2016 Edition

ASME A17.1/CSA B44 Handbook

ASME A17.1-2016, Safety Code for Elevators and Escalators

CSA B44-16, Safety Code for Elevators

Kevin L. Brinkman, PE

The American Society of Mechanical Engineers

2016 Edition

ASME A17.1/CSA B44 Handbook

ASME A17.1-2016, Safety Code for Elevators and Escalators

CSA B44-16, Safety Code for Elevators

Kevin L. Brinkman, PE

The American Society of Mechanical Engineers

Two Park Avenue • New York, NY • 10016 USA

The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

CONTENTS

Introduction		vii
Foreword		viii
Acknowledgments		xii
Summary of Code Changes		xiii
Part 1	**General**	1
1.1	Scope	1
1.2	Purpose and Exceptions	1
1.3	Definitions	3
Part 2	**Electric Elevators**	4
	Scope	4
2.1	Construction of Hoistways and Hoistway Enclosures	4
2.2	Pits	20
2.3	Location and Guarding of Counterweights	26
2.4	Vertical Clearances and Runbys for Cars and Counterweights	29
2.5	Horizontal Car and Counterweight Clearances	33
2.6	Protection of Space Below Hoistways	39
2.7	Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms	39
2.8	Equipment in Hoistways, Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms	52
2.9	Machinery and Sheave Beams, Supports, and Foundations	65
2.10	Guarding of Equipment and Standard Railing	68
2.11	Protection of Hoistway Openings	68
2.12	Hoistway Door Locking Devices and Electric Contacts, and Hoistway Access Switches	94
2.13	Power Operation of Hoistway Doors and Car Doors	104
2.14	Car Enclosures, Car Doors and Gates, and Car Illumination	125
2.15	Car Frames and Platforms	143
2.16	Capacity and Loading	152
2.17	Car and Counterweight Safeties	156
2.18	Speed Governors	170
2.19	Ascending Car Overspeed and Unintended Car Movement Protection	176
2.20	Suspension Means and Their Connections	189
2.21	Counterweights	199
2.22	Buffers and Bumpers	200
2.23	Car and Counterweight Guide Rails, Guide-Rail Supports, and Fastenings	207
2.24	Driving Machines and Sheaves	211
2.25	Terminal Stopping Devices	229
2.26	Operating Devices and Control Equipment	244
2.27	Emergency Operation and Signaling Devices	314
2.28	Layout Drawings	365
2.29	Identification	365
Part 3	**Hydraulic Elevators**	367
	Scope	367
3.1	Construction of Hoistways and Hoistway Enclosures	367

3.4	Bottom and Top Clearances and Runbys for Cars and Counterweights	368
3.6	Protection of Spaces Below Hoistway	370
3.7	Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms	370
3.11	Protection of Hoistway Landing Openings	371
3.14	Car Enclosures, Car Doors and Gates, and Car Illumination	371
3.15	Car Frames and Platforms	371
3.16	Capacity and Loading	372
3.17	Car Safeties, Counterweight Safeties, Plunger Gripper, and Governors	372
3.18	Hydraulic Jacks	376
3.19	Valves, Pressure Piping, and Fittings	380
3.21	Counterweights	382
3.22	Buffers and Bumpers	382
3.23	Guide Rails, Guide-Rail Supports, and Fastenings	382
3.24	Hydraulic Machines and Tanks	382
3.25	Terminal Stopping Devices	383
3.26	Operating Devices and Control Equipment	384
3.27	Emergency Operation and Signaling Devices	386
3.28	Layout Data	386
Part 4	**Elevators With Other Types of Driving Machines**	387
4.1	Rack-and-Pinion Elevators	387
4.2	Screw-Column Elevators	392
4.3	Hand Elevators	398
Part 5	**Special Application Elevators**	400
5.1	Inclined Elevators	400
5.2	Limited-Use/Limited-Application Elevators	407
5.3	Private Residence Elevators	410
5.4	Private Residence Inclined Elevators	418
5.5	Power Sidewalk Elevators	420
5.6	Rooftop Elevators	422
5.7	Special Purpose Personnel Elevators	426
5.8	Marine Elevators	432
5.9	Mine Elevators	433
5.10	Elevators Used for Construction	437
5.11	Wind Turbine Tower Elevators	440
5.12	Outside Emergency Elevators	440
Part 6	**Escalators and Moving Walks**	441
6.1	Escalators	441
6.2	Moving Walks	473
Part 7	**Dumbwaiters and Material Lifts**	489
	Scope	489
7.1	Power and Hand Dumbwaiters Without Automatic Transfer Devices	489
7.2	Electric and Hand Dumbwaiters Without Automatic Transfer Devices	492
7.3	Hydraulic Dumbwaiters Without Automatic Transfer Devices	496
7.4	Material Lifts Without Automatic Transfer Devices	496
7.5	Electric Material Lifts Without Automatic Transfer Devices	501
7.6	Hydraulic Material Lifts Without Automatic Transfer Devices	503
7.7	Automatic Transfer Devices	504

7.8	Power Dumbwaiters With Automatic Transfer Devices	507
7.9	Electric Material Lifts With Automatic Transfer Devices	508
7.10	Hydraulic Material Lifts With Automatic Transfer Devices	510
Part 8	**General Requirements**	511
8.1	Security	511
8.2	Design Data and Formulas	512
8.3	Engineering Tests, Type Tests, and Certification	523
8.4	Elevator Seismic Requirements	529
8.5	Escalator and Moving Walk Seismic Requirements	537
8.6	Maintenance, Repair, Replacement, and Testing	539
8.7	Alterations	562
8.8	Welding	594
8.9	Code Data Plate	594
8.10	Acceptance Inspections and Tests	595
8.11	Periodic Inspections and Witnessing of Tests	611
8.12	Flood Resistances	616
Part 9	**Reference Codes, Standards, and Specifications**	624
	Locating Codes, Standards, and AECO Certifications	624
	United States Codes and Standards	624
	Canadian Codes and Standards	628
	Accredited Elevator/Escalator Certification Organization (AECO)	628
	International Codes and Standards	628
	Out-of-Print Codes and Standards	629
	Additional Resource Material	629

Nonmandatory Appendices

A	Control System	633
B	Unlocking Zone	633
C	Location of Top Emergency Exit	633
D	Rated Load and Capacity Plates for Passenger Elevators	633
E	Elevator Requirements for Persons With Physical Disabilities in Jurisdictions Enforcing NBCC	633
F	Ascending Car Overspeed and Unintended Car Movement Protection	633
G	Top-of-Car Clearance	633
H	Private Residence Elevator Guarding	633
I	Escalator and Moving Walk Diagrams	633
J	Relationship of Pit Ladder to Hoistway Door Unlocking Means	634
K	Beveling and Clearance Requirements	634
L	Index of Alteration Requirements for Electric Elevators, Hydraulic Elevators, Escalators, and Moving Walks	634
M	Inertia Application for Type A Safety Device Location of Test Weight [8.10.2.2.2(ii)(2)]	634
N	Recommended Inspection and Test Intervals in “Months”	634
P	Plunger Gripper Stopping Distances	634
Q	Explanatory Figures for the Definitions of Elevator Machinery Space, Machine Room, Control Space, Control Room, Remote Machine Room, or Remote Control Room	634
R	Inspection Operation and Hoistway Access Switch Operation Hierarchy	634

S Vertically Sliding Doors — Illustrations of Detection Zones (2.13.3.4) 634
T Inspection and Replacement of Steel Wire Ropes 634
U Design Requirements — Traction Elevator Suspension System 634
V Building Features for Occupant Evacuation Operation 634
W Wind Turbine Tower Elevator Clearances 635
X Acceptance Tests 635
Y Maintenance Control Program Records 635
Z Mass and Closing Time of Horizontally Sliding Elevator Doors 635

Index 636
The Author 659

INTRODUCTION

This is the 12th edition of the ASME A17.1/CSA B44 Handbook, and the first one not authored by Ed Donoghue. The idea for the Handbook came from Mr. Donoghue and has grown from that simple idea to the valued resource we all know today. The history behind the Handbook is important, so, below, I have included Mr. Donoghue's Introduction from the 2013 edition to provide that background.

> *In 1976 I was appointed to the A17 Editorial Committee with Al Land (Chair), William "Bill" Crager (A17 Chair), and Manuel Gutierrez (ASME Secretary). At the time, the A17 Editorial Committee was charged with a total editorial review of the A17.1 Code for the 1978 edition. Every Rule was scrutinized and editorially revised for clarification when appropriate.*
>
> *The Committee met weekly for this massive project. To avoid unintentionally changing the content of a Rule, it was essential that the Committee members had a clear understanding of the technical requirements and their intent. Bill Crager had a long history as a member of the A17 Committee, including 15 years as Committee Chairman. At the meetings, the members would look to Bill for his recollection of why a Rule was in the Code. Bill possessed an encyclopedic knowledge of the history of A17 requirements. His typical response would start by stating, "At the (date) A17 Meeting, the Committee approved the Rule for the following reason." At our next meeting, Bill would arrive with documents from his home file backing up his recollection — including the meeting dates.*
>
> *I quickly came to the conclusion that the "Bill Cragers" on the A17 Committee were mostly retired or would be retiring from Committee activities over the next few years. Their expansive knowledge of the past committee work and the rationale for the A17.1 Rules would no longer be available. This would be a loss not only to the A17 Committee but also to the users of the Code.*
>
> *I concluded that a Handbook for A17.1 would be an invaluable addition to the A17.1 Code, as the NEC® Handbook was an invaluable supporting document for the NEC®. I approached Mel Green, then director of ASME Codes and Standards, with a proposal to write an ASME A17.1 Handbook. He thought the idea had merit, and the first edition of the A17.1 Handbook was published at the time of publication of the 1981 edition of the A17.1 Code. A new edition of the Handbook was published thereafter with each new edition of the A17.1 Code and later the A17.1/B44 Code . . . — Ed Donoghue*

With each passing year, we see experts in the industry retire and we welcome new faces to the Code development process. The Handbook, much like the Code itself, is a living document. Each edition updates and expands upon the information provided in previous edition. I have the privilege of authoring this edition of the Handbook and hope to continue the tradition and build on the foundation that Mr. Donoghue and so many others have helped to create.

—Kevin Brinkman

FOREWORD

The ASME A17.1/CSA B44 Safety Code for Elevators and Escalators is written by a committee of technically qualified persons with a concern and competence in the subject within the Committee's scope and a willingness to participate in the work of the Committee. The ASME A17 Standards Committee is restricted to a maximum of 35 members of which no more than one-third can be from any single interest category. This requirement serves to ensure balance in the consensus process. In addition, there are over 300 members serving on the Regulatory Advisory Council, National Interest Review Group, Technical Committees, Administrative Committees, and Ad Hoc Committees. Technical revisions to ASME A17.1/CSA B44 are also submitted to the CSA B44 Technical Committee for their concurrence.

This Handbook incorporates the harmonization of the ASME A17.1, *Safety Code for Elevators and Escalators* and CSA B44, *Safety Code for Elevators*. Since 2000, editions of the CSA B44 and ASME A17.1 Codes have been identical, except for application deviations noted in CSA B44. Starting with the ASME A17.1-2007/CSA B44-07, a single Code book has been published for use in the United States and Canada. A joint effort of the CSA B44 Technical Committee and the ASME A17 Standards Committee to harmonize requirements between CSA B44 and ASME A17.1 was started in the mid-1990s. The harmonization process compared and studied differences between the two codes over a number of years through discussions by joint ASME/CSA working groups. A harmonized requirement was formulated and proposed for review and approval through formal balloting by both the ASME A17 Standards Committee and CSA B44 Technical Committee. If any member did not approve a proposed requirement, the member's rationale for disapproval was returned to the working committee for resolution. The working committee either revised the proposal or provided a reason for rejecting the comment. The revised proposal or rejection was once again balloted until negatives were resolved or the Chairman of the ASME A17 Standards Committee ruled consensus had been achieved. Many requirements went through multiple ballots before a consensus was achieved. As a result, requirements in the ASME A17.1-2000 and CSA B44-00 and later editions of the Code are different from corresponding Rules and Clauses in the previous editions of ASME A17.1 and CSA B44. The harmonization process identified technical and editorial problems with requirements in both codes and in such cases formulated new requirements. The ASME A17 and CSA B44 Committees recognized that not all requirements could be fully harmonized, in particular requirements based on, or which depended on, other national codes or regulations, such as building, electrical, and fire codes. In such cases, two separate requirements were formulated, one for "jurisdictions enforcing NBCC" (meaning National Building Code of Canada or "NBCC" for short) and another for "jurisdictions not enforcing NBCC" (meaning the United States).

In cases where no agreement on a requirement could be achieved or the publication schedule precluded continuation of discussions, the CSA B44 Technical Committee created Canadian exceptions from the ASME A17.1 requirements, known as Canadian deviations. These Canadian deviations appeared in the CSA B44-00 and CSA-B44-04 Elevator Safety Code. Both committees continue the harmonization process and endeavor to reduce the number of Canadian deviations in future editions. In January 2006, the list of deviations had shrunk to the point where the ASME A17 Standards Committee felt they could all be incorporated in the next edition of the ASME A17.1 Code with an objective of publishing a single Safety Code for Elevators and Escalators for use in both the United States and Canada. That objective was met with the publication of ASME A17.1-2007/CSA B44-07.

ASME and CSA recognize that the Code must be written in a form suitable for enforcement by state, municipal, and other jurisdictional or regulatory authorities often referred to in the United States as "Authorities Having Jurisdiction (AHJ)" and in Canada as "Regulatory Authorities (RA)"; and as such, the text is concise, without examples or explanations. It is also recognized that this Code cannot cover every situation nor can it cover new technology before it is developed and field experience is gained. For these reasons, ASME agreed that a handbook would be useful to augment the Code by providing a commentary on the Code requirements.

This Handbook contains rationale for the ASME A17.1/CSA B44 Code requirements along with explanations, examples, and illustrations of the implementation of requirements. In addition, it contains excerpts from other nationally recognized standards referenced by the Code. This information is intended to provide users of the ASME A17.1/CSA B44 Code with a better understanding of, and appreciation for, the requirements. The net result should be increased safety for owners, manufacturers, installers, maintainers, consultants, the inspection community, and users of equipment covered by the ASME A17.1/CSA B44 Code.

Commentary in this Handbook was compiled from ASME A17 Committee minutes, correspondence, and

interpretations, as well as conversations with past and present ASME A17 and CSA B44 committee members.

The original intent for requirements in ASME A17.1 and CSA B44 Codes may be obscure in the Committee's records. Therefore, this Handbook will convey, through text, examples of calculations, tables, and illustrations, the end result of Code requirements as applied to equipment installed today where the original intent cannot be found. It should not be construed that examples and illustrations in this Handbook are the only means of complying with ASME A17.1/CSA B44 Code requirements, or that all illustrations necessarily represent all requirements contained in the Code. Some illustrations simply reflect general industry or specific company practices. With information of this type, it is hoped the reader will develop a better understanding of, and appreciation for, requirements in ASME A17.1/CSA B44.

Commentary contained in this Handbook is the opinion of the authors (both current and previous). It does not necessarily reflect the official position of ASME, the ASME A17 Standards Committee for Elevators and Escalators, CSA, or the CSA B44 Technical Committee. When an official interpretation of an ASME A17.1/CSA B44 requirement is required, the user should submit a request for interpretation to the Secretary of the ASME A17 Standards Committee in accordance with instructions in the Preface to the ASME A17.1/CSA B44 Code. Comments and suggestions for this and future editions of the ASME A17.1/CSA B44 Handbook should be addressed to:

Secretary, A17 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, New York 10016-5990
http://go.asme.org/Inquiry

ASME Elevator and Escalator Courses. ASME Training and Development is a leader in top-quality elevator and escalator education. Courses range from an introduction to elevators and escalators, inspection techniques, equipment modernization code requirements, and maintenance evaluation, to an in-depth review of ASME A17.1/CSA B44 using this Handbook as the course text. The following courses and Webinars are recommended for those with little or no experience in the industry:

(a) Courses

(1) PD010, ASME A17.1 Safety Code for Elevators and Escalators

(2) PD100, Introduction to the Maintenance and Inspection of Elevators and Escalators

(b) Webinars

(1) Introduction to ASME Elevator Codes

(2) Essentials — A17.1/CSA B44 Safety Code for Elevators and Escalators

Other courses meet the needs for those with elevator and escalator experience as well as those who have an extensive background in the industry. To obtain a catalog of course material, contact:

ASME Training and Development
Two Park Avenue
New York, NY 10016-5990
Phone: 800-THE-ASME (800-843-2763)
www.asme.org/shop/courses

ABBREVIATIONS

Throughout this Handbook, references are made to the ASME A17 Standards Committee and CSA B44 Technical Committee. The term "ASME A17/CSA B44 Committee" is used for that purpose. References are also made to the *Safety Code for Elevators and Escalators*, ASME A17.1/CSA B44. The term "ASME A17.1/CSA B44 Code" is used for that purpose. The reader should keep in mind the reference to the "ASME A17/CSA B44 Committee" is not intended to imply there is only one committee.

METRIC

The ASME A17.1/CSA B44 Handbook includes both metric and imperial units. Both are included in the commentary.

