2010 Edition

ASME A17.1/CSA B44 Handbook

ASME A17.1-2010, Safety Code for Elevators and Escalators

CSA B44-10, Safety Code for Elevators

Edward A. Donoghue, CPCA

The American Society of Mechanical Engineers

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INTRODUCTION

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 to not only the A17 Committee but 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, with this being the 10th edition of the ASME A17.1/CSA B44 Handbook.

—Ed Donoghue

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 Committees' 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 assure 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 both CSA B44-00 ASME and A17.1–2000 Codes are identical, except for application deviations noted in CSA B44. Starting with the ASME A17.1/CSA B44-2007, a single Code book has been published for use in the U.S. 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/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 A17 and 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 scheduled precluded continuation of discussions, the 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 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 deviation 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 U.S. and Canada. That objective was met with the publication of ASME A17.1/CSA B44-2007.

ASME and CSA recognizes 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, 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 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 author. 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 write 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
Three Park Avenue
New York, New York 10016-5990, or
E-mail: infocentral@asme.org.

ASME Elevator and Escalator Courses. ASME Professional 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, maintenance evaluation, to an in depth review of ASME A17.1/CSA B44 using this Handbook as the course text. The course titled *Introduction to Elevators and Escalators (PD 100)* is recommended as a prerequisite for persons with little or no experience in the industry. 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 Professional Development
Three Park Avenue
New York, NY 10016-5990
Phone: 800-THE-ASME, or
212-591-7604.

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 A17.1-2004 through ASME A17.1/CSA B44-2007 and CSA B44-04 through ASME A17.1/CSA B44-04 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:

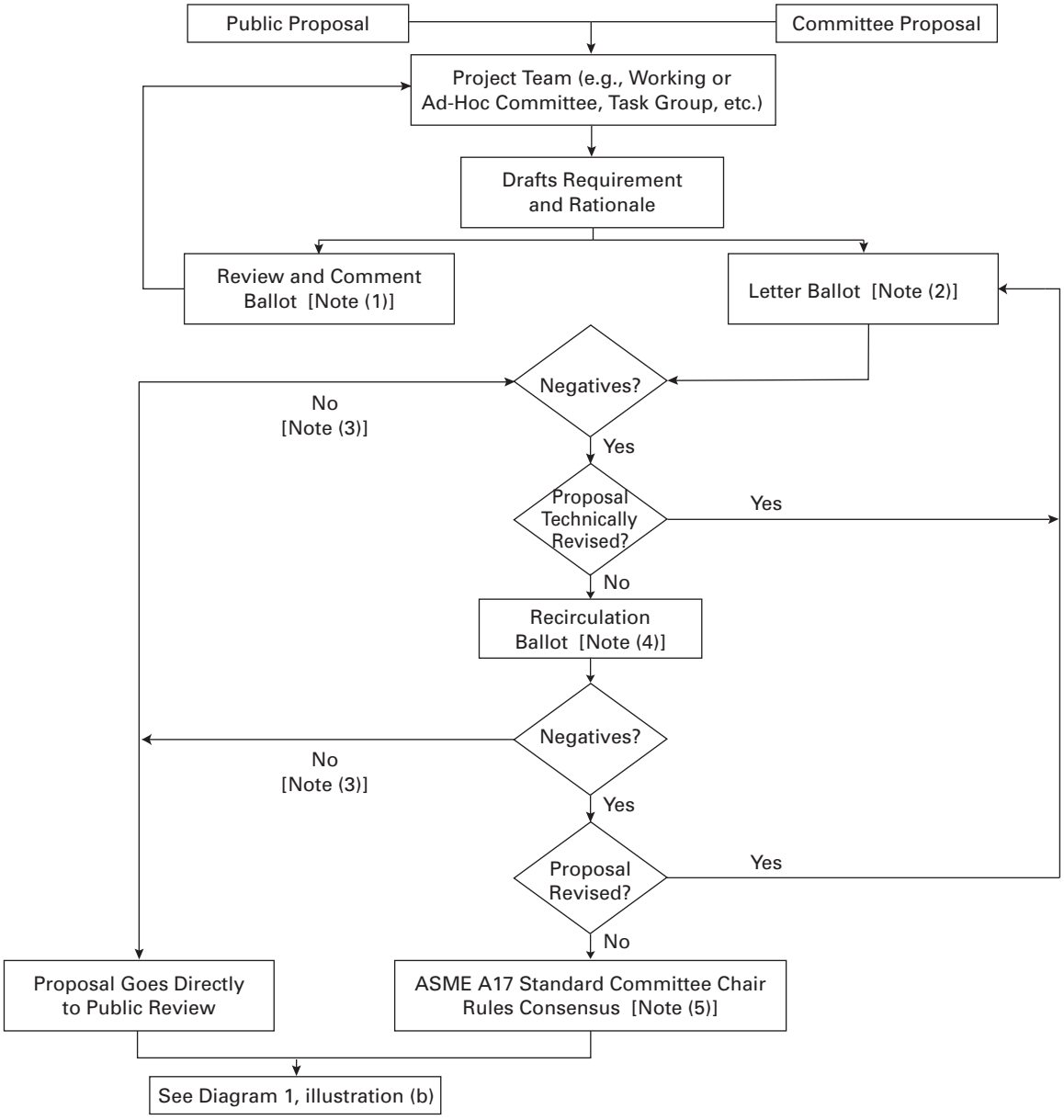
Secretary
A17 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016
E-mail: infocentral@asme.org

Revisions to the ASME A17.1/CSA B44 Code occurs after an intense formal process assuring 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.

ERRATA

Errata to the current ASME A17.1/CSA B44 is published on the ASME A17 Committee Web site. Errata to prior editions of the Code are not readily available. The errata to ASME A17.1-2007/CSA B44-07 can be found in this Handbook immediately following summary of code changes.

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, A17 Standards Committee, NIRG, RAC, and/or CSA B44.

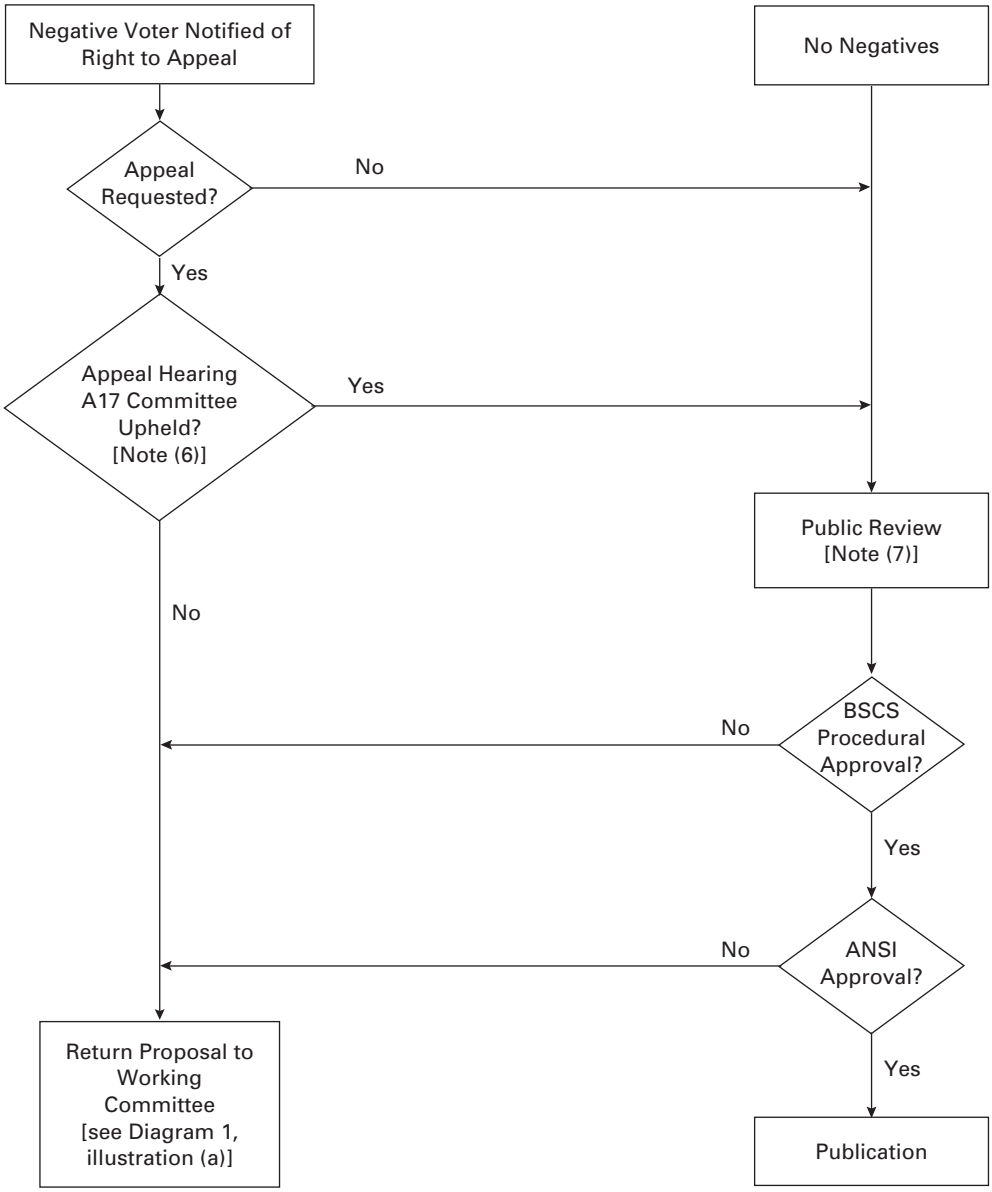
(2) Letter Ballot of A17 Standards Committee, NIRG, RAC, and CSA for distribution to B44 Committee.

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

(4) Secretary contacts all negative voters (this includes A17, 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 illustration (b). Reconsideration Ballot of A17 Standards Committee if any remaining negatives.

