design submission is in paper format it shall;

- (a) be submitted as one copy unless the submission includes oversized drawings;
- (b) drawings that are not legible when printed on 11" x 17" paper are considered oversized and shall be submitted as four paper copies as well as in an electronic media form that contains the oversized drawings in unprotected PDF format;
- (c) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding.

2.8.2 Electronically submitted design submissions shall be as follows;

- (a) filled specification sheets shall be provided in excel format;
- (b) other supporting documentation shall be provided in unprotected PDF, excel or word format;
- (c) where electronic pages exceed 11"x17" paper size, the information shall be legible to the smallest detail when printed to 11"x17", otherwise they shall also be provided as four hardcopies;
- (d) pages larger than 11"x17" provided in hardcopy shall be folded and submitted without any binding;
- (e) documents received electronically, will be returned electronically at the conclusion of the design review.

## 2.9 Hydraulic Elevating Device Oil Loss Monitoring Program

2.9.1 Every contractor who maintains a hydraulic elevating device with buried cylinders or buried piping shall ensure there is a written oil loss monitoring program.

2.9.2 A "hydraulic elevating device" means a non-portable device for hoisting and lowering or moving persons or freight and includes an elevator, dumbwaiter, manlift, incline lift, construction hoist, stage lift, platform lift and special elevating device that incorporates one or more hydraulic cylinders.

2.9.3 The purpose of the oil loss monitoring program is to identify any loss of oil which cannot be accounted for in the hydraulic system.

2.9.4 If a contractor performs maintenance on a hydraulic elevating device with buried cylinders or buried piping, the contractor shall ensure that a written oil loss monitoring program is developed and maintained before the contractor performs work on the hydraulic elevating device.

2.9.5 The oil loss monitoring program shall include:

- (a) the requirement to provide an oil loss monitoring log ("OLM log") for each hydraulic elevating device with buried cylinders or buried piping;
- (b) the requirement for the OLM log to reference the elevating device installation number;
- (c) the requirement to establish a fixed reference level for the oil and the requirement to mark the reference level on the tank, dip stick or other suitable location via permanent means;

Note: "permanent" implies affixed in such a manner so as to not be easily removed or repositioned.

- (d) the requirement to document in the OLM log the location of the mark for the fixed reference level;

- (e) the requirement to check that the oil level is at the established reference point when the device is level with the lowest landing during each scheduled maintenance visit;
- (f) if the fixed reference level needs to be intentionally adjusted, the requirement to document and record the changes to the established reference level and reason for establishing the new reference level;
- (g) the requirement to record in the OLM log any quantity of oil added or removed from the hydraulic system;
- (h) that during each maintenance visit, even if no oil is added, the requirement to record in the OLM log the oil level and the date of the scheduled maintenance visit;
- (i) if oil is added or removed, the requirement to record in the OLM log the dates oil was added or removed from the hydraulic system;
- (j) the requirement to record in the OLM log the reason oil was added to or removed from the hydraulic system;
- (k) the requirement to record in the OLM log the mechanic's printed and legible name, signature and certification number for every entry made;
- (l) the requirement to keep the OLM log in the elevator machine room, in a readily identifiable location;
- (m) the requirement that the OLM log be kept in the elevator machine room for a period of at least five years from the date of the last entry in the OLM log;
- (n) the requirement to never allow oil levels to exceed the fixed reference level for the oil level;
- (o) the requirement to record in the OLM log the frequency of oil monitoring activities;
- (p) if there is any oil loss which cannot be accounted for, the requirement to immediately remove a hydraulic elevating device from service until the cause for the oil loss is determined and the cause and associated remedy noted in the OLM log;
- (q) the requirement to report in writing any oil loss attributed to leaks in buried cylinders or buried piping to the TSSA Elevating Devices Director within 7 days;
- (r) the requirement to provide maintenance personnel adequate training related to the contractor's oil loss monitoring program;
- (s) the requirement to maintain up-to-date written records showing who provided and who received the training referred to in (r), the nature of the training and the date when it was provided. A record of training shall be available to the TSSA upon request.
- (t) the requirement that the contractor's oil loss monitoring program be posted or otherwise available in the machine room, and
- (u) the requirement that the collection containers shall not exceed 19 L (5 gal) per cylinder.

2.9.6 Oil that is returned to the hydraulic system from recovery containers, either by manual means or automatically via scavenger pumps, need not be recorded.



Note 1: if oil from recovery containers is not suitable for return to the tank, it must be measured and an equivalent amount must be added to the system when recovery containers are emptied. If additional oil is needed to reach the fixed reference level it must be recorded as new oil.

Note 2: As of May 1, 2015 every hydraulic elevating device (including elevators, dumbwaiters, manlifts, incline lifts, construction hoists, stage lifts, platform lifts and special elevating devices) required mitigation (replacement or other means) to protect against single bottom cylinder failures. Where single bottom cylinders continue to exist with supplemental hazard mitigation, or where buried piping remains, the Oil Loss Monitoring requirements of 2.9 apply. [CAD Amendment 277-19]

## **2.10 Proper Use of Jumpers** (*Elevator Industry Field Employees' Safety Handbook*) (01/82)

- 2.10.1 Each contractor shall have written procedures for the use of jumpers when working on elevating device circuits. Each contractor is responsible for ensuring that their mechanics understand the procedure and are equipped to follow it. Each mechanic is responsible for ensuring that they adhere to the procedure. [CAD Amendment 246-11]
- 2.10.2 The written procedures shall contain not less than the minimum requirements prescribed in Section 6 of the 2015 edition of the Elevator Industry Field Employees' Safety Handbook. [CAD Amendment-261-13] [CAD Amendment 277-19]

Note: This procedure is applicable to all devices under regulated under O. Reg. 209/01.

## **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 the following shall apply to facilitate safe passage from the roof top access point to the elevating device equipment:
  - (a) a permanent and unobstructed walkway not less than 600 mm (24 in.) wide shall be provided
  - (b) adequate lighting that ensures shadows and/or glare are reduced to a minimum
  - (c) The means of access are maintained, including but not limited to ensuring: snow removal as needed, secure footing, no standing water, and the upkeep of safety equipment such as walkways, lifelines, stairs and fixed ladders.
  - (d) for buildings with any elevating device installation that was commissioned on or after December 27, 1985 (effective date of B44-M85) where there is no parapet at least 1070mm (42 in.) high around the roof or protecting a fall hazard on a side of the walkway, a guardrail meeting the requirements of the Occupational Health and Safety Regulations shall be provided on all sides of the walkway where a roof top edge and the associated fall hazard can be accessed.

(e) for buildings where all elevating device installation(s) were commissioned before December 27, 1985 where there is no parapet at least 1070mm (42 in.) high around the roof or protecting a fall hazard on a side of the walkway;

(1) a guardrail meeting the requirements of the Occupational Health and Safety Regulations shall be provided on all sides of the walkway where a roof top edge and the associated fall hazard can be accessed, or

(2) an engineered lifeline in lieu of a guardrail shall be provided that is designed to accommodate a travel restraint (safety belt) or fall arrest system meeting all applicable requirements of the Occupational Health and Safety Regulations.

**2.13 Parts affecting Safe Operation** [CAD Amendment-261-13]

2.13.1 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.

2.13.2 Where a defective part that can impact the safety of the operation is identified, the part shall be adjusted, repaired or replaced, or a risk assessment carried out to determine if the device can remain in service where the work cannot be carried out immediately. The nature of the defect and the anticipated date of repair or replacement shall be noted in the log book.

Archive  
Superseded by CAD 295/22

## Part 3 [No Changes from 261-13r1]

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

#### 3.1 Applied Codes and Standards [CAD Amendment 250-11] [CAD Amendment 261-13]

3.1.1 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 **332/12** ~~350/06~~ (**Building Code**) 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 32 mm (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 **on the side sloping away from the walk** with a railing conforming to 2.10.2.1, 2.10.2.2, and 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 and or control room shall be provided.

- (9) Requirement 2.10.2 is revoked and the following substituted (see also 3.8.2): (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 1 070 mm (42 in.) from the working surface. **For alterations only:** On elevator car tops of existing devices where a non collapsible 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 NBCO 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 1000N (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. 332/12 350/06 (Building Code) Article 4.1.5.14 4-1-5.15, as required by Reg. 851 (Regulations for Industrial Establishments) Section 14(2).

For Limit States Design a principal load factor of 1.5 applies per sentence 4.1.3.2(6) 4-1-3-2(5) of O. Reg. 332/12 350/06 (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 amended and supplemented with the following (see also 3.8.2):  
(245/10)

**2.14.1.7.2** When the car has reached its maximum upward movement (2.4.6.1), The following minimum clearances shall be provided to mitigate shearing hazards caused by relative motion between from the top rail of the standard railing and the building structure or equipment not attached to the car:

- (a) when the car has reached its maximum upward movement (2.4.6.1):

- (1) 100 mm (4 in.) vertically
- (2) 300 mm (12 in.) horizontally towards the centerline of the car enclosure top
- (3) 100 mm (4 in.) horizontally in the direction towards the hoistway enclosure

- (b) throughout the hoistway 100 mm (4 in.) horizontally in the direction towards the hoistway enclosure for submissions received after November 1, 2013. [CAD Amendment 261-13r1]

**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 not be less than 1 070 mm (42 in.) in height and shall meet the requirements of 2.10.2, and
- (9) a suitably designed and marked fall arrest anchor point shall be provided if there is worker exposure to a fall hazard (per R.R.O. 1990, Reg. 851 (Industrial Establishments) made under the *Occupational Health and Safety Act*, s. 85) 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, and
  - (3) in elevator and dumbwaiter shafts or:
    - (i) 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, or
    - (ii) O. Reg. 332/12 Article 3.2.4.11 (e) if a fire alarm system is required by O. Reg. 332/12 Article 3.2.4.1, except as provided in O. Reg. 332/12 Article 3.2.4.16.
- (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 O. Reg. 350/06 article 3.2.4.14.(3) or O. Reg. 332/12 article 3.2.4.15.(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 (DFFA). The installation of this control panel shall conform to the following:
  - (1) in a building with an existing fire alarm system, the building fire alarm system and the Dedicated Function Fire Alarm system shall be interconnected. [CAD Amendment-261-13]
  - (2) in a building without an existing fire alarm system, the Dedicated Function Fire Alarm control panel used to initiate elevator recall shall be permanently identified as "Elevator Recall Control and Supervisory Control Unit" in lettering not less than 6mm (0.25in.) in height.
  - (3) the installation or alteration of any fire alarm systems or DFFA system must be installed in accordance with CAN/ULC-S524 (Installation of Fire Alarm Systems), and
  - (4) where a DFFA has been installed to serve as an Elevator Recall Control and Supervisory Control Unit, the system shall be subject to inspection and testing in accordance with CAN/ULC-S536 (Inspection and Testing of Fire Alarm Systems). For these systems the owner or contractor shall provide written confirmation of testing at the initial inspection, and confirmation of annual testing shall be available to an inspector upon request.

NOTE(S):

1. (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.
2. The installation or alteration of a fire alarm system, including dedicated function fire alarm systems require permits and installation by qualified personnel.
3. See 8.6.11.1 for notes related to DFFA testing.

**(ALTERATIONS ONLY)**

(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. 332/12 350/06 Sentence 3.2.4.10.(2) 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) below apply, otherwise the requirements of (2) below 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) below apply, otherwise the requirements of (2) below 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 165 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:

- (i) *only elevator personnel are permitted to unlock hoistway doors*
- (ii) *only emergency personnel are permitted to perform emergency evacuations.*
- (iii) access to the unlocking device is controlled or has a controlled procedure
- (iv) 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:

- (i) lettering shall be a minimum of 20 mm in height
- (ii) the sign shall remain permanent and readily legible, viewable from the hall
- (iii) the Context of the message shall convey the following information:
  - (a) a 'warning' advising of the potential fall hazard that exists below when the car is above the floor level
  - (b) lower the car prior to attempting rescue of trapped passengers
  - (c) 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) Requirement 6.1.6.3.1(a) is supplemented with the following:

Additionally, escalator operation in accordance with Section 5.5.2 of NFPA 130, Standard for Fixed Guideway Transit and Passenger Rail Systems (2010 Edition), shall be permitted for transit facilities.

- (25) "Material lift – type B" shall mean the same as the term "freight platform lift – type B" used in Ontario Regulation 209/01;
- (26) 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.

(27) Requirement 7.4.14.8 is added:

**7.4.14.8**

Requirement 2.12.3 applies only to Type A Material Lifts.

(28) 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.

- (29) 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;
- (30) 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;
- (31) The requirements of Section 8.7 – Alterations, is adopted, as modified and clarified in 3.4 of the Code Adoption Document;

- (32) Section **8.7.7.3** Material Lifts and Dumbwaiters with Automatic Transfer Devices, is not adopted, except **8.7.7.3.2** is adopted;
- (33) 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;
- (34) 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.(1)
- 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](#).
  - (a) For new installations for which a design submission is received on or after May 1, 2013 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.
  - (b) For existing or altered installations the Maintenance Control Program shall be fully implemented not later than **March 31**, 2014. [CAD Amendment-261-13r1]
- 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.