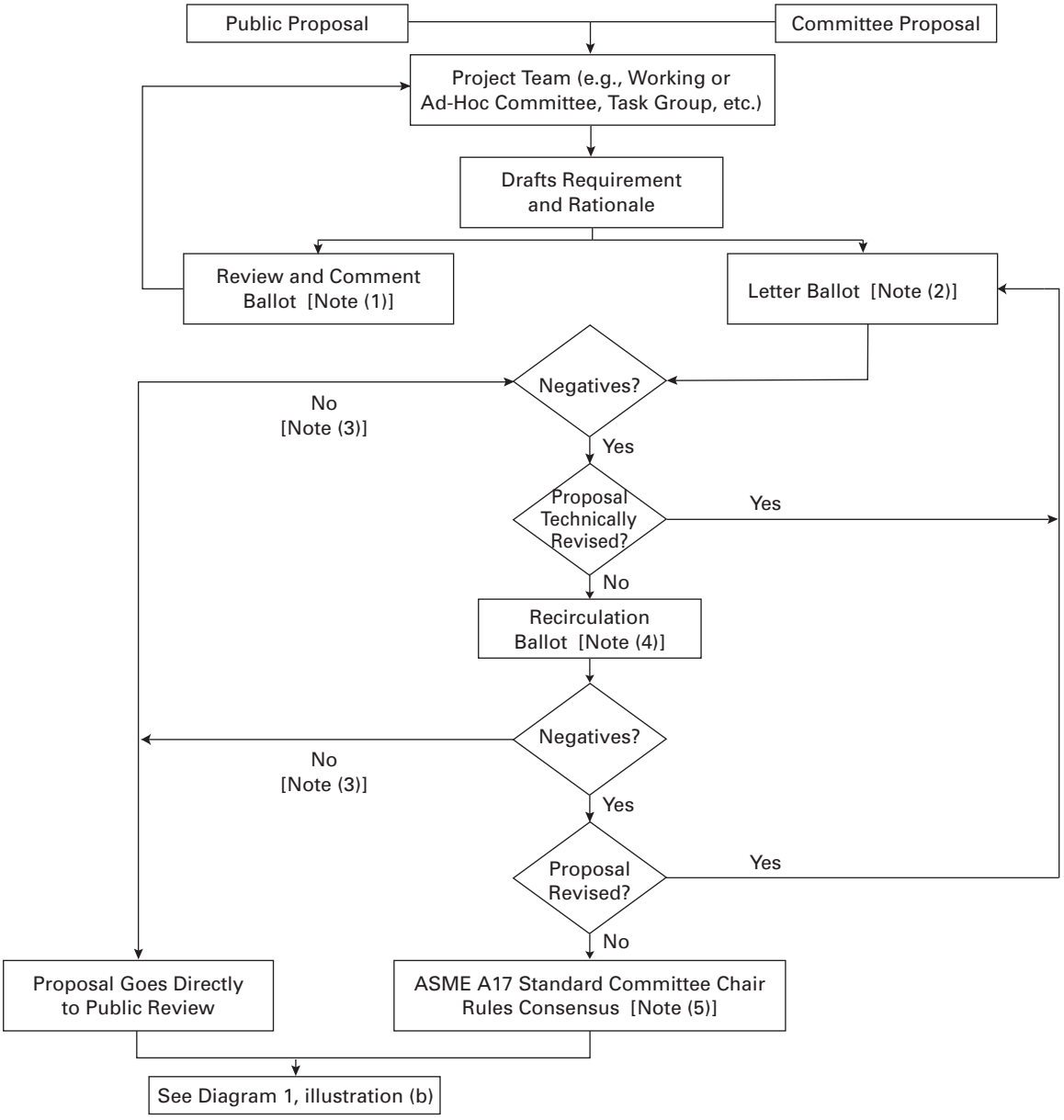
ASME A17.1/CSA B44 CODE REVISIONS

A summary of code changes from ASME A17.1-2013/CSA B44-13 through ASME A17.1-2016/CSA B44-16 along with approved balloted rationale are in the front of this Handbook. Revisions are made periodically to the Code to incorporate necessary or desirable changes determined from experience gained from the application of the procedures, and address developments in the elevator art. Approved revisions are published periodically. See Diagram 1 in the Foreword for the flowchart of the ASME A17 revision process. The Committee welcomes proposals from Code users. Such proposals should be as specific as possible, citing Section number(s), proposed wording, pertinent documentation, and a detailed description of the reasons for the proposal. Proposed revisions should be sent to:

Secretary, A17 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Revisions to the ASME A17.1/CSA B44 Code occur after an intense formal process ensuring due process for all affected parties. The ASME A17 process is illustrated in Diagram 1, illustrations (a) and (b). The CSA process is the same as illustrated in Diagram 1.

Diagram 1 ASME A17 Technical Revision Flowchart



(a)

NOTES:

(1) Project team determines who receives Review and Comment Ballot, e.g., Working Committee only, other Working Committees, ASME A17 Standards Committee, NIRG, RAC, and/or CSA B44.

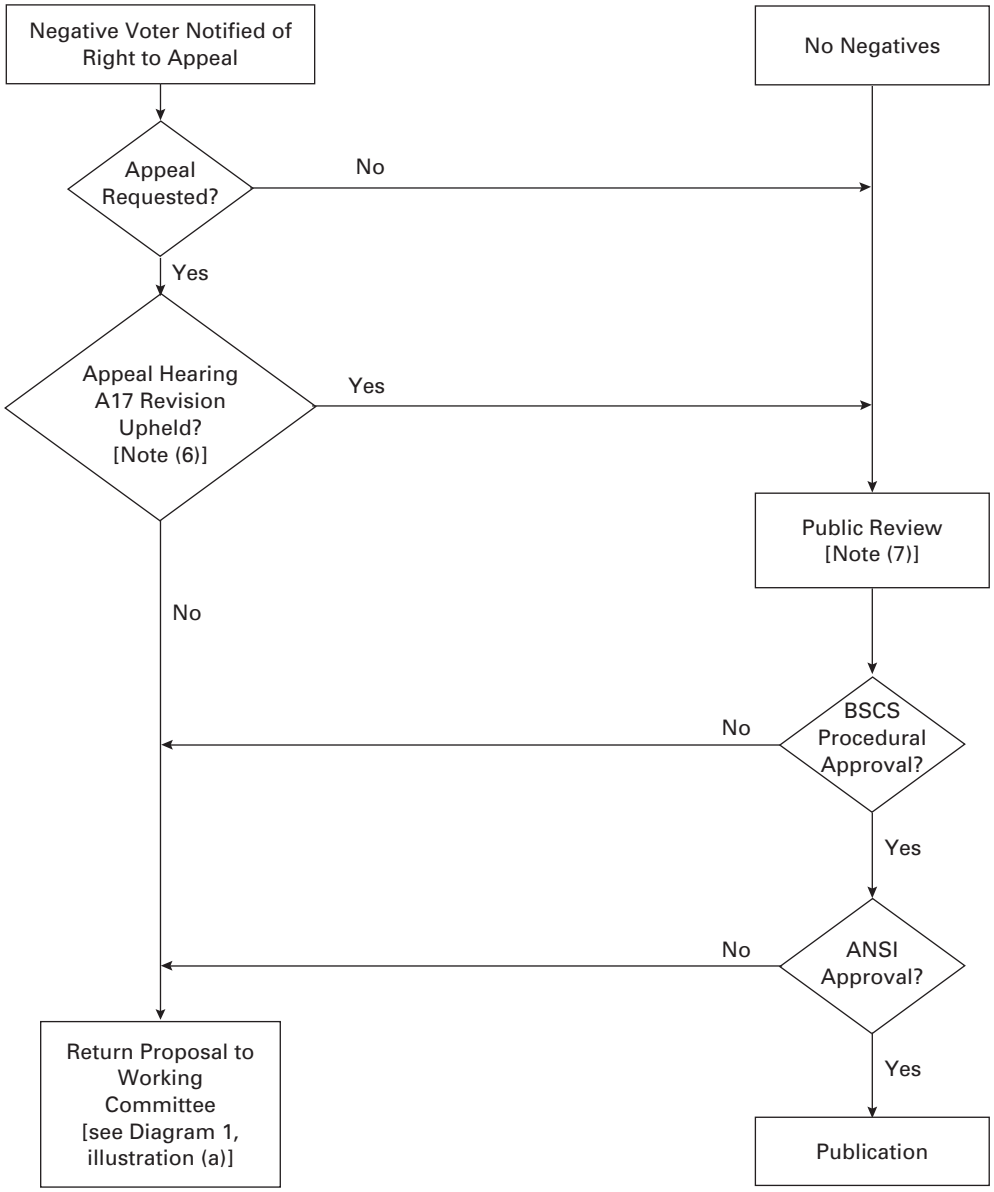
(2) Letter Ballot of ASME A17 Standards Committee, NIRG, RAC, and CSA for distribution to CSA B44 Committee.

(3) All comments must be addressed. Editorial revision allowed with ASME A17 Standards Committee approval.

(4) Secretary contacts all negative voters (this includes ASME A17, CSA B44, RAC, NIRG) and asks them if they want to withdraw their negatives and notifies them of their rights to appeal. If all negatives are withdrawn, proposal proceeds to public review. See Diagram 1, illustration (b). Recirculation Ballot of ASME A17 Standards Committee if any remaining negatives. Ballot may include editorial revisions. Copy of ballot sent to CSA.

(5) Assuming at least two-thirds affirmative vote by ASME A17 Standards Committee on proposed revision.

Diagram 1 ASME A17 Technical Revision Flowchart (Cont'd)



(b)

NOTES (Cont'd):

(6) Three levels of appeal. First appeal to ASME A17 Standards Committee. Second appeal to ASME BSCS. Third appeal to ASME Board on Hearings and Appeals.

(7) Public review comments sent to Working Committee. Working Committee may draft response, revise proposal, or withdraw proposal. If proposal is revised technically, it is subject to first-consideration ballot [see Diagram 1, illustration (a)]. Working Committee action subject to approval of ASME A17 Standards Committee.

ACKNOWLEDGMENTS

The author gratefully acknowledges the time, effort, and dedication of the many people and organizations that assisted in and contributed to the preparation of this 2016 edition of the ASME A17.1/CSA B44 Handbook.

I especially want to acknowledge and thank the following for their assistance and significant contributions to this edition of the Handbook:

Barry Blackaby, Otis Elevator Co., Farmington, CT — Sections 2.25, 2.26, 8.4, and 8.5

Jeff Blain, Schindler Elevator Corp., Morristown, NJ — NFPA 70 Highlights

John Carlson, Schindler Elevator Corp., Morristown, NJ — Section 2.27

Dennis Kalgren, KONE, Inc., Allen, TX — Section 2.22 and 8.3.13

David McColl, Otis Elevator Co., Mississauga, ON — CSA C22.1 Highlights

Many people and organizations have made significant contributions to the Handbook over the years. It would be difficult to list everyone, but individual acknowledgments are included at the beginning of most sections of the Handbook. This book is truly an industry effort and is a testament to all of their contributions.

Of course, none of this would be possible without the years of effort by Ed Donoghue, who came up with the idea for the Handbook and has authored every edition prior to this one. This edition is really just an extension of all the work done previously by Ed and the many other contributors. I extend my sincere thanks and appreciation to Ed for all the encouragement, support, and guidance he provided me during this project. I am truly honored to call him my friend.

Finally, I would like to thank my wife, Vickie, and my family for their patience and understanding for the many hours and weekends needed to prepare the Handbook. It would not have been possible without their support.

SUMMARY OF CODE CHANGES ASME A17.1-2013/CSA B44-13 AND ASME A17.1-2016/CSA B44-16

This summary of Code changes identifies the Requirements that have been revised or added in ASME A17.1-2016/CSA B44-16 from those in ASME A17.1-2013/CSA B44-13. The rationale for the revisions are from the public review drafts that closed August 25, 2014; June 1, 2015; and January 4, 2016.

The "Rationale" reflects the balloted position of the ASME A17 Standards Committee and CSA B44 Technical Committee for revising or adding the requirement. The technical number (TN) in brackets immediately following each revision or addition is an administrative number used by the ASME A17 Committee.

Section 1.3 Added definition of "backup rollers(s)"

RATIONALE: Add definition to define a term used on rack and pinion machine types. [TN 03-1806]

Section 1.3 Revised definition of "bumper"

RATIONALE: Revised the definition for bumper to avoid conflict between definition of buffer and bumper. [TN 11-1861]

Section 1.3 Revised definition of "control, operation"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "controller, motor"

RATIONALE: To align the definition of "motor controller" with listing/certification requirements because not all "motor controllers" include power conversion equipment. [TN 13-1041]

Section 1.3 Revised definition of "displacement switch"

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Section 1.3 Revised definition of "driving machine, traction climbing"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Added definition of "elastomeric buffer"

RATIONALE: Added a definition for elastomeric buffers and to recognize elastomeric buffers as "equivalent types." [TN 11-1861]

Section 1.3 Revised definition of "elevator"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "guide rope fixes"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline

denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "platform, landing"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "seismic switch" to "seismic detection device"

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Section 1.3 Added definition of "sound engineering practice"

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-2135]

Section 1.3 Revised definition of "tail line"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "traction machine"

RATIONALE: For consistency with "suspension means" terminology used in the code. [TN 14-2115]

Section 1.3 Revised definition of "travel path"

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Section 1.3 Revised definition of "unlocking zone"

RATIONALE: The dimensional requirements for "unlocking zone" are removed from the definition and placed into the appropriate section in the code. [TN 12-594]

Table 2.4.2.2 Revised

RATIONALE: Added elastomeric buffers. [TN 11-1861]

Requirement 2.4.2.2 Revised

RATIONALE: Added elastomeric buffers. [TN 11-1861]

Requirement 2.4.6.1 Revised

RATIONALE: Added elastomeric buffers. [TN 11-1861]

Requirement 2.4.8(d)(2) Revised

RATIONALE: Added elastomeric buffers. [TN 11-1861]

Requirement 2.5.1.5.3 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.7.5.3.3 Revised

RATIONALE: The current requirements would require a railing in a situation where there is a horizontal clearance of 12 in. (300 mm) between the working platform or car enclosure top and the hoistway enclosure which is only 1 in. wide or wide enough to fit a ruler, tape measure or laser. The intent of the requirement is to protect against fall hazards. Anthropometric data from A17.1/B44.7 Appendix C shows the body thickness to be 342 mm, so a 300 mm circular space in all orientations as defined by a 300 mm (12 in.) sphere would be small enough to provide protection from the fall hazard. [TN 14-505]

Requirement 2.7.5.4 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car for new elevators. The top of car clearance requirements above the car top should

be the same whether there is a working platform above the car or not. [TN 12-908]

Requirement 2.7.6.3.2(e) Added

RATIONALE: The standard CSA-B44.1/ASME-A17.5 is in process of being updated to include additional requirements for enclosures for motor controllers that can be installed outside a machinery space, machine room, control space or control room. Motor controller enclosures that meet the additional requirements are marked with the additional marking "AGP."

Since the actual installation of the equipment is outside the scope of B44.1/A17.5, the requirement for the additional marking "AGP" must be included in A17.1/B44. [TN 11-1277]

Requirement 2.7.6.3.2(f) Added

RATIONALE: To instruct elevator personnel to close and lock the motor controller when not present in order to prevent unauthorized personnel from access to controller when elevator personnel are not present at the controller. [TN 12-175]

Requirement 2.7.6.4.1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.8.3.3.4 Revised

RATIONALE: Fix a reference. [TN 13-656]

Requirement 2.11.6.1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.12.1 Revised

RATIONALE: The dimensional requirements for "unlocking zone" are removed from the definition and placed into the appropriate section in the code. [TN 12-594]

Requirement 2.12.6.2 Revised

RATIONALE: To clarify the language to be consistent throughout the section and throughout the requirement. [TN 15-1317]

Requirement 2.12.7.2 Revised

RATIONALE: This assures that a hoistway access switch is located where it is readily visible to and safely accessible by elevator personnel when the door is open. This proposal limits locations for hoistway access switches, and therefore makes it safer for elevator personnel to access and egress the hoistway.

This assures that in installations where a hoistway access switch is located on the sight guard, (1) support for the switch will be adequate, and (2) motion will not occur if a ground or short circuit occurs in the flexible wiring.

Finally, this corrects references in 2.12.7.3.8. [TN 08-1522]

Requirement 2.12.7.3.3(c)

RATIONALE: This clarifies the requirement that the hoistway access switch be able to raise the car high enough for elevator personnel to safely access and egress the pit unless the car is incapable of traveling to such an elevation, e.g., a very short hoistway. The 12 inch window provides a tolerance. [TN 08-1781]

Requirement 2.12.7.3.8 Revised

RATIONALE: This assures that a hoistway access switch is located where it is readily visible to and safely accessible by elevator personnel when the door is open. This proposal limits locations for hoistway access switches, and therefore makes it safer for elevator personnel to access and egress the hoistway.

This assures that in installations where a hoistway access switch is located on the sight guard, (1) support for the switch will be adequate, and (2) motion will not occur if a ground or short circuit occurs in the flexible wiring.

Finally, this corrects references in 2.12.7.3.8. [TN 08-1522]

Requirement 2.13.2.1.1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.13.2.2.1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.14.1.5.1 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car for new elevators. The top of car clearance requirements above the car top should be the same whether there is a working platform above the car or not. [TN 12-908]

Requirement 2.14.1.7.1 Revised

RATIONALE: The current requirements would require a railing in a situation where there is a horizontal clearance of 12 in. (300 mm) between the working platform or car enclosure top and the hoistway enclosure which is only 1 in. wide or wide enough to fit a ruler, tape measure or laser. The intent of the requirement is to protect against fall hazards. Anthropometric data from A17.1/B44.7 Appendix C shows the body thickness to be 342 mm, so a 300 mm circular space in all orientations as defined by a 300 mm (12 in.) sphere would be small enough to provide protection from the fall hazard. [TN 14-505]

Requirement 2.14.1.7.2 Revised

RATIONALE: Revised to ensure protection of elevator personnel against shearing hazards throughout the hoistway between the top rail and intermediate rail of the standard railing and fixed equipment passed or approached by the standard railing as the car moves throughout the hoistway. [TN 13-0538]

Requirement 2.14.4.2.4 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.14.5.7.1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.14.5.7.3 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.14.5.8 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.14.6.1 Revised

RATIONALE: Folding doors are prohibited for passenger elevators (see 2.14.5.2.) for new installations. Folding car doors are permitted for freight elevators (see 2.14.6). The original intent of adding folding car door requirements 2.14.5 was for the replacement of existing folding car doors. However, replacement criteria does not belong in Part 2, but belongs in 8.6.