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

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



(b)

NOTES:

(6) Three levels of appeal. First appeal to 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 1st consideration ballot [see Diagram 1, illustration (a)]. Working Committee action subject to approval of A17 Standards Committee.

ACKNOWLEDGMENTS

The author gratefully acknowledges the time, effort, and dedication of the many people and organizations that assisted and contributed in the preparation of this 2010 Edition of the ASME A17.1/CSA B44 Handbook.

The following deserve special recognition for their participation on the ASME A17.1/CSA B44 Handbook Review Group for this Edition:

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Zack McCain, Jr., P.E., McCain Engineering Associates, Norman, OK

Marcus Tevyaw, C.E.T., Technical Standards and Safety Authority, Toronto, ON

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Matt Martin, Schindler Elevator Corporation, Morristown, NJ — Section 2.27

Albert Saxer, Consultant, Avon, CT — Sections 5.9, 8.6, and 8.7

Marcus Tevyaw, Technical Standards and Safety Authority, Toronto, ON — Sections 8.10 and 8.11

Davis Turner, Consultant, D. L. Turner Associates, Mission Viejo, CA — Part 6

I would also like to thank Andy Juhasz, KONE, Inc. for the NEC® 2008 summary of changes; David McColl, Otis Canada, Inc., for the CEC-09 summary of changes; James Coaker for his editorial work on Sections 8.6 and 8.7; and Jim Runyan for the smoke/heat detector shunt-trip decision-making flowchart.

I extend special thanks and appreciation to my partner, friend, and wife, Janet, for her patience and understanding during the countless hours that it took to prepare this Handbook. I am very fortunate for having her support. She deserves as much credit as I do, for her invaluable assistance in the preparation of the manuscript. My appreciation for her contributions cannot be expressed in words.

SUMMARY OF CODE CHANGES ASME A17.1a-2008 AND CSA B44a-04 THROUGH ASME A17.1-2010/CSA B44-10

In this summary of Code changes, the reasons for the revisions published in Addenda ASME A17.1a-2008/CSA B44a-08 are identified by [08a]. The revisions published in Addenda ASME A17.1b-2009/CSA B44b-09 are identified by [09b]. The revisions published in ASME A17.1-2010/CSA B44-10 are identified by [10]. The rationale for the revisions are from the public review drafts for the respective addenda or edition.

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

[10] Section 1.1.2 Revised

RATIONALE:

(a) Update of an existing exclusion to replace the reference to "ship or offshore drilling rig" with "marine vessel."

(b) Platform type elevators are literally a maritime industrial use type of elevator, which have no car enclosure. Controls are located outside of the hoistway.

(c) Examples of use are no longer appropriate or required.

(d) Platform elevators are not related to "platform lifts" within the scope of A18.1. [TN 07-1346]

[08a] Section 1.1.3 Revised

RATIONALE: To correct location where to find the effective date. [TN 07-1439]

[08a] Section 1.1.4 Revised

RATIONALE: To correct location where to find the effective date.[TN 07-1439]

[09b] Section 1.3 Added "Car-direction"

RATIONALE: Clarification of the requirement for elevators on Phase I and Phase II, and to add definitions for hall lanterns, car lanterns, and car-direction indicators. When some cars are on Phase II and others are on normal service, landing call buttons and registered lights may be operative for the cars on normal service. [TN 05-402]

[09b] Section 1.3 Added "Car Lantern"

RATIONALE: Clarification of the requirement for elevators on Phase I and Phase II, and to add definitions for hall lanterns, car lanterns, and car-direction indicators. When some cars are on Phase II and others are on normal service, landing call buttons and registered lights may be operative for the cars on normal service. [TN 05-402]

[09b] Section 1.3 Deleted "clearance, top car electric elevators"

RATIONALE: The definition was deleted since it is clearly defined in the rule and to eliminate any possibility of conflict with the requirements. [TN 02-2268]

[09b] Section 1.3 Deleted "clearance, top car hydraulic elevators"

RATIONALE: The definition was deleted since it is clearly defined in the rule and to eliminate any possibility of conflict with the requirements. [TN 02-2268]

[10] Section 1.3 Added definition of "creep"

RATIONALE: Requirement 2.20.8.1 has been added to require that loss of traction be detected. . However, traction loss must not be confused with creep, which is a natural phenomenon. Traction loss occurs when the required traction exceeds the available traction. Creep occurs due to the existence of unequal tensile loads in the suspension means at the points of entry and exit from the driving sheave, their tensile elasticity, and the friction work. Creep always exists in a traction system. Since its basis is load-related, it can occur with a stationary or rotating sheave. To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[08a] Section 1.3 Revised definition of "door, folding"

RATIONALE: Clarification that a folding door is a type of horizontally sliding door. [TN 06-792]

[10] Section 1.3 Revise Definition "elevator, marine" Added

RATIONALE: "Elevator, marine" replaces "Elevator, shipboard." A definition for marine vessels is not provided. Marine vessels are defined by the AHJ for design

and safety of marine vessels. Examples of such AHJs are provided for general education only. Equipment installed on marine vessels is designed for operation under a variety of marine operating conditions. [TN 06-1153]

[10] Section 1.3 Deleted "elevator, shipboard"

RATIONALE: "Elevator, marine" replaces "Elevator, shipboard." A definition for marine vessels is not provided. Marine Vessels are defined by the AHJ for design and safety of marine vessels. Examples of such AHJs are provided for general education only. Equipment installed on marine vessels is designed for operation under a variety of marine operating conditions. [TN 06-1153]

[09b] Section 1.3 Added definition of "Hall Lantern"

RATIONALE: Clarification of the requirement for elevators on Phase I and Phase II, and to add definitions for hall lanterns, car lanterns and car-direction indicators. When some cars are on Phase II and others are on normal service, landing call buttons and registered lights may be operative for the cars on normal service. [TN 05-402]

[08a] Section 1.3 Added definition of "intended car movement"

RATIONALE: Clarification of what is unintended/ intended car movement, specifically with regard to hoistway access operation, bypass, and inspection operation, etc. [TN 03-91]

[10] Section 1.3 Added definition of "means, compensation"

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Section 1.3 Added definition of "means, suspension"

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Section 1.3 Added definition of "member, compensation"

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Section 1.3 Added definition of "member, suspension"

RATIONALE: To allow for other means of suspension, such as non-circular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Section 1.3 Added definition of "residual strength"

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Section 1.3 Added definition of "suspension member, noncircular elastomeric coated steel"

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[08a] Section 1.3 Added definition of "unintended car movement"

RATIONALE: Clarification of what is unintended/ intended car movement, specifically with regard to hoistway access operation, bypass, and inspection operation, etc. [TN 03-91]

[09b] Requirement 2.1.4 Revised

RATIONALE: Clarification of intent. [TN 06-794]

[08a] Requirement 2.2.2.7 Deleted

RATIONALE:

(a) With the publication of the next code, Firefighters Emergency Operation will be mandatory on all elevators.

(b) This is permitted in the A17.1 Code without any safety issue.

(c) The argument for not allowing it was to not allow nonelevator people in the hoistway. This is happening, usually under a mechanic's supervision, for such things today as smoke detectors, sprinklers, and cleaning of glass and hoistway ventilation equipment. It no longer makes sense to also restrict sump pumps. [TN 07-1484]

[09b] Requirement 2.4.6 Revised

RATIONALE: If a tie-down device operates the compensation ropes will stretch, reducing the overhead clearance. [TN 02-2268]

[09b] Requirement 2.4.6.1 Revised

RATIONALE: If a tie-down device operates the compensation ropes will stretch, reducing the overhead clearance. [TN 02-2268]

[09b] Requirement 2.4.6.1.1 Revised (formerly 2.4.6.2)

RATIONALE: If a tie-down device operates the compensation ropes will stretch, reducing the overhead clearance. [TN 02-2268]

[10] Requirement 2.4.6.1.1(b)(2) Revised

RATIONALE: Top of car clearance indexed to stroke of full stroke buffer does not mitigate risk of the car striking

the overhead structure or damage to reduced stroke buffer and other equipment.

NOTES:
(1) Numbering is based on Approved TN 02-2268 [A17.1-2007 numbering: Requirement 2.4.6.2(b)(2)]
(2) A17 Electrical TN 09-118, when approved will revise the requirements for ETSD/ETSLD to ensure that the buffer will not be struck at greater than the buffer's striking speed. [TN 07-1111]

[08a] Requirement 2.4.6.2 Revised

RATIONALE: To codify the requirements for an uncounterweighted traction elevator system. The elevator system utilizes a conventional traction hoisting machine but does not use a traditional counterweight. The changes represented in this TN are adding to changes in TN 02-02268 and do not reflect changes to the current published section.

NOTE: These requirements are coordinated with TN 02-2268. [TN 05-1579]

[08a] Requirement 2.4.7 Revised

RATIONALE: To codify the requirements for an uncounterweighted traction elevator system. The elevator system utilizes a conventional traction hoisting machine but does not use a traditional counterweight. The changes represented in this TN are adding to changes in TN 02-02268 and do not reflect changes to the current published section.