Maintenance, repair and replacement shall be performed to provide compliance with the code applicable at the time of installation or alteration.

#### 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.**

Requirement (a) is applicable for

- (1) new installations submitted on or after May 1, 2013,
- (2) any existing devices where a Maintenance Control Program has been implemented, and
- (3) all devices maintained after March 31, 2014. [CAD Amendment-261-13]

Requirement (b) is applicable until March 31, 2014 for

- (1) existing installations, or
- (2) new installations submitted prior to May 1, 2013. [CAD Amendment-261-13r1]

**8.6.1.1.2** 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

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

### **8.6.1.2 General Maintenance Requirements**

**8.6.1.2.1** A written Maintenance Control Program where implemented shall be in place to maintain the equipment in compliance with the requirements of 8.6 and the following, otherwise the requirements of 8.6.1.1(b) apply.

The MCP shall specify examinations, tests, cleaning, lubrication, and adjustments to applicable components at regular intervals (see definition for maintenance) and shall comply with the following:

- (a) A Maintenance Control Program for each unit (see 8.6.1.1.1) shall be provided by the person(s) and/or firm maintaining the equipment and shall be viewable on-site by elevator personnel at all times from time of acceptance inspection and test or from the time of equipment installation or alteration (see 8.10.1.5).
- (b) The MCP shall include, but not be limited to, the code required maintenance tasks, maintenance procedures and examinations and tests listed with the associated requirement (see 8.6.4 to 8.6.11). Where maintenance tasks, maintenance procedures, or examinations or tests have been revised in 8.6 the MCP shall be updated.
- (c) The MCP shall reference On-Site Equipment Documentation (see 8.6.1.2.2) needed to fulfill 8.6.1.2.1(b) and On-Site Maintenance Records (see 8.6.1.4.1) that record the completion of all associated maintenance tasks specified in 8.6.1.4.1(a).
- (d) Where the MCP is maintained remotely from the machine room, machinery space, control room, or control space (see 8.11.1.8) instructions for on-site locating or viewing the MCP either in hard copy or in electronic format shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125in) in height.
- (e) In addition to s. 32(1) of the Regulation, the specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on
  - (1) equipment age, condition, and accumulated wear ,
  - (2) design and inherent quality of the equipment ,
  - (3) usage,
  - (4) environmental conditions,
  - (5) improved technology,
  - (6) the manufacturer's recommendations and original equipment certification for any SIL rated devices or circuits (see 8.6.3.12 and 8.7.1.9), and

- (7) the manufacturer's recommendations based on any A17.7/B44.7 approved components or functions.
- (f) 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.  
[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.]
- (g) The manufacturer's or installer's procedures for tests, periodic inspections, maintenance, replacements, adjustments, and alterations repairs, of SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall be incorporated into the Maintenance Control Program. (ref TN 08-802)

**8.6.1.2.2 On-Site Documentation**

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

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

- (a) Up-to-date wiring diagrams detailing circuits of all electrical protective devices (see 2.26.2) and critical operating circuits (see 2.26.3).
- (b) Procedures for inspections and tests not described in A17.2 and procedures or methods required for elevator personnel to perform maintenance, repairs, replacements and adjustments, as follows:
  - (1) all procedures specifically identified in the code as required to be written (e.g. 8.6.4.20.8 check out procedure for leveling, 8.6.5.16.5 check out procedure for over speed valve, and 8.6.8.15.7 check out procedure for reversal stop switch, etc),
  - (2) unique maintenance procedures or methods required for inspection, tests, and replacement of SIL rated E/E/PES electrical protective devices and circuits (see 2.26.4.3.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b)),
  - (3) unique maintenance procedures or methods required for inspection, tests, and replacement of equipment applied under alternative arrangements (see 1.2.2.1) shall be provided by the manufacturer or installer, and
  - (4) unique maintenance procedures or unique methods required for inspection and test of equipment specified in an A17.7/B44.7 Code Compliance Document (CCD).
- (c) Written checkout procedures:
  - (1) to demonstrate E/E/PES function as intended (see 8.6.4.19.10),
  - (2) for elevator leveling speed with open doors (see 8.6.4.20.8),
  - (3) for hydraulic elevator over speed valve (see 8.6.5.16.5),
  - (4) for escalator reversal stopping device (see 8.6.8.15.7), and
  - (5) for escalator handrail retarding force (see 8.6.8.15.13).
- (d) Written procedures for the following:
  - (1) evacuation procedures for elevators by authorized persons and emergency personnel shall be available on site. (see 8.6.11.5.2 and A17.4)
  - (2) the procedure for cleaning of a car and hoistway transparent enclosures by authorized persons. (see 8.6.11.4.2)

**8.6.1.2.3** 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

Maintenance records shall document compliance with 8.6. Instructions for locating the maintenance records of each unit, for viewing on site, shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 years or from the date of installation or adoption of this code edition, whichever is less or as specified by the authority having jurisdiction. Existing maintenance records up to 5 years shall be retained.

#### 8.6.1.4.1 On-Site Maintenance Records

##### 8.6.1.4.1(a) Maintenance Control Program Records

- (1) A record that shall include the maintenance tasks listed with the associated requirements of 8.6 identified in the Maintenance Control Program (8.6.1.2.1), other tests (see 8.6.1.2.2), examinations and adjustments, and the specified scheduled intervals shall be maintained.
- (2) The specified scheduled maintenance intervals (see 1.3) shall, as applicable, be based on the criteria given in 8.6.1.2.1(e).
- (3) MCP records shall be viewable on-site by elevator personnel in either hard copy or electronic format acceptable to the authority having jurisdiction and shall include but not limited to the following:
  - (a) site name and address,
  - (b) service provider (Contractor) name,
  - (c) conveyance identification (ID) (TSSA or MCCR installation number) and type,
  - (d) date of record,
  - (e) a description of the maintenance task, interval, and associated requirements of 8.6,
  - (f) indication of completion of maintenance task,
  - (g) year and month when the task was performed,
  - (h) Contractor's Registration Number, and
  - (i) the printed name, signature and mechanic certification number of the person(s) 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. (277-10)

Note [8.6.1.4.1(a)]: Recommended format for documenting maintenance control program records can be found in non-mandatory Appendix Y. This is only an example format. A specific maintenance control program that includes all maintenance needs is required for each unit.

##### 8.6.1.4.1 (b) Repair and Replacement Records

The repairs and replacements listed in paragraphs (1) and (2) below shall be recorded and shall be kept on-site for viewing by elevator personnel in either hard copy or electronic format. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. The record shall include an explanation of the repair or replacement, date, and name of person(s) and/or firm performing the task. The record of repairs and replacements shall be retained by the owner of the equipment for the most recent 5 years or from the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction and shall be a permanent record for the installation. These records may be kept remotely from the site.

- (1) Repairs (8.6.2.1- 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 (8.6.3.1 - 8.6.3.11 except 8.6.3.7 and 8.6.3.10) including replacements 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.

#### **8.6.1.4.1 (c) Other Records**

The written records listed in paragraphs (1) to(4) below shall be kept on-site for each unit. Instructions for locating the records of each unit for immediate viewing shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The provided instructions shall be permanently legible with characters a minimum of 3 mm (0.125 in.) in height. These records shall be retained for the most recent 5 years from of the date of installation or adoption of this code edition, whichever is less, or as specified by the authority having jurisdiction. The record shall include the date and name of person(s) and/or firm performing the task.

- (1) A record of oil usage (8.6.5.7).
- (2) A record of findings for firefighter's service operation required by 8.6.11.1 with identification of the person(s) that performed the operation.
- (3) Periodic tests (see 8.6.1.7) shall be documented or recorded in accordance with 8.6.1.7.2.
- (4) Written record to document compliance with replacement criteria specified in ASME A17.6 requirement 1.10.1.1(c).

#### **8.6.1.4.1 (d) Acceptance Tests**

A permanent record of the results of all Acceptance tests as required by 8.10.1.1.4 and 8.10.1.1.5 shall be kept with the on-site records.

#### **8.6.1.4.2 Call Backs (Trouble Calls)**

A record of call backs shall be maintained and shall include the description of reported trouble, dates, time and corrective action(s) taken that are reported by any means to elevator personnel. These records shall be made available to elevator personnel when performing corrective action. For elevator personnel other than personnel performing the corrective action, records will be available upon request and shall be maintained for a minimum of one year. Instructions on how to report any need for corrective action (trouble calls) to the responsible party shall be posted on the controller or at the means necessary for test (see 2.7.6.4). The instructions shall be permanently legible with characters a minimum of 3mm (0.125 in.) in height.

#### **8.6.1.5 Code Data Plate**

~~8.6.1.5.1 The Code data plate shall comply with 8.9.~~

#### **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 and Wiring**

- (a) 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.
- (b) Temporary wiring and insulators or blocks in the armatures or poles of magnetically operated switches, contactors, or relays on equipment in service are prohibited.

- (c) 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 recommended minimum jumper control procedures.
- (d) Control and operating circuits and devices shall be maintained in compliance with applicable Code requirements (see 8.6.1.1.2).
- (e) 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.

**8.6.1.6.5 Fire Extinguishers.**

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

**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 the interval between maintenance visits to an elevating device (excluding wind tower elevators) exceed three months, nor shall it exceed the manufacturer’s specified limit or other imposed limit which is less than three months (see CAD 2.9 for example of a one month limit), and
  - (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.

(225/07-r3)

(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 the interval between 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 Non-mandatory Appendix N.

#### 8.6.1.7.1 Not adopted

~~Periodic tests shall be witnessed by an inspector employed by the authority having jurisdiction or by a person authorized by the authority having jurisdiction. The inspector shall conform to the requirements in 8.11.1.1.~~

#### 8.6.1.7.2 Periodic Test Records

A periodic test record for all periodic tests containing the applicable code requirement(s) and date(s) performed, and the name of the person or firm performing the test, shall be kept readily visible adjacent to or securely attached to the controller of each unit in the form of a log book record metal tag or other format designated by and acceptable to the authority having jurisdiction. If any of the alternative test methods contained in 8.6.4.20 were performed then the test record tag must indicate alternative testing was utilized for the applicable requirement.

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)** ~~8.11.2.3.2(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).

#### **8.6.2.6 Repairs involving SIL Rated Device(s)**

SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) shall:

- (a) not be repaired in the field
- (b) be permitted to be repaired in accordance with the provisions for repair where included in the listing/certification, and
- (c) shall not be affected by other repair(s) such that the listing/certification is invalidated.

### **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 Non-mandatory 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 rods.

**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). ~~8.11.2.3.2(b)~~.

8.6.3.4.4 ~~A test tag indicating the~~ The date when the pull-through test was performed shall be ~~attached~~ 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 (8.6.1.4.1(b)(2)).

#### 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. ~~8.11.2.3.2~~. 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~~ ~~8.11.2.3.1~~ 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.

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

#### 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) ~~8.11.2.3.2(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 valves, piping, or fittings are replaced, replacements shall conform to 3.19 with the exception of 3.19.4.6. Replacement control valves must conform to the Code under which it was installed.
- (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 Reropeing 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 Demarcation Lights**

Fluorescent lighting fixtures shall be permitted to be replaced by any type light source, except incandescent sources, and shall comply with all other applicable step demarcation lighting requirements under which the escalator was installed or altered.

**8.6.3.14 Replacements involving SIL Rated Device(s) (See 1.3)**

- (a) SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) shall not be affected by other replacement(s) such that the listing/certification is invalidated.

(b) Where a SIL Rated Device (see 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced, it shall be considered a replacement only when the replacement device is the original manufacturer's listed/certified SIL rated device or the original manufacturer's listed/certified SIL rated replacement device; otherwise it shall be considered an alteration (see 8.7.1.9(d)).

(c) Where a non-SIL Rated Device used to satisfy 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), or 2.26.9.6.1(a) is replaced with SIL Rated Device, it shall be considered an alteration. (see 8.7.1.9(c)).

#### **8.6.3.15 to 8.6.3.24 Reserved**

#### **8.6.3.25 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

#### **8.6.3.26 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.

#### **8.6.3.27 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. ~~Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured.~~ When suspension-member tension is checked or adjusted, an antirotation device conforming to the requirements of 2.20.9.8 shall be permitted.

**Note:** Suspension members are considered to be equally tensioned when the smallest tension measured is within 10% of the highest tension measured.

#### **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 8.6.1.6.2. and 2.17.16).

**8.6.4.3.3** If lubricants other than those recommended by the manufacturer are used, a safety test conforming to 8.6.4.20.1 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 8.6.4.20.1.