The proposed 8.6.3.13 is based on approved TN 06-431. The original intent was for the replacement of folding car doors. It has been renumbered because A17.1-2013 already has an 8.6.3.13. 2.14.4.6 (Strength of Doors, Gates, and Their Guides, Guide Shoes, Tracks, and Hangers) applies to both passenger elevators and freight elevators. [TN 14-1766]

Requirement 2.14.6.4 Revised; formerly numbered 2.14.5.10

RATIONALE: Folding doors are prohibited for passenger elevators (see 2.14.5.2.) for new installations. Folding car doors are permitted for freight elevators (see 2.14.6). The original intent of adding folding car door requirements 2.14.5 was for the replacement of existing folding car doors. However, replacement criteria does not belong in Part 2, but belongs in 8.6.

The proposed 8.6.3.13 is based on approved TN 06-431. The original intent was for the replacement of folding car doors. It has been renumbered because A17.1-2013 already has an 8.6.3.13. 2.14.4.6 (Strength of Doors, Gates, and Their Guides, Guide Shoes, Tracks, and Hangers) applies to both passenger elevators and freight elevators. [TN 14-1766]

Requirement 2.15.6.3 Revised

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-135]

Requirement 2.15.7.2 Revised

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-135]

Table 2.18.2.1 Revised

RATIONALE: The proposed change is to correct an error in Table 2.18.4.2.1 that goes back to the harmonization of the ASME A17.1 with CSA B44.

The ASME A17.1 code did not require an overspeed switch on governors on elevators with rated speeds of 150 fpm or less. When the Code was harmonized an overspeed switch was required on all governors (2.18.4.1.1). The maximum setting for the overspeed switch to operate at was 90% of the governor tripping speed for rated speeds over 0.75 m/s (150 fpm) up to

2.5 m/s (500 fpm). The metric values in Table 2.18.2.1 need to be revised to address speed up to 0.75 m/s as shown above. This will agree with the imperial values in Table 2.18.2.1, which are correct, but not the metric values, which need to be revised as shown using practical conversion values. [TN 10-661]

Requirement 2.18.5.3 Revised

RATIONALE: Requirement 2.16.3.3 in the 2010 edition of A17.1 contained the requirements that now appear in 2.16.3.3.3 in the 2013 edition of the code, and is the only applicable to these types of tags. The proper requirement number was not updated for the 2013 edition. [TN 14-1596]

Requirement 2.18.6.2 Revised

RATIONALE: For consistency between 2.18.5.1 and 2.18.6.2. [TN 14-2114]

Requirement 2.20.2.2 Revised

RATIONALE: Requirement 2.16.3.3 in the 2010 edition of A17.1 contained the requirements that now appear in 2.16.3.3.3 in the 2013 edition of the code, and is the only applicable to these types of tags. The proper requirement number was not updated for the 2013 edition. [TN 14-1596]

Requirement 2.20.3 Revised

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-135]

Requirement 2.20.8.1 Revised

RATIONALE: Updated section name of referenced requirement and requirement number. [TN 15-730]

Requirement 2.20.8.2 Revised

RATIONALE: Updated section name of referenced requirement and requirement number. [TN 15-730]

Requirement 2.20.8.3 Revised

RATIONALE: Updated section name of referenced requirement and requirement number. [TN 15-730]

Requirement 2.22.1 Revised

RATIONALE: To recognize elastomeric buffers as "equivalent types", to define a maximum rated speed for their use and note any possible environmental considerations. [TN 11-1861]

Requirement 2.22.2 Revised

RATIONALE: To limit the speed of application of solid bumpers on electric elevators, consistent with hydraulic elevators. [TN 11-1861]

Requirement 2.22.4.5 Revised

RATIONALE: Inclusion of design requirements relating to lateral movement of the plunger (2.22.4.5.2) is a proactive measure to ensure effective oil buffer operation. Testing after manufacture is not as effective as addressing the issue in the design stage. Requirement 8.3.2.5.5 has been revised to reference the design requirements of the oil buffer and retain independent lab verification. [TN 11-1861]

Requirement 2.22.5 Added

RATIONALE: To define performance, testing, marking requirements as well as environmental limitations for elastomeric buffers. The buffer stroke is necessary to verify that top and bottom clearances for cars and counterweights comply with Sections 2.4 and 3.4. [TN 11-1861]

Requirement 2.24.8.6 Revised

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-135]

Requirement 2.25.2.1.2 Revised

RATIONALE: To clarify the intent of the term "devices" as used in requirement 2.25.2.1.2. [TN 13-2258]

Requirement 2.25.3.2 Revised

RATIONALE: To recognize elastomeric buffers as "equivalent types." [TN 11-1861]

Requirement 2.25.4.1.8 Revised

RATIONALE: To correct a reference error. [TN 15-1252]

Requirement 2.26.2.5 Revised

RATIONALE: The use of toggle or push-to-run switches for emergency stops is being prohibited for safety reasons. Toggle and push-to-run switches can be inadvertently moved to the run position placing elevator personnel at risk due to potential exposure to unexpected movement of the elevating device. Push-to-stop switches if inadvertently actuated will cause the elevator to be in a safe state. [TN 13-1748]

Requirement 2.26.4.2 Revised

RATIONALE: The standard CSA-B44.1/ASME-A17.5 is in process of being updated to include additional requirements for enclosures for motor controllers that can be installed outside a machinery space, machine room, control space or control room. Motor controller enclosures that meet the additional requirements are marked with the additional marking "AGP." [TN 11-1277]

Requirement 2.26.4.3.1 Revised

RATIONALE: To clarify "positively opened" for the users of the Code. This also substantially harmonizes with EN 81. [TN 13-138]

Requirement 2.26.7 Revised

RATIONALE:

1. The In-Car Stop Switch is only accessible to elevator personnel. It is either behind a group 1 locked panel, or it is a group 1 key switch. Other examples of stop switches available to elevator personnel include Pit Stop Switch, Machine Room Stop Switch, and Car Top Stop Switch all of which remain operative during Phase I and Phase II Fire Recall Service. If a mechanic actuates the In-Car Stop Switch it must be assumed there is a valid reason to stop the car immediately. In this case the power should be removed from the driving machine motor and brake as intended. Per 2.27.3.1.6(l), means used to remove elevators from normal operation shall not prevent Phase I Emergency Recall Operation, except

(1) as specified in this Code

(2) as controlled by elevator personnel

2. The Emergency Stop Switch on freight elevators is required for use by the elevator operator for the purpose of managing safe movement of freight. This switch is an EPD required to be readily accessible, red and conspicuously marked allowing quick actuation by the operator. If the operator actuates the Emergency Stop Switch it must be assumed there is a valid reason to stop the car immediately. Any car movement can result in the need for the operator to stop the car immediately therefore this EPD should remain functional during all car movement. Misuse of the Emergency Stop Switch during Phase I Fire Recall can be quickly assessed by the firefighters with the Emergency Communication means of 2.27.1.1.4 requiring direct communication with the elevator operator in the car. The analysis shows having an operational EPD outweigh the concerns for insuring the car recall on Phase I. [TN 09-1466]

Requirement 2.26.8.2

RATIONALE: To correct the references for 8.6.1.2.2(a). [TN 12-1959]

Requirement 2.26.9.3.2

RATIONALE: To correct the references for 8.6.1.2.2(a). [TN 12-1959]

Requirement 2.27.2.4.4 Revised

RATIONALE: Provided the performance requirement of a minimum of 2 minutes for the in-car operator to move the car and eliminated the prescriptive requirements. While 20–30 seconds seems perfectly adequate for cars on normal, automatic operation, when a car is on any non-automatic or designated-attendant mode of operation, more time may be needed for the in-car operator or elevator personnel to respond appropriately once power is transferred to that car.

Dedicated one paragraph to Fire Phase I operation to address the unique requirements for the car to return to the "recall level," rather than to the "designated level."

Reorganized the requirements to improve the understanding. Hoistway access operation was inadvertently omitted from the list of operations that must be excluded when selecting the cars that will be automatically returned on emergency/standby power operation to the recall level in accordance with 2.27.2.4.4(a). [TN 12-2122]

Requirement 2.27.3.1.6(c) Revised

RATIONALE:

1. The In-Car Stop Switch is only accessible to elevator personnel. It is either behind a group 1 locked panel, or it is a group 1 key switch. Other examples of stop switches available to elevator personnel include Pit Stop Switch, Machine Room Stop Switch, and Car Top Stop Switch all of which remain operative during Phase I and Phase II Fire Recall Service. If a mechanic actuates the In-Car Stop Switch it must be assumed there is a valid reason to stop the car immediately. In this case the power should be removed from the driving machine motor and brake as intended. Per 2.27.3.1.6(l), means used to remove elevators from normal operation shall not prevent Phase I Emergency Recall Operation, except

(1) as specified in this Code

(2) as controlled by elevator personnel

2. The Emergency Stop Switch on freight elevators is required for use by the elevator operator for the purpose of managing safe movement of freight. This switch is an EPD required to be readily accessible, red and conspicuously marked allowing quick actuation by the operator. If the operator actuates the Emergency Stop Switch it must be assumed there is a valid reason to stop the car immediately. Any car movement can result in the need for the operator to stop the car immediately therefore this EPD should remain functional during all car movement. Misuse of the Emergency Stop Switch during Phase I Fire Recall can be quickly assessed by the firefighters with the Emergency Communication means of 2.27.1.1.4 requiring direct communication with the elevator operator in the car. The analysis shows having an operational EPD outweigh the concerns for insuring the car recall on Phase I. [TN 09-1466]

Requirement 2.27.3.1.6(d) Revised

RATIONALE: Requirements 2.27.3.1.6(d)(1), (2), and (3) only require Phase 1 Emergency Recall when the doors are in the open position, this modification is to include Phase 1 Emergency Recall when initiated with the doors in the closed position. [TN 12-588]

Requirements 2.27.3.2.1 and 2.27.3.2.2 Revised

RATIONALE: These notes were added to clarify the existing requirement for FAIDs in the hoistway. Because of new technology, elevator machinery and elevator control spaces can now be located in elevator hoistways and, as such, FAIDs would be required in the hoistway. [TN 13-1320]

Requirement 2.27.3.2.4 Revised

RATIONALE:

1. The In-Car Stop Switch is only accessible to elevator personnel. It is either behind a group 1 locked panel, or it is a group 1 key switch. Other examples of stop switches available to elevator personnel include Pit Stop Switch, Machine Room Stop Switch, and Car Top Stop Switch all of which remain operative during Phase I and Phase II Fire Recall Service. If a mechanic actuates the In-Car Stop Switch it must be assumed there is a valid reason to stop the car immediately. In this case the power should be removed from the driving machine motor and brake as intended. Per 2.27.3.1.6(l), means used to remove elevators from normal operation shall not prevent Phase I Emergency Recall Operation, except

(1) as specified in this Code

(2) as controlled by elevator personnel

2. The Emergency Stop Switch on freight elevators is required for use by the elevator operator for the purpose of managing safe movement of freight. This switch is an EPD required to be readily accessible, red and conspicuously marked allowing quick actuation by the operator. If the operator actuates the Emergency Stop Switch it must be assumed there is a valid reason to stop the car immediately. Any car movement can result in the need for the operator to stop the car immediately therefore this EPD should remain functional during all car movement. Misuse of the Emergency Stop Switch during Phase I Fire Recall can be quickly assessed by the firefighters with the Emergency Communication means of 2.27.1.1.4 requiring direct communication with the elevator operator in the car. The analysis shows having an operational EPD outweigh the concerns for insuring the car recall on Phase I. [TN 09-1466]

Requirement 2.27.3.3.1(c) Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 2.27.3.3.7

RATIONALE: To specify the location of the phone jack when it is provided as part of the fire department communication system. [TN 15-635]

Requirement 2.27.3.3.8 Revised

RATIONALE: Editorial clarification that both visual signals will have the exact same operation. [TN 14-1169]

Requirement 2.29.1 Revised

RATIONALE: The reformatting of 2.29.1 into 2.29.1.1 and 2.29.1.2 are to clarify that the marking requirements related to size of alphanumeric marking and marking methods apply only to those items listed in the proposed 2.29.1.2.

The proposed updates cover the marking requirements for equipment located in non-traditional areas and spaces. Panels may not be located in common enclosures but mounted in common areas of hallways and lobbies, in any configuration, adjacent to or across from entrances or remotely located in the building not within sight of the elevator.

Also added a requirement to ensure that the single unique identification for each elevator required for equipment identification is common with the destination oriented control car identification. [TN 09-86]

Requirement 2.29.1 Revised

RATIONALE: Fix a reference. [TN 13-656]

Requirement 3.6.3 Revised

RATIONALE: To permit the use of elastomeric buffers with hydraulic elevator applications. [TN 11-1861]

Requirement 3.22.1.2.1 Revised

RATIONALE: Revised to provide clarity of compression differences of spring and elastomeric buffers. [TN 11-1861]

Requirement 3.22.1.2.2 Revised

RATIONALE: To clarify the consistency of application between electric and hydraulic elevator buffers. [TN 11-1861]

Requirement 3.26.8 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 3.27.2 Revised

RATIONALE: Clarification of language. [TN 13-1313]

Requirement 3.27.4 Revised

RATIONALE: To clarify when travelling down, stopping between floors is not required and provides no benefit to the firefighter. The devices specified in 3.27.1 when activated will prevent upward travel therefore will immediately stop a car travelling up. Once stopped, the firefighter can only travel down by entering a call below. Because the 3.27.1 devices do not limit downward travel, an immediate stop on activation is not required and if possible, it should continue to run to the next available floor. [TN 15-637]

Section 4.1 Revised and Restructured

RATIONALE: To harmonize the Rack and Pinion section to code language developed in other sections of ASME A17.1-2013/CSA B44-13; to update the structure of section 4.1 in following the same requirement numbering of Part 2; and to update the requirements of Rack and Pinion Drives with the appropriate areas of the new MRL requirements. [TN 03-1806]

Section 4.1 Revised

RATIONALE: Editorial to indicate that more than one rack is possible. [TN 03-1806]

Requirement 4.1.1 Revised

RATIONALE: Rename heading to coincide with section 2.1. Limit the reference to part 2 with requirements specific to Construction of Hoistways and Hoistway Enclosures [TN 03-1806]

Requirement 4.1.2 Added

RATIONALE: To add specific reference to Pits. Note: requirements for machine rooms and machinery spaces moved to 4.1.7. [TN 03-1806]

Requirement 4.1.3 Added

RATIONALE: To add specific reference to Location and Guard of Counterweights. Note: Requirements for equipment in Hoistways or machine rooms moved to 4.1.8. [TN 03-1806]

Requirement 4.1.4 Added

RATIONALE: To add specific reference to Vertical Clearances and Runbys for Cars and Counterweights. Note: Requirements for supports and foundations moved to 4.1.9. [TN 03-1806]

Requirement 4.1.5 Added

RATIONALE: To add specific reference to Horizontal Car and Counterweight Clearances. [TN 03-1806]

Requirement 4.1.6 Added

RATIONALE: To add specific references to Protection of Space Below Hoistways and to clarify references within 4.1. Note: Requirements for car enclosures, car doors and gates, and car illumination moved to 4.1.14. [TN 03-1806]

Requirement 4.1.7 Revised; formerly numbered 4.1.2

RATIONALE: Editorial — renumber requirement. Machine rooms do not apply to rack and pinion drives. To bring into Rack and Pinion the new terms, machinery spaces and control spaces. Note: Requirements for car frames and platforms moved to 4.1.15. [TN 03-1806]

Requirement 4.1.7.1 Revised; formerly numbered 4.1.2.1

RATIONALE: Editorial — renumber requirement. Add requirement heading. Separate machine rooms do not apply to rack and pinion drives. Note added to 4.1.7.1.2 to provide clarity to what is meant by "inside the hoistway" as it relates to R&P drives. Requirements for machinery spaces moved to 4.1.7.3. [TN 03-1806]

Requirement 4.1.7.2 Added

RATIONALE: Add requirement heading specific to control rooms. Clarify control room requirements. Add requirement to address remote control rooms. [TN 03-1806]

Requirement 4.1.7.3 Revised; formerly numbered 4.1.2.3

RATIONALE: Editorial — renumber requirement. Add a requirement heading. Clarify requirements for machinery spaces and control spaces located on the car. [TN 03-1806]

Requirement 4.1.7.4 Revised; formerly numbered 4.1.2.4

RATIONALE: Editorial — renumber requirement. Add a requirement heading. Clarify requirements for machinery spaces and control spaces located in the car. Deleted wording as made redundant with the addition of Group 1 security. Editorial change to security requirement. [TN 03-1806]

Requirement 4.1.7.5 Added

RATIONALE: Add new requirement to clarify conditions when machinery is mounted beneath the car. Note added to 4.1.7.5 to provide clarity to what is meant by "beneath the car" as it relates to R&P drives. [TN 03-1806]

Requirement 4.1.7.6 Revised; formerly numbered 4.1.2.2

RATIONALE: Editorial — renumber requirement. Add requirements specific to control spaces exterior to the

hoistway. Harmonize security access in both U.S. and Canada. [TN 03-1806]

Requirement 4.1.8 Revised; formerly numbered 4.1.3

RATIONALE: Editorial — renumber requirement. Added new text to remove machine room requirements. [TN 03-1806]

Requirement 4.1.9 Revised; formerly numbered 4.1.4

RATIONALE: To bring into focus the kinetic energy of rack and pinion machines. Deleted drive nut failure since it is not applicable to rack and pinion machines. [TN 03-1806]

Requirement 4.1.10 Added

RATIONALE: To add specific reference to guarding of equipment and standard railings. Note: Requirements for counterweights moved to 4.1.21. Provide clarity to standard railing requirement in 4.1. [TN 03-1806]

Requirement 4.1.11 Revised; formerly numbered 4.1.5

RATIONALE: Editorial — renumber requirement. Provide new requirement heading, and bring into the requirement the reference to the total section 2.11. Add language for R & P elevators installed in structures accessible to only authorized personnel. By definition authorized personnel are persons who have been instructed in the operation of the equipment and designated by the owner to use the equipment. [TN 03-1806]

Requirement 4.1.12 Added

RATIONALE: To add specific reference to hoistway-door locking devices and electric contacts and hoistway access switches. Note: Requirement for guide rails, guide-rail supports, and fastenings moved to 4.1.23. [TN 03-1806]

Requirement 4.1.13 Added

RATIONALE: To add specific reference to power operation of hoistway doors and car doors. Note: Requirement for rack-and-pinion driving machine moved to 4.1.24. [TN 03-1806]

Requirement 4.1.14 Revised; formerly numbered 4.1.6

RATIONALE: Editorial — renumber requirement. [TN 03-1806]

Requirement 4.1.15 Revised; formerly numbered 4.1.7

RATIONALE: Editorial — renumber requirement. Remove requirement referencing electric traction not pertaining to rack and pinion. [TN 03-1806]

Requirement 4.1.16 Revised; formerly numbered 4.1.8

RATIONALE: Editorial — renumber requirement. [TN 03-1806]

Requirement 4.1.17 Revised; formerly numbered 4.1.9

RATIONALE: Editorial — renumber requirement. Removed "or supporting structure" for clarity.