NOTE: These requirements are coordinated with TN 02-2268. [TN 05-1579]

[09b] Requirement 2.4.7.1 Revised

RATIONALE: To provide adequate space for elevator personnel when they are on top-of-car enclosure and to warn them when the clearance is inadequate. ISO 15534-3-2000 anthropometric data is used to establish sufficient space on top of the car in which a human being can be placed when a car is at its maximum upward movement. [TN 02-2268]

[09b] Requirement 2.4.8 Deleted

RATIONALE: Clearances are now addressed in 2.4.6 and 2.4.7. [TN 02-2268]

[09b] Requirement 2.4.8 Revised (formerly 2.4.9)

RATIONALE: Renumbered for coordination. Add additional clearance considerations in (e) as done for car in 2.4.6.1.1(d). [TN 02-2268]

[09b] Requirement 2.4.9 Revised (formerly 2.4.11)

RATIONALE: Clarification and coordination with 2.4.7. [TN 02-2268]

[09b] Requirement 2.4.10 Deleted

RATIONALE: The issues are addressed in 2.4.7. [TN 02-2268]

[09b] Requirement 2.4.10.1 Deleted

RATIONALE: The issues are addressed in 2.4.7. [TN 02-2268]

[09b] Requirement 2.4.10.2 Deleted

RATIONALE: The issues are addressed in 2.4.7. [TN 02-2268]

[09b] Requirement 2.4.12 Deleted

RATIONALE: New requirements 2.4.7 and 2.14.1.6.2 provide adequate vertical clearance for elevator personnel when on top-of-car enclosure. [TN 02-2268]

[09b] Requirement 2.4.12.1 Deleted

RATIONALE: New requirements 2.4.7 and 2.14.1.6.2 provide adequate vertical clearance for elevator personnel when on top-of-car enclosure. [TN 02-2268]

[09b] Requirement 2.4.12.2 Deleted

RATIONALE: New requirements 2.4.7 and 2.14.1.6.2 provide adequate vertical clearance for elevator personnel when on top-of-car enclosure. [TN 02-2268]

[09b] Requirement 2.7.3.3 Revised

RATIONALE: To clarify and to provide a safe means for entry and exit to machine rooms or machinery spaces and to provide an area to stand for access openings where full bodily entry is not necessary for maintenance and inspection when a ladder is used for access.

Revised to harmonize requirements that were previously excluded in jurisdictions enforcing NBCC. [TN 02-2276]

[09b] Requirement 2.7.3.3.5 Revised

RATIONALE: To clarify and to provide a safe means for entry and exit to machine rooms or machinery spaces and to provide an area to stand for access openings where full bodily entry is not necessary for maintenance and inspection when a ladder is used for access.

Revised to harmonize requirements that were previously excluded in jurisdictions enforcing NBCC. [TN 02-2276]

[09b] Requirement 2.7.3.3.6 Added

RATIONALE: To clarify and to provide a safe means for entry and exit to machine rooms or machinery spaces and to provide an area to stand for access openings where full bodily entry is not necessary for maintenance and inspection when a ladder is used for access.

Revised to harmonize requirements that were previously excluded in jurisdictions enforcing NBCC. [TN 02-2276]

[08a] Requirement 2.7.3.4.5 Revised

RATIONALE: Since nonelevator personnel have access to machine rooms, etc., any access into the hoistway from such space must be additionally protected from access by such nonelevator personnel. This requirement ensures that nonelevator personnel would only have supervised access to the elevator hoistway even from an elevator equipment area that they are permitted to enter. [TN 02-2281]

[08a] Renumbered current 2.7.3.4.6 as 2.7.3.4.7 and added new requirement 2.7.3.4.6 (requirement number is based on ASME A17.1S-2005).

RATIONALE: Since nonelevator personnel have access to machine rooms, etc., any access into the hoistway from such space must be additionally protected from access by such nonelevator personnel. This requirement ensures that nonelevator personnel would only have supervised access to the elevator hoistway even from an elevator equipment area that they are permitted to enter. [TN 02-2281]

[08a] Requirement 2.7.3.4.6 Added

RATIONALE: Since nonelevator personnel have access to machine rooms, etc., any access into the hoistway from such space must be additionally protected from access by such nonelevator personnel. This requirement ensures that nonelevator personnel would only have supervised access to the elevator hoistway even from an elevator equipment area that they are permitted to enter. [TN 02-2281]

[10] Requirement 2.7.5.1.3 Revised

RATIONALE: These procedures are imperative for elevator personnel safety. These procedures are already required to be maintained in 8.6.1. However, there are no requirements in Section 2 for the procedures to be provided in the first place by the manufacturer. [TN 07-1754]

[10] Requirement 2.7.5.2.3 Revised

RATIONALE: These procedures are imperative for elevator personnel safety. These procedures are already required to be maintained in 8.6.1. However, there are no requirements in Section 2 for the procedures to be provided in the first place by the manufacturer. [TN 07-1754]

[10 Requirement 2.7.5.3.1 Revised

RATIONALE: These procedures are imperative for elevator personnel safety. These procedures are already required to be maintained in 8.6.1. However, there are no requirements in Section 2 for the procedures to be provided in the first place by the manufacturer. [TN 07-1754]

[10] Requirement 2.7.5.5(b) Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 2.7.6.5 Revised

RATIONALE: Switch location is adequately addressed in 2.26.1.5 as modified. [TN 07-25]

[10] Requirement 2.7.6.5.2(h) Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[08a] Requirement 2.7.9.1 Revised

RATIONALE: To clarify the location for the light control switch in the various rooms and spaces. [TN 06-336]

[08a] Requirement 2.8.3.3.1 Revised

RATIONALE: To eliminate terminology not used in NFPA 13. [TN 05-1012]

[08a] Requirement 2.11.3.2 Deleted

RATIONALE: The conditions specified in 2.11.3.2 are no longer necessary, as manual recall only is no longer permitted. See approved TN 03-1854. TN 03-1854 requires all elevators to meet the requirement in deleted requirement 2.11.3.2(c), eliminating the need for this requirement. All automatic operation elevators doors are permitted to remain open at a single location, as all elevators are required to be provided with automatic Phase I recall operation. On designated attendant elevators, the doors are under the control of the attendant. [TN 06-793]

[08a] Requirement 2.11.3.3 Renumbered as 2.11.3.2

RATIONALE: The conditions specified in 2.11.3.2 are no longer necessary, as manual recall only is no longer permitted. See approved TN 03-1854. TN 03-1854 requires all elevators to meet the requirement in deleted requirement 2.11.3.2(c) eliminating the need for this requirement. All automatic operation elevators doors are permitted to remain open at a single location, as all elevators are required to be provided with automatic Phase I recall operation. On designated attendant elevators, the doors are under the control of the attendant. [TN 06-793]

[08a] Requirement 2.11.19.2 Revised

RATIONALE: To update references as permitted by revisions to CSP 9. [TN 06-335]

[08a] Requirement 2.12.2.4.1 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[09b] Requirement 2.12.7.1 Revised

RATIONALE: To clarify where hoistway access switches, provided in addition to required access switches, must be located, and to establish when additional access switches are permitted. By ensuring required switches remain in a consistent location, elevator personnel unfamiliar with a jobsite can safely access the pit or top of the car. [TN 07-1149]

[08a] Requirement 2.12.7.1.1 Added

RATIONALE: To clarify that access switches, whether required or provided voluntarily, should be provided at a consistent location to ensure that elevator maintenance personnel can quickly find the hoistway access switches. [TN 05-1023]

[08a] Requirement 2.12.7.1.1 Renumbered as 2.12.7.1.2

RATIONALE: To clarify that access switches, whether required or provided voluntarily, should be provided at a consistent location to ensure that elevator maintenance personnel can quickly find the hoistway access switches. [TN 05-1023]

[08a] Requirement 2.12.7.1.2 Renumbered as 2.12.7.1.3

RATIONALE: To clarify that access switches, whether required or provided voluntarily, should be provided at a consistent location to ensure that elevator maintenance personnel can quickly find the hoistway access switches. [TN 05-1023]

[08a] Requirement 2.12.7.3 Revised

RATIONALE:

(a) To include car door interlocks and hoistway door electric contacts

(b) To ensure that access switches and bypass switches do not render ineffective hoistway or car door interlocks or hoistway door or car door or gate electric contacts ineffective any time the switches are in the "OFF" position, not just when they are switched from the actuated position to the "OFF" position. [TN 05-1266]

[09b] Requirement 2.12.7.3 Revised

RATIONALE: To clarify that the hoistway access switch located at a landing with multiple entrances will only operate in conjunction with the hoistway door located adjacent to the access switch, and with only the car door or gate associated with this hoistway door. This is consistent with the response to Inquiry 04-36 and the response to Inquiry 06-53. [TN 07-1152]

[10] Requirement 2.12.7.3 Revised

RATIONALE: To clarify that the switch should only be used for hoistway access operation within the Zones specified. See also TN 07-1152. [TN 07-1752]

[09b] Requirement 2.12.7.3.7 Revised

RATIONALE: To clarify where hoistway access switches, provided in addition to required access switches, must be located, and to establish when additional access switches are permitted. By ensuring required switches remain in a consistent location, elevator personnel unfamiliar with a jobsite can safely access the pit or top of the car. [TN 07-1149]

[10] Requirement 2.12.7.3.8 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[08a] Requirement 2.13.3.2 Revised

RATIONALE: Requirements for continuous pressure closing of vertically sliding doors have been moved to 2.13.3.4.1. The conditions when sequence operation is or is not required have been moved to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4 Deleted

RATIONALE: Requirements for momentary pressure closing have moved to 2.13.3.4.2. [TN 05-781]

[08a] Requirement 2.13.3.4 Revised

RATIONALE: General Rationale for different size objects applicable to 2.13.3.4.5(a) and (b); 2.13.3.4.6(c) and (d);

and 2.13.3.4.7(d) and (e). Written using 2.13.3.4.5 references. Substitute requirements from 2.13.3.4.6 or 2.13.3.4.7, where applicable.

Paragraph 2.13.3.4.5(a) requires detection means located immediately adjacent to the landing side of the hoistway door and the car side of the car door capable of detecting a target equivalent to the head of a small size adult located from the car/landing floor to 1 880 mm above the car/landing floor.

Paragraph 2.13.3.4.5(b) requires the detection of a target of torso size located wholly within the confines bounded by the vertical planes established by the landing side of the doors and the car side of the doors.

For clarification: If the horizontal distance between the sensors of the detectors placed at landing side of the hoistway door and the car side of the car door is less than 140 mm, then no additional detectors are required, since those detectors would sense a torso-size object located wholly within the path of the hoistway/car door, thus satisfying 2.13.3.4.5(b).