#### **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 operations, 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. A test complying with 8.6.4.20.4 shall be performed.

**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.**

- (a) 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.
- (b) the suspension wire ropes shall conform to 2.20.7.

**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
  - (b) the date on which the rope was resocketed or other types of fastening changed
- 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 2.6.3.3.3).

**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 gears 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) means to restrict hoistway or car door opening ~~and expiration date for the alternate power source~~, 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. **Where a dedicated function fire alarm system has been added to comply with CAD requirement 2.27.3.2.2(c) the owner shall ensure that testing of the "Elevator Recall Control and Supervisory Control Unit" is performed annually.**

#### 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.(d)).



- (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 and Stop Motion Switch on Winding Drum Machines.**

Slack-rope devices on winding drum machines shall be operated manually and tested to determine conformance with the applicable requirements. The final terminal stopping device and the machine final (stop motion switch) shall be examined and tested by disabling the normal stopping device, normal terminal stopping device and final terminal stopping device located in the hoistway and operating the unit to verify proper operation. (Item 2.20)

#### **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 2.20, 2.28.2.1, 3.5.2.1 and 3.6.2.1).

#### **8.6.4.19.6 Firefighters' Emergency Operation.**

Firefighters' emergency operation (Phase I and II) shall be tested annually to the requirements of 8.6.11.1. Additional testing may be performed to determine conformance with the applicable requirements. Phase I recall shall be tested by individually activating fire alarm initiating device inputs to the elevator control, the three position switch at the designated landing and where provided, the two position switch at the building fire control station. (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 Functional Safety of SIL Rated Devices.**

Verify SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.3.2(b), 2.26.9.5.1(b), and 2.26.9.6.1(b) are as identified on wiring diagrams (8.6.1.6.3) with part identification, SIL, and certification identification information.

The person or firm maintaining the equipment shall provide a written checkout procedure and demonstrate that SIL Rated Devices, Safety Functions (see table 2.26.4.3.2), and related circuits operate as intended.

#### **8.6.4.19.11 Ascending Car Overspeed Protection and Unintended Car Movement Devices**

(a) **Examinations.** All working parts of ascending car overspeed protection and unintended car movement 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.** Ascending car overspeed protection shall be subjected to tests to demonstrate compliance with 2.19.1 with no load in the car at the slowest operating speed (inspection speed) in the up direction.
- (c) **Tests.** Unintended car movement shall be subjected to tests with no load in the car. Testing shall confirm compliance with 2.19.2 due to an elevator rollaway caused by a brake and releveling failure. at the slowest operating speed in the up direction.

**8.6.4.19.12 Traction-Loss Detection Means.**

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

- (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(f)]

**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 Occupant Evacuation Operation.**

Occupant Evacuation Operation shall be tested to determine conformance with the applicable requirements. Deficiencies shall be corrected. A record of findings shall be available to the building owner and the authority having jurisdiction.

**8.6.4.19. 15 Emergency Communications**

Emergency Communications shall be tested to determine conformance with the applicable requirements (Item 1.6)

**8.6.4.19. 16 Means to Restrict Hoistway or Car Door Opening**

Means to restrict hoistway or car door opening shall be tested to determine conformance with the applicable requirements (Item 1.18)

**8.6.4.19.17 to 8.6.4.19.24 Reserved**

**8.6.4.19.25 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.

For new installations and where the annual testing per 8.6.4.19.25 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, in which case a marking tag to indicate spring force shall be utilized / retained to provide an interim brake checking method.
- (b) Except as permitted in (a3), 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 and counterweight safeties shall be tested in accordance with 8.6.4.20.1(a) or subject to approval by the authority having jurisdiction with 8.6.4.20.1(b).

###### (a) Rated Load and Rated Speed Test.

Car safeties, except those operating on wood guide rails, and their governors, shall be tested with rated load in the car. Counterweight safety tests shall be made with no load in the car. Tests shall be made by tripping the governor by hand at the rated speed. The following operational conditions shall be checked (Item 2.29.2.):

- (1) Type B safeties 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.) and the level of the platform checked for conformance to 2.17.9.2.
- (2) 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. The level of the platform shall be checked for conformance to 2.17.9.2.

###### (b) Alternative Test Method for Car Safeties.

The alternative test methods shall comply with requirement 8.6.11.10, and the following:

- (1) The testing of safeties with any load in the car, centered on each quarter of the platform symmetrically with relation to the centerlines of the platform from no load up to rated load, and at not less than rated speed shall be permitted provided that,
  - a) when the alternative test is performed, the test shall stop the car and verify that the safeties will be capable of stopping an overspeeding car in accordance with the requirements of Section 2.17 applicable to the specific classification of safeties, and
  - b) when applied the method shall verify that the safeties perform or are capable of performing in compliance with 8.6.4.20.1(a) and the platform shall not be out of level more than 30 mm/m (0.36 in/ft) in any direction.

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

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~~ After these tests in jurisdictions enforcing NBCC, a metal tag indicating the date of the governor tests, together with the name of the person or firm that performed the tests, shall be attached to the governor in a permanent manner.

**8.6.4.20.3 Oil Buffers**

- (a) Car oil buffers shall be tested to determine conformance with the applicable requirements by running the car
  - (1) onto the buffer with rated load at rated speed, or
  - (2) subject to approval by the authority having jurisdiction, with
    - (a) any load, from no load up to rated load onto the buffer at rated speed when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a), except as specified in **8.6.4.20.3(b)** and (c) (Item 5.9.2.1). or,
    - (b) onto the buffer with any load, from no load up to rated load, and at less than rated speed, when the requirements of 8.6.11.10 are complied with, provided that when applied the method verifies that the buffer performs or is capable of performing in compliance with 8.6.4.20.3(a),
- (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 compression of the buffer during the test.
- (e) After completion of the test, a metal tag, indicating the date of the test, together with the name of the person or firm who performed the test, shall be attached to the buffer [Item 5.3.2(b)].
- (f) 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), or at reduced speed if requirements of 8.6.11.10 are met.
- (g) A test ~~record~~ tag as required in 8.6.1.7.2 shall be provided.

**8.6.4.20.4 Driving Machine Brake(s).**

For passenger elevators and all freight elevators, the driving machine brake shall be tested for compliance with applicable requirements, in accordance with **8.6.4.20.4(a)** or subject to approval by the authority having jurisdiction with **8.6.4.20.4(b)**. 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.

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

- (a) Test with load per Table **8.6.4.20.4**.  
Place the load as shown in Table **8.6.4.20.4** in the car. The driving machine brake, on its own, shall hold the car with this load. With no load in the car the driving machine brake shall hold the empty car at rest, and shall decelerate an empty car traveling in the up direction from governor tripping speed. The driving machine brake on freight elevators of class C-2 loading, when loaded to their maximum design load shall hold the elevator car at rest (Item 2.17.2.1).
- (b) Alternative Test Method for Driving Machine Brakes.  
The alternative test methods shall comply with requirement 8.6.11.10, and the following:

- 1) Any method of verifying conformity of the driving-machine brake with the applicable Code requirements (see 2.24.8.3 and Table 8.6.4.20.4) shall be permitted, including the testing method of the brakes with or without any load in the car, provided that when applied the method verifies that the brake performs or is capable of performing in compliance with 8.6.4.20.4(a) and shall include,
- 2) A test record tag as required in 8.6.1.7.2 shall be provided.

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

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 Reserved**

**8.6.4.20.5 Emergency and Standby Power Operation.**

Not adopted. (see 8.6.4.19.5)

Operation of elevators equipped with emergency or standby power shall be examined and tested for conformance with the applicable requirements (Item 2.17.2.1 1.17.2.1).

**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 as permitted by the applicable requirements 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).

**Table 8.6.4.20.4 Brake Test Loads**

Class of Service	Not Permitted to Carry Passengers	Permitted to Carry Passengers
Passenger	Not applicable	125% rated load
Freight	Rated load	125% rated load
One Piece Load by 2.16.7	Rated load or one piece load, whichever is greater	125% rated load or one piece load, whichever is greater

**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 Braking System, Traction and Traction Limits.**

Traction and traction limits on traction elevators shall be verified for compliance with 2.24.2.3 in accordance with

**8.6.4.20.10(a)** or subject to approval by the authority having jurisdiction, with **8.6.4.20.10(b)**.

**(a) Dynamic Stopping Test.**

Traction elevators shall be tested to ensure that:

- (1) 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 safely stop and hold the load (see 2.24.2.3.1, 2.24.2.3.2 and 2.24.2.3.3); and
- (2) if either the car or the counterweight bottoms on its buffers or becomes otherwise immovable, one of the following shall occur (see 2.24.2.3.4):
  - (a) the suspension means shall lose traction with respect to the drive sheave and not allow the car or counterweight to be raised; or
  - (b) the driving system shall stall and not allow the car or counterweight to be raised.
- (3) with a load in the car in accordance with Table 8.6.4.20.4, the braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car.

**(b) Alternative Test Method for Braking System, Traction and Traction Limits.**

Alternative test methods shall comply with requirement 8.6.11.10 and the following;

- (1) Other methods for verifying traction for compliance with 2.24.2.3, and traction limits in compliance with 2.24.2.3.4 shall be permitted provided the test method complies with the following:
  - (a) When applied, the method shall verify that the elevator traction system performs, or is capable of performing, in compliance with the performance requirements of 8.6.4.20.10(a); and
  - (b) The braking system and traction relation shall be tested to show the system can safely stop and hold the car, and where required by 2.16.2.2.4(c) shall relever the car without load in the car.
- (2) A test record tag as required in 8.6.1.7.2 shall be provided.

**8.6.4.20.11 Emergency Brake.** (Note: Aligns with 4.29 of B4.3-10)

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.

**8.6.4.22 Maintenance of Seismic Devices**

8.6.4.22.1 A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

8.6.4.22.2 The counterweight displacement switch components, where provided, shall be:

- a) maintained in accordance with the manufacturer's recommendations, and
- b) properly aligned and tensioned and kept free of dirt, debris and other contaminants that may interfere with proper operation.

**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 3.19.3.5.2.

### 8.6.5.7 Record of Oil Usage.

(a) Oil monitoring shall conform to 2.9 of the Code Adoption Document.

For systems where the part of cylinder and/or piping is not exposed for visible examination, a written record shall be kept of the quantity of hydraulic fluid added to the system and emptied from leakage collection containers and pans. The written record shall be kept in the machine room.

(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 May 1, 2015, 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, tests shall be conducted in accordance with 8.6.5.14.1.

#### **8.6.5.10 Runby and Clearances After Reropeing 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.**

Overspeed valves shall be calibrated and maintained in accordance with the manufacturer's recommendations including replacement of the valve seals or entire valves at intervals specified.

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 Verification of 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. Once this is established, test the entire system to ensure that it 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 2.28)
  - (b) Governors (8.6.4.19.3) (Item 2.13)
  - (c) Safeties (8.6.4.19.2) (Item 2.9)
  - (d) Oil Buffers (8.6.4.19.1) (Items 3.29 and 5.8)
  - (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)
- 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 3.18.1.2.5 (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). A plunger gripper, where provided, shall be examined and tested per 8.10.3.2.5(n).

**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).

**8.6.5.17 Plunger Gripper.** Plunger grippers, where provided, shall be maintained in accordance with the manufacturer's recommendations.

## **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. 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.

**8.6.7.3 Private Residence Elevators.**

The maintenance of private residence elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

**8.6.7.3.1 Periodic Test.**

Private residence elevators and lifts should be subject to the 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 5.3. Any additional requirements for this equipment should also be checked during these tests.

**8.6.7.4 Private Residence Inclined Elevators.**

The maintenance of private residence inclined elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

**8.6.7.4.1 Periodic Test.**

Private residence inclined elevators and lifts should be subject to the 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 5.4. Any additional requirements for this equipment should 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.

**8.6.7.7 Special Purpose Personnel Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of special purpose personnel elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6 (see Section 5.7).

**8.6.7.7.1 Periodic Test.**

Special purpose personnel elevators shall be subject to the applicable 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 5.7. Any additional requirements for this equipment shall also be checked during these tests.

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### **8.6.7.8 Shipboard Elevators.**

The maintenance of shipboard elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

#### **8.6.7.8.1 Periodic Test.**

Shipboard 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 5.8. Any additional requirements for this equipment shall also be checked during these tests.

### **8.6.7.9 Mine Elevators.**

Except in jurisdictions enforcing NBCC, maintenance of mine elevators shall conform to 8.6.7.9.1 through 8.6.7.9.5. ~~8.6.7.9.1~~ Rails on mine elevators shall be kept free of rust and scale, that will prevent proper operation of the car (or counterweight) safety device.

~~8.6.7.9.2~~ Oil buffers that are installed on elevators where water can accumulate in the pit shall be checked every 60 days for accumulation of water.