Rename requirement to separate out Speed Governors. See new requirement 4.1.18 for Speed Governors. Clarify the different requirements of rack and pinion safeties, and to move the requirements for speed governors to a new requirement 4.1.18. Removed undefined word "gradual" for clarity. [TN 03-1806]

Requirement 4.1.17.1 Revised; formerly numbered 4.1.9.1

RATIONALE: Editorial — renumber requirement. Harmonize U.S. and Canada requirements. [TN 03-1806]

Requirement 4.1.17.2 Added

RATIONALE: Add new sub-requirement to clarify minimum factors of safety. [TN 03-1806]

Requirement 4.1.17.3 Added

RATIONALE: Add new sub-requirement to clarify marking plate requirements. [TN 03-1806]

Requirement 4.1.18 Added

RATIONALE: To add specific reference to speed governors. Note: requirement for Welding moved to 4.1.30. To clarify the requirements for integral rack and pinion type speed governors permitted. To clarify the requirements for separate speed governors permitted. [TN 03-1806]

Table 4.1.18.1 Revised; formerly numbered 4.1.9.1

RATIONALE: The table has been updated to a hard metric format. Renumber the table to 4.1.18.1. [TN 03-1806]

Requirement 4.1.19 Added

RATIONALE: To add specific requirement for ascending car overspeed and unintended car movement protection. [TN 03-1806]

Requirement 4.1.20 Added

RATIONALE: To add specific requirement for suspension ropes and their connections. [TN 03-1806]

Requirement 4.1.21 Revised; formerly numbered 4.1.10

RATIONALE: Renumber requirement. Also added requirements for counterweight sheave. Rack and pinion

machine do not have tractions sheave however may have counterweight sheaves. [TN 03-1806]

Requirement 4.1.22 Revised; formerly numbered 4.1.11

RATIONALE: Editorial — renumber requirement. Separate requirements for car buffers for rack and pinion drives. To remove requirement that does not take into consideration the kinetic energy of the rack and pinion machine. [TN 03-1806]

Requirement 4.1.23 Revised; formerly numbered 4.1.12

RATIONALE: Editorial — renumber and name requirement. [TN 03-1806]

Requirement 4.1.24 Revised; formerly numbered 4.1.13

RATIONALE: Editorial — renumber and name requirement. Redefine the rack and pinion machine requirements within section 4.1 to refine definition. Since the vertical rack is installed in sections made to standard lengths, it is not probable that two backup rollers will occupy the same section of rack at all times. Remove general reference to part 2 and add requirements to Section 4.1. [TN 03-1806]

Requirement 4.1.25 Revised; formerly numbered 4.1.14

RATIONALE: Renumber and name requirements. Remove referenced requirements to traction and winding drum machines. [TN 03-1806]

Requirement 4.1.26 Revised; formerly numbered 4.1.15

RATIONALE: Editorial — renumber requirement. Remove referenced requirements to traction and winding drum machines. Remove requirement references that solely apply to traction and/or machine rooms. Car top inspection operation provides equivalent function for machinery spaces located on the car. 4.1.26.2.39 is shown optional due to rack and pinion drives are a direct drive system utilizing a vertical stationary rack. Reformat the applicable operating devices and control equipment to rack and pinion elevators. Remove reference to permitted voltage, this falls under the applicable electrical codes as referenced. [TN 03-1806]

Requirement 4.1.27 Revised; formerly numbered 4.1.16

RATIONALE: Editorial — renumber requirement. [TN 03-1806]

Requirement 4.1.28 Revised; formerly numbered 4.1.17

RATIONALE: Editorial — renumber requirement. [TN 03-1806]

Requirement 4.1.29 Added

RATIONALE: Added to bring into rack and pinion identification requirements. [TN 03-1806]

Requirement 4.1.30 Added

RATIONALE: Added to bring into rack and pinion identification requirements. [TN 03-1806]

Requirement 4.1.31 Revised; formerly numbered 4.1.18

RATIONALE: Editorial — renumber requirement. [TN 03-1806]

Requirement 4.2.2.3 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car for new elevators. Top of car clearances are the same for electric and hydraulic elevators. [TN 12-908]

Requirement 4.2.2.4 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car for new elevators. Top of car clearances are the same for electric and hydraulic elevators. [TN 12-908]

Requirement 5.1.11.4 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 5.2.1.13 Revised

RATIONALE: Requirements were modified to eliminate folding car doors on LULA applications based on a hazard analysis and current commercial industry practice. The new language closely aligns with the current requirements of part 2. [TN 13-0868]

Requirement 5.2.1.14 Revised

RATIONALE: Requirements were modified to eliminate folding car doors on LULA applications based on a hazard analysis and current commercial industry practice. The new language closely aligns with the current requirements of part 2. [TN 13-0868]

Requirement 5.2.1.14(m) Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 5.2.1.15.2 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 5.2.1.22 Revised

RATIONALE: This exception is no longer required since elastomeric buffers are now included in 2.22. [TN 11-1861]

Requirement 5.2.2.5 Revised

RATIONALE: Title was updated to clarify the requirements covered by this section to include all types of hydraulic LULA elevators. Changes were also included to clarify that safeties operated by inertia are an alternative to speed governors on roped-hydraulic LULA elevators that have an overspeed valve conforming to 3.19.4.7. [TN 10-0223]

Requirement 5.3.1.7.1 Revised

RATIONALE: Updated proposal to include hoistway doors whenever an enclosure is provided, not just when they are required. Removed hoistway gates to be consistent with other sections of the Standard. [TN 13-1151]

Requirement 5.3.1.7.2 Revised

RATIONALE: Reduced clearance between hoistway door and edge of landing sill based on Hazard Analysis. Moved hoistway door to car door clearance to new section 5.3.1.8.3. [TN 13-1151]

Requirement 5.3.1.8.2 Revised

RATIONALE: To add strength and deflection requirements for car doors and gates on private residence elevators. [TN 13-1151]

Requirement 5.3.1.8.3 Added

RATIONALE: Moved requirements for clearance between hoistway door and car door or gate. Reduced clearances based on Hazard Analysis and provided additional detail to define the clearance requirement for various door or gate combinations. [TN 13-1151]

Requirement 5.3.1.8.4 Editorially renumbered; formerly numbered 5.3.1.8.3

RATIONALE: Editorially renumbered. Moved requirements for clearance between hoistway door and car door or gate. Reduced clearances based on Hazard Analysis and provided additional detail to define the clearance requirement for various door or gate combinations. [TN 13-1151]

Requirement 5.3.1.14.1 Revised

RATIONALE: To correctly identify the equipment that is permitted to be used. [TN 11-1861]

Requirement 5.3.1.19 Revised

RATIONALE: To clarify the functions of the two devices listed. [TN 12-696]

Requirement 5.6.1.4 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car. Sections 2.4.10, 2.4.11 & 2.4.12 do not exist. Top of car clearance requirements added to replace refuge space when a person is on top of the car. [TN 12-908]

Requirement 5.7.1.2 Revised

RATIONALE: The type of structures served by SPPE's are not practical and necessary to provide a floor over the hoistway; harmonized with CSA B311-02. [TN 03-1807]

Requirement 5.7.2 Revised

RATIONALE: To provide specific SPPE requirements for pits. Horizontal refuge space requirements removed to conform with inquiry #96-67. [TN 03-1807]

Requirement 5.7.3.2 Revised

RATIONALE: To establish security requirements. [TN 03-1807]

Requirement 5.7.4.2 Revised

RATIONALE: To simplify and to encompass all accepted drive types. [TN 03-1807]

Requirement 5.7.4.3 Added

RATIONALE: To add requirements for top counterweight clearances. Gravity stopping affect not considered due to car speed limitation of 0.76 m/s (150 FPM). [TN 03-1807]

Requirement 5.7.10.4.1 Revised

RATIONALE: Editorial to correct missing area notation and update metric conversion. [TN 03-1807]

Requirement 5.7.13.1 Revised

RATIONALE: To conform to the 0.76 m/s (150 FPM) maximum rated car speed for SPPE's. [TN 03-1807]

Requirement 5.7.13.2 Revised

RATIONALE: Changed to reflect R & P requirements. [TN 03-1807]

Requirement 5.7.13.2.2 Deleted

RATIONALE: The requirement was made redundant as a result of the reference change in 5.7.13.2 to requirement 4.1.17. [TN 03-1807]

Requirement 5.7.16.1 Revised

RATIONALE: To define specific requirement for drive types. [TN 03-1807]

Requirement 5.7.16.2 Revised

RATIONALE: Separate requirements of car buffers for rack and pinion drives. To remove requirement that does not take into consideration the kinetic energy of the rack and pinion machine. [TN 03-1807]

Requirement 5.7.17 Revised

RATIONALE: To create a link to the sub-rules. Editorial correction. [TN 03-1807]

Requirement 5.7.18.1.2 Revised

RATIONALE: To create a link to the rack and pinion machine requirements in section 4.1. [TN 03-1807]

Requirement 5.7.18.1.3 Revised

RATIONALE: To add requirement special to traction type drives. [TN 03-1807]

Requirement 5.7.18.1.4 Revised

RATIONALE: To add requirement special to winding drum type drives. [TN 03-1807]

Requirement 5.7.18.3 Revised

RATIONALE: Add requirements for rack and pinion machines. [TN 03-1807]

Requirement 5.7.19 Revised

RATIONALE: Converted Section 5.7.19 into positive code language by removing exceptions and reformatted 5.7.19.1 to 5.7.19.9 to bring forward into Section 5.7.19 applicable code language in requirement 2.26 that applies to SPPE's. [TN 03-1807]

Requirement 5.7.19.1 Revised; formerly numbered 5.7.19

RATIONALE: Editorial to use similar wording used in 2.26.1. [TN 03-1807]

Requirements 5.7.19.1.1 through 5.7.19.1.3 Revised; formerly numbered 5.7.19.1

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.2 Added

RATIONALE: See rationale for 5.7.19. For rack and pinion safety devices the 5.7.19.2.9 car-safety overspeed switch and the 5.7.19.2.10 speed-governor switch are the same switch serving the dual function. To carry forward exceptions taken to Part 2 requirements within the current code edition that include the following that are shown as Not Used: 5.7.19.2.12 (2.26.2.12), 5.7.19.2.13 (2.26.2.13), 5.7.19.2.17 (2.26.2.17), and 5.7.19.2.20 (2.26.2.20).

5.7.19.2.15 revised to eliminate conflict with 5.7.19.2.28.

5.7.19.2.16 (2.26.2.16) is not used due to SPPE's having a car speed limitation less than 1m/s. 5.7.19.2.21 (2.26.2.21) is not used due to SPPE limitations to authorized personnel and material only.

5.7.19.2.22 (2.26.2.22) Gas Spring-Return Oil Buffers are not used due to speed limitation of SPPE's.

Add 5.7.19.2.23 requirements for stop switches in remote machine rooms and control rooms.

5.7.19.2.25 (2.26.2.25) for emergency doors electrical protective device in blind hoistways was removed due to no existing requirements in SPPE's for emergency blind hoistway doors.

Add 5.7.19.2.28 for car door contacts and interlocks.

Add 5.7.19.2.29 for ascending car overspeed protection.

Add 5.7.19.2.30 for unintended car movement.

5.7.19.2.31(2.26.2.31) and 5.7.19.2.32 (2.26.2.32) not used due to the limitations of SPPE's

5.7.19.2.33 (2.26.2.33); 5.7.19.2.34 (2.26.2.34); 5.7.19.2.35 (2.26.2.35); 5.7.19.2.36 (2.26.2.36); 5.7.19.2.37 (2.26.2.37); and 5.7.19.2.38 (2.26.2.38) are not required due to the limitations of SPPE's however where provided they shall conform to the referenced requirements in 2.26.

5.7.19.2.39 (2.26.2.39) are not required due to the limitations of SPPE's however where provided they shall conform to the referenced requirements in 2.26. [TN 03-1807]

Requirement 5.7.19.3 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.4 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.5 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.6 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.7 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.8 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.9 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.10 Added

RATIONALE: See rationale for 5.7.19. [TN 03-1807]

Requirement 5.7.19.11 Revised

RATIONALE: Not Used: SPPE's are not accessible by the general public and do not comply with ANSI/ICC A117.1 or ADAAG. [TN 03-1807]

Requirement 5.7.19.12 Revised

RATIONALE: Not Used: SPPE's are not accessible by the general public and do not comply with ANSI/ICC A117.1 or ADAAG. [TN 03-1807]

Requirement 5.7.22 Revised

RATIONALE: To bring in rack and pinion requirements. [TN 03-1807]

Requirement 5.9.14.3 Revised

RATIONALE: Mine elevators operate in blind hoistways several hundred feet deep. Passengers may need to be rescued from disabled elevators. The car top may need to be removed to facilitate passenger rescue with an auxiliary personnel hoist operated from an overhead location on the surface. [TN 15-144]

Requirement 5.9.26 Revised

RATIONALE: Inspection operation is not permitted to transport miners when defects are present which prevent automatic elevator operation. However, inspection operation is permitted by elevator personnel to evacuate miners from the mine during a mine emergency or rescue miners from a disabled mine elevator. [TN 14-2093]

Requirement 5.9.26.1(b) Revised

RATIONALE: Push-to-stop configuration if inadvertently actuated will cause the elevator to be in a safe state. Also, prevention of inadvertent switch movement is necessary because mine personnel are required to wear safety apparatus on their person that may contact the switch and cause a rated speed emergency stop. Mine elevators are typically crowded with personnel during shift change. [TN 15-146]

Requirement 5.9.26.1(d) Revised

RATIONALE: Editorial correction, incorrect reference. [TN 15-146]

Requirement 5.9.27 Revised

RATIONALE: Mine elevators are exposed to extreme elements which present health and safety hazards to elevator passengers when power is interrupted. Mine elevators operate in blind hoistways and typically provide the primary means of escape during a mine emergency since stairs are not typically available. [TN 15-145]

Section 5.11 Revised

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Requirement 6.1.3.10.1 Revised

RATIONALE: Section 9.1 currently lists an old 1978 edition of AISC Book No S326 and the 1994 edition of CAN/CSA-S16.1 and is referenced in multiple places in the A17.1 code for both elevators and escalators. Recent rewrites to the code (Seismic sections) have been updated to specify more recent AISC and CAN/CSA editions. The escalator and walk code is updated to specify these more recent editions with specific call out in the requirements. [TN 15-1062]

Requirement 6.1.5.3.2 Revised

RATIONALE: Duplication of a system, component, or part with monitoring of the function of each is a fundamental and long accepted practice to ensure reliability and safety. It is reasonable to allow this approach to ensure the level of safety in escalator drive systems that utilize power transmission chain between the main shaft and the driving machine and brake. In addition to ensuring the braking function in case of disengagement of a drive chain, potential improvements in emergency braking can be realized with this rule revision if the function of the machine brake is maintained in lieu of a main shaft brake. This includes possible utilization of the machine brake that is type tested, which would be checked and monitored on a periodic basis, and that is operated/exercised on a regular basis demonstrating proper function. Inquiry 92-58 further supporting this TN is attached. 6.1.5.3.2 and 6.1.6.3.4 are revised to reflect the Inquiry answer to permit duplicate and monitored power transmission chains in lieu of a main shaft brake to ensure brake function. [TN 12-1110]

Requirement 6.1.6.3.4 Revised

RATIONALE: Duplication of a system, component, or part with monitoring of the function of each is a fundamental and long accepted practice to ensure reliability

and safety. It is reasonable to allow this approach to ensure the level of safety in escalator drive systems that utilize power transmission chain between the main shaft and the driving machine and brake. In addition to ensuring the braking function in case of disengagement of a drive chain, potential improvements in emergency braking can be realized with this rule revision if the function of the machine brake is maintained in lieu of a main shaft brake. This includes possible utilization of the machine brake that is type tested, which would be checked and monitored on a periodic basis, and that is operated/exercised on a regular basis demonstrating proper function. Inquiry 92-58 further supporting this TN is attached. 6.1.5.3.2 and 6.1.6.3.4 are revised to reflect the Inquiry answer to permit duplicate and monitored power transmission chains in lieu of a main shaft brake to ensure brake function. [TN 12-1110]