If a person were entering or exiting the car just prior to or during door closing, the person would encounter the detection means located immediately adjacent to the landing side of the hoistway door and/or the car side of the car door as required in 2.13.3.4.5(a). Thus, the detection means stipulated in 2.13.3.4.5(b) only comes into play if the person is standing, wholly within the path of the closing doors prior to closing. To get to that position, the person must have passed through the detection means stipulated in 2.13.3. 4.5(a), thus preventing closure or initiating reopen until the head and torso had passed though the 2.13.3.4.4(a) detection zones.

For the head to be wholly within the path of the door, without the torso, the torso would be detected by the devices in 2.13.3.4.5(a). Paragraph 2.13.3 4.5(b) provides protection when the horizontal distance between detectors 2.13.3.4.5(a)(1) and 2.13.3.4.5(a)(2)will no longer detect a head. Since the head is attached to the balance of the body and the body must also be located wholly within the confines bounded by the vertical planes established by the landing side of the doors and the car side of the doors [i.e., not sensed by the 2.13.3. 4.5(a) detectors], then detection of the body (i.e., torso) will ensure that the head is also detected.

Passage into the zone located wholly within the confines bounded by the vertical planes established by the landing side of the doors and the car side of the doors would have prevented closure or initiated reopen per 2.13.3.4.5(a). Thus, 2.13.3.4.5(a) prevents door closure unless the torso is fully within the confines bounded by the detectors located along vertical planes of the landing side of the hoistway door and the car side of the car door. Since the torso must be fully within this zone prior to door close, detection of the torso will also protect the head.

(a) General Rationale Concerning Object Size. Detection of the object as described is necessary to demonstrate the efficacy of the protection means. There is no prohibition against detecting larger or smaller objects, just as long as the object can be detected as described.

(b) General Rationale Concerning Nonhuman Objects. There are a large number of hypothetical nonhuman objects that could enter into the path of any closing door and be located such that they are not detected. Scenarios involving the consequential effects on humans were extensively analyzed, and the safety issues were addressed. [TN 05-781]

[08a] Requirement 2.13.3.4.1 Revised

RATIONALE: The requirements are deleted from this section, as hazards addressed by the warning devices are mitigated by new requirements for object detection and reopening.

Warning bells do not mitigate the risks sufficiently to eliminate the need for protective devices. As such, since protective devices were necessary and mitigated the risks, there was no need to retain the warning bell, except for vertical slide-up to open hoistway and car doors with sequence operation [2.13.3.4.6(f)]. This requirement is similar to 2.13.3.2.1.

Continuous pressure close, momentary pressure close, or closing initiated by automatic means are permissible methods of closing the doors. Regardless of the type of closing means, detection devices are required per requirements 2.13.3.4.5, 2.13.3.4.6, or 2.13.3.4.7.

Requirements for continuous pressure close were selected to conform to industry norms. 2.13.3.4.1(b), (c), and (d) are similar to 2.13.3.2.2, 2.13.3.2.3, and 2.13.3.2.4. In paragraph (c), the location of the closing means is clarified.

2.13.3.4.1(e) added requirements for labeling the door close button.

Additional Rationale related to attendant operation: Operation by a designated attendant is permitted. Since an inattentive operator might not be aware that a person is entering or leaving the elevator, operation by a designated attendant did not mitigate the risks sufficiently to eliminate the need for protective devices. As such, since protective devices were necessary, there was no need to differentiate between automatic operation and operation by a designated attendant. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.2 Revised

RATIONALE: The conditions for sequence operation have moved to 2.13.3.4.6 and 2.13.3.4.7.

Sequence operation in the proposal is mandatory for biparting hoistway doors with vertical slide-up car door/gates with both continuous pressure and momentary pressure operation. Sequence operation is optional for vertical slide-up hoistway doors with vertical slide-up car door/gates. When sequence operation is not provided, the same level of protection provided on the car door/gate is also required on the hoistway door.

These requirements are similar to 2.13.3.4.

The inclusion of detectors eliminated the need to assume that the person in control of the doors would react in time to initiate reopening. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.3 Revised

RATIONALE: Requirements for door reopening devices have moved to 2.13.3.4.5, 2.13.3.4.6, and 2.13.3.4.7

To provide users at the landing or in the car with a means to reopen a closing hoistway door or car door or gate. Clarification added that an immediate initiation to reopen is to occur. A minimum distance the doors need to reopen has been established. The intention is to open the doors sufficiently to remove the object. Added requirements for labeling the door open button.

Since the inertia present within the system does not allow any moving mass to instantly stop, there is no scenario where a person situated adjacent to the leading edge of a closing door cannot be struck by the door. The best possible alternative is to lower the probability. In this proposal, the arrangement of the detection means and the requirement that the doors not close or, if closing, reopen when an obstruction is detected, suggests that once the person has entered the path of the door, regardless of location of the doors, the doors will react.

Immediate initiation of reversal is required, which suggests that the control system and motor are attempting to initiate a reversal. However due to inertia there is a time delay before the doors physically reverse direction. That time delay varies with numerous factors including door mass, speed, electro-motor force, friction, etc.

In the current requirements, reversal is not initiated until there is physical contact with the obstruction. In this proposal, contact resulting from closing door inertia results only if a person places a body part in a position at or just in front of the leading edge of the moving panel, a low probability occurrence for body parts such as the head. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.4 Revised

RATIONALE: Requirements for door open buttons with momentary pressure operation are in 2.13.3.3. Requirements have been moved from 2.13.3.4.5. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.5 Revised

RATIONALE: The requirement has been moved to 2.13.3.4.4.

There are different requirements and different object detection zones for doors with and without sequence operation. The required object detection zones and reopening requirements incorporated in 2.13.3.4.5 eliminated the need for sequence operation.

2.13.3.4.5(a)(1): To detect an object of small size adult head (assures that larger size body parts are also protected) located anywhere from the floor to the height of a standing tall large size adult located adjacent to the path of the landing side door. The prism dimensions were taken from ISO 3411-1995(E). See also general rationale for different object sizes located at 2.13.3.4

2.13.3.4.5(a)(2): To detect an object of small size adult head (assures that larger size body parts are also protected) located anywhere from the floor to the height of a standing tall large size adult located adjacent to the path of the car side door or gate. The prism dimensions were taken from ISO 3411-1995(E). See also general rationale for different object sizes located at 2.13.3.4.

According to SAE J833, the standing height from floor to the top of the head of a tall adult male in the 95 percentile with shoes was 1880 mm (74 in.).

2.13.3.4.5(b): To detect an object of small size standing adult torso (assures that larger size body parts are also protected) located within the defined zone (480 mm to 1 500 mm) of the landing door and car side door or gate, that may not be addressed by 2.13.4.5(a). Anthropometric data shows that the torso will fall within the defined zone. The prism dimensions were taken from ISO 3411-1995(E) and SAE J833-R1989. See also general rationale for different object sizes located at 2.13.3.4

2.13.3.4.5(c): To detect an object equal to the size of the front of shoe for a small sized adult located on the floor of the car and in the path of the car side of the car door or gate. The object thickness was estimated, the object width was from ISO 3411-1995(E) and the objected depth was calculated as half the shoe length dimension from ISO 3411-1995(E).

Detection devices are not required when the design inherently mitigates the effects of foot entrapment between the leading edge of the car door or gate and the car platform. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.6 Added

RATIONALE: There are different requirements and different object detection zones for doors with and without

sequence operation. To advise users of potential hazards. 2.13.3.4.6(c)(1): To detect an object of small size adult head (ensures that larger size body parts are also protected) located anywhere from the floor to the height of a large-size adult standing tall located adjacent to the path of the landing side car door or gate. The prism dimensions were taken from ISO 3411-1995(E).

According to SAE J833, the standing height from floor to the top of the head of a tall adult male in the 95th percentile with shoes was 1 880 mm (74 in.).

2.13.3.4.6(c)(2): To detect an object of a small-size adult head (ensures that larger size body parts are also protected) located anywhere from the floor to the height of a large-size adult standing tall located adjacent to the path of the car side of the car door or gate. The prism dimensions were taken from ISO 3411-1995(E). See also general rationale for different object sizes located at 2.13.3.4.

2.13.3.4.6(d): To detect an object of small adult torso (ensures that larger size body parts are also protected) size located anywhere from the floor to the shoulder height of a seated, squatting, or large-size adult standing tall, located within the path of the car door or gate. The prism dimensions were taken from ISO 3411-1995(E) and SAE J833-R1989. See also general rationale for different object sizes located at 2.13.3.4.

2.13.3.4.6(e): To detect an object equal to the size of the front of the shoe for a small-size adult located on the floor of the car and in the path of the car side of the car door or gate. The object thickness was estimated, the object width was from ISO 3411-1995(E), and the objected depth was calculated as half the shoe length dimension from ISO 3411-1995(E).

Detection devices are not required when the design inherently mitigates the effects of foot entrapment between the leading edge of the car door or gate and the car platform.

2.13.3.4.6(f) and 2.13.3.4.6(g): To provide additional warning, beyond the closing car door or gate, that a slide-up to open hoistway door is closing.

Note that the rising lower panel of a bi-parting door, in addition to the closing car door or gate, warns users that bi-parting doors are closing; as such, an audible/visual warning was not necessary. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.7 Added

RATIONALE: Sequence closing is now required for both continuous and momentary pressure closing.

To reduce the potential impact if a person has a body part between closing door panels, although contact may occur.

Slow closing and the specified dimension were intended to give users additional time to react and remove a body part that might be located between closing bi-parting door panels.

To give time for a user with a head size of 170 mm a time of 0.5 sec (corresponding to 75 mm at 0.15 m/s) to remove the head prior to contact.

To advise users of potential hazards.