~~8.6.7.9.3~~ The mine elevator hoistway shall be maintained to minimize the entry of water and formation of ice, that would interfere with the operation of the elevator.

#### **8.6.7.9.4 Suspension, Compensating, and Governor Ropes.**

When elevator suspension, compensating, or governor ropes show deterioration caused by corrosion, the replacement wire ropes shall be constructed of electrogalvanized or other types of corrosion resistant material suitable for the environment and application. The installation shall conform to 8.7.2.21 for suspension ropes and 8.7.2.19 for governor ropes. Where emergency replacement of wire ropes is required, noncorrosion resistant wire ropes shall be permitted to be installed for temporary use. These emergency replacement noncorrosion resistant wire ropes shall be replaced by corrosion resistant wire ropes within one year of installation.

#### **8.6.7.9.5 Periodic Test.**

Mine 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 5.9. 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.

**8.6.7.11 Wind Turbine Tower Elevator**

The maintenance of wind turbine tower elevators shall conform to the applicable requirements of 8.6.7.11.1 through 8.6.7.11.3.

**8.6.7.11.1 Periodic Test Requirements – Category 1**

Wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor shall be tested with rated load in the car. Governor operated safeties shall be tested by manually tripping the governor at the rated speed. The overspeed switch on the governor shall be made ineffective during the test.

**8.6.7.11.2 Wind Turbine Tower Elevators.**

The maintenance of wind turbine tower elevators shall conform to 8.6.1 through 8.6.3 and the applicable requirements of 8.6.

**8.6.7.11.3 Car and Counterweight Safeties.**

Types A, B, and C car safeties except those operating on wood guide rails, and their governors, wire rope gripping safeties with slack rope actuation, or wire rope gripping safeties with an internal centrifugal governor, shall be tested with rated 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 and wire rope gripping 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 2.29.2.1) and hold the car with rated load. The following operational conditions shall be checked (Item 2.29.2.1):

**8.6.7.12 Outside Emergency Elevators.**

The maintenance, repair, and replacement of outside emergency elevators shall conform to 8.6.1 through 8.6.3 and A17.7/B44.7 requirement 2.12.2.

**8.6.7.12.1 Periodic Test Requirements -- Category 1.**

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.19.1 through 8.6.4.19.5, 8.6.4.19.7, 8.6.4.19.8, 8.6.4.19.10, and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

**8.6.7.12.2 Periodic Test Requirements -- Category 5.**

Outside emergency elevators shall be subject to applicable periodic tests specified in 8.6.4.20.1 through 8.6.4.20.11 and A17.7/B44.7 requirement 2.12.3. Outside emergency elevators are not required to be powered by electric driving machine motors.

**8.6.8 Maintenance and Testing of Escalators and Moving Walks**

- (a) The maintenance of escalators submitted and registered to A17.1-2004/B44-04 and later (effective January 1, 2006) shall conform to 8.6.1 through 8.6.3 and 8.6.8.
- (b) Not later than May 1, 2015 all escalators shall be brought into conformance with the requirements of 8.6.8.2 (Step-to-Skirt Clearance) and 8.6.8.3 (Step/Skirt Performance Index).
- (c) 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 until those escalators are brought into conformance with 8.6.8.2 and 8.6.8.3.3 after which the application of friction-reducing agents will no longer be permitted, and the requirements of 8.6.8(a) apply. [241/10]

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### 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: The allowable clearances are applicable as follows:

- (a) ASME A17.1-1955 through A17.1d-1970; not more than 4.8 mm (0.1875 in.) with a total of both sides not more than 6.4 mm (0.25 in.), except where skirt obstruction devices are installed at the lower entrance for escalators installed under the ASME A17.1-1965 through A17.1d-1970.
- (b) ASME A17.1-1971 through A17.1-1979 editions; not more than 9.5 mm (0.375 in.) on each side.
- (c) ASME A17.1-1980 through A17.1c-1999 and ASME A17.3; not more than 4.8 mm (0.1875 in.) on each side.
- (d) For equipment installed under ASME A17.1d-2000 and later editions, the clearance (loaded gap) 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.

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  $\pm 11$  N. The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> and not more than 3 870 mm<sup>2</sup>.

(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  $\pm 2.5$  lbf. The load shall be distributed over a round or square area not less than 3 in.<sup>2</sup> and not more than 6 in.<sup>2</sup>

**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  $\mu\text{m}$  (32  $\mu\text{in.}$ )
- (d) Area in contact with skirt panel:  $2\,900 \pm 325$  mm<sup>2</sup> ( $4.5 \pm 0.5$  in.<sup>2</sup>) 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 6.1.3.3.7 is provided
- (c)  $\leq 0.4$  for escalators installed under ASME A17.1-2000/CSA B44-00 and earlier editions and when a skirt deflector device is provided

#### **8.6.8.4 Combplates**

**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 6.1.6.3.16.

#### **8.6.8.5 Escalator Skirt Panels and Skirt Obstruction Devices**

(a) Damaged skirt or dynamic skirt panels shall be replaced or repaired and the installation shall conform to 8.6.8.2 and 8.6.8.3.3.

(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 combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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).

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**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)**

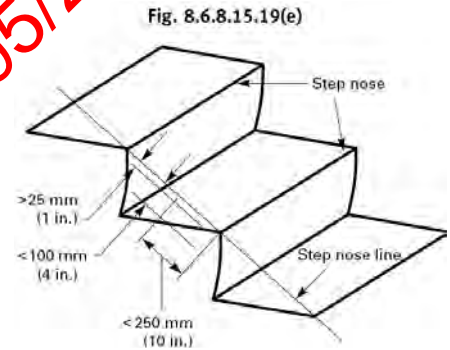
**8.6.8.15.18 Comb-Step or Comb-Pallet Impact Device.**

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  $\pm 11$  N (2.5 lbf). The load shall be distributed over a round or square area not less than 1 940 mm<sup>2</sup> (3 in.2) and not more than 3 870 mm<sup>2</sup> (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  $\pm 2.2$  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  $\pm 11$  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 mm<sup>2</sup> (3 in.2) and no more than 3 870 mm<sup>2</sup> (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 250mm (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).

#### **8.6.8.15.24 Maintenance of Seismic Devices.**

A seismic switch, where provided, shall be maintained in accordance with the manufacturer's recommendations.

#### **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 Combplates**

**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 6.2.6.7.4.

##### **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 combplates 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 treadway does not provide a continuous unbroken treadway surface or proper engagement with the combplates 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 Antislid e Devices.**

Damaged or missing antislid e 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. **Not later May 1, 2014 than all type 'B' material lifts, and all type 'A' and type 'B' freight platform lifts shall be retrofitted as required by CAD requirement 3.9.2.**

##### 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.
- 3) Where a dedicated function fire alarm system has been added to comply with CAD requirement 2.27.3.2.2(c) the owner shall ensure that testing of the "Elevator Recall Control and Supervisory Control Unit" is performed annually in accordance with CAN/ULC-S536 (Inspection and Testing of Fire Alarm Systems), with written confirmation of testing provided in the machine room or location of the elevator's log books.

~~All elevators provided with firefighters' emergency operation shall be subjected monthly, by authorized personnel, to Phase I recall by use of the key switch, and a minimum of one floor operation on Phase I, except in jurisdictions enforcing the NBCC. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.~~

**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 and wind turbine tower 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.

NOTE (8.6.11.5): See ASME A17.4, Guide for Emergency Personnel.

#### **8.6.11.6 Escalators and Moving Walks Startup and Procedures**

##### **8.6.11.6.1**

(a) 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.

(b) **Out of service** or stopped escalators shall **not** be used as a means of access or egress by non-authorized personnel and shall **not** be properly barricaded if accessible to the general public to prevent such use.

NOTE(S):

- (1) Proper barricades are described in the Elevator Industry Field Employee Safety Handbook-Escalator/Moving Walk Barricades.
- (2) Per provisions in OBC and NFPA 130, escalators in rapid transit facilities may form part of the pedestrian egress route.
- (3) Stationary escalators do not have uniform tread rise and may pose unique risks not associated with typical stairways.
- (4) The treadway of a stationary escalator relies on the escalators brake to ensure the treadway will not move under loading conditions (eg pedestrian traffic). Escalators should never be used as a stairway if the brakes holding capacity is suspect. See 8.6.11.6.2(c2) for confirmation of adequate breaking capacity. See CAD 3.21 for stopping distance check sign.
- (5) See CAD 2.13 for parts affecting safe operation and risk assessment for device use.

**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 treadway 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 Category 5 tests without Load via Alternative Test Methodologies**

**8.6.11.10.1 Where Permitted**

Alternative test methods without load are permitted for category 5 testing subject to approval by the Authority Having Jurisdiction of;

- (a) car and counterweight safeties per **8.6.4.20.1**,
- (b) oil buffers per **8.6.4.20.3**,
- (c) driving machine brakes per **8.6.4.20.4**, and
- (d) braking system, traction and traction limits per **8.6.4.20.10**

Note: See 8.10 note 2.

**8.6.11.10.2 Alternative Test Method and Tools**

- (a) An alternative test method shall be:
  - i) based on sound engineering principles,
  - ii) validated and documented via engineering tests,



- (b) The method, measuring devices and tools shall be capable of producing reliable and consistent measurements, suitable for the intended measurement. The monitoring and calibration of the measuring devices or tools shall be in accordance with the providers guidelines.

**8.6.11.10.3 Alternative Test Method Procedure**

The alternative test method shall;

- (a) include requirements to obtain and verify car and counterweight masses if necessary for the test,
- (b) have a procedure document that;
  - i) defines the permissible equipment range and limitations regarding use,
  - ii) establishes monitoring and calibration criteria for tools or measuring devices as appropriate,
  - iii) defines the test set-up procedure,
  - iv) provides instructions on how to interpret results and correlate the results to pass fail criteria,
- (c) describe how to correlate no load test results with previously acquired full load and no load results,
- (d) be included in the maintenance control program (see 8.6.1.2.1(a)),
- (e) include the information required by 8.6.1.2.1(f) where applicable, and
- (f) require a report conforming to 8.6.11.10.4

**8.6.11.10.4 Alternative Test Method Report**

The alternative test method report shall;

- (a) identify the alternative test tool (make / model) used to perform the test,
- (b) identify of the company performing the tests, names of personnel conducting and witnessing the tests, and testing dates,
- (c) contain all required print outs or record of tests required to demonstrate compliance to the testing requirement that were gathered during an acceptance test,
- (d) identify which results from the baseline test are to be used for future compliance evaluation,
- (e) record the car and counterweight masses that were obtained per 8.6.11.10.3(a) during the acceptance test and during any subsequent category 5 test if required by test method,
- (f) contain all subsequent category 5 results with pass-fail conclusions regarding code compliance, and
- (g) remain on site or shall be available to elevator personnel and the authority having jurisdiction.

**8.6.11.11 Examination After Shutdown Due to Traction Loss.**

Where the traction-loss detection means has been actuated [see 2.20.8.1 and 8.6.1.2.1(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.

**8.6.11.12 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.

**8.6.11.13 Occupant Evacuation Operation.**

All elevators provided with Occupant Evacuation Operation shall be subjected, by authorized personnel, to a check of the operation in conjunction with the fire alarm system testing in accordance with the requirements of NFPA 72. Deficiencies shall be corrected. A record of findings shall be available to elevator personnel and the authority having jurisdiction.

**8.6.11.14 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 Alteration 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.

#### 8.7.1.9 Alterations involving SIL Rated Device(s) (See 1.3)

(a) A SIL Rated Device(s) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) shall not be:

- (1) modified such that the modification invalidates the listing/certification; or
- (2) affected by other alteration(s) such that the listing/certification is invalidated.

(b) Where a SIL Rated Device (See 1.3) used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced with a non SIL Rated Device, the replacement shall meet the applicable requirements of 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), and 2.26.9.6.1(a).

(c) Where a non-SIL Rated Device used to satisfy 2.26.4.3.1, 2.26.8.2, 2.26.9.4(a), 2.26.9.5.1(a), or 2.26.9.6.1(a) is replaced with a SIL Rated Device, the replacement shall meet the applicable requirements of 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b).

(d) Where a SIL rated device used to satisfy 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), or 2.26.9.6.1(b) is replaced with a SIL Rated Device that is not the original manufacturer's listed/certified SIL rated device or the original manufacturer's listed/certified SIL rated replacement device the replacement shall meet the applicable requirements of 2.26.4.3.2, 2.26.8.2, 2.26.9.4(b), 2.26.9.5.1(b), and 2.26.9.6.1(b).

(e) An up-to-date Maintenance Control Program (8.6.1.2.1) and wiring diagrams (8.6.1.6.3) shall be provided where they are affected by an alteration involving a SIL Rated Device (see 1.3).

### 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, machinery space, control space or control room 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.