Requirement 6.1.6.7 Revised

RATIONALE: The device is intended to monitor the stopping distance every time the escalator/moving walk is stopped to ensure correct brake operation. The min/max stopping distance requirements are already described within the code. [TN 11-1695]

Requirement 6.1.7.4.3 Revised

RATIONALE: To change electromagnetic interference test requirements for escalator and moving walk control circuits to an ISO standard in lieu of a European Standard. The revisions are not due to any known deficiencies with the current products or the previous EN Standard and have been previously made to elevator controls (see 2.26.4.4). [TN 15-812]

Requirement 6.2.3.11.1 Revised

RATIONALE: Section 9.1 currently lists an old 1978 edition of AISC Book No S326 and the 1994 edition of CAN/CSA-S16.1 and is referenced in multiple places in the A17.1 code for both elevators and escalators. Recent rewrites to the code (Seismic sections) have been updated to specify more recent AISC and CAN/CSA editions. The escalator and walk code is updated to specify these more recent editions with specific call out in the requirements. [TN 15-1062]

Requirement 6.2.5.3.1(d)(5) Added

RATIONALE: The device is intended to monitor the stopping distance every time the escalator/moving walk is stopped to ensure correct brake operation. The min/max stopping distance requirements are already described within the code. [TN 11-1695]

Requirement 6.2.6.8 Added

RATIONALE: The device is intended to monitor the stopping distance every time the escalator/moving walk is stopped to ensure correct brake operation. The min/max stopping distance requirements are already described within the code. [TN 11-1695]

Requirement 6.2.7.4.3 Revised

RATIONALE: To change electromagnetic interference test requirements for escalator and moving walk control circuits to an ISO standard in lieu of a European Standard. The revisions are not due to any known deficiencies with the current products or the previous EN Standard and have been previously made to elevator controls (see 2.26.4.4). [TN 15-812]

Requirement 7.1.7.10 Revised

RATIONALE: Require dumbwaiter controllers to be locked and accessible to only elevator personnel. The requirement for a locked cabinet was contained in the B44-94 code but was not carried through at harmonization. Additionally, this provides consistency with NFPA 70 requirement 620.71(A). Requiring a lock on the door prevents public exposure to hazards that could result if unauthorized persons access the controller. This could include operation of the dumbwaiter with the hoistway doors open. [TN 14-0686]

Requirement 7.1.12.1.1 Revised

RATIONALE: Remove the permission for lock and contacts at floors with other than counter height loading. The previous rule allowed lock and contacts only when the fall hazard was restricted however, the rule appears to have been attempting to apply the rules for vertically sliding freight doors. In this case the car is at least 2030 mm (80 in.) high and with a travel limit of 4570 mm (180 in.) would result in a potential fall hazard of 2540 mm (100 in.) from the top landing to the car top with the car at the bottom landing. Applying the same rule to a dumbwaiter with a maximum height of 1220 mm (48 in.) results in a potential fall hazard of at least 3350 mm (132 in.). [TN 11-1485]

Requirement 7.1.12.1.3 Revised

RATIONALE: Maintain the current interlock requirements for dumbwaiters with a rated speed greater than 0.5 m/s (100 fpm). This will require a full interlock and a retiring cam for these devices. [TN 11-1485]

Requirement 7.1.12.1.3(b) Added

RATIONALE: Allow dumbwaiters with a rated speed less than 0.5 m/s (100 fpm) to move within a zone 75 mm (3 in.) above or below the landing with the doors closed but before they are locked. This is similar to the level of safety provided by the lock and contact but once outside the 75 mm (3 in.) door zone, the car will not continue to move unless the interlock is locking the doors. This provides safer operation than a mechanical

lock and contact but allows the use of a fixed cam like the mechanical lock and contact. This rule allows a fixed cam to be used on dumbwaiters where space can be limited but with a greater level of safety than previously allowed by rule 7.1.12.1.1 where mechanical lock and contacts were previously permitted. [TN 11-1485]

Requirement 7.2.3.2 Revised

RATIONALE: To make the dumbwaiter plates consistent with elevator capacity plates. [TN 12-675]

Requirement 7.2.6.3.1 Revised

RATIONALE: To improve safety and consistency in the A17.1 Safety Code for Elevators and Escalators by replacing the differing references to chain strength with the same terminology used in the B29 Code (Minimum Ultimate Tensile Strength).

The ASME B29 chain committee only publishes the Minimum Ultimate Tensile Strength (MUTS) in its chain standards. As defined in the B29 Code, MUTS is the minimum force at which an unused, undamaged chain could fail when subjected to a single tensile loading test. Other values of chain strength are not recognized by the B29 standards.

Average tensile strength is only a catalog value that is not defined in the B29 standards, varies from manufacturer to manufacturer, and should not be used in the design of drive or suspension systems using chain.

Rated breaking strength is not defined in the B29 standards, and is therefore not specific enough to use for design purposes.

Ultimate tensile strength, although well recognized terminology, is of little use in this case.For its use, the specific failure mode of the chain would have to be known (which component breaks in the given situation), and the ultimate strength of that component would need to be provided by the chain manufacturer. This value would vary from manufacturer to manufacturer.

Note: In the above requirements that involve lifting people, it may be prudent to have the chain manufacturers certify the MUTS of their chain. [TN 14-1632]

Requirement 7.2.6.3.2 Revised

RATIONALE: See rationale for 7.2.6.3.1 [TN 14-1632]

Requirement 7.2.6.5 Revised

RATIONALE: See rationale for 7.2.6.3.1 [TN 14-1632]

Requirement 7.2.6.8.1 Revised

RATIONALE: See rationale for 7.2.6.3.1 [TN 14-1632]

Requirement 7.2.12.31 Added

RATIONALE: Provide a clear indication that door close contacts must be provided when operation with the door closed but not locked is permitted by clause 7.1.12.1.3(b)(2). Confirm that the door close contacts are EPDs and must all EPD requirements such as the requirements of 2.26.9.3 as applicable. [TN 11-1485]

Requirements 7.2.12.32 Through 7.2.12.40 Renumbered; formerly 7.2.12.31 through 7.2.12.39

RATIONALE: Renumber clauses to allow insertion in correct position in list of EPD requirements. [TN 11-1485]

Requirement 7.2.12.40 Added

RATIONALE: Clarify that fire service is not applicable to dumbwaiters and material lifts. [TN 11-1484]

Requirement 7.3.11.10 Added

RATIONALE: Clarify that fire service is not applicable to dumbwaiters and material lifts. [TN 11-1484]

Requirement 7.4.2.2 Revised

RATIONALE: 7.6 m provides a practical limit for the operation of a device at 0.15 m/s as it would require holding the operating button for 50 seconds. Jurisdictions in Canada have permitted type "B" Material Lifts to have a travel greater than 5 m for many years with no adverse consequences. Type "B" material lifts have access and usage restricted to authorized personnel and are commonly found in industrial buildings. These types of buildings can have floor spacing greater than 5 m as a result of the type of processing, storage or manufacturing being performed. Also, these buildings industrial buildings are typically slab on grade construction without provisions for elevators pits. Removing the one floor penetration restriction allows greater application of this type of device when travel is increase to 7.6 m. These devices can already stop at intermediate landings and have fire rated hoistway requirements when required by the building code. No additional hazards are foreseen by removing the floor penetration restriction. The additional requirement of an interlock for this device reduce the risk of a fall that could result from increased travel as it ensures the doors are positively locked before the car leaves the landing zone. [TN 11-1486]

Requirement 7.4.6.1.4 Revised

RATIONALE: Dimensions revised to reflect requirements in 2.4.7. Refuge space is no longer specified in the code when on top of the car. [TN 12-908]

Requirement 7.4.13.2.5 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 7.4.14.7 Revised

RATIONALE: Limit the Type B Material Lifts to full interlocks only. Lock and contacts will only be permitted for Type A Material Lifts. This enhances the safety of Type B material lifts by ensuring that hoistway doors are locked before the car leaves the landing. Since persons are permitted to ride, removing the mechanical lock and contact ensures that someone cannot accidentally enter a hoistway without the car present should the mechanical lock fail. [TN 11-1486]

Requirement 7.4.14.8 Added

RATIONALE: Limit the Type B Material Lifts to full interlocks only. Lock and contacts will only be permitted for Type A Material Lifts. This enhances the safety of Type B material lifts by ensuring that hoistway doors are locked before the car leaves the landing. Since persons are permitted to ride, removing the mechanical lock and contact ensures that someone cannot accidentally enter a hoistway without the car present should the mechanical lock fail. [TN 11-1486]

Requirement 7.5.1.1.1 Revised

RATIONALE: Remove the width restriction for Type A Material Lifts with a restricted height. This continues to prevent fork lifts from being driven onto Type A Material Lifts while expanding the range of sizes available. [TN 11-1484]

Requirement 7.5.4.3 Revised

RATIONALE: These safeties are permitted to be similar to that of freight elevators except the speed is increased since there are no riders. Limit the use of slack rope safeties when space below the material lift is accessible to reduce the possibility of personal injury. [TN 11-1484]

Requirement 7.5.12.1.3 Added

RATIONALE: We do not want to put people on the car top if there is not adequate refuge space. The area was chosen to consider typical equipment on the top of the material lift, including door operator(s), crosshead, etc., and possible refuge space. [TN 11-1484]

Requirements 7.5.12.1.4 Through 7.5.12.1.24 Renumbered; formerly 7.5.12.1.3 through 7.5.12.1.23

RATIONALE: We do not want to put people on the car top if there is not adequate refuge space. The area was chosen to consider typical equipment on the top of the material lift, including door operator(s), crosshead, etc., and possible refuge space. [TN 11-1484]

Revised 7.5.12.1.25 Revised

RATIONALE: Clarify that fire service is not applicable to dumbwaiters and material lifts. [TN 11-1484]

Requirement 7.5.12.2.6 Revised

RATIONALE: Provide permission to use a non-latching emergency stop switch at the landings for Type B Material Lifts. This is intended to prevent operator entrapment which can occur if someone activates a latching landing emergency stop switch while the device is in use. Requiring release of all operating devices at the landing and in the car before allowing operation of the car ensures that an operator in the car can regain control of the car by releasing and actuating an operating device. Labelling requirements of 2.26.2.5(c) will still apply to the continuous pressure emergency stop switch. Operation of constant pressure emergency stop switch still requires removal of power from the driving machine while it is operated. [TN 11-1486]

Requirement 7.5.12.2.35 Revised

RATIONALE: Clarify that fire service is not applicable to dumbwaiters and material lifts. [TN 11-1484]

Requirement 7.9.2.4 Added

RATIONALE: Transfer devices in the car must be visible so that people will not mistake a material lift with automatic transfer devices as being a passenger or freight elevator. Adding a requirement to mark obscured transfer devices ensures they remain visible. [TN 14-687]

Requirements 7.9.2.5 and 7.9.2.6 Renumbered; formerly 7.9.2.4 and 7.9.2.5

RATIONALE: Transfer devices in the car must be visible so that people will not mistake a material lift with automatic transfer devices as being a passenger or freight elevator. Adding a requirement to mark obscured transfer devices ensures they remain visible. [TN 14-687]

Requirement 7.9.2.7 Revised; formerly 7.9.2.6

RATIONALE: Expand the restriction prohibiting persons to ride all material lifts with automatic transfer devices whether located in restricted areas or not. Material lifts with automatic transfer devices could result in injury to a passenger should the automatic device actuate while a person is in the car. [TN 14-687]

Requirement 7.9.2.8 Revised; formerly 7.9.2.7

RATIONALE: Correct numbering and renumber. [TN 14-687]

Requirements 7.9.2.12 Through 7.9.2.21 Renumbered; formerly 7.9.2.11 through 7.9.2.20

RATIONALE: Transfer devices in the car must be visible so that people will not mistake a material lift with automatic transfer devices as being a passenger or freight elevator. Adding a requirement to mark obscured transfer devices ensures they remain visible. [TN 14-687]

Section 7.11 Deleted

RATIONALE: Delete dual use system for new installations to improve safety. This ensures that persons using an elevator will not encounter automatic loading or unloading by an obscured transfer device. Such automatic operation could result in injury. Existing sections 7.9 and 7.10 would apply to devices with obscured transfer devices. Additional requirements have been added to section 7.9 to reduce the likelihood that a transfer device is obscured. [TN 14-687]

Requirement 8.1.2 Added

RATIONALE: Added to bring into Section 8 rack and pinion requirements. [TN 03-1806]

Requirement 8.1.3 Added

RATIONALE: Added to bring into Section 8 rack and pinion requirements. [TN 03-1806]

Requirement 8.2.2.4 Revised

RATIONALE: To add the buffer reaction and impact to buffer supports for elastomeric buffers. The performance of these buffers is similar to that of oil buffers with regards to buffer reaction and impact loading into supports. [TN 11-1861]

Requirement 8.2.3.1 Revised

RATIONALE: To add the buffer reaction and impact to buffer supports for elastomeric buffers. The performance of these buffers is similar to that of oil buffers with regards to buffer reaction and impact loading into supports. [TN 11-1861]

Section 8.3 Revised

RATIONALE: Proposed changes provide information regarding engineering tests, type tests and certification of elastomeric buffers. [TN 11-1861]

Requirement 8.3.3.4.2 Revised

RATIONALE: To clarify the requirements for the test circuit used for the current interruption test in both AC and DC rated devices. Adding the composition of the test circuit clearly indicates the test conditions to be established. For DC rated devices removing the word "maximum" and replacing it with a tolerance will insure that neither too little nor too much inductance is used in the test. The proposed change will maintain the original maximum inductance in the test circuit with a rise time of 0.3 seconds while establishing a minimum inductance with a rise time of 0.24 seconds. This allows the inductance used in the test circuit to be within a ±10% range.

For both AC and DC the proposed change harmonizes A17.1/B44 with EN81 by clearly indicating that the inductive circuit is a series L/R test circuit used when performing the current interrupt test. Except for the addition of the tolerance this proposed change would harmonize A17.1/B44 requirements for the DC current interruption test with the requirements in EN81 [see EN81, Annex F (normative) F.1.2.4.2.2 ". . . the current reaches 95% of the steady-state value of the test current in 300 ms"]. In this case, for complete harmonization EN81 should harmonize with A17.1/B44 by adding a similar tolerance. [TN 13-1040]

Requirement 8.3.11.3 Revised

RATIONALE: Editorial. [TN 13-1434]

Requirement 8.3.11.4 Revised

RATIONALE: Editorial. [TN 13-1434]

Requirement 8.3.13 Added

RATIONALE: See rationale for Section 8.3. [TN 11-1861]

Section 8.4 Revised

RATIONALE: None provided. [TN 13-656]

Section 8.4 Revised

RATIONALE: None provided. [TN 13-657]

Section 8.4 Revised

RATIONALE: To be able to harmonize the elevator & escalator & moving walk rules with 8.5(b). [TN 14-1502]

Requirement 8.4.2.3.3 Revised

RATIONALE: Correct the reference made as there is no requirement 8.4.14.1.4. [TN 14-1502]

Requirement 8.4.2.3.4 Revised

RATIONALE: "IBC" is the designation used in the introduction of 8.4. After the 2000 printing IBC moves and references the seismic application to ASCE 7. [TN 14-1502]

Requirement 8.4.3.1.5 Added

RATIONALE: To prevent restarting of the car from the next stop of the car after the suspension displacement detection means has actuated due to the suspension means being displaced from the normal operating position, or the retainer being dislodged.

Removed the reference to the emergency exit switch. This is required in other sections of the Code as an EPD. [TN 13-656]

Requirement 8.4.4.1.2 Deleted

RATIONALE: To prevent restarting of the car from the next stop of the car after the suspension displacement detection means has actuated due to the suspension means being displaced from the normal operating position, or the retainer being dislodged.

Removed the reference to the emergency exit switch. This is required in other sections of the Code as an EPD. [TN 13-656]

Figure 8.4.8.2-3 Revised

RATIONALE: None provided. [TN 14-1502]

Figure 8.4.8.2-8 Notes revised

RATIONALE: None provided. [TN 14-1502]

Figure 8.4.8.2-7 Revised

RATIONALE: None provided. [TN 14-1502]

Requirement 8.4.8.6 Revised

RATIONALE: The rationale for permitting threads to be in the shear plane for structural design:

• Computing the shear stresses across threads in a shear plane is an acceptable structural design practice provided the root area is accounted for.

• AISC 360 and other structural building codes permit fastener threads to be in the shear plane.

• Fatigue limits will not be reached in the structural connection due to the low occurrence of earthquake events. Fatigue limits are inherent in the design requirements specified in section 2. [TN 12-2134]

Requirement 8.4.9.1 Revised

RATIONALE: To align current language with ASCE 7 requirements. [TN 14-2439]

Requirement 8.4.10.1 Revised

RATIONALE:

• Scope has been expanded for all elevators with counterweights since there is a potential hazard of hitting a counterweight or having ropes tangle for all roped elevators. The initial data from the San Fernando earthquake demonstrated that there were many cwt and car collisions on the slower speed counterweighted elevators. The West Coast AHJs have data that shows slower elevators also have these collisions in almost all earthquakes still. The general feeling of the West coast AHJs is that the EQ requirements have helped reduce injuries in earthquakes, given that there is no rationale for NOT expanding the protection to other elevators with counterweights. The only case can be made for private residence and LULA elevators where the counterweight is generally always overlapping the car.

• Using one seismic detection device per group rather than building based on lack of definition of the word building. This is an accepted practice in the industry.

• Removed reference to attendant operated elevators since control for the elevator is removed from the attendant during earthquake operation. Clarified the signage required during earthquake operation.

• Adding the alarm bell back into the requirement to provide a local indication of trapped passengers in the case of telephone service disruption.