Biparting panels do not have detection devices. In combination with other safety means the warning strip is intended to remind users not to insert body parts between closing door panels.

2.13.3.4.7(d)(1): To detect an object of a small-size adult head (ensures that larger size body parts are also protected) located anywhere from the floor to the height of a large-size adult standing tall, located adjacent to the path of the landing side car door or gate. The prism dimensions were taken from ISO 3411-1995(E). See also general rationale for different object sizes located at 2.13.3.4.

According to SAE J833, the standing height from the floor to the top of the head of a tall adult male in the 95th percentile with shoes was 1 880 mm (74 in.).

2.13.3.4.7(d)(2): To detect an object of a small-size adult head (ensures that larger size body parts are also protected) located anywhere from the floor to the height of a large-size adult standing tall, located adjacent to the path of the car side of the car door or gate. The prism dimensions were taken from ISO 3411-1995(E). See also general rationale for different object sizes located at 2.13.3.4.

2.13.3.4.7(e): To detect an object of a small-size adult torso (ensures that larger size body parts are also protected) located anywhere from the floor to the shoulder height of a seated, squatting, or large-size adult standing tall, located within the path of the car door or gate. The prism dimensions were taken from ISO 3411-1995(E) and SAE J833-R1989. See also general rationale for different object sizes located at 2.13.3.4.

2.13.3.4.7(f): To detect an object equal to the size of the front of shoe for a small-sized adult located on the floor of the car and in the path of the car side of the car door or gate. The object thickness was estimated, the object width was from ISO 3411-1995(E), and the objected depth was calculated as half the shoe length dimension from ISO 3411-1995(E).

2.13.3.4.7(g): If the distance between the closed car door and the car side sill of the open hoistway door is large enough for a person's foot to be entrapped, then an object of shoe size is to be detected. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.4.8 Revised

RATIONALE: To reduce the probability of contact, two provisions have been added. The first is to prohibit closing if the object is present in the detection zones. The second is that a closing door must stop and reopen when the object enters a detection zone. Physical contact is not required to initiate reopening, although contact may occur before the door reverses.

Clarification added that an immediate initiation to reopen is to occur. A minimum distance the doors need to reopen has been established. Clarifies the zone and conditions when reopening is no longer required.

Since the inertia present within the system does not allow any moving mass to stop instantly, there is no scenario where a person situated adjacent to the leading edge of a closing door cannot be struck by the door. The best possible alternative is to lower the probability. In this proposal, the arrangement of the detection means and the requirement that the doors not close or, if closing, reopen when an obstruction is detected, suggests that once the person has entered the path of the door, regardless of location of the doors, the doors will react. Also see revision to 2.13.3.4. [TN 05-781]

In the current requirements, reversal is not initiated until there is physical contact with the obstruction. In this proposal, contact resulting from closing door inertia results only if a person places a body part in a position at or just in front of the leading edge of the moving panel, a low probability occurrence for body parts such as the head.

[08a] Requirement 2.13.3.4.9 Added

RATIONALE: To verify that the detection devices are functional and to disable door closing if they are not. This requirement provides design flexibility while ensuring that the device is functional. This requirement does not require redundant designs or the device to sense the failure of a particular component. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.3.4.10 Added

RATIONALE: To provide requirements where environmental or other job conditions make the use of detection devices impractical. Usage is specifically limited to "authorized" users.

The proposed revisions provide clear guidelines to designers and the AHJ when situations arise when conditions prohibit the use of detection devices. Also see revision to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.5 Revised

RATIONALE: All vertical door reopening devices have been moved to 2.13.3.4. [TN 05-781]

[08a] Requirement 2.13.5.3 Deleted

RATIONALE: [TN 05-781]

[08a] Requirement 2.13.5.4 Renumbered as 2.13.5.3

RATIONALE: Editorial [TN 05-781]

[08a] Requirement 2.13.6 Revised

RATIONALE: Deleted requirements addressed in 2.13.3.4. [TN 05-781]

[09b] Requirement 2.14.1.6.1 Revised

RATIONALE: To require separate footprints for two people to occupy on top-of-car enclosure. ISO 15534-3-2000 anthropometric data used to establish dimensions. [TN 02-2268}

[09b] Requirement 2.14.1.6.2 Added

RATIONALE: To require separate footprints for two people to occupy on top-of-car enclosure. ISO 15534-3-2000 anthropometric data used to establish dimensions. [TN 02-2268]

[09b] Requirement 2.14.1.7 Revised

RATIONALE: To indicate all conditions when a railing is required. [TN 07-1154]

[08a] Requirement 2.14.1.7.1 Revised

RATIONALE: A person should not stand on the car top area between the standard railing and the edge of the car top perimeter. This proposal requires the same marking in this area as the refuge space where there is limited overhead space. [TN 06-791]

[09b] Requirement 2.14.1.7.2 Added

RATIONALE: To provide adequate clearances against shearing and crushing hazards if an elevator personnel has a hand on the top rail of the standard railing when the car reaches maximum upward movement. ISO 15534-3-2000 anthropometric data used to establish dimensions. [TN 02-2268]

[09b] Requirement 2.14.1.7.3 Revised (formerly 2.14.1.7.2)

RATIONALE: To provide adequate clearances against shearing and crushing hazards if an elevator personnel has a hand on the top rail of the standard railing when the car reaches maximum upward movement. ISO 15534-3-2000 anthropometric data used to establish dimensions. [TN 02-2268]

[09b] Requirement 2.14.1.7.4 Revised (formerly 2.14.1.7.3)

RATIONALE: To provide adequate clearances against shearing and crushing hazards if an elevator personnel has a hand on the top rail of the standard railing when the car reaches maximum upward movement. ISO 15534-3-2000 anthropometric data used to establish dimensions. [TN 02-2268]

[10] Requirement 2.14.1.8.3 Deleted

RATIONALE: CAN/CGSB-12.5 was withdrawn by the Canadian General Standards Board in 2004. [TN 08-1059]

[10] Requirement 2.14.1.8.4 Renumbered as 2.14.1.8.3

RATIONALE: CAN/CGSB-12.5 was withdrawn by the Canadian General Standards Board in 2004. [TN 08-1059]

[10] Requirement 2.14.2.1 Revised

RATIONALE: Editorial reorganization of the requirements to group the requirements into sections applicable to jurisdictions not enforcing NBCC; applicable to jurisdictions enforcing NBCC; and common requirements in all jurisdictions, while maintaining harmonization of requirements as much as possible and permitting applicable tests in all jurisdictions. Also to correct references to CAN/ULC-S102 and S102.2, and delete the inappropriate reference to NFPA 252. [TN 07-1753]

[08a] Requirement 2.14.2.1.1 Revised

RATIONALE: To update references as permitted by revisions to ASME CSP 9. [TN 06-335]

[08a] Requirement 2.14.2.1.3 Revised

RATIONALE: To update references as permitted by revisions to ASME CSP 9. [TN 06-335]

[08a] Requirement 2.14.2.6(c) Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[09b] Requirement 2.14.4.2.6 Added

RATIONALE: The function, description, testing, listing, and marking requirements for a hoistway door interlock are the same as for a car door interlock. There should be no need to re-submit an approved hoistway door interlock so that it can also be used as a car door interlock. [TN 07-461]

[10] Requirement 2.14.4.5.1(a) Revised

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14, which is omitted from the code. While the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add appropriate design and safety requirement in 2.14.

Applicable design requirements for folding doors. [TN 07-459]

[10] Requirement 2.14.4.5.2 Revised

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14, which is omitted from the code. Although the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible

car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add the appropriate design and safety requirement in 2.14.

Applicable design requirements for folding doors. [TN 07-459]

[10] Requirement 2.14.4.6 Revised

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14, which is omitted from the code. Although the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add the appropriate design and safety requirement in 2.14.

This proposal reduces the allowable deflection for all types of sliding doors from the line of the car sill to a maximum of 12 mm (0.5 in.). This paragraph extends the force and deflection requirements applicable to single and multi-section horizontal slide and vertical slide car doors when the force is applied on the car side of the car door to folding doors and gates.

When combining swing landing doors with folding car doors or collapsible gates, excessive deflection of the gate or folding car door away from the landing door can create a space whereby a person might become entrapped. This proposal incorporates a limit on how far the car door or gate can deflect away from the landing door.

The added language clarifies that the applicable forces and deflection limitations apply to each individual panel of a folding door or gate and addresses loading criteria should the width of the panel be less than 300 mm (12 in.). Language also ensures entrapment cannot occur at any point in the lower part of the door, gate, or folding door. [TN 07-459]

[10] Requirement 2.14.5.2 Revised

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14, which is omitted from the code. While the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add appropriate design and safety requirement in 2.14.

To clarify that folding car doors are not permitted on new passenger elevators. While current requirements limit car door types to horizontally sliding doors, the limitation fails to exclude horizontally sliding car doors of the folding type. The proposed revision to 2.14.5.2 reflects generally accepted industry practice.

To add the following additional requirements to 2.14 to address omitted design and safety parameters for folding car doors used to replace existing folding car doors or collapsible car gates. Note that folding car doors are not permitted on new passenger elevators (see proposed revision to 2.14.5.2). [TN 07-459]

[08a] Requirement 2.14.5.7 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[10] Requirement 2.14.5.9 Added

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14 currently omitted from the code. While the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add appropriate design and safety requirement in 2.14.

Applicable design requirements for folding doors. [TN 07-459]

[10] Requirement 2.14.6.1.1 Revised

RATIONALE: This proposal offers new requirements to clarify permitted types of car doors and the types of car doors able to replace existing car doors, as the definition of horizontally sliding doors does not exclude horizontally sliding folding type doors. Requirement 2.14.5.2 applies to new passenger elevators. Requirement 8.7.2.14.5 applies to alteration of existing elevators.