#### 8.7.2.7.8★1 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 750 mm (29.5 in.) and a minimum clear height of 2030 mm (80 in.)
- (c) 2.10.1 as a minimum
- (d) guarding shall be openable or removable only by use of common 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 1000 mm (39 in.) as per CAD requirements 2.2.1 (per Ontario Electrical Safety Code 38095 2(c)) or the permissible clearance required at the time of the original installation.
- (g) access for the operation of the disconnecting means shall be
  - (1) 1000 mm for installations installed under the Ontario Electrical Safety Code 2000 edition or later, or
  - (2) 750mm (29.5 in.) for installations installed under Ontario Electrical Safety Code 1998 edition or prior, or
  - (3) if less than 750 mm, the existing clearances shall not be further reduced
- (h) installation by a registered contractor (O. Reg 209/01 s.24)
- (i) large or heavy sections of guards that may need to be removed or opened for maintenance access shall be designed to be removed or easily handled by one person.

#### 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 2.11.11.3, 2.11.11.5.1, 2.11.11.5.2, and 2.11.11.5.3.
- (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 an 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, and ~~2.24.8.3~~.
- (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, and ~~2.24.8~~.

##### **8.7.2.11.3 Parking Devices.**

Where an alternation 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 and ~~2.24.8.3~~ for unlocking devices
- (b) requirements 2.12.7, ~~2.24.8~~, and 2.16.1.4 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 2.14.5.7.

##### **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 and 8.7.2.15★1, or 8.7.2.15★2.

### 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
- (d) requirements 8.7.2.15★1 or 8.7.2.15★2.

### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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. **and 8.7.2.15★1 or 8.7.2.15★2 as applicable.**
- (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<sup>1,2</sup> specified in O. Reg. 332/12 ~~350/06~~ (Building Code) Article ~~4.1.5.14~~ ~~4.1.5.15~~, as required by Reg. 851 (Regulations for Industrial Establishments) Section 14(2). See table in 5.2 for reference; and
- (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.

<sup>1</sup> For Limit States Design a principal load factor of 1.5 applies per sentence ~~4.1.3.2(6)~~ ~~4.1.3.2(5)~~ of O. Reg. ~~332/12~~ ~~350/06~~ (Building Code).

<sup>2</sup> 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★4(a)(1) is not possible due to existing overhead conditions, a foldable, collapsible or other stow able 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.
- (c) Where a car top railing is installed the requirements of 8.7.2.15★1 or 8.7.2.15★2 apply.

### 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 115kg (255 Lbs.) including all weight changes since the car was originally installed the following requirements shall apply, except (a) does not apply if the cumulative increase is 11kg (25 Lbs.) or less;



- (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 or for cars without crossheads in a conspicuous location on the car top or adjacent to the original data
- (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 than 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★4 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
  - (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 2.21.2.2. 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

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

#### 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

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

#### 8.7.2.27★4

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

#### 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) In jurisdictions not enforcing NBCC, 2.27.3 through 2.27.9 apply.~~
    - ~~(a) when travel is 8 m (25 ft) or more above or below the designated landing; or~~
    - ~~(b) on installations when firefighters' emergency operation was required or provided at the time of installation.~~
  - (5) ~~In jurisdictions enforcing NBCC, 2.27.3 through 2.27.9 apply only if firefighters' emergency operation was required or provided at the time of installation.~~
  - (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

Where an elevator 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.

#### 8.7.2.27.5 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 2030 mm in height or 800 mm 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
  - ~~through 2.11.13, except 2.11.11.9,~~



- (6) 2.12, except
    - (a) requirement 2.12.2.4.3 to allow a minimum engagement of 6 mm
    - (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, and 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, and 2.14.2.4
  - (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) In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall be provided and shall conform to 2.27.~~
- In jurisdictions enforcing NBCC, emergency operation and signaling devices where required by NBCC shall be provided and where required by NBCC shall be provided and 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, and
- (d) travel to all serviced landing shall be possible per 2.27.3.3.1(i).

**8.7.2.27.★8**

Where destination dispatch is added to an automatic operation control the following shall apply:

- (a) 8.7.2.8
- (b) changes to FEO shall apply to either 8.7.2.28 or to the code applicable at the time of the original installation or subsequent FEO related alteration.

**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.★ Alteration Hydraulic to Electric Elevator [CAD Amendment-261-13-r1]**

Where a hydraulic elevator that operated in an existing hoistway is being replaced with an electric elevator, the installation shall conform to Part 2, Electric Elevators, except for the following:

- (a) Existing building conditions not in conformance to the latest code maybe permitted to be retained
- (b) Apron plates must conform to 2.15.9 or where a 1220 mm (48 in.) apron is not possible due to existing pit depth, an engineered solution providing 1220 mm (48 in.) of guarding shall be permitted.

Note: Existing building conditions may include items such as pit depth or no pit drains. Items not in conformance with Part 2 shall be noted in the design submission.

### **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, 8.7.2.12★1, 8.7.2.12★2 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 2.17.11, 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 115 kg (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 than 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 2.22.4.5(b), 2.22.4.7, 2.22.4.10, and 2.22.4.11.
- (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.
- (h) Requirements 3.26.1 through 3.26.6.
- (i) Requirement 3.20.

#### 8.7.3.22.3 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 **as part of an alteration**, 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~~ 3.22.1 and 3.22.2. 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 ~~as part of an alteration~~ 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**

Where there is an addition of a top-of-car operating device, the requirements of 2.26.1.4 apply. See CAD 3.8.3. Requirement 8.7.2.15★1 or 8.7.2.15★2 applies.

**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**

Where there is an alteration to or addition of car door bypass or hoistway door bypass switches, the alteration shall conform to 2.26.1.5.

**8.7.3.31★4**

Where there is an alteration to or addition of a system to monitor and prevent automatic operation of the elevator with faulty door contact circuits on power-operated car doors that are mechanically coupled with the landing doors while the car is in the landing zone, the alteration shall conform to the requirements in 2.26.5.

**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.

Electrical equipment shall conform to 3.26.1, 3.26.4, 3.26.5, and 3.26.6 (not including 2.26.4.4).

**8.7.3.31★5 Addition of Soft Start**

Where there is an addition of a soft start feature the follow 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 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.

**8.7.3.31.5 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
  - (2) The operating devices and control equipment shall conform to 3.26. Requirements of 2.26.1.1, 2.26.1.3, and 2.26.12 do not apply.
  - (3) Requirement 2.27.2 applies when emergency power is provided.
  - (4) In jurisdictions not enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply
    - (a) when travel is 8 m (25 ft) or more above or below the designated landing; or
    - (b) on installations when firefighters' emergency operation was required or provided at the time of the installation.
  - (5) In jurisdictions enforcing NBCC, 3.27.1 through 3.27.4 and 2.27.3 through 2.27.9 apply only if firefighters' emergency operation was required or provided at the time of installation.
- (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★7**

Where an elevator 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.

**8.7.3.31.6 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 2030 mm in height or 800 mm 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 through 2.11.13, except 2.11.11.9, 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 6 mm
  - (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, and 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, and 2.14.2.4
  - (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 3.7.2.27.5(d) 3.16
- (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) In jurisdictions not enforcing NBCC, emergency operation and signaling devices shall conform to 3.27. In jurisdictions enforcing NBCC, emergency operation and signaling devices where required by NBCC shall be provided and 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 2.27.3.3.1(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 2.26.2.21, 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.**

Reserved.

**8.7.5.2.★1 Alterations to Electric Limited-Use/Limited-Application Elevators**

Alterations to Limited-Use/Limited-Application Elevators, shall conform to 8.7.2 and the requirements of Part 2 except as modified in section 5.2.

**8.7.5.2.★2 Alterations to Hydraulic 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.

**8.7.5.3 Private Residence Elevators**

**8.7.5.3.1** 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.

**8.7.5.4 Private Residence Inclined Elevators**

**8.7.5.4.1** 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 3.1.8 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, 6.1.6.3.12, and 6.1.6.4.

**8.7.6.1.★1 Addition of Handrail Advertizing**

The addition of handrail advertizing is not permitted per 6.1.6.9.2, unless otherwise permitted by a variance request.

#### 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, 6.1.6.3.3, 6.1.6.3.9, 6.1.6.3.11, 6.1.6.3.14, and 6.1.6.5.
- (b) Steps having a width less than 560 mm (22 in.) shall not be reduced in width by the alteration.

#### 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 conforming to 6.1.3.7, 6.1.3.9.1, and 6.1.3.10.1. The installation of a new escalator into an existing truss shall conform to all of the requirements of 6.1.

#### 8.7.6.1.10 Step Wheel Tracks.

Any alteration to the tracks shall result in the escalator's conforming 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 conforming 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 conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.4, and 6.1.6.3.8.
- (b) Driving Motor. An alteration to the drive motor shall result in the escalator's conforming to 6.1.3.9.2, 6.1.3.10.3, 6.1.4.1, 6.1.5.2, 6.1.5.3.1, 6.1.5.3.2, 6.1.6.3.2, 6.1.6.3.4, and 6.1.6.3.10.
- (c) Machine Brake. An alteration to the machine brake shall result in the escalator's conforming to 6.1.3.9.3, 6.1.3.10.2, and 6.1.5.3.1.

#### 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.★2 Removal of Step Demarcation Lights (226/07)

The removal of step demarcation lights, shall be permitted if the device complies with the following:

- (a) requirement 6.1.3.3.5,
- (b) requirements 6.1.3.5.4, 6.1.3.5.5, 6.1.3.5.6, and
- (c) requirement 6.1.3.6.2.

#### 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 as part of an alteration, it shall conform to 6.1.6.10 through 6.1.6.15, and 6.1.7.4.

#### 8.7.6.1.★3 Controller Replaced (226/07)

Where a controller is replaced it shall conform to 8.7.6.1.16.

#### 8.7.6.1.★4 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. ★5 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. ★6 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 movingwalk 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, ~~6.2.3.12.3~~, 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 1<sup>st</sup> 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 **May 1**, 2014, 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 (253/12)

- 3.9.1 Every existing power dumbwaiter or freight platform lift that was installed before the 1<sup>st</sup> 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]
- 3.9.2 All type ‘A’ and type ‘B’ freight platform lifts and type ‘B’ material lifts utilizing hoistway door mechanical lock and contracts shall have their mechanical lock and contracts upgraded to interlocks by **May 1, 2014**. New or modified circuits relevant to this upgrade shall be arranged such as to comply with A17.1-2010/B44-10, requirement 2.26.9.3.1(a) and (b). When a single ground or failure as specified in 2.26.9.3.1 occurs, the car shall not be permitted to restart.

### 3.10 Platform Apron Requirements (166/01)

- 3.10.1 Every passenger elevator installed before the 1<sup>st</sup> 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 16 mm 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, 97/02, 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 300 mm
- (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 or persons inside the elevator, unless the hoistways are separated by a structure supported and braced so as to not deflect into the code required running clearance of the adjacent operating car or its counterweight [CAD Amendment-261-13].

3.13.2 Where the separating structure referred to in subsection **3.13.1** is made of perforated material, it shall reject a ball 25 millimetres in diameter. [CAD Amendment-261-13].

### **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 Requirements (85/91) (247/11)**

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]

3.19.3 Every escalator shall have device specific brake adjustment procedures or instruction that provides instruction for the maintenance mechanics to correctly adjust and check the escalator brake(s).

3.19.4 The instructions or procedures shall

- (a) be posted or made otherwise available in the upper escalator pit;
- (b) include detailed instructions for setting the escalator brake;
- (c) include all information provided on the existing brake data tag;
- (d) be of durable material such that the information contained therein will remain legible;
- (e) as a minimum include the maximum no-load stopping distance as related to the manufacturer's specified brake torque, spring length etc. Where this information is missing and cannot be obtained from the original manufacturer, it is acceptable for a professional engineer in the province of Ontario to determine the no-load stopping distance; and
- (f) include the method of checking the brake setting such as the 'minimum torque', or the 'maximum spring length', or other method.

**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.
- (f) An FEO-K1 key for each switch location. [CAD Amendment 250-11]

3.20.2 Where Fire Alarm Initiating Devices need to be added to facilitate recall their installation shall be as required in 2.27.3.2.2(a) through (c) as revised in this CAD.

Note: Where a yellow hat designation was provided on an elevator that received an FCR upgrade, the yellow hat designation is required to remain, even if a subsequent alteration occurred that introduced a newer form of FEO Operation, switch markings however shall be upgraded from yellow to red.