• The extension of two way communications into the car is for the mechanic to be able to maintain communications with passengers while moving the car. [TN 13-656]

Requirement 8.4.10.1 Revised

RATIONALE: "IBC" is the designation used in the introduction of 8.4. After the 2000 printing IBC moves and references the seismic application to ASCE 7. Correct the reference made since the component seismic force level is not located in 8.4.14.1.2 but rather in 8.4.14.1.1. To provide IBC/NBCC equivalences for the exception(s). [TN 14-1502]

Requirement 8.4.10.1.1 Revised

RATIONALE: "IBC" is the designation used in the introduction of 8.4. After the 2000 printing, IBC moves and references the seismic application to ASCE 7. [TN 14-1502]

Requirement 8.4.10.1.2 Revised

RATIONALE:

• Clarified the counterweight displacement detection requirement.

• Clarified the voltage requirements for earthquake protective devices.

• The prohibition on fuses is to make the system more difficult to compromise counterweight displacement detection.

• Clarified the requirements for counterweight displacement detection device latching requirement. [TN 13-656]

Requirement 8.4.10.1.3 Revised

RATIONALE:

• Clarified how earthquake operation interacts with other elevator inspection/operation modes. Operation of the elevator is allowed in all inspection modes following a seismic detection device actuation, allowing the mechanic to run the elevator from outside the hoistway if that is a safer operation.

• Present code allows for an elevator to be put back in slow speed automatic operation without any system checks after a seismic detection device actuates. This proposal adds a hoistway, slow speed "scan" initiated by authorized personnel, before slow speed automatic operation is allowed. This also requires the seismic detection device to be reset before the scan/automatic

operation is allowed which will make the seismic detection device active for aftershocks. [TN 13-656]

Requirement 8.4.10.1.3 Revised

RATIONALE: The definition for an Emergency Stop was not well defined and needed clarification. [TN 13-0668]

Requirement 8.4.10.1.4 Added

RATIONALE:

• Clarified how earthquake operation interacts with other elevator inspection/operation modes. Operation of the elevator is allowed in all inspection modes following a counterweight displacement detection device actuation, allowing the mechanic to run the elevator from outside the hoistway if that is a safer operation.

• Earthquake protective devices shall override the Governor Tension Carriage switch until the car has reached a floor after a seismic event. The governor rope could get tangled, actuating the GTC switch. [TN 13-656]

Requirement 8.4.10.1.5 Added

RATIONALE:

• Clarified how earthquake operation interacts with other elevator inspection/operation modes. Operation of the elevator is allowed in all inspection modes following a counterweight displacement detection device actuation, allowing the mechanic to run the elevator from outside the hoistway if that is a safer operation.

• Earthquake protective devices shall override the Governor Tension Carriage switch until the car has reached a floor after a seismic event. The governor rope could get tangled, actuating the GTC switch. [TN 13-656]

Requirement 8.4.10.1.6 Renumbered; formerly 8.4.10.1.6

RATIONALE:

• Clarified how earthquake operation interacts with other elevator inspection/operation modes. Operation of the elevator is allowed in all inspection modes following a counterweight displacement detection device actuation, allowing the mechanic to run the elevator from outside the hoistway if that is a safer operation.

• Earthquake protective devices shall override the Governor Tension Carriage switch until the car has reached a floor after a seismic event. The governor rope could get tangled, actuating the GTC switch. [TN 13-656]

Requirement 8.4.10.2 Reserved

RATIONALE:

• Clarified how earthquake operation interacts with other elevator inspection/operation modes. Operation of the elevator is allowed in all inspection modes following a counterweight displacement detection device actuation, allowing the mechanic to run the elevator from outside the hoistway if that is a safer operation.

• Earthquake protective devices shall override the Governor Tension Carriage switch until the car has reached a floor after a seismic event. The governor rope could get tangled, actuating the GTC switch. [TN 13-656]

Requirement 8.4.14.1 Revised

RATIONALE: This is an editorial change to update references. "IBC" is the designation used in the introduction of 8.4. After the 2000 printing IBC moves and references the seismic application to ASCE 7. Correct the reference made since the load combinations are not located in 8.4.14.1.3 but rather in 8.4.14.1.2. [TN 14-1502]

Requirement 8.4.14.1.1 Revised

RATIONALE: This is an editorial change to update references. "IBC" is the designation used in the introduction of 8.4. After the 2000 printing IBC moves and references the seismic application to ASCE 7. Correct the reference made since the load combinations are not located in 8.4.14.1.3 but rather in 8.4.14.1.2. [TN 14-1502]

Requirement 8.4.14.1.2 Revised

RATIONALE: "IBC" is the designation used in the introduction of 8.4. After the 2000 printing IBC moves and references the seismic application to ASCE 7. [TN 14-1502]

Section 8.5 Revised

RATIONALE: 8.5(a & b) revisions were made to comply with IBC, NBCC, and other building code requirements. 8.5(c) was introduced to clarify that the loads specified in section 6.1 & 6.2 are not to be added to the loads specified in 8.5 unless otherwise noted. [TN 13-657]

Requirement 8.5.1 Revised

Figure 8.5.1 Added

RATIONALE: It is intended to define a realistic set of load requirements considering the live load mass and applicable seismic forces coming from the moving masses. The 70% was determined by using 100% of the machinery rated load divided amongst the two balustrades resulting in 50% load for each balustrade. This value was increase by $\frac{1}{3}$ for seismic applications resulting in 67%, then rounded to 70%. The 70% value results in seismic loading that is consistent with the previous A17.1 seismic loading values and with current building code standards. [TN 13-657]

Requirement 8.5.2 Revised

RATIONALE: Revised to include requirements for jurisdictions enforcing IBC & NBCC. Editorially revised to more accurately describe the forces traditionally being applied. [TN 13-657]

Requirement 8.5.2.1 Revised

RATIONALE: Added "horizontal" to clarify the application of this section. Removed "the most critical loading" to allow the designer to use best engineering practice. [TN 13-657]

Requirement 8.5.2.1 Formula notes revised

RATIONALE: Editorially revised for clarity. [TN 13-657]

Requirement 8.5.2.2 Revised

Table 8.5.2.2 Added

RATIONALE: Change to allow for more than two supports on escalators & moving walks in accordance with accepted structural design principles. Included a table for clarification. [TN 13-657]

Requirement 8.5.2.3 Revised

RATIONALE: To define the methodology for performing truss calculations and to highlight the truss is considered a non-structural component for the IBC/NBCC building codes. [TN 13-657]

Requirement 8.5.3 Revised

RATIONALE: Revisions were intended to

- clarify that this section deals with the truss supports and not the building supports;
- clarify that we are restraining the motion and not the forces;
- include moving walks.

The restraint clearance dimension of .25 in. was included to limit the amount of allowed motion. Added a requirement to determine the allowable amount of motion in the longitudinal direction. Added a requirement to consider vertical restraints. Clarified considerations for type of restraint utilized. [TN 13-657]

Requirement 8.5.3.2 Revised

RATIONALE: Clarify that the seat depth is the overlap between the building support and the truss support and is sufficient to ensure that the story drift neither compresses the escalator truss nor allows for it to fall off the seat. [TN 13-657]

Requirement 8.5.3.2.1 Revised

RATIONALE: Editorially revised to clarify the requirement. [TN 13-657]

Requirement 8.5.3.2.2 Revised

RATIONALE: Building story drift is not determined by the escalator engineer but is obtained by the structural engineer of record or the allowable story drift table maximum value. Added clarification to distinguish the design story drift from the building story drift. ASCE/SEI 7 Table 12.12-1 has been substituted for FEMA 450 Table 4.5-1 because the ASCE/SEI 7 is the base standard and these tables are identical. [TN 13-657]

Requirement 8.5.3.3 Added

RATIONALE: Added a new section not previously included. This new requirement covers intermediate vertical support, when provided, and ensures that no additional horizontal loads are applied by the building support to the escalator truss. [TN 13-657]

Requirement 8.5.4 Revised

RATIONALE:

- Removed the failsafe comment since it is covered in 8.4.10.1.2(a).
- Using one seismic detection device per escalator or moving walk or stack rather than building based on lack of definition of the word building. This is an accepted practice in the industry.
- Allowing option of one device per stack of escalators provides adequate protection for each of the escalators in a stacked arrangement and is also allowed under current Code. In many instances it is desirable to shut down all escalators in a given installation, where the structure dictates each escalator can have its own seismic detection device. [TN 13-656]

Requirement 8.5.5 Added

RATIONALE: The factor of safety of 2 is considered a reasonable value based on the fact that the design loading includes the dynamic effects. This section introduces seismic design stress limits that have not been previously considered in 8.5. The limits cover both the zone criteria and the new force level criteria. [TN 13-657]

Requirement 8.6.1.2 Revised

RATIONALE:

- Relocation of requirement to On-Site Documentation, as they need to be left by the Installer/Manufacturer.
- Replaced 8.6.11.10 to 8.6.11.11 due to renumbering in A17.1-2013. [TN 15-730]

Requirement 8.6.1.2.2 Revised

RATIONALE: To provide a checkout procedure for testing specific equipment used for the two-way communication means validating the automatic verification of line operability. There are numerous systems in the marketplace and the checkout procedure must be available and not developed by the inspectorate. Note: This proposed revision is based on language from TN 08-1348, which was approved in A17 Ballot 12-1117RC1 and has been published in A17.1-2013/B44-13. [TN 13-927]

Requirement 8.6.1.2.2(c) Revised

RATIONALE: Add written checkout procedures for elastomeric buffers. [TN 11-1861]

Requirement 8.6.1.7.5 Added

RATIONALE: It is a common occurrence for the latest Code to require safety devices and other items on new equipment that are not required by the Code adopted by the Authority Having Jurisdiction (AHJ). Manufacturers comply with the latest Code when manufacturing new equipment and provide all required safety devices.

In addition, manufacturers/installers sometimes include safety device and features beyond code requirement to enhance the safety of equipment. This may be done because of design features or to assure the maximum safety allowed by the state of technology. Also, compliance with ASME A17.7/CSA B44.7 may require additional safety features or devices.

8.6.1.6.1 already prohibits making device on which the safety of users is dependent inoperative or ineffective. This proposal merely requires applicable testing to be performed. If the manufacturer installed it and considers it a device on which the safety of users is dependent, then the manufacture must provide testing procedures and the AHJ must test it (assuming adoption of the applicable A17 requirements). Also, this is very similar to 8.6.1.2.1(f), which requires unique or product specific procedures to test equipment since the code does not contain the requirements for those devices

While many jurisdiction follow the "If it's there it has to work" rule of thumb and this is the assumed intent of 1.2, 8.6.1.6.1 and 8.7.1.2; it has sometimes been unclear whether these safety devices were required to function and be tested during acceptance and periodic tests. The addition of the above requirement allows the Code to clarify these issues.

Also, the addition of the above requirement would allow the Code to specify that inspection and test documentation be kept with the unit at all times, so that the safety devices may be properly inspected and tested.

The phrase "device on which safety of users is dependent" has been in A17.1 for many years without any apparent confusion and therefore is well understood in the elevator industry. [TN 13-926]

Requirement 8.6.2.4 Revised

RATIONALE: To correct references in A17.1. [TN 12-957]

Requirement 8.6.3.2.1 Revised

RATIONALE: Nonmandatory Appendix T is being deleted. [TN 15-87]

Requirement 8.6.3.4.3 Revised

RATIONALE: To correct references in A17.1. [TN 12-957]

Requirement 8.6.3.6 Revised

RATIONALE: To allow for the replacement of a speed governor with one of the same make, model and manufacturer to that being replaced and to add testing requirements to assure all replacements operate in the manner intended. The intention is to allow exception to the alteration requirement only when an equivalent governor is available. There are cases where old governor sit for years adjacent to running cars and a governor gear breaks on the running car. Why force the owner to pay for a costly alteration when the repair does not comprise safety. Other cases may include newer equipment damaged by outside forces. Second sentence, first paragraph, relocated to new 8.6.3.6.2.

Rationale for deletion of first sentence, second paragraph: This is an Alteration — Alteration requires testing of governor.

Rationale for deletion of second sentence, second paragraph: This paragraph is moved to 8.7.2.19. [TN 09-631]

Requirement 8.6.3.6 Revised

RATIONALE: To correct references in A17.1. [TN 12-957]

Requirement 8.6.3.8 Revised

RATIONALE:

8.6.3.8(b): Maintenance requires that the kinetic energy, typically demonstrated through door closing times, must be in compliance with the code. The absence of door closing times on data tags would prevent this assessment. Appendix J3 was developed via a consolidation of information from several elevator manufacturers. Table J3, now displayed as Nonmandatory Appendix Z provides guidance/best estimates of permissible door times which can be used to establish closing times in the absence of data tags.

8.6.3.8(c): Editions of A17 or B44 prior to 1981 did not require door edges to be rendered inoperative — as mechanical safety edges where typically not affected by smoke of hot gases. If electronic edges are applied to an older control system, for which the code was silent on rendering them ineffective, this replacement requirement needs to ensure the edges are rendered ineffective in order for the doors to close and FEO to recall the elevator, hence the requirement to meet 2.27.3.1.6(e). [TN 12-1775]

Requirement 8.6.3.9 Revised

RATIONALE: To correct references in A17.1. [TN 12-957]

Requirement 8.6.3.13 Added

RATIONALE: Replacement car doors and gates need to meet important safety requirements including location and deflection requirements in A17.1. These requirements were added to prevent excessive deflection or gaps of the gates/doors whereby a person might become entrapped.

Requirement 2.14.4.10 is excluded as it requires conformance to 2.13, which may dictate additional affects for devices not being replaced (e.g., power closing device).

Requirement 2.14.5.2 is excluded because it does not allow the use of Folding Doors. The objective of this TN is not to exclude them, but when they are replaced, the must comply with requirement 2.14.5.9, which is the intent of this TN. [TN 06-431]

Requirement 8.6.3.13 Revised

RATIONALE: Folding doors are prohibited for passenger elevators (see 2.14.5.2.) for new installations. Folding car doors are permitted for freight elevators (see 2.14.6). The original intent of adding folding car door requirements 2.14.5 was for the replacement of existing folding car doors. However, replacement criteria does not belong in Part 2, but belongs in 8.6.

The proposed 8.6.3.13 is based on approved TN 06-431. The original intent was for the replacement of folding car doors. It has been renumbered because A17.1-2013 already has an 8.6.3.13. 2.14.4.6 (Strength of Doors, Gates, and Their Guides, Guide Shoes, Tracks, and Hangers) applies to both passenger elevators and freight elevators. [TN 14-1766]

Requirement 8.6.4.4 Revised

RATIONALE: To provide a verification procedure to comply with requirement 2.22.1.1.5. [TN 11-1861]

Requirement 8.6.4.13.2 Revised

RATIONALE: General Maintenance requires that the kinetic energy, typically demonstrated through door closing times, must be in compliance with the code. Often the continued absence of door closing times prevents this assessment. Appendix Z was developed via a consolidation of information from several elevator manufacturers and provides guidance/best estimates of permissible door times which can be used to establish closing times in the absence of data tags. [TN 12-1775]

Requirement 8.6.4.19.2 Revised

RATIONALE: Both of these switches are important and test of their operation is needed to assure that they will perform their intended function. [TN 13-924]

Requirement 8.6.4.19.8 Revised

RATIONALE: General Maintenance requires that the kinetic energy, typically demonstrated through door closing times, must be in compliance with the code. Often the continued absence of door closing times prevents this assessment. Appendix Z was developed via a consolidation of information from several elevator manufacturers and provides guidance/best estimates of permissible door times which can be used to establish closing times in the absence of data tags. [TN 12-1775]

Requirement 8.6.4.19.11 Revised

RATIONALE: Clarification. [TN 08-786]

Requirement 8.6.4.19.12 Revised

RATIONALE: Updated section name of referenced requirement and requirement number. [TN 15-730]

Requirement 8.6.4.19.15 Revised

RATIONALE: To provide a requirement for a checkout procedure for testing of the two-way communications means validating the automatic verification of line operability. [TN 13-927]

Requirement 8.6.4.19.17 Added

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.6.4.20.11 Revised

RATIONALE:

(1) 8.6.4.19.11 requires that the test be performed at the lowest operating speed in the up direction. Therefore, it is not justified verifying the ascending overspeed protection setting on a Category 1 Test. Also, the overspeed detection means is typically the governor overspeed switch, whose setting is only required to be verified on a Category 5 Test.
(2) Editorial corrections.
(3) Clarifications. [TN 08-786]

Requirement 8.6.4.20.11(a) Added

RATIONALE: To cover Category 5 Test. [TN 08-786]

Requirement 8.6.4.22 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.6.5.14.6 Revised

RATIONALE: General Maintenance requires that the kinetic energy, typically demonstrated through door closing times, must be in compliance with the code. Often the continued absence of door closing times prevents this assessment. Appendix Z was developed via

a consolidation of information from several elevator manufacturers and provides guidance/best estimates of permissible door times which can be used to establish closing times in the absence of data tags. [TN 12-1775]

Requirement 8.6.5.14.8 Added

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.6.5.16 Revised

RATIONALE: To clarify that overspeed testing is not required for hydraulic elevators on a Category 5 Test, which is not required for electric elevators. [TN 12-157]

Requirement 8.6.6.1 Revised

RATIONALE: To provide clarity to the meaning of "date of expiration." [TN 03-1806]

Requirement 8.6.6.1 Revised

RATIONALE: Field testing is required to assure that the safeties work properly after they are overhauled and reinstalled and before the elevator is placed back in service. [TN 12-961]

Requirement 8.6.7.9 Revised

RATIONALE: Specify the appropriate maintenance and testing requirements applicable to mine elevators. Hydraulic mine elevators are not addressed in the Code. [TN 14-2094]

Requirement 8.6.8.15.1 Revised

RATIONALE: Clarification of the requirements. [TN 13-925]

Requirement 8.6.8.15.23 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.6.8.15.24 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.6.11.6.1 Revised

RATIONALE: Editorial change to indicate correct Section number. [TN 14-1894]

Requirement 8.6.11.10.3 Revised

RATIONALE: Updated referenced requirement number. [TN 15-730]

Requirement 8.6.11.11 Revised

RATIONALE: Requirement was incorrect for A17.1-2013 and updated to correct referenced requirement number. [TN 15-730]

Requirement 8.6.11.13 Added

RATIONALE: To prevent unauthorized personnel from access to motor controller when elevator personnel are not present at the controller. Note: This proposal includes language approved in TN 11-1277. [TN 12-175]

Requirement 8.7.1.3 Revised

RATIONALE: It is a common occurrence for the latest Code to require safety devices and other items on new equipment that are not required by the Code adopted by the Authority Having Jurisdiction (AHJ). Manufacturers comply with the latest Code when manufacturing new equipment and provide all required safety devices.