This proposal also adds design and safety requirements for folding car doors to 2.14, which is omitted from the code. While the proposed revision to 2.14.5.2 corrects the omitted industry practice to prohibit folding car doors on new passenger elevators, this proposal also clarifies the types of car doors permitted to replace existing collapsible car gates or folding car doors. Since a folding car door may replace an existing collapsible car gate or folding door [see 8.7.2.14.2(i) below], it was necessary to add appropriate design and safety requirement in 2.14.

Adds an allowance for the use of folding type car doors when collapsible car doors are also permitted. [TN 07-459]

[08a] Requirement 2.14.6.2.1 Revised

RATIONALE: Object detection and reversal of power operated vertical freight doors require that car doors and gates be power operated and of a type that slide-up to open. Clarification that power opened only doors are permitted and that power closed doors must also be power-openable. [TN 05-781]

[10] Requirement 2.14.7.1 Revised

RATIONALE: New technology allows the possibility of a system where when one lamp burns out or is not functional, the other lamp will illuminate. In addition, the new requirement also addresses systems with a primary and redundant set of lights, in which the redundant lamps illuminate upon failure of the primary set of lamps. This requirement ensures that when any one lamp or set of lamps becomes nonfunctional, it does not leave the car without normal illumination

2.14.7.1.1(a): If a system that relies on a single lamp or set of lamps to illuminate the car is provided, that single lamp must provide sufficient illumination. In multi-lamp systems where all lamps are illuminated simultaneously, the combination of the lamps must provide sufficient illumination.

2.14.7.1.1(b): Adds a requirement for systems relying on a single lamp or set of lamps to illuminate the car; the unlit lamp or set of lamps will immediately illuminate should the current lamp illuminating the car malfunction and no longer able to illuminate the car. These provisions ensure continuous illumination in the car.

2.14.7.1.1(c): In systems employing simultaneously lit multiple lamps of approximately equal illumination, it should be noticeable when one is burned out or not functional. In contrast, a system that relies on a single lamp or set of lamps to illuminate the car combined with a back-up lamp or set of lamps only illuminated should the first lamp or set of lamps malfunction, it will not be so noticeable that the first lamp or set of lamps is no longer functional. It is important that authorized personnel are notified so that the nonfunctioning lamps or set of lamps gets replaced before the second one burns out or becomes nonfunctional. Visual signals might include an indicator on the car panel, or light fixture. [TN 07-460]

[10] Requirement 2.14.7.1.3(a)(6) Revised

RATIONALE: There is confusion in the industry about whether the push button should be called "HELP" or "PHONE," particularly with the Braille marking. The "PHONE" symbol is universally understood, and eliminating "HELP" will eliminate confusion without any loss of meaning for the button. With direct reference to "PHONE" in 2.27.1.1.3, there is no need for 2.26.12.4. [TN 08-1095]

[10] Requirement 2.14.7.1.3(e) Revised

RATIONALE: New technology allows the lamp(s) used for "auxiliary lighting" to be the same lamps(s) used for "normal illumination." This is permitted if other requirements are met. See reason for 2.14.7.1. [TN 07-460]

[09b] Requirement 2.14.7.1.3(f) Revised

RATIONALE: To add the appropriate UL reference standard and make both applicable in the U.S. and Canada. [TN 07-1153]

[10] Requirement 2.14.7.1.3(g) Revised

RATIONALE: New technology allows the lamp(s) used for "auxiliary lighting" to be the same lamps(s) used for "normal illumination." This is permitted if other requirements are met. See reason for 2.14.7.1. [TN 07-460]

[10] Requirement 2.16.3.2.2(c) Revised

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coated steel suspension members and aramid fiber ropes. [TN 07-1970]

[08a] Requirement 2.16.4.9 Revised

RATIONALE: All vertical door protection items are now addressed in 2.13.3.4. Additional requirements that supersede the deleted requirements in 2.16.4.9 also have been added. [TN 05-781]

[08a] Requirement 2.16.5.1.2 Revised

RATIONALE: Freight elevators are often used by non-employees of the building or facility, such as package delivery personnel. New requirements have been added in 2.13.3.4 to protect all potential adult users. [TN 05-781]

[08a] Requirement 2.16.5.2 Revised

RATIONALE: Editorial clarification. [TN 05-781]

[10] Requirement 2.17.1 Revised

RATIONALE: To allow for other means of suspension, such as noncircular elastomeric coasted steel suspension members and aramid fiber ropes. [TN 07-1970]

[10] Requirement 2.18.5 Revised

RATIONALE: To ensure that materials used for governor ropes comply with the new standard for construction. [TN 07-1970]

[10] Requirement 2.18.5.1 Revised

RATIONALE: To ensure that materials used for governor ropes comply with the new Standard for construction and to include the globally used size of 6 mm governor ropes and corresponding factor of safety as codified by EN81-1:1998, Clauses 9.9.6.3 and 9.9.6.2. [TN 07-1970]

[09b] Requirement 2.18.7.2 Revised

RATIONALE:

(a) Provide clarity that the rule applies only to jawless governor systems (those operated by the available traction in the governor sheave groove) that require enough tension in the governor rope to impart necessary traction to activate the safety and does not apply to other governors.

(b) Force required to activate the safety may be greater than tripping the releasing carrier, thus the traction force should trip the releasing carrier, if used, and activate the safety. [TN 08-96]

[10] Requirement 2.18.7.4 Revised

RATIONALE: To include the globally used governor ropes with diameters less than 9.5 mm (0.375 in.), based on EN81-1:1998, Clause 9.9.6.4, and the D/d ratios commonly used with these smaller diameter ropes. See also changes and rationale for 2.18.5.1. [TN 07-1970]

[10] Table 2.18.7.4 Revised

RATIONALE: To recognize the use of 9-strand construction of governor ropes. The multiplier is conservative as 9-strand construction is no less flexible than 8-strand. [TN 07-1970]

[08a] Requirement 2.19.2 Revised

RATIONALE: Clarification of language. [TN 03-91]

[08a] Requirement 2.19.3.2 Revised

RATIONALE: Use of emergency brake for elevator operations other than ascending car and unintended motion. Although not permitted to be used to stop the elevator car on automatic operation, there are other elevator operations (e.g., continuous pressure operation) that may make use of an existing emergency brake device. Today's elevator systems are composed mostly of ACVF traction systems. These systems may not provide inherent dynamic braking on "power off" stopping (e.g., emergency terminal speed limiting device, inspection/car emergency stop switches, and other possible electrical protective safety devices). Braking assistance to the "driving machine brake" may be necessary to meet required code stopping performance criteria, or provide elevator personnel with responsive stopping during elevator maintenance and inspection. If used for the additional safety functions, the emergency brake is required to be designed to higher factors of safety. The restricted use of the emergency brake ensures availability when required.

The term "rope" was changed to be consistent with the proposed suspension means standard. [TN 03-91]

[10] Requirement 2.20.1 Revised

RATIONALE:

(a) This Section ties all recognized means of suspension to respective ASME standards.

(b) Suitable care must be taken to protect the suspension means during the installation or modernization process, particularly in view that nontraditional suspension means are being applied. [TN 07-1970]

[10] Requirement 2.20.2 Revised

RATIONALE: To permit the use of wire and aramid fiber ropes and noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.2.1 Revised

RATIONALE: To permit the use of wire and aramid fiber ropes and noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.2.2 Revised

RATIONALE: To permit aramid fiber ropes and noncircular elastomeric coated steel suspension members in addition to steel wire ropes. [TN 07-1970]

[10] Requirement 2.20.2.2.1 Added

RATIONALE: To permit aramid fiber ropes and noncircular elastomeric coated steel suspension members in addition to steel wire ropes. [TN 07-1970]

[10] Requirement 2.20.2.2.2 Added

RATIONALE: To permit aramid fiber ropes and noncircular elastomeric coated steel suspension members in addition to steel wire ropes. [TN 07-1970]

[10] Requirement 2.20.3 Revised

RATIONALE: The FS ≥ 12 selected for steel wire ropes in the range of 8 mm ≤ d < 9.5 mm is based on the European Code, EN81-1:1998, Clause 9.2.2(a), and that ropes of these sizes have been successfully deployed on many applications according to the Liftinstitut, one of the European enforcing authorities and notified bodies. (see SMTG 184 R1).

The requirement has been written in performance-based language with an assurance that existing factors of safety will be used as a minimum while allowing alternative suspension means.

The most vital issue regarding suspension strength is the residual strength at the point at which the suspension means should be replaced. Thus, the significant factor of safety is that which will ensure safe operation at the point of replacement. Present Code criteria for steel wire ropes have historically been shown, by testing, to have a residual strength of 60% at replacement. The same residual strength criterion is appropriate for aramid fiber ropes and noncircular elastomeric coated steel suspension members. (See ASME A17.6, Sections 2.9.4 and 3.7.4.)

Extensive study of the degradation of both aramid fiber ropes and nonCircular elastomeric coated steel suspension members was presented to and reviewed by the SMTG experts. The experts agreed that decreases in strength are a function of bending fatigue and/or internal fretting, which is directly dependent on the total number of bending cycles — thus their residual strength is predictable based on the test data. This is consistent with the results on steel wire rope determined by Dr. K. Feyrer, at the University of Stuttgart. See also ISBN-10 2-540-33821-7 and ISBN-13 978-3-540-33821-5. [TN 07-1970]

[10] Table 2.20.3 Revised

RATIONALE: The FS ≥ 12 selected for steel wire ropes in the range of 8 mm ≤ d < 9.5 mm, is based on the European Code, EN81-1: 1998, Clause 9.2.2(a), and that ropes of these sizes have been successfully deployed on many applications according to the Liftinstitut, one of the European enforcing authorities and notified bodies. (see SMTG 184 R1).

The requirement has been written in performance-based language with an assurance that existing factors of safety will be used as a minimum while allowing alternative suspension means.