**3.21 Escalator Stopping Distance Check (247/11)**

- 3.21.1 All escalators shall have a “Daily Stopping Distance Check” sign posted at each end of the escalator near the stop button or start switch.
- 3.21.2 The check sign shall communicate the following:
  - (a) Stop the empty running escalator. If the escalator travels more than “ X” step(s) before stopping, do not restart. Barricade and call for service.
    - (1) The value of “X” in 3.21.2(a) shall be replaced with 1 or 2, and shall indicate the permitted number of steps, rounded to the nearest whole number, that was determined by the elevator contractor, that reflects the needed no load stopping distance required by the escalator brake.
- 3.21.3 The person(s) authorized by the owner to carry out the daily prestart checks of the escalator shall also perform the daily stopping distance check to verify the escalator braking capability aligns with the information contained on the stopping distance check sign. [CAD Amendment-261-13]

**Summary of Pending Compliance Due Dates**

Subject	Reference	Due Date
MCP for all existing devices (B44.2 no longer applicable)	CAD 3.3.2(b)	March 31, 2014
Single bottom cylinders	CAD 3.3.4 see 8.6.5.9	May 1, 2015
Escalators to meet Step/Skirt Performance Index	CAD 3.3.4 see 8.6.8(b)	May 1, 2015
Car top railing requirements	CAD 3.8.2	May 1, 2014
Material lifts/Freight platform lifts require interlocks	CAD 3.9.2	May 1, 2014

## Part 4

### 4 MANLIFTS

#### 4.1 Applied Code

- 4.1.1 Every newly installed or altered manlift shall conform to the requirements of CSA Standard B311-02 (R2018), Safety Code for Manlifts and any applicable changes set out in this document.
- 4.1.2 Conformance to Appendix A, B, & C is mandatory.
- 4.1.3 Section 7.32.9 of B311 applies to all Power-Type Manlifts. Top-of-car operating stations are not limited to lifts with wireless control and shall be provided on each power-type manlift.
- 4.1.4 Section 7.32 of B311: Note that requirements of section 7.36, Control and Operating Circuits, apply to "Wireless Control" as well. [CAD Amendment 246-11]

#### 4.2 Top of Car Requirements for Power Type Manlift

- 4.2.1 Every power type manlift shall be provided with,

- (a) a top-of-car operating device; and
- (b) a protective guard railing on the top of the car.

#### 4.3 Inspection and Testing of Safety Brake

- 4.3.1 The inspection and testing of a safety brake on an endless belt type manlift required in subsection 33.(2) of the Regulation shall ensure compliance with clause 5.2.2.3 of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.
- 4.3.2 The inspection and testing of a safety device and overspeed governor on a counter-balanced or power type manlift required in subsection 33.(3) of the Regulation shall ensure compliance with clause 6.11.8 or 7.6.8.2, as the case may be, of CSA Standard B311-M1979, Safety Code for Manlifts and Supplement No. 1 1984.

#### 4.4 Authorized Persons

- 4.4.1 No person shall use a manlift except those persons designated by the owner of the manlift as being properly trained in its operation and use.

#### 4.5 Maintenance Log Book

- 4.5.1 The log book shall, as a minimum, contain the following information :
  - (a) Building name and/or address,
  - (b) TSSA or MCCR installation number,
  - (c) Contractor's and Owner's name,

- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 246-11]

4.5.2 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 defect is adjusted repaired or replaced. [CAD Amendment 246-11]

#### **4.6 Location of the Log Book**

4.6.1 The log book will be retained in the machine room 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. [CAD Amendment 246-11]

Archive  
Superseded by CAD 295/22

## Part 5

### 5 PASSENGER ROPEWAYS AND PASSENGER CONVEYOR

#### 5.1 Applied Code

- 5.1.1 Every new or altered passenger ropeway and passenger conveyor shall conform to the applicable requirements of CSA-Z98-14, Passenger ropeways and passenger conveyors, and any additional applicable requirements set out in this document.
- 5.1.2 Annexes "A, B, C, D, E, F, G, H, I, J and K" referenced in the CSA-Z98-14 standard are also adopted.
- 5.1.3 Existing installations shall conform to CSA-Z98-14 clause 1.4, Annexes A through K as applicable, any requirements applicable at the time of the original installation or subsequent alteration and any applicable requirements set out in this document .

#### 5.2 General Technical Requirements for Passenger Ropeways and Passenger Conveyors

- 5.2.1 The general technical requirements in Part 2 of the Code Adoption Document do not apply to passenger ropeways and passenger conveyors.
- 5.2.2 Passenger Ropeways and Passenger Conveyors shall conform to the following general technical requirements,
  - (a) Electrical equipment shall conform to the Ontario Electrical Safety Code as amended from time to time;
  - (b) In addition to CSA-Z98-14 requirements, welding on a passenger ropeway or passenger conveyor shall conform to the requirements of CSA W59 Welded Steel Construction (Metal Arc Welding);
  - (c) Where a passenger ropeway or passenger conveyor is relocated it shall meet the requirements of 5.1.

#### 5.3 Definitions

- 5.3.1 In Part 5 of this document,
  - (a) "safety circuits" means E/E/PES of a passenger ropeway or passenger conveyor having an ability to carry out the functions necessary for mitigation of unacceptable failures by preventing movement or limiting speed of passenger ropeway or conveyor.  
NOTE:
    - 1) Preventing movement may require a passenger ropeway or conveyor to stop or to prevent unwanted start-up
    - 2) Limiting speed may require appropriate acceleration, deceleration or speed.
  - (b) "electrical/electronic/programmable electronic system" or "(E/E/PES)" means a system for control, protection, or monitoring based on one or more electrical/electronic/programmable electronic (E/E/PE) devices, including all elements of the system such as power supplies, sensors and other input devices, data highways and other communication paths, and actuators and other output devices.
  - (c) "electrical/electronic/programmable electronic" or "(E/E/PE)" means that based on electrical (E), and/or electronic (E), and/or programmable electronic (PE) technology.



“programmable electronic” or “(PE)” means that based on computer technology which may be comprised of hardware, software, and of input and/or output units

#### 5.4 Amendments to Z98-14

5.4.1 The requirements of 4.23.2.5 are supplemented as follows;

**4.23.2.5** For conveyors, surface and above-surface ropeways, the brake shall be actuated by a device independent of the emergency brake overspeed device if the line velocity exceeds the design maximum speed by 10%.

5.4.2 The requirements of 4.23.3.2(c) are amended as follows;

**4.23.3.2(c)** 10% to 15% overspeed, as detected from the speed of the drive sheave or haul rope; and

5.4.3 The requirements of 4.29.1.10 are amended as follows;

**4.29.1.10** Safety circuits shall incorporate redundancy and monitoring mechanisms to detect system failure. Monitoring of redundancy incorporated in safety circuits shall be done as a minimum, once per day. Relays and contactors used in safety circuits shall have force guided, mirrored, or mechanically linked contacts for monitoring purposes. Redundancy in safety circuits using software systems shall use diversification to avoid common mode failure.

5.4.4 The requirements of 4.29.8.3 are supplemented as follows;

**4.29.8.3** Photoelectric safety switches shall be:  
a) approved by their manufacturer for use in safety-related systems for persons; and  
b) used in accordance with the manufacturer's instructions, or  
c) as qualified in 5.9 and 5.10 of this CAD.

#### 5.5 Z98 clauses 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations” (General Applicability)

5.5.1 The general applicability of clauses 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations” shall not apply if all applicable prescriptive requirements of the code are met.

5.5.2 Any variance to or deviation from the prescriptive requirements related to the design of safety circuits (see definitions) shall comply with clauses 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations”.

5.5.3 New configurations or novel designs which cannot be precisely classified in CSA Z98-14, shall ensure that their safety circuit designs comply with 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations”.

5.5.4 Where feature(s) of safety circuits for a passenger ropeway or conveyor is not specified in CSA Z98-14, safety circuits shall comply with 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations”.

#### 5.6 Z98 clauses 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations” (Compliance to)

5.6.1 Where conformance to clauses 4.29.1.7 “Safety levels” and 4.29.1.8 “Safety Considerations” is required as specified in 5.5, compliance shall be demonstrated as required in 5.6.2 or 5.6.3.

5.6.2 Safety circuits function shall conform to:

(a) a SIL 3 rating in accordance with the applicable requirements of IEC 61508-2:2010 (Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems); and

- (b) IEC 61508-3:2010 (Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements) or

5.6.3 *Safety circuits* function shall conform to:

- (a) EN 12929:2015 (Safety requirements for cableway installations designed to carry persons. General requirements. Requirements for all installations);
- (b) EN 13243:2015 (Safety requirements for cableway installations designed to carry persons. Electrical equipment other than for drive systems); and
- (c) EN 13223:2015 (Safety requirements for cableway installations designed to carry persons. Drive systems and other mechanical equipment); or
- (d) Equivalent requirements as acceptable to the director.

## 5.7 Single Failure Protection

- 5.7.1 Every passenger ropeway installed before June 1, 2001 shall be so constructed and installed that the failure of any single, magnetically operated switch, contactor containing metal-to-metal contacts or relay to release does not prevent the passenger ropeway from stopping in response to an emergency stopping device nor permit the passenger ropeway to start or run if any emergency stopping device is activated.
- 5.7.2 Every passenger ropeway installed on or after June 1, 2001 shall be so constructed and installed that none of the following events prevents the passenger ropeway from stopping in response to an emergency stopping device nor permits the passenger ropeway to start or run if any emergency stopping device is activated;
  - (a) the occurrence of a single ground;
  - (b) the failure of a single magnetically operated switch, contactor or relay;
  - (c) the failure of a single solid-state device; or
  - (d) a software system failure.
- 5.7.3 The devices used to satisfy the requirements of 5.7.2 shall be checked prior to starting of the passenger ropeway, as a minimum, once per day.
- 5.7.4 Where a single ground is detected as set out in clause 5.7.2(a) or an event referred to in 5.7.2(b) to 5.7.2(d) is detected, the passenger ropeway shall not restart.
- 5.7.5 Implementation of redundancy in a passenger ropeway by a software system is permitted provided that there is diversification to avoid common mode failure.

## 5.8 Log Books

- 5.8.1 In addition to data specified in section 34 of the Regulation, the log book of a passenger ropeway or passenger conveyor shall contain,
  - (a) all data required in the code adopted in section 5.1 of this document;

- (b) all data on any increases or decreases to the mass of the carriers;
- (c) a record of all pre-season inspections carried out in accordance with section 5.9 of this document;
- (d) a record of all major and minor alterations; and
- (e) a record of all five-year periodic tests referred to in 12.17 and Annex H.

5.8.2 In addition to the requirements of subsection 34.(2) of the Regulation,

- (a) non-destructive testing (NDT) records shall be kept from a historical reference date of October 1, 2001 or from the date any passenger ropeway or passenger conveyor was commissioned if after October 1, 2001, until the passenger ropeway or passenger conveyor is dismantled.
- (b) major and minor alteration records shall be kept until the passenger ropeway or passenger conveyor is dismantled.
- (c) a record of all engineering and assessment reports referred to in 5.10 of this document shall be kept until the above-surface passenger ropeway is dismantled.

## 5.9 Preseason Inspection (168/02)

- 5.9.1 The holder of a licence for a passenger ropeway shall perform a preseason inspection prior to the start of each ski season to ensure that the lift is in compliance with requirements as set out in part 5 of this document.
- 5.9.2 The results of the inspection shall be recorded in a form acceptable to the director.

## 5.10 Aging Ski Lift Assessment

- 5.10.1 Every above-surface passenger ropeway shall be subjected periodically to a complete engineering review and assessment to ensure its continued operational safety in accordance with guidelines set by the director. Note: see Director's guideline 224/07.

## 5.11 Requirements to Limit Tube Tow Detachment (178/03 & 182/03)

- 5.11.1 The word "tube(s)" has the same meaning as "secondary carrier(s)" used in Z98.
- 5.11.2 Tube tows shall comply with the requirements of 5.11.3 through 5.11.7
- 5.11.3 The designer shall specify the method to verify the haul rope tension.
- 5.11.4 Connection of Tubes to Towing Attachments
  - (a) Manufacturers/designers of tube tows shall verify that the type of tube attachment connection is compatible for their towing attachment design.
  - (b) Manufacturers/designers of tube tows must allow for a safety margin that will ensure that the tubes will not detach as a result of changes in the tension force on the tether connecting the towing attachment to the tube. Changes of tension force on tether due to uneven tow path, foreseeable movement of

passengers in tubes, passengers feet dragging on snow while seated in an acceptable position in tubes and acceleration/deceleration feature of tube tows shall be considered.

- (c) For tube tows with automatic detachment at a predetermined unloading point, manufacturers/designers of tube tows shall specify minimum and maximum weight restrictions of tube users.

#### 5.11.5 Tubes

- (a) Tube sizes shall match tow path design so that a detached tube will slide clear of the uphill path of any of the following tubes.
- (b) Tubes shall be designed to accommodate the passenger size.

#### 5.11.6 Towing attachments

- (a) The length of tube towing attachment shall be designed to maintain a minimum operational clearance from the snow along the tube tow-path and hauling rope while the tube is being hauled along the tow path.
- (b) Factor of safety of all attachments to the haul rope and components for pulling tubes shall be based upon their impact strength at low temperatures.
- (c) The designer/manufacture shall specify the maximum tension force on all attachments to the haul rope and components for pulling tubes along their tow path.
- (d) The designer/manufacture shall specify procedures for inspection of all attachments to the haul rope and components for pulling tubes to verify their safety. Inspection procedures shall include criteria to evaluate the necessity of their replacement.