In addition, manufacturers/installers sometimes include safety device and features beyond code requirement to enhance the safety of equipment. This may be done because of design features or to assure the maximum safety allowed by the state of technology. Also, compliance with ASME A17.7/CSA B44.7 may require additional safety features or devices.

8.6.1.6.1 already prohibits making device on which the safety of users is dependent inoperative or ineffective. This proposal merely requires applicable testing to be performed. If the manufacturer installed it and considers it a device on which the safety of users is dependent, then the manufacture must provide testing procedures and the AHJ must test it (assuming adoption of the applicable A17 requirements). Also, this is very similar to 8.6.1.2.1(f), which requires unique or product specific procedures to test equipment since the code does not contain the requirements for those devices

While many jurisdiction follow the "If it's there it has to work" rule of thumb and this is the assumed intent of 1.2, 8.6.1.6.1 and 8.7.1.2; it has sometimes been unclear whether these safety devices were required to function and be tested during acceptance and periodic tests. The addition of the above requirement allows the Code to clarify these issues.

Also, the addition of the above requirement would allow the Code to specify that inspection and test documentation be kept with the unit at all times, so that the safety devices may be properly inspected and tested.

The phrase "device on which safety of users is dependent" has been in A17.1 for many years without any apparent confusion and therefore is well understood in the elevator industry. [TN 13-926]

Requirement 8.7.2.2 Revised

RATIONALE: To assure refuge space and other safety factors are maintained when a surface mounted sump pump is to be installed in an existing pit. [TN 09-1590]

Requirement 8.7.2.10.1 Revised

Requirement 8.7.2.11.1 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.27.5:* Require Restricted Opening Requirement.
- *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.11.3 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Requirement 8.7.2.11.3 Revised

RATIONALE: Parking devices are required by 8.7.2.11.3. They are usually strictly mechanical devices which can fail to operate as intended without being detected, similar to door locks and contacts versus interlocking. This failure can permit a landing door to be opened without the car to being at the landing. If the hoistway was dark the operator would not know it is not at the landing. [TN 12-651]

Requirement 8.7.2.14.1 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.27.5:* Require Restricted Opening Requirement.
- *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.14.2 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.27.5:* Require Restricted Opening Requirement.
- *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.14.5 Added

RATIONALE: The addition of a railing to a car top is an alteration of the car top. Given the specific requirements related to railing as outlined in 2.14.1.7, care and diligence are required to ensure that the railing is achieving its intended safety purpose, that it is meeting strength and clearance requirements, that low clearance areas on the car top are marked accordingly, and to ensure that no new hazards are being created as a result of the railing addition. In existing installation where overheads may not permit a fixed 1070 mm railing, a stowable design (example: foldable, collapsible, etc.) is permitted provided that specific requirements are met to ensure any potential hazards are mitigated. Other means to achieve compliance are always available via the means permitted in Section 1.2 of A17.1/B44. [TN 10-791]

Requirement 8.7.2.15.2 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21. [TN 13-779]

Requirement 8.7.2.16.1 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21. [TN 13-779]

Requirement 8.7.2.16.4 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21. [TN 13-779]

Requirement 8.7.2.16.4 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.27.5:* Require Restricted Opening Requirement.
- *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.17.2 Revised

RATIONALE: Proposed change provides information regarding requirements for alterations that involve an increase in rated speed when elastomeric buffers are involved. [TN 11-1861]

Requirement 8.7.2.17.2 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21. [TN 13-779]

Requirement 8.7.2.17.2 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
- *8.7.2.27.5:* Require Restricted Opening Requirement.
- *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.19 Revised

RATIONALE: Relocated from 8.6.3.6. [TN 09-631]

Requirement 8.7.2.21.1 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21, except if rope size is changed then all of 2.20 applies. Move a requirements from 8.7.2.21.4 to 8.7.2.21.1 which deals with changes to suspension members. Address requirements for change in suspension member fastenings. [TN 13-779]

Requirement 8.7.2.21.3 Revised

RATIONALE: More precisely identify the requirements related to auxiliary suspension-member fastening. [TN 13-779]

Requirement 8.7.2.21.4 Revised

RATIONALE: State the requirements of alteration scope of 8.7.2.21.4 at the beginning of the alteration scope and in clear language. Retain an exemption to suspension means monitoring, and place at the end of 8.7.2.21.4. Move an implied requirement regarding "no change to the type of suspension means" and clearly address in 8.7.2.21.1. Add requirements if residual strength detection means are altered or added. [TN 13-779]

Requirement 8.7.2.25.1 Revised

RATIONALE: Highlight that an exemption to 2.20 exists in 8.7.2.21. [TN 13-779]

Requirement 8.7.2.27.5 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):

- *8.7.2.10.1:* Require Restricted Opening Requirement.
- *8.7.2.11.1:* Require Restricted Opening Requirement.
- *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.

• *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.27.5:* Require Restricted Opening Requirement.
• *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.2.28 Revised

RATIONALE: The addition of an auto dialer telephone would fall under the scope of these alterations. If an existing auto dialer telephone was upgraded to a unit capable of line monitoring (an enhancement in safety) the requirements for new equipment installations in 2.27 would require an audible and visual signal to added to the lobby fire recall switch panel.

If the current panel does not exists, or could not accommodate the additional components needed to provide the audible and visual signal, a new or additional fixture would be required as well as a dedicated wire run from the car to the machine room to the lobby panel to support this audible/visual annunciation.

While switching an auto dialer telephone to a new unit with line monitoring is relatively simple, the difficulties associated with providing a lobby annunciation may be prohibitive and the line monitoring feature excluded.

This proposed change allows the addition or upgrade to an auto dialer phone with line monitoring — but permits the audible/visible signals to be provided in the car. In this manner, line monitoring and the related visual and audible trouble signals are retained, except that they are displayed within the elevator. [TN 13-780]

Requirement 8.7.3.2 Revised

RATIONALE: To assure refuge space and other safety factors are maintained when a surface mounted sump pump is to be installed in an existing pit. [TN 09-1590]

Requirement 8.7.3.22.1 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car. [TN 12-908]

Requirement 8.7.3.22.2 Revised

RATIONALE: To editorially correct requirement references made in A17.1-2000. Referenced requirement 3.21 is for COUNTERWEIGHTS, while the corrected requirement 3.22.1 appropriately references "Car Buffers or Bumpers." [TN 12-1805]

Requirement 8.7.3.27 Revised

RATIONALE: To editorially correct requirement references made in A17.1-2000. Referenced requirement 3.21 is for COUNTERWEIGHTS, while the corrected requirement 3.22.1 appropriately references "Car Buffers or Bumpers." [TN 12-1805]

Requirement 8.7.3.31.6 Revised

RATIONALE: To correct requirements in the Alterations Section that was implemented in TN02-3046, where Restricted Opening of Hoistway Doors was moved from requirement 2.12.5 to 2.14.5.7. These modifications will reinstate the requirements to be consistent with A17.1-2010 status (adding or removing):
• *8.7.2.10.1:* Require Restricted Opening Requirement.
• *8.7.2.11.1:* Require Restricted Opening Requirement.
• *8.7.2.14.1:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.14.2:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.16.4:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.17.2:* Remove the addition of Restricted Opening Requirement.
• *8.7.2.27.5:* Require Restricted Opening Requirement.
• *8.7.3.31.6:* Require Restricted Opening Requirement. [TN 14-0614]

Requirement 8.7.3.31.8 Revised

RATIONALE: The addition of an auto dialer telephone would fall under the scope of these alterations. If an existing auto dialer telephone was upgraded to a unit capable of line monitoring (an enhancement in safety) the requirements for new equipment installations in 2.27 would require an audible and visual signal to added to the lobby fire recall switch panel.

If the current panel does not exists, or could not accommodate the additional components needed to provide the audible and visual signal, a new or additional fixture would be required as well as a dedicated wire run from the car to the machine room to the lobby panel to support this audible/visual annunciation.

While switching an auto dialer telephone to a new unit with line monitoring is relatively simple, the difficulties associated with providing a lobby annunciation may be prohibitive and the line monitoring feature excluded.

This proposed change allows the addition or upgrade to an auto dialer phone with line monitoring — but permits the audible/visible signals to be provided in the car. In this manner, line monitoring and the related visual and audible trouble signals are retained, except that they are displayed within the elevator. [TN 13-780]

Requirement 8.7.6.1.18 Added

RATIONALE: The 2010 code introduced requirements for speed variation after start-up on both Escalators and Moving Walks, to permit empty escalators and moving walks to slow down when riders are not present.

If existing devices are altered to provide this feature, they should conform to the speed variation requirements for new equipment. This proposal addresses an alteration of this nature by referencing 6.1.4.1.2 and 6.2.4.1.2.

Testing requirements in 8.10.4.2.2(j) are to verify the operating parameters of 6.1.4.1.2 and 6.2.4.1.2. [TN 12-609]

Requirement 8.7.6.2.17 Added

RATIONALE: The 2010 code introduced requirements for speed variation after start-up on both Escalators and Moving Walks, to permit empty escalators and moving walks to slow down when riders are not present.

If existing devices are altered to provide this feature, they should conform to the speed variation requirements for new equipment. This proposal addresses an alteration of this nature by referencing 6.1.4.1.2 and 6.2.4.1.2.

Testing requirements in 8.10.4.2.2(j) are to verify the operating parameters of 6.1.4.1.2 and 6.2.4.1.2. [TN 12-609]

Requirement 8.8.1 Revised

RATIONALE: To clarify the requirements for welders qualification and welding in Canadian jurisdictions. [TN 12-139]

Requirement 8.8.2 Revised

RATIONALE: To clarify the requirements for welders qualification and welding in Canadian jurisdictions. [TN 12-139]

Requirement 8.9.3 Revised

RATIONALE: It would cause and unnecessary expense to replace existing code data plates that provide the needed information. [TN 08-650]

Requirement 8.10.1.5 Added

RATIONALE: It is a common occurrence for the latest Code to require safety devices and other items on new equipment that are not required by the Code adopted by the Authority Having Jurisdiction (AHJ). Manufacturers comply with the latest Code when manufacturing new equipment and provide all required safety devices.

In addition, manufacturers/installers sometimes include safety device and features beyond code requirement to enhance the safety of equipment. This may be done because of design features or to assure the maximum safety allowed by the state of technology. Also, compliance with ASME A17.7/CSA B44.7 may require additional safety features or devices.

8.6.1.6.1 already prohibits making device on which the safety of users is dependent inoperative or ineffective. This proposal merely requires applicable testing to be performed. If the manufacturer installed it and considers it a device on which the safety of users is dependent, then the manufacture must provide testing procedures and the AHJ must test it (assuming adoption of the applicable A17 requirements). Also, this is very similar to 8.6.1.2.1(f), which requires unique or product specific procedures to test equipment since the code does not contain the requirements for those devices

While many jurisdiction follow the "If it's there it has to work" rule of thumb and this is the assumed intent of 1.2, 8.6.1.6.1 and 8.7.1.2; it has sometimes been unclear whether these safety devices were required to function and be tested during acceptance and periodic tests. The addition of the above requirement allows the Code to clarify these issues.

Also, the addition of the above requirement would allow the Code to specify that inspection and test documentation be kept with the unit at all times, so that the safety devices may be properly inspected and tested.

The phrase "device on which safety of users is dependent" has been in A17.1 for many years without any apparent confusion and therefore is well understood in the elevator industry. [TN 13-926]

Requirement 8.10.2.2.2 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.10.2.2.2 Revised

RATIONALE: Updated section name of referenced requirement and requirement number. [TN 15-730]

Requirement 8.10.2.2.3 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car.

Note: Inspectors Guide item 3.4.4 needs to reflect Nonmandatory Appendix G in ASME A17.1b-2009. [TN 12-908]

Requirement 8.10.2.2.3 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.2.2.5 Revised

RATIONALE for Section 8.10. Proposed changes provide information regarding inspection of elastomeric buffers. [TN 11-1861]

Requirement 8.10.2.3.2 Revised

RATIONALE: To add requirement for test of Door Reopening Device (2.13.5) (Item 1.1) similar to the Hydraulic alteration test requirement.

(a) Where the alteration consists of the addition of power operation to the door system (8.7.3.12), tests shall be performed as specified in 8.10.3.2.1(a), (h), (i), (j), and (t); 8.10.2.2.3(g); 8.10.3.2.3(r); 8.10.2.2.4(b), (d) through (g); and 8.10.2.2.6. [TN 15-1232]

Requirement 8.10.3.2.1 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.3.2.2 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.3.2.3 Revised

RATIONALE: Refuge space is no longer specified in the code when on top of the car. Note: Inspectors Guide item 3.4.4 needs to reflect Nonmandatory Appendix G in ASME A17.1b-2009. [TN 12-908]

Requirement 8.10.3.2.3 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.3.2.4 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.3.2.5 Revised

RATIONALE: Proposed changes provide information regarding inspection of elastomeric buffers. [TN 11-1861]

Requirement 8.10.3.2.5 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.4.1.1 Revised

RATIONALE: Regardless of NBCC or non NBCC jurisdictions, requirement 8.6.8.3 relates to maintenance and should not be referenced during the Acceptance Inspection criteria of section 8.10. Item 1.17.2 should read 7.17.2. [TN 12-959]

Requirement 8.10.4.1.2 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.10.4.1.2 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.10.4.2.2 Revised

RATIONALE: Editorial change to remove an extra word. [TN 12-609]

Requirement 8.10.5.16 Added

RATIONALE: Specify the appropriate acceptance inspection and test requirements applicable to mine elevators. [TN 14-2095]

Requirement 8.11.1.8 Added

RATIONALE: It is a common occurrence for the latest Code to require safety devices and other items on new equipment that are not required by the Code adopted by the Authority Having Jurisdiction (AHJ). Manufacturers comply with the latest Code when manufacturing new equipment and provide all required safety devices.

In addition, manufacturers/installers sometimes include safety device and features beyond code requirement to enhance the safety of equipment. This may be done because of design features or to assure the maximum safety allowed by the state of technology. Also, compliance with ASME A17.7/CSA B44.7 may require additional safety features or devices.

8.6.1.6.1 already prohibits making device on which the safety of users is dependent inoperative or ineffective. This proposal merely requires applicable testing to be performed. If the manufacturer installed it and considers it a device on which the safety of users is dependent, then the manufacture must provide testing procedures and the AHJ must test it (assuming adoption of the

applicable A17 requirements). Also, this is very similar to 8.6.1.2.1(f), which requires unique or product specific procedures to test equipment since the code does not contain the requirements for those devices

While many jurisdiction follow the "If it's there it has to work" rule of thumb and this is the assumed intent of 1.2, 8.6.1.6.1 and 8.7.1.2; it has sometimes been unclear whether these safety devices were required to function and be tested during acceptance and periodic tests. The addition of the above requirement allows the Code to clarify these issues.

Also, the addition of the above requirement would allow the Code to specify that inspection and test documentation be kept with the unit at all times, so that the safety devices may be properly inspected and tested.

The phrase "device on which safety of users is dependent" has been in A17.1 for many years without any apparent confusion and therefore is well understood in the elevator industry. [TN 13-926]

Requirement 8.11.2.1.1 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.11.2.1.2 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Requirement 8.11.2.1.3 Revised

RATIONALE: To provide correct and missing Item references in 8.10 and 8.11. Also to provide for missing inspection and/or test requirements noted in A17.1/B44. [TN 13-206]

Requirement 8.11.5.16 Added

RATIONALE: Specify the appropriate periodic inspection requirements applicable to mine elevators. [TN 14-2096]

Section 9.1 Revised ANSI/AWS D1.1

RATIONALE: To clarify the requirements for welder's qualification and welding in Canadian jurisdictions. [TN 12-139]

Section 9.1 Revised ANSI/AWS D1.1

RATIONALE: To make the table in section 9 consistent with TN 12-139. [TN 13-154]

Section 9.1 Revised ANSI/AWS D1.3

RATIONALE: To clarify the requirements for welder's qualification and welding in Canadian jurisdictions. [TN 12-139]

Section 9.1 Revised ANSI/AWS D1.3

RATIONALE: To make the table in section 9 consistent with TN 12-139. [TN 13-154]

Section 9.1 Added ASCE/SEI 7-2010

RATIONALE: Update the applicable code references in Part 9. [TN 13-657]

Section 9.1 Added ASME A17.8

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is.