The most vital issue regarding suspension strength is the residual strength at the point at which the suspension means should be replaced. Thus, the significant factor of safety is that which will ensure safe operation at the point of replacement. Present Code criteria for steel wire ropes have historically been shown, by testing, to have a residual strength of 60% at replacement. The same residual strength criterion is appropriate for aramid fiber ropes and noncircular elastomeric coated steel suspension members. (See ASME A17.6, Sections 2.9.4 and 3.7.4.)

Extensive study of the degradation of both aramid fiber ropes and noncircular elastomeric coated steel suspension members was presented to and reviewed by the SMTG experts. The experts agreed that decreases in strength are a function of bending fatigue and/or internal fretting, which is directly dependent on the total number of bending cycles — thus their residual strength is predictable based on the test data. This is consistent with the results on steel wire rope determined by Dr. K. Feyrer, at the University of Stuttgart. See also ISBN-10 2-540-33821-7 and ISBN-13 978-3-540-33821-5. [TN 07-1970]

[10] Requirement 2.20.4 Revised

RATIONALE: Extensive testing of 4 mm diameter steel wire ropes has proven that they can be safely used, installed, and inspected. Therefore, the minimum diameter limit on steel wire suspension ropes has been reduced accordingly. (See SMTG 135, 136, 137, 144, 146, 150, 151, and 167.) [TN 07-1970]

[10] Requirement 2.20.4.1 Revised

RATIONALE: Extensive testing of 4 mm diameter steel wire ropes has proven that they can be safely used, installed, and inspected. Therefore, the minimum diameter limit on steel wire suspension ropes has been reduced accordingly. (See SMTG 135, 136, 137, 144, 146, 150, 151, and 167.) [TN 07-1970]

[10] Requirement 2.20.4.2 Added

RATIONALE: To accommodate aramid fiber ropes. Outer wire diameter does not apply to aramid fiber ropes, as the fibers are jacketed and not exposed. No technology has been developed or proposed for the attachment of aramid fiber ropes to winding drums at this time. [TN 07-1970]

[10] Requirement 2.20.4.3 Added

RATIONALE: To accommodate noncircular elastomeric coated steel suspension members. Outer wire diameter does not apply to noncircular elastomeric coated steel suspension members, as the cords are jacketed and not exposed. No technology has been developed or proposed for the attachment of noncircular elastomeric coated steel suspension members to winding drums at this time. [TN 07-1970]

[10] Requirement 2.20.5 Revised

RATIONALE: To include the applicable requirements for all types of suspension means. [TN 07-1970]

[10] Requirement 2.20.5.1 Revised

RATIONALE: To include the applicable requirements for all types of suspension means. [TN 07-1970]

[10] Requirement 2.20.5.2 Revised

RATIONALE: To include the applicable requirements for all types of suspension means. [TN 07-1970]

[10] Requirement 2.20.5.3 Revised

RATIONALE: To include the applicable requirements for all types of suspension means. [TN 07-1970]

[10] Requirement 2.20.6 Revised

RATIONALE: To use the term "steel" consistently. [TN 07-1970]

[10] Requirement 2.20.7 Revised

RATIONALE: To eliminate the possibility of crushing pressures caused by overwrapping of ropes. [TN 06-158]

[10] Requirement 2.20.8.1 Added

RATIONALE: Failure of the suspension members or traction sheave can occur due to the loss of traction between the suspension members and driving sheave. A means to detect traction loss is necessary to remove power from the driving machine motor and brake before either of these failures occurs. The requirements have been written in performance language enabling manufacturers to set appropriate parameters for the type of suspension used and the method of detection, but still have quantifiable criteria for verification purposes. The requirements cover all types of suspension members and traction sheave materials. The proposal recognizes the following:

(a) Over the last few decades, the ratio of the car weight to the rated load (C/L) has decreased due to design optimization and the use of lightweight materials, thereby increasing the potential for traction loss as an empty, or lightly loaded, car approaches the top terminal landing.

(b) Measures to detect and protect against loss of traction have been implemented by elevator manufacturers, although they are not required by the A17.1 Code. This has contributed to the safety record of steel wire ropes. Making these measures mandatory merely formalizes the status quo and does not unnecessarily penalize elevators provided with steel wire ropes, but in fact, requires a common denominator for safety.

Certain inspections and tests, such as traction tests, and maintenance or repair actions may cause the loss of traction. During this testing period, it may be necessary to render ineffective these protection means. The Maintenance Control Program (MCP), 8.6.1.2.1, is required to provide precautions for performing such actions when the protection means is made inoperative or ineffective. The method of verification of the system will depend on the nature of the suspension means system and must be provided in the MCP.

It is essential that, before the elevator is returned to service after actuation of the traction loss detection means, the suspension means are inspected to determine if they are within the replacement criteria of ASME A17.6, 1.10, 2.9, and 3.7 and replaced, if necessary. In addition, the traction sheave shall also be examined and repaired or replaced, if necessary.

2.20.8.1, 2.20.8.1(a), and 2.20.8.1(b): This requirement provides detection of traction loss between the suspension means and the drive sheave within specified parameters. The robustness of the suspension means is specified in the engineering tests in 2.20.11. These parameters are taken from ASME A17.1, Requirement 5.8.1.7.2, and are also based on requirements in the EN81-1 Code, Sections 12.10.1 and 12.10.2. These codified requirements in ASME A17 and EN81 are valid in typical elevator applications. The requirement causes the removal of electrical power from the driving machine motor and brake similar to the Requirements of EN81-1,

Clause 12.10.1. This is more stringent than A17.1, Requirement 5.8.1.7.2.

2.20.8.1(c): The new requirements provide for additional assurance that the traction loss detection means will not be made ineffective by EMC, or the failure of power to be removed from the driving machine motor and brake, or to a single ground, or any permanent device not permitted by the code. The traction loss detection means will remove power from the driving machine motor and brake.

2.20.8.1(d): Once loss of traction is detected, these requirements ensure shutting the elevator system down and taking remedial action before restoration of service by elevator personnel. [TN 07-1970]

[10] Requirement 2.20.8.2 Added

RATIONALE: The SMTG concluded that the proposed 2.20.8.2 is the selected mitigation for the identified risks in the Hazard Assessment. "Stop the car in a controlled manner" means a stop in which the car is decelerated at a typical rate during a normal stop "however, not necessarily at a landing. It is undesirable to have the car stop away from an opening and entrap passengers unnecessarily. This would also allow stopping away from a landing if the car was in a long express zone. [TN 07-1970]

[10] Requirement 2.20.8.3 Added

RATIONALE: All suspension means must be able to be inspected visually, mechanically, or electronically where the suspension means cannot be seen due to coatings or coverings. Monitoring will be required to automatically stop the car if the residual strength of any suspension means drops below 60% and prevent the elevator from restarting after a normal stop at a landing. [TN 07-1970]

[10] Requirement 2.20.9 Revised

RATIONALE: To permit noncircular elastomeric coated steel suspension member fastenings and improve the inspectability of all suspension member fastenings. [TN 07-1970]

[10] Requirement 2.20.9.1 Revised

RATIONALE: To permit noncircular elastomeric coated steel suspension member fastenings and improve the inspectability of all suspension member fastenings. [TN 07-1970]

[10] Requirement 2.20.9.1.1 Revised

RATIONALE: To permit noncircular elastomeric coated steel suspension member fastenings and improve the inspectability of all suspension member fastenings. [TN 07-1970]

[10] Requirement 2.20.9.1.2 Revised

RATIONALE: To permit noncircular elastomeric coated steel suspension member fastenings and improve the inspectability of all suspension member fastenings. [TN 07-1970]

[10] Requirement 2.20.9.2 Revised

RATIONALE: To permit noncircular elastomeric coated steel suspension member fastenings. [TN 07-1970]

[10] Requirement 2.20.9.3 Revised

RATIONALE: Elongation text was added for clarity. [TN 07-1970]

[10] Requirement 2.20.9.3.1 Revised

RATIONALE: Elongation text was added for clarity. [TN 07-1970]

[10] Requirement 2.20.9.3.2 Revised

RATIONALE: Elongation text was added for clarity. [TN 07-1970]

[10] Requirement 2.20.9.3.3 Revised

RATIONALE: Elongation text was added for clarity. [TN 07-1970]

[10] Requirement 2.20.9.3.4 Revised

RATIONALE: A fabricated termination lends itself to ensuring a high quality safe product. Welded structures manufactured to 8.8.1 and 8.8.2 will meet or exceed the strength and endurance requirements of cast or forged components. This configuration is in use extensively in Europe under the notified body process and should be permitted by the Code. Testing to 2.20.9.9.1 or 2.20.9.5.1 is required. [TN 07-1970]

[10] Requirement 2.20.9.3.5 Added

RATIONALE: A fabricated termination lends itself to ensuring a high quality safe product. Welded structures manufactured to 8.8.1 and 8.8.2 will meet or exceed the strength and endurance requirements of cast or forged components. This configuration is in use extensively in Europe under the notified body process and should be permitted by the Code. Testing to 2.20.9.9.1 or 2.20.9.5.1 is required. [TN 07-1970]

[10] Requirement 2.20.9.3.6 Revised — formerly 2.20.9.3.5

RATIONALE: To express in performance language to give more latitude in design without reduction in safety. [TN 07-1970]

[10] Requirement 2.20.9.3.7 Revised — formerly 2.20.9.3.6

RATIONALE: To express in performance language to give more latitude in design without reduction in safety. [TN 07-1970]

[10] Requirement 2.20.9.3.8 Revised — formerly 2.20.9.3.7

RATIONALE: To express in performance language to give more latitude in design without reduction in safety. [TN 07-1970]

[10] Requirement 2.20.9.3.9 Revised — formerly 2.20.9.3.8

RATIONALE: To express in performance language to give more latitude in design without reduction in safety. [TN 07-1970]

[10] Requirement 2.20.9.4 Revised

RATIONALE: To separate the requirements of steel wire tope from the different requirements for nonsteel ropes. [TN 07-1970]