#### 5.11.7 Tow Path, Crossfall and Containment Barriers

- (a) Means to protect passenger in a tube against contacting any part of tube tow including grips shall be provided along the entire length of the tow path.
- (b) Means shall be provided to keep tubes on the pre-defined tow path.

### 5.12 Alterations

5.12.1 Where an alteration is made to a passenger ropeway or passenger conveyor the altered components and functions and those components and functions that are affected by the alterations shall conform to the requirements of [5.1](#).

5.12.2 One or more of the following actions on a passenger ropeway or passenger conveyor shall constitute a major alteration:

- (a) an increase or decrease in,
  - (1) the rated speed of the carriers,
  - (2) the maximum capacity of the ropeway;
- (b) an increase or decrease by more than ten per cent, or an accumulated increase or decrease by more than ten per cent, of the dead weight of the carriers or counter-weight system;

(c) an increase or decrease in the length or rise of the travel of the passenger ropeway;

(d) a change,

- (1) in the carrier design or manufacturer,
- (2) in the line sheaves and sheave assemblies design,
- (3) in the type of power supply to the machine,
- (4) in the type of driving machine,
- (5) in the location of a machine or tensioning system,
- (6) in the type of tensioning system,
- (7) that would result in a reclassification of the passenger ropeway,
- (8) in tower length or an addition of a new tower.

(e) a change in,

- (1) the method or type of operation,
- (2) the method or type of motion control
- (3) location of the controller

(f) a replacement of the controller,

(g) an alteration to the controller, other than an alteration to the motor starters.

5.12.3 Any action or work performed on a passenger ropeway that results in a change to the original design or the operational characteristics of the passenger ropeway or affects the inherent safety of the passenger ropeway and not listed in subsection 5.12.2 shall constitute a minor alteration.

5.12.4 Minor alterations shall be reported and inspected as required by section 19 of the Regulation.

### **5.13 Manufacturers/Designers Bulletins**

5.13.1 Manufacturer(s) of passenger ropeway(s) or conveyor(s) shall inform owners about the requirements associated with their safety bulletins or alerts in addition to the requirement of Section 35 of the Regulation.

5.13.2 In addition to the requirement of Section 35 of the Regulation, owner(s) of passenger ropeway(s) or conveyor(s) shall inform manufacturer(s) about findings which may require the issuing of a safety bulletin or alerts.

5.13.3 Owners are responsible to carry out the requirements of manufacturer's safety bulletin or alerts.

## Part 6 [No Changes from 261-13r1]

### 6 CONSTRUCTION HOISTS

#### 6.1 Applied Code [CAD Amendment 216-07]

6.1.1 Every construction hoist shall conform to the following:

- (a) workers' rail guided construction hoists shall conform to CAN/CSA Standard Z185-M87(R2001), Safety Code for Personnel Hoists; [CAD Amendment 216-07]
- (b) workers' rope-guided construction hoist shall conform to, American National Standard ANSI/ASSE A10.22 – 2007 Safety Requirements for Rope-guided and Non-guided Workers' Hoist; and [CAD Amendment 216-07]
- (c) material construction hoist, CSA Standard Z 256-M87(R2006), Safety Code for Material Hoists, [CAD Amendment 216-07]

and any applicable changes set out in this document. [CAD Amendment 246-11]

#### 6.2 Rated Load

6.2.1 For the purpose of this Document and subsection 31.3 of the Regulation, "rated load" or "rated loading" in the codes referred to in section 6.1 means "maximum capacity".

#### 6.3 Continuously Controlled by Power

6.3.1 Every construction hoist shall be so designed that the car movement in both the up and down direction is continuously controlled by power.

#### 6.4 Broken Rope Safety

6.4.1 A material construction hoist that is equipped with a broken rope type safety shall not be registered unless a type test indicates that the safety is capable of stopping the car when it is free falling with its rated load.

#### 6.5 Limitation on Speed

6.5.1 Where the load-carrying unit of a workers' rope-guided construction hoist passes through a restricted area at a platform or floor, a control device that positively and automatically lowers the speed of the load-carrying unit to that specified in the related design submission while the load-carrying unit passes through the restricted area shall be installed on the hoist, except where the design submission indicates that no speed limitation is required.

6.5.2 In lieu of the control device referred to in subsection 6.5.1, an operator utilizing a system of signals may be used to manually control the speed of the hoist.

## 6.6 Attendant Operation

- 6.6.1 Every workers' rail-guided construction hoist, shall while in operation, be attended by an attendant who shall be stationed in the load-carrying unit, and who shall operate the construction hoist and also supervise the loading, passage and unloading of persons and freight.
- 6.6.2 Every material construction hoist shall while in operation be,
- (a) attended by one or more attendants stationed at each location where freight is being loaded or unloaded; and
  - (b) operated by,
    - (1) an attendant stationed at the location of the operating devices, provided that the operating devices can be automatically rendered inoperative should an unsafe condition for operation of the construction hoist exist, or
    - (2) an operator stationed at the driving unit where the driving unit and its operating devices cannot automatically be rendered inoperative should an unsafe condition for operation of the construction hoist exist.
- 6.6.3 Subsections 6.6.1 and 6.6.2 apply with necessary modifications to the providing of attendants and operators for workers' rope-guided construction hoists.

## 6.7 Up Overspeed Protection

- 6.7.1 Every workman's construction hoist that is equipped with a counterweight having a mass greater than the mass of the empty car shall be provided with a means for protecting against uncontrolled car speed in the up direction and such means shall conform to the following:
- (a) It shall detect any uncontrolled movement of the car prior to or at least when the car reaches a predetermined overspeed and shall cause the car to stop prior to the time when the counterweight strikes its buffers, or at least reduce car speed to the speed for which the buffers are designed.
  - (b) It shall be capable of performing as required in paragraph (a) without assistance from any hoist component which solely without built in redundancy, controls the speed, or deceleration, or stops the car during normal operation.
  - (c) It shall not develop an average retardation of the car in excess of  $9.81 \text{ m/sec}^2$  during the stopping phase.
  - (d) It shall prevent uncontrolled movement of the car through control of the speed of, and acting upon the,
    - (1) car;
    - (2) counterweight;
    - (3) suspension or compensating rope system; and
    - (4) drive sheave, provided that the traction between the suspension ropes and the drive sheave are continuously monitored and the construction hoist is automatically removed from service when the rope slippage exceeds a predetermined amount.

- (e) When it is activated or during the stopping phase, it or another hoist component shall cause the power supply of the driving machine to be interrupted.
- (f) It shall be capable of performing at least ten operations without any adjustments.
- (g) All components that require periodic examination and maintenance for the purpose of maintaining their operational reliability, shall be readily accessible.
- (h) Its performance shall be checked during the initial and periodic inspections unless its performance reliability is substantiated otherwise.
- (i) It shall be provided with a making plate indicating maximum capacity for which it may be used and the speed at which it is set to operate.

**6.8 Additional Requirements for Workers' Rail Guided Construction Hoists** [CAD Amendment 216-07]

6.8.1 In addition to the requirements of **6.1.1(a)**, workers' rail-guided construction hoists shall conform to the following:

(a) Clause **14.4.2** of CAN/CSA-Z185-M87 (R2001) shall be replaced with the following;

(1) The occurrence of a single ground or a software system failure or the failure of

- a) a switch which does not have contacts that are positively separated;
- b) a contactor;
- c) a relay; or
- d) a solid state device;

shall not render any electrical protective device ineffective.

(b) Redundant software systems used to satisfy the requirements of **(a)** shall have a level of diversification sufficient to avoid common mode failures.

(c) Clause **18.1.1(c)** of CAN/CSA-Z185-M87 (R2001) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

(d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.

(e) Workers' construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216-07]



**6.9 Additional Requirements for Workers' Rope-Guided Construction Hoists** [CAD Amendment 216-07]

6.9.1 In addition to the requirements of **6.1.1(b)**, workers' rope-guided construction hoists shall conform to the following:

(a) The occurrence of a single ground or a software system failure or the failure of

- (1) a switch which does not have contacts that are positively separated;
- (2) a contactor;
- (3) a relay; or
- (4) a solid state device;

shall not render the, deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake ineffective.

Note: Requirements only apply to the circuits in which the deadman control switch, the limit switches which prevent overtravel, or the automatic friction brake are used and not to the devices themselves.

- (b) Redundant software systems used to satisfy the requirements of **(a)** shall have a level of diversification sufficient to avoid common mode failures.
- (c) Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render the Deadman Control Switch, Limit Switches, or the Automatic Friction Brake ineffective and shall not cause the cage to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.
- (d) All references to NFPA 70 (Clause **2.1**, Clause **3.24**, and Clause **4.13** of ANSI A10.22-2007) shall be replaced with Ontario Electrical Safety Code as referenced in **2.2.1(b)** of this document. [CAD Amendment 216-07], [CAD Amendment 246-11]

**6.10 Additional Requirements for Material Construction Hoist** [CAD Amendment 216-07]

6.10.1 In addition to the requirements of **6.1.1(c)**, material construction hoists shall conform to the following:

(a) Clause **15.3.2** of CAN/CSA-Z256-M87 (R2006) shall be replaced with the following;

- (1) The occurrence of a single ground or a software system failure or the failure of
  - a) a switch which does not have contacts that are positively separated;
  - b) a contactor;
  - c) a relay; or
  - d) a solid state device;

shall not render any electrical protective device ineffective.

(b) Redundant software systems used to satisfy the requirements of (a) shall have a level of diversification sufficient to avoid common mode failures.

(c) Clause 19.1.3 of CAN/CSA-Z256-M87 (R2006) shall be replaced with:

Control equipment incorporating solid state devices and/or software systems in operating and control circuits shall be tested in accordance with the testing requirements of EN 12016:2004 by exposing it to interference levels at the test values specified for "safety circuits." The interference shall not render any electrical protective device ineffective and shall not cause the car to move. If enclosure doors or suppression equipment must remain installed to meet the above requirements, warning signs to that effect shall be posted on the control equipment.

(d) The normal terminal stopping device and final terminal stopping devices shall not control the same controller devices unless two or more separate and independent controller devices are provided, two of which shall complete both the driving-machine motor and the driving machine brake circuits in either direction of travel.

(e) Material construction hoists employing a two- or three-phase alternating-current driving machine motor, which is not driven from a direct current source through a static inverter, shall be provided with a means to inhibit the flow of alternating-current in each phase. [CAD Amendment 216/07]

#### 6.11 Maintenance Log Book [CAD Amendment 255-12]

6.11.1 Each elevating device of a type listed in 6.1.1 shall be provided with a maintenance log book as required by O. Reg. 209/01, s. 34 Log books.

6.11.2 Maintenance records in the form of a log book shall document compliance with related construction hoist codes, Code Adoption Document (CAD) requirements and any manufacturer recommended tasks extracted from the manufacturers maintenance and operation manuals, and shall include records on the following activities:

(a) description and dates of maintenance tasks performed;

(b) description and dates of examinations tests;

(c) description and dates of adjustments, repairs, and replacements;

(d) description and dates of any tasks noted in the Guideline for Maintenance Logs – Construction Hoists (Guideline 256/12); and

(e) description and dates of all call backs (trouble calls) or reports that are reported to elevator personnel by any means, including corrective action taken.

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

(1) Building name and/or address;

(2) TSSA installation number;

(3) Contractor's (owners) name;

(4) Contractor's Registration Number;

(5) the code section, reference, requirement or clause number associated with a task;

(6) a description of the task performed;

(7) the prescribed maintenance frequency of the task;

(8) the date the task was performed; and

- (9) upon completion of the task, the printed name, signature, and TSSA certificate number of the person who completed the maintenance, examination or tests.

6.11.3 Where a part of an elevating device which directly affects the safe operation of the device is found to be defective, the record of the relevant maintenance task shall not be signed off by the party performing the task until the defective part is adjusted, repaired or replaced, and the safety of the device restored.

**6.12 Location of the Maintenance Log Book** [CAD Amendment 255-12]

6.12.1 The maintenance log book shall be kept in the machine room or on the device or near the device location or, in the alternative if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.12.2 Log book data shall be readily available as required by O. Reg. 209/01, s .34.(3)

**6.13 Manufacturers Maintenance and Operation Manual** [CAD Amendment 255-12]

6.13.1 For each construction hoist the manufacturers maintenance and operations manual shall be retained.

6.13.2 The manufacturers maintenance and operation manual shall be kept in the machine room or on the device or near the device location or in the alternative, if it is kept at another location on the site, a notice shall be posted in the machine room or device location indicating the alternate location.