Section 9.1 Revised CSA W47.1-1992

RATIONALE: To make the table in section 9 consistent with TN 12-139. [TN 13-154]

Section 9.1 Deleted FEMA-450

RATIONALE: Update the applicable code references in Part 9. [TN 13-657]

Section 9.1 Added IEC 60947-5-1:2004

RATIONALE: To add the necessary requirements to the reference documents section of the standard. [TN 13-138]

Nonmandatory Figure B-1 Revised

RATIONALE: Add a reference to 2.12.1 for the unlocking zone so that code readers can locate the dimension requirements previously specified in the definition. [TN 12-594]

Nonmandatory Figure G-1 Revised

RATIONALE: To clarify that both 2.4.7.1 and 2.14.1.7.2 reference Nonmandatory Appendix G. [TN 12-1113]

Nonmandatory Figure G-1 Revised

RATIONALE: Revised to ensure protection of elevator personnel against shearing hazards throughout the hoistway between the top rail and intermediate rail of

the standard railing and fixed equipment passed or approached by the standard railing as the car moves throughout the hoistway [TN 13-0538]

Nonmandatory Table N-1 Revised

RATIONALE: To update references in Table N-1 in A17.1. [TN 12-1882]

Nonmandatory Table N-1 Revised

RATIONALE: Add new testing requirements for Wind Turbine Elevators. [TN 14-1896]

Nonmandatory Table N-1 Revised

RATIONALE: To specify the recommended inspection and test intervals appropriate for mine elevators. These intervals are based upon current mine industry practices. These inspection and test frequencies are necessary due to extreme mine environmental conditions such as temperature, humidity, and water intrusion. [TN 14-2097]

Nonmandatory Appendix T Deleted

RATIONALE: Nonmandatory Appendix T is being deleted. [TN 15-87]

Nonmandatory Table U-1 Revised

RATIONALE: "Sound engineering practice" is a common term used in the design of components and systems and is appropriate for use in writing performance-based requirements. The definition provides a list of typical considerations that must be taken into account in order to provide safe designs of components and systems. [TN 12-135]

Nonmandatory Appendix W Deleted in entirety

RATIONALE: Language in ASME A17.1/CSA B44, Section 5.11 (including definitions specific to 5.11) and Appendix W, was removed to eliminate duplicative language which will be included into ASME A17.8. The referenced changes regarding A17.8 followed the same format used for changes made when the suspension means language moved to ASME A17.6. The approval of this proposal is to coincide with the approval of TN 15-1105 and TN 15-1107. Strike out and underline denotes changes to existing language or addition of new language; existing, unchanged language which is only relocating from A17.1 to A17.8 is left as is. [TN 15-1106]

Nonmandatory Table X-1 Revised

RATIONALE: Ensuring consistent language throughout A17.1. [TN 13-656]

Nonmandatory Table X-3 Revised

RATIONALE: To correct reference associated with Step/Skirt Indexing in Section 8.10.4. [TN 15-212]

Nonmandatory Appendix Z Added

RATIONALE: This proposal introduces a Nonmandatory Appendix Z related to typical door closing times. Appendix Z is an extraction from a prior edition of B44 table J3. The relevant code sections of 8.6.3.8, 8.6.4.13.2, 8.6.4.19.8 and 8.6.5.14.6 have been modified to bring awareness to the proposed Nonmandatory Appendix Z. [TN 12-1775]

SAFETY CODE FOR ELEVATORS AND ESCALATORS

Part 1
General

SECTION 1.1
SCOPE

The ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, and ASME A17.7/CSA B44.7, *Performance-Based Safety Code for Elevators and Escalators*, are the accepted guides for design, construction, installation, operation, inspection, testing, maintenance, alteration, and repair of elevators, dumbwaiters, escalators, moving walks, and material lifts. They are the basis in total or in part for elevator codes used throughout the United States and Canada.

The ASME A17.1/CSA B44 and ASME A17.7/CSA B44.7 Codes are only guides unless adopted as law or regulation by an authority having jurisdiction.

Local jurisdictions may, in their adopting legislation, occasionally revise and/or include requirements in addition to those found in the ASME A17.1/CSA B44 and ASME A17.7/CSA B44.7 Codes. It is therefore advisable to check with the local jurisdiction before applying Code requirements in any area.

Requirement 1.1.1(c) was revised in ASME A17.1-2013/CSA B44-13 to clarify that devices with hoisting and lowering mechanisms equipped with a car serving two or more landings and restricted to the carrying of materials but not classified as a dumbwaiter or material lift are not covered by the Code.

Requirement 1.1.2 outlines examples of equipment not covered by the ASME A17.1/CSA B44 and ASME A17.7/CSA B44.7 Codes. Requirement 1.1.3 specifies those Parts and requirements of the Code that apply only to new installations, as well as those that apply to both new and existing installations.

SECTION 1.2
PURPOSE AND EXCEPTIONS

The ASME A17.1/CSA B44 Code requirements provide a framework for standards of safety for current products whose technologies have become state-of-the-art and commonplace. The ASME A17 and CSA B44 Committees have demonstrated in the past their responsiveness to prepare new requirements throughout their long history, to address new designs and technologies.

However, elevator technology is advancing at a rapid pace. The advent and wide use of the Essential Safety Requirements (ESRs) of the Lift Directive in the European Union (EU) has accelerated the pace of change. As safe elevators based on new technology become available, worldwide demand for these products increases. Elevator codes based on prescriptive language take time to change, given the nature of the consensus process upon which they are based. This hampers introduction of new technology into jurisdictions without a uniform, structured process acceptable to authorities having jurisdiction (AHJ).

ASME A17.1-2004 and CSA B44-04 recognized the need for a method to introduce new technology. The preface to those Codes stated the following:

> **Application of Requirements to New Technology**
>
> Where present requirements are not applicable or do not describe new technology, the authority having jurisdiction should recognize the need for exercising latitude and granting exceptions where the product or system is equivalent in quality, strength or stability, fire resistance, effectiveness, durability, and safety to that intended by the present Code requirements.

This issue was further addressed in Section 1.2 of both Codes, which states the following:

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

While the purposes of the foregoing provisions in those Codes are clear, implementation was difficult in practice, as there was no uniform process of establishing equivalent safety that could be readily applied. The ASME A17 and CSA B44 Committees recognized that

a uniform process would be of assistance to AHJs in establishing safe application of new technology. At the same time, it would be valuable to an equipment provider to have a clear method to follow.

The inhibiting effects of prescriptive-based codes on the adoption of new ideas are well known. Many countries have replaced prescriptive-based building codes of long standing with performance-based building codes. Australia pioneered this concept many years ago, and the model building codes in the United States initiated a similar approach shortly thereafter. The European Common Market followed suit.

In the United States, performance-based codes have been an objective of the National Fire Protection Association (NFPA) for many years. NFPA has a performance-based alternative to the *Life Safety Code®*, NFPA *101®*. As recently as 2001, the International Code Council (ICC) approved a performance-based building code as an alternative to the International Building Code (IBC). The *NFPA 5000® Building Construction and Safety Code®* also incorporates performance-based alternatives. In Canada, the National Building Code of Canada (NBCC) includes performance-based requirements.

NOTE: *Life Safety Code®*, *101®*, *NFPA 5000®*, and *Building Construction and Safety Code®* are registered trademarks of the National Fire Protection Association (NFPA), Quincy, MA.

Publication of the Lift Directives by the European Union (EU) in 1997 was a major step toward implementation of a process for developing safety requirements for new technology. The Lift Directive in effect allows two ways of establishing the safety of elevators. The first way is to demonstrate compliance with the prescriptive EN81 Code. The second way is to demonstrate compliance with "Essential Safety Requirements" (ESRs). ESRs are performance-based requirements relating directly to the safety of elevators for users and non-users. Verification that the ESRs have been met is by a risk assessment of the particular design being verified. Conformity assessment is established by a "Notified Body," which is a government-accredited organization that has been qualified by the government of one of the EU countries. The country government "notifies" the European Commission that this body is qualified to carry out conformity assessments. Conformity assessments by Notified Bodies obtained in any one EU country are valid for all members of the EU, and in practice are recognized by authorities beyond the EU jurisdiction. Similar approaches are in the process of adoption by other countries, including Australia and China.

There have been several advances in the world in recent times that have proved difficult to introduce in North America. An example of this is the use of machine-room-less (MRL) elevators, which have been safely operating in EU countries and other parts of the world for many years. The elevator industry in North America recognized the need for MRL elevators in this marketplace, but due to the code development process, it took 8 yr for ASME A17.1/CSA B44 to recognize MRL elevators.

It was clear that if more effective processes were not introduced, North America would gradually fall behind the rest of the world as technology innovators. At the same time, there is clearly a continuing need for "prescriptive codes," such as ASME A17.1/CSA B44 for standard products. The availability of a uniform process for new technology allows for timely introduction of innovative products and consequently allows prescriptive codes to "catch up" as innovative products become standard products.

In September 2002 at a joint meeting of the ASME A17 and CSA B44 Committees, National Elevator Industry, Inc. (*NEII®*) and National Elevator Escalator Association (NEEA) proposed a working committee be established to draft a Performance-Based Safety Code for Elevators and Escalators to establish safety requirements for new technology. The proposal was approved and a binational New Technology Committee (reporting to the ASME Standards Committee) was approved with U.S. and Canadian representatives. In March 2007, the Performance-Based Safety Code for Elevators and Escalators, ASME A17.7/CSA B44.7, was published.

1.2.1 Purpose

This requirement was introduced in ASME A17.1-2007/CSA B44-07. It is a major departure from past Code requirements that only recognized compliance with the requirement stated in the ASME A17.1/CSA B44 Code. If you did not comply, an exception (variance) from an AHJ was required.

As of ASME A17.1-2007/CSA B44-07, the Code formally recognized compliance with the Performance-Based Safety Code for Elevators and Escalators, ASME A17.7/CSA B44.7 as being equivalent to meeting the requirements in the ASME A17.1/CSA B44 Code. In other words, a new or innovative product that cannot comply with a requirement(s) in ASME A17.1/CSA B44 but does satisfy ASME A17.7/CSA B44.7 is considered compliant with ASME A17.1/CSA B44. Alternatively, the AHJ could be asked to grant an exemption from the requirement(s) in ASME A17.1/CSA B44 utilizing the procedures in 1.2.2. The ASME A17 and CSA B44 Committees still envision the use of Exception (1.2.2) for one-of-a-kind and unique applications. However, for innovative new technology, the ASME A17.7/CSA B44.7 Code should be utilized.

The ASME A17.7/CSA B44.7 Code provides a structured approach for introducing new technology products to the marketplace. The approach is based on Global Essential Safety Requirements (GESRs) that have to be satisfied and a risk assessment process to ensure GESRs are met. An Accredited Elevator/Escalator Certification

Organization (AECO), in conjunction with an equipment designer, will examine the process and provide documentation. The AECO is responsible for certifying design compliance with ASME A17.7/CSA B44.7.

At the heart of ASME A17.7/CSA B44.7 are GESRs, which are based on ISO TS 22559-1. The ASME A17.7/CSA B44.7 Code also includes Safety Parameters (SPs) consistent with the ASME A17.1/CSA B44 Code requirements. SPs are provided to help the users of the ASME A17.7/CSA B44.7 Code satisfy applicable GESRs. The ASME A17.7/CSA B44.7 risk assessment requirement ensures that risks are identified and sufficiently mitigated. A risk assessment methodology such as ISO TS 14798 or equivalent is necessary in order to verify compliance with the applicable GESRs. Risk assessment requires a balanced team of suitably qualified experts with a trained facilitator. The ISO TS 14798 Methodology is described in ASME A17.7/CSA B44.7. ASME A17.7/CSA B44.7 provides a method for selecting applicable GESRs and provides a detailed example of the process.

To ensure the process has been properly followed and potential hazards identified and addressed, ASME A17.7/CSA B44.7 requires a Code Compliance Document (CCD). The CCD must include the risk assessment, design and test data, as well as information pertaining to inspection and maintenance.

The CCD will be examined by an AECO, which will issue a certificate of conformance when satisfied that ASME A17.7/CSA B44.7 requirements have been properly met. The AHJ can also directly examine the CCD and certify the design for its own jurisdiction.

AECOs must be independent organizations with a high degree of technical competence. They are required to be accredited and audited by the American National Standards Institute (ANSI) or the Standards Council of Canada (SCC) to a level defined by ASME A17.7/CSA B44.7. The AECOs in turn will audit products they have certified to ensure the products comply with the CCD.

This process provides a structured roadmap for new technology to safely enter the marketplace.

At the time this Handbook was being revised in December 2016, ANSI had accredited two AECOs, and SCC had accredited one. Accredited AECOs are

(a) Liftinstituut, www.liftinstituut.com

(b) Underwriters Laboratories (UL), LLC, www.ul.com

Additional information on the Performance-Based Safety Code for Elevators and Escalators, including where adopted, accredited AECOs, etc., can be found at www.neii.org.

1.2.2 Exceptions to ASME A17.1/CSA B44

This requirement recognizes that it is not always possible to comply with all the provisions in ASME A17.1/CSA B44. The AHJ has the right and responsibility to grant exception when equivalent safety can be demonstrated. See also Handbook commentary on Section 1.2 and 1.2.2.2.

1.2.2.2 Some ASME A17.1/CSA B44 Code requirements differ depending on where the Code is being enforced: in jurisdictions not enforcing the NBCC and those enforcing the NBCC. Equivalency was not considered or evaluated by either Committee and in some instances the requirement may not be equivalent. The differences are usually due to geographic assignments of responsibility (e.g., elevator code vs. building code, etc.). The user should not assume that differing requirements are equivalent. AHJs and RAs should keep this in mind when an application for a variance is based on compliance with the requirements applicable in jurisdictions enforcing or not enforcing the NBCC.

SECTION 1.3
DEFINITIONS

This Section defines the terms used in the Code. These may be words with unique meanings when used in the context of elevators. For example, the word "safety" is used as a noun to identify a device for stopping and holding the elevator in the event of overspeed. The user of the Code should become familiar with all terms contained in Section 1.3. Where terms are not defined, they have ordinarily accepted meanings or application as the context may imply.

Words used in the present tense may also include the future. Words in the masculine gender include the feminine and neuter. Words in the feminine and neuter gender include the masculine. The singular number may also include the plural and the plural number includes the singular.

Many interpretation requests can be avoided if time is taken to become familiar with the definitions in this Section.

Performance terminology: Industry standards for dimensional, performance, application, electrical, and evaluation of building transportation equipment are published in *NEII*®-1, *Building Transportation Standards and Guidelines*. Performance terms are defined and measurement standards specified.

NEII®-1 incorporates the Code requirements in ASME A17.1/CSA B44, IBC, NFPA 70, etc. It is an invaluable reference for architects, engineers, consultants, building owners and managers, elevator manufacturers, contractors, and suppliers. *NEII*®-1 can be found at www.neii.org. Access to *NEII*®-1 is available at no cost.

Part 2
Electric Elevators

SCOPE

Part 2 applies to new traction and winding-drum electric elevators. Other types of elevators, such as hydraulic, private residence, screw-column, sidewalk, hand, inclined, rack-and-pinion, shipboard, rooftop, limited-use/limited-application, and special purpose personnel elevators, elevators used for wind towers or construction, dumbwaiters, and material lifts reference many of the requirements in Part 2 in their respective Sections of the ASME A17.1/CSA B44 Code. Part 2 requirements may also apply when an alteration is made as required by Section 8.7.

Electric elevators installed at an angle of 70 deg or less from the horizontal must comply with Section 5.1 or if installed in a private residence, Section 5.4.

SECTION 2.1
CONSTRUCTION OF HOISTWAYS AND HOISTWAY ENCLOSURES

2.1.1 Hoistway Enclosures

2.1.1.1 Fire-Resistive Construction. Fire-resistive construction controls the spread of fire, and inhibits the migration of hot gases and smoke from one floor or area to another.

The building code is an ordinance that sets forth requirements for building design and construction. Where such an ordinance has not been enacted, compliance with one of the following model codes is required:

(a) International Building Code (IBC)

(b) *Building Construction and Safety Code*, *NFPA 5000*

(c) National Building Code of Canada (NBCC)

Most building codes in the United States are based on a model building code. The National Building Code (NBC) began publication in 1905. In its later years, it was developed and published by the Building Officials and Code Administrators International (BOCA) and was widely adopted in the Northeast and Midwest. Prior to the 1984 edition, it was known as the Basic Building Code. The Basic Building Code was first published in the 1950s. The 1984 edition was titled the Basic/National Building Code. These changes in titles reflect an agreement between BOCA and the American Insurance Association, which from 1905 through 1976 published the NBC. The Standard Building Code (SBC), formerly Southern Standard Building Code, began publishing in the mid-1940s. It was developed and published by the Southern Building Code Congress International (SBCCI) and was widely adopted in the Southern states. The Uniform Building Code (UBC) began publishing in the late 1920s. It was developed and published by the International Conference of Building Officials (ICBO) and was widely adopted west of the Mississippi River. These building codes, now referred to as the legacy codes, are still used in some jurisdictions.

In the spring of 2000, the three U.S. model building codes collaborated to publish the International Building Code (IBC), which was promulgated by the International Code Council (ICC). The IBC has replaced the previously mentioned model codes in the last few years. In 2003, the National Fire Protection Association (NFPA) published the *Building Construction and Safety Code*, *NFPA 5000*. To the author's knowledge, no major jurisdiction in the United States or Canada had adopted *NFPA 5000* as of the publication of this Handbook. The model building code used in Canada is the NBCC, which is promulgated by the National Research Council of Canada.

Building codes regulate the properties of materials and the methods of construction as they pertain to the hazards presented by various occupancies. They are based on the findings of previous experiences such as fires, earthquakes, and structural collapses. Requirements found in building codes that have an impact on fire protection include enclosures of vertical openings such as stair shafts, elevator hoistways (shafts), pipe chases, exit requirements, flame spread requirements for interior finishes, fire alarm requirements, and sprinkler requirements.

The evaluation of the risk to a building with respect to fire resistance has been a goal of building codes, fire codes, and insurance underwriters for years. For this reason, building codes have classified construction types and controlled the size of buildings based on the potential fire hazard. Each building code identifies various construction types, and although each code may classify the various types of construction differently, the classification system is essentially the same for all. Originally, there were only two classifications, "fireproof" and "nonfireproof." These terms were misleading, especially since "fireproof" conveyed a false sense of security. Thus, the term "fire-resistive" was coined to provide a more realistic assessment of the resistance of buildings to the effects of a fire. The use of this term also allows for the identification of relative fire resistance, resulting in five