6.13.3 The manufacturers maintenance and operation manual shall be readily available and immediately provided to an inspector upon request.

**6.14 Operator Training** [CAD Amendment 255-12]

6.14.1 Every operator must have the required knowledge and experience to operate an elevating device and owners, licensees and/or lessees, must ensure operators are trained to safely operate such devices and must be satisfied that the operator is aware of potential hazardous situation connected therewith as required by O.Reg 209/01 s.40.

6.14.2 Owners, licensees, lessees providing training or other trainers providers shall develop and maintain written operator training programs and written policies and procedures to ensure compliance with the regulation and **6.14.1**.

6.14.3 Written training programs shall include applicable portions of the manufacturers maintenance and operation manual to address the requirements of the regulation and **6.14.1** and shall include the minimum requirements for operator training as outlined in the Guide for Operator's Logs and Operator Training Requirements – Construction Hoists (Guideline 257/12).

6.14.4 Copies of the documentation required under **6.14.2** shall be kept on site, shall contain current and complete information and shall be readily available and immediately provided to an inspector upon request.

6.14.5 Training records shall be maintained by the training provider ("trainer") and shall include the following information:

- (a) the name of the person(s) who received the operator training;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date of training;
- (d) the signature of the trained operator; and,

(e) the signature of the trainer.

6.14.6 A copy of the training records identified in **6.14.5** shall be maintained on site and readily available and immediately provided to an inspector upon request.

6.14.7 Individuals who are trained as operators, and have achieved sufficient competence to operate the device safely shall be issued by the trainer an “Operator’s Proof of Training” document which must certify that the operator is competent to operate the device safely and must specify the following information:

- (a) the operators name;
- (b) the TSSA installation number of the device on which they were trained or the device/ device type(s) on which they were trained and the address associated with the device location;
- (c) the date the training was received; and
- (d) the signature of the trainer.

6.14.8 The trainer shall issue an “Operator’s Proof of Training” document in the form of a letter or wallet card or equivalent as per **6.14.7**.

### **6.15 Operator’s Proof of Training** [CAD Amendment 255-12]

6.15.1 Operators are required to carry their “Operator’s Proof of Training” document whenever they operate an elevating device.

6.15.2 “Operator’s Proof of Training” shall be readily available and immediately provided to an inspector upon request.

6.15.3 An “Operator’s Proof of Training” may be immediately revoked by an Inspector, owner, licensee, lessee or trainer where there is reason to believe that the operator lacks the competence to safely operate the elevating device and the operator may no longer operate the device.

### **6.16 Daily Operator’s Log** [CAD Amendment 255-12]

6.16.1 Each elevating device type listed in **6.1.1** shall have a corresponding “Daily Operator’s Log” in which a current and accurate record of all required start up checks as required by the device manufacturer, owner, licensee, lessee or device operator shall be kept and shall include the minimum requirements for operator’s logs as outlined in the Guideline for Operator’s Logs – Construction Hoists (Guideline 257/12).

6.16.2 Operator’s of a device must satisfy themselves, at the start of each shift, that the device is safe to operate as required by O.Reg 200/01 s.42 by conducting a series of start up checks as outlined in the Guideline for Operator’s Log – Construction Hoists and shall record and sign off these checks in the “Daily Operator’s Log”.

6.16.3 The “Daily Operator’s Log” must contain the following information:

- (a) the Building name and/or address;
- (b) the TSSA device installation number;
- (c) a list of the daily checks as required by **6.16.1**;
- (d) the Operator’s printed name and signature acknowledging completion of all daily checks after the device is found to be in safe working order and the date of such checks.

6.16.4 Where a part of the elevating device which directly affects the safe operation of the device is found to be defective, the log shall not be signed off and the device shall not be put into operation until the defect is adjusted, repaired or replaced, by a registered mechanic.

**6.17 Location of the Daily Operator's Log** [CAD Amendment 255-12]

6.17.1 The "Daily Operator's Log" shall be kept in the machine room, on the device, or near the device location, or in the alternative, if it is kept at another location on the site, a notice will be posted in the machine room or device location indicating the alternate location.

**6.18 Signage** [CAD Amendment 255-12]

6.18.1 Every car, cage or platform shall be equipped with a sign as follows:

- (a) The sign shall display the message, "Only Operators who have their valid "Operator's Proof of Training" card on their person shall operate this device";
- (b) The sign shall be of such material and construction that the letters are stamped, etched, cast or otherwise applied to remain permanently visible; and
- (c) The height of the letters shall not be less than 12 mm (1/2 in.).

**6.19 Incident and Issue Reporting** [CAD Amendment 255-12]

6.19.1 Incidents shall be reported as required by O Reg 209/01 s.36. See also Director's Guideline 230/09.

6.19.2 Device operators shall report device incidents and any safety related issues to supervisory personnel who are responsible for taking the appropriate action or following the incident report requirements required by the regulation.

Superseded by CAD 295/22

## Part 7 [No Changes from 261-13r1]

### 7 ELEVATING DEVICES FOR PERSONS WITH PHYSICAL DISABILITIES

#### 7.1 Applied Code [CAD Amendment 238-09]

7.1.1 Each newly installed elevating device for persons with physical disabilities shall conform to the requirements of CSA Standard B355-09, Lifts for persons with physical disabilities including and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.2 Maintenance [CAD Amendment 238-09]

7.2.1 All lifts for persons with physical disabilities shall conform to the maintenance requirements of CSA-B355-09 Lifts for persons with physical disabilities including Annex B and any applicable changes set out in the CAD. [CAD Amendment 238-09]

#### 7.3 Maintenance Log Book [CAD Amendment 238-09]

7.3.1 The log book shall, as a minimum, contain the following information:

- (a) Building name and/or address,
- (b) TSSA or MCCR installation number,
- (c) Contractor's and Owner's name,
- (d) Year and month when a specific task is performed,
- (e) The code section, reference or clause number associated with a maintenance task, a description of the task performed and the prescribed maintenance frequency of the task,
- (f) The printed name and signature of the persons who completed the required maintenance task. [CAD Amendment 238-09]

7.3.2 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 defect is adjusted repaired or replaced. [CAD Amendment 238-09]

#### 7.4 Location of the Log Book [CAD Amendment 238-09]

7.4.1 The log book will be retained in the machine room 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. [CAD Amendment 238-09]

#### 7.5 Access to Lift

7.5.1 Every owner of an unenclosed vertical platform lift and every owner of an unenclosed stair platform lift or stairchair lift shall ensure that the public does not have access to the area where the lift is installed while the lift is in operation.

- 7.5.2 Subsection 7.5.1 does not apply in the case of an unenclosed stair platform lift or stairchair lift where,
- (a) the owner of the lift is able to control and identify persons who will be using the lift or the area where the lift is installed and the owner familiarizes those persons in advance of using the area or lift with the safety rules and procedures concerning the use of the area and the lift; and
  - (b) and the lift meets the requirements of subsection 7.6.

## 7.6 Lift Operation with Persons Nearby

- 7.6.1 Where an unenclosed stair platform lift or stairchair lift is being operated at the same time that other persons are using the area in which the lift is installed,
- (a) audio-visual signals shall be emitted that warn persons using the lift and persons in the area where the lift is installed at all times when the platform is unfolded and until the lift is parked in a safe position at a terminal; and
  - (b) every leading edge or surface of that portion of the lift and its carriage that carries the passengers in both directions of travel shall be equipped with sensitive devices that meet the requirements of clause 7.2.4. and 8.5.4. of the standard adopted in section 7.1 of this Document and that are operational whenever the carriage is in motion.

## 7.7 Usage of Device

- 7.7.1 The owner of a lift for persons with physical disabilities shall ensure that,
- (a) the device is used primarily for the transportation of persons with physical disabilities;
  - (b) detailed operating instructions are posted at every operating station;
  - (c) the operation of the device is restricted to attendants designated by the owner or those persons who in the opinion of the owner are able to use the device without an attendant; and
  - (d) the persons using the device receive instruction and training that emphasizes the hazards associated with improper use of the device.

## 7.8 Requirements for Restricted Operation

- 7.8.1 The operation of a lift for persons with physical disabilities shall be restricted by means of a key-control for the operating device as set out in subsection 7.8.2 and 7.8.3 or by a method acceptable to the director that provides the same degree of safety.
- 7.8.2 A key-control for an operating device may be by means of an on/off lockable switch located near and controlling one or more operating devices or each operating device may be directly key-controlled.
- 7.8.3 The key for a key-control for an operating device shall be removable only when the switch is in an "off" position.
- 7.8.4 Folding down of a platform on a stair platform lift shall be restricted to persons authorized to use the lift, by the following means:

- (a) in the case of a platform that is folded down by power – by means of a key-controlled switch or by a method acceptable to the director; and
- (b) in the case of a platform that is folded down manually – by means of a keyed lock or by a method acceptable to the director.

7.8.5 Lowering of a barrier arm, if provided, shall be restricted to persons authorized to use the lift by means of a keyed switch or lock or by a method acceptable to the director.

## 7.9 Instructions for Use and Owner Requirements

7.9.1 Every owner of an elevating device for persons with physical disabilities shall,

- (a) ensure that the instructions for the device are posted at the location of each operating device that will inform a person with physical disabilities of the established procedure to gain access to and to use the device and, in the case of unenclosed devices, that such instructions include, but are not limited to, cautioning the user to observe the lift runway for possible obstructions;
- (b) ensure that an attendant is available to operate the device when a person with physical disabilities requires assistance;
- (c) where an attendant is required and is not permanently stationed at the location of the operating device ensure that a notice is posted at the entrance to the elevating device that indicates the procedure to be followed to obtain assistance; and
- (d) provide instruction that an unoccupied platform of an unenclosed stair platform lift should not be called or sent from a landing station unless it is in the raised and folded position. [CAD Amendment 238-09]

7.9.2 A person shall only operate an unenclosed vertical platform lift, an unenclosed stair platform lift or a stairchair lift, if the person is satisfied that only persons using the lift have access to the area where the lift is installed.

7.9.3 Subsection 7.9.2 does not apply to a person operating an unenclosed stair platform lift or a stairchair lift while other persons are using the area in which the lift is installed where,

- (a) the conditions set out in subsection 7.5.2 exist;
- (b) the person operating the lift is an attendant and has, while operating the lift in the folded down position, a clear view of the lift runway in the direction of its movement by walking along with the carriage while it is in motion or has by being stationed at a point, a clear view of the runway;
- (c) the person using the lift has, while using the lift, a clear view of the lift runway in the direction of travel; and
- (d) the audio-visual signals required under subsection 7.6.1(a) are operational.

## 7.10 Notice Required Regarding Restricted Use

7.10.1 A notice that the use of a lift for persons with physical disabilities is restricted to persons with physical disabilities shall be posted at each location of a device, at landing or runway entrances of the device and at the load-carrying unit of the device.



## 7.11 Supplementary Owners Report

- 7.11.1 In addition to those requirements set out in sections 15 and 16 of the Regulation, the design submission for a lift for persons with physical disabilities shall include a detailed report, completed on a form provided by the director, from the owner of the elevating device, in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.12 Change of Ownership & Supplementary Owners Report

- 7.12.1 In addition to the requirements of section 29 of the Regulation, where there is change in the ownership of a lift for persons with physical disabilities or a substantive change in the type of occupancy of a building in which a lift for persons with physical disabilities is installed, the new owner of the lift shall submit to the director, a detailed report on a form provided by the director in which the proposed methods of compliance with sections 7.5 to 7.8 and 7.9.1 of this Document shall be described.

## 7.13 Pressure Sensor Requirement for Vertical Platform Lifts (248/11)

- 7.13.1 All vertical platforms, where any part of the hydraulic cylinder is above the top of the hydraulic oil storage tank, shall be equipped with a pressure sensor that when activated shall prevent the operation of the lowering valve or valves in conformance with clause 6.6.8 of CSA B355.09 Lifts for Persons with Physical Disabilities [CAD Amendment-261-13]

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## Part 8

### 8 WIND TURBINE TOWER ELEVATORS [CAD Amendment 277-19]

#### 8.1 Applied Code

- 8.1.1 Each newly installed wind tower turbine elevator shall conform to the requirements of ASME A17.8-2016 / CSA B44.8-16, Standard for wind turbine tower elevators including any applicable changes set out in the CAD.

#### 8.2 Amendments to ASME A17.8-2016 / CSA B44.8-16

- 8.2.1 The requirements of 2.20.2.10 c) are amended as follows;

2.20.2.10 c) A readily visible hour meter shall be provided on all suspended elevator cars and the suspension steel wire ropes shall be replaced after 250 h of operation. ~~or after 5 years, whichever occurs first.~~

#### 8.3 Maintenance

- 8.3.1 Existing wind tower turbine elevators shall conform to the maintenance requirements of ASME A17.8-2016 / CSA B44.8-16, Standard for wind turbine tower elevators including and any applicable changes set out in the CAD.

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