[10] Table 2.20.9.4.5 Revised

RATIONALE: To recognize the use of 8 mm ($^5/_{16}$ in.) steel wire suspension ropes and their application in tapered rope sockets. [TN 07-1970]

[10] Requirement 2.20.9.5 Revised

RATIONALE: Revised for clarification and consistency with the new standard. [TN 07-1970]

[10] Requirement 2.20.9.5.1 Revised

RATIONALE: Revised for clarification and consistency with the new standard. [TN 07-1970]

[10] Requirement 2.20.9.5.4 Revised

RATIONALE: Editorial for clarification. To include use of aramid fiber ropes. [TN 07-1970]

[10] Requirement 2.20.9.5.5 Added

RATIONALE: Editorial for clarification. To include use of aramid fiber ropes. [TN 07-1970]

[10] Requirement 2.20.9.5.6 Revised — formerly 2.20.9.5.5

RATIONALE: Editorial for clarification. To include use of aramid fiber ropes. [TN 07-1970]

[10] Requirement 2.20.9.8 Revised

RATIONALE: Revised for clarification and consistency with the new standard. [TN 07-1970]

[10] Requirement 2.20.9.9 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.9.9.1 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.9.9.2 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.9.9.3 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.9.9.4 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.9.9.5 Added

RATIONALE: To permit the use of wedge socket terminations on noncircular elastomeric coated steel suspension members. [TN 07-1970]

[10] Requirement 2.20.11 Added

RATIONALE: During the construction phase of an elevator, it is necessary to recognize that all safety functions or safeguards may not yet be installed or must be bypassed outside the restrictions of 8.6.1.6.1. To ensure the dependability of the suspension system under these circumstances, an engineering test is required. See detailed Rationale under 8.3.12. [TN 07-1970]

[10] Requirement 2.24.2.1 Revised

RATIONALE:

(a) To clarify that sheaves integral with the driving machine shafts are permitted.

(b) Permit the safe use of nonmetallic sheaves.

(c) Composite driving sheave materials must conform to safety factors and design criteria required by the Code.

(d) To ensure that regrooving is not permitted on plastic sheaves. [TN 07-1970]

[10] Requirement 2.24.2.1.1 Added

RATIONALE:

(a) To clarify that sheaves integral with the driving machine shafts are permitted.

(b) Permit the safe use of nonmetallic sheaves.

(c) Composite driving sheave materials must conform to safety factors and design criteria required by the Code.

(d) To ensure that regrooving is not permitted on plastic sheaves. [TN 07-1970]

[10] Requirement 2.24.2.1.2 Added

RATIONALE:

(a) To clarify that sheaves integral with the driving machine shafts are permitted.

(b) Permit the safe use of nonmetallic sheaves.

(c) Composite driving sheave materials must conform to safety factors and design criteria required by the Code.

(d) To ensure that regrooving is not permitted on plastic sheaves. [TN 07-1970]

[10] Requirement 2.24.2.2 Revised

RATIONALE:

(a) To allow for the use of noncircular elastomeric coated steel suspension members. The cord of a noncircular elastomeric coated steel suspension member is equivalent to a wire rope in bending.

(b) To allow for use of aramid fiber ropes. These can accept much lower D to d ratios with fatigue cycle limits greater than steel. The value of 16 to 1 on functional diameter has been verified by extensive testing. (See SMTG 122 R3.) [TN 07-1970]

[10] Requirement 2.24.2.3.1 Revised

RATIONALE: To ensure that sufficient traction is available if the cover of the aramid fiber rope or coating of the noncircular elastomeric coated steel suspension member is damaged. [TN 07-1970]

[10] Requirement 2.24.2.3.2 Revised

RATIONALE: To ensure that sufficient traction is available if the cover of the aramid fiber rope or coating of the noncircular elastomeric coated steel suspension member is damaged. [TN 07-1970]

[10] Requirement 2.24.2.3.3 Added

RATIONALE: To ensure that sufficient traction is available if the cover of the aramid fiber rope or coating of the noncircular elastomeric coated steel suspension member is damaged. [TN 07-1970]

[10] Requirement 2.24.2.3.4 Revised

RATIONALE: To ensure that sufficient traction is available if the cover of the aramid fiber rope or coating of the noncircular elastomeric coated steel suspension member is damaged. [TN 07-1970]

[10] Requirement 2.24.2.5 Added

RATIONALE: A means to prevent suspension members from being dislodged from their respective location due to slackening of the suspension members should be provided on all sheaves. Guarding of suspension means from accidental contact, where authorized persons could inadvertently introduce foreign objects during maintenance, inspection, or repair, should also be guarded against.

The criteria of 39 in. is based on a height slightly less than a car top handrail so it does not protrude above and cause clearance issues when the car is at the extreme limit of travel. Incidental damage due to an authorized person's tools is likely at a height where tools are pocketed. [TN 07-1970]

[10] Requirement 2.24.3 Revised

RATIONALE: To establish a conservative factor of safety for plastic and fiber-reinforced plastic. The use of nonmetallic materials is relatively new in North America and the Requirements reflect a conservative approach to the application of these components. Also, as a result of some of the rewritten requirements, provisions for drums were added where appropriate. [TN 07-1970]

[10] Requirement 2.25.3.3.1 Revised

RATIONALE: For elevator control systems where the operation controller is located on the car, it is logical that the final terminal stopping device(s) could be located on the car and wired directly into the operation controller. In addition, this proposal would allow the controller to be on the car or not on the car. It is important to provide a secure location where it is unlikely that the finals could be accidentally damaged or moved from their adjusted locations. The case of finals located on the car and potential grounding of the signal through a traveling cable is covered.

Location of device worded similarly to normal terminal stopping device. [TN 03-813]

[10] Requirement 2.25.3.4 Revised

RATIONALE: Wording clarified to be in line with current terminology; any device could be used but must comply with existing rules in other sections. In 2.26.9.3 and 2.26.9.4, rules are provided for the final terminal stopping device because it is an EPD (cannot be solely software controlled; single failure requirements for solid state and relays/contactors). Normal terminal stopping device is required to function independently of the final terminal stopping device. [TN 03-813]

[08a] Requirement 2.26.1.1 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not

intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[09b] Requirement 2.26.1.4.2 Added

RATIONALE: To ensure that the top of car inspection operating device can be reached from a safe area by elevator personnel while they are on the car top. [TN 02-2268]

[10] Requirement 2.26.1.4.2(g) Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 2.26.1.5 Revised

RATIONALE: To clarify the required location of the car door and hoistway door bypass switches including that they may be provided in the Inspection and Test Panel even if the controller enclosure is also located outside the hoistway. The relevant safety requirement is the location of the switches and their accessibility, not the location of the car door and gate electric contact or car door interlock circuits, and hoistway door interlock and/or hoistway door combination mechanical lock and electric contact circuits. [TN 07-25]

[08a] Requirement 2.26.1.5.5 Revised

RATIONALE:

(a) To include car door interlocks and hoistway door electric contacts.

(b) To ensure that access switches and bypass switches do not render ineffective hoistway or car door interlocks or hoistway door or car door or gate electric contacts ineffective any time the switches are in the "OFF" position, not just when they are switched from the actuated position to the "OFF" position. [TN 05-1266]

[08a] Requirement 2.26.2 Revised

RATIONALE: To clarify when it is permissible to allow the electrical protective devices to operate the emergency brake, which in turn may allow simultaneous operation of the braking system and the emergency brake. Additional requirements clarify that the emergency brake may be applied during the stopping of the elevator while on continuous pressure operation. [TN 03-91]

[10] Requirement 2.26.2.26 Revised

RATIONALE: The reference to 2.2.4.4 is incorrect and should be 2.2.4.5. [TN 09-100]

[09b] Requirement 2.26.2.33 Revised

RATIONALE:

(a) To establish uniformity and consistency for firefighters' stop switch required by 2.27.3.3.7 where firefighters need to operate the switch with a gloved hand.

(b) This prohibits "push to run" buttons, which could be moved to the run position by closing the cover. Under normal operation the switch will be left in the run position. [TN 06-796]

[10] Requirement 2.26.4.4 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 2.26.4.4 Revised

RATIONALE: Paragraphs 2.26.4.4, 2.26.7, 2.26.8.3, 2.26.9.5.3, and 2.26.9.6.3 were modified to coordinate with the requirements of 2.20.8.1(c). [TN 07-1970]

[08a] Requirement 2.26.4.4.1 Revised

RATIONALE: This allows the control equipment to be tested to EN12016:1998 requirements if the test equipment will support voltage dips of fractions of cycles or by testing at 50 Hz.

Alternatively, this equipment may be tested at 60 Hz for voltage dip times of 8.33 ms and 83.3 ms, which would be the equivalent number of cycles at 60 Hz as the 10 ms and 100 ms requirements, at 50 Hz. This is in line with the current language in the ISO 22200 draft. [TN 07-575]

[08a] Requirement 2.26.4.4.2 Revised

RATIONALE: This allows the control equipment to be tested to EN12016:1998 requirements if the test equipment will support voltage dips of fractions of cycles or by testing at 50 Hz.

Alternatively, this equipment may be tested at 60 Hz for voltage dip times of 8.33 ms and 83.3 ms, which

would be the equivalent number of cycles at 60 Hz as the 10 ms and 100 ms requirements, at 50 Hz. This is in line with the current language in the ISO 22200 draft. [TN 07-575]

[10] Requirement 2.26.7 Revised

RATIONALE: Paragraphs 2.26.4.4, 2.26.7, 2.26.8.3, 2.26.9.5.3, and 2.26.9.6.3 were modified to coordinate with the requirements of 2.20.8.1(c). [TN 07-1970]

[10] Requirement 2.26.8.3 Revised

RATIONALE: Paragraphs 2.26.4.4, 2.26.7, 2.26.8.3, 2.26.9.5.3, and 2.26.9.6.3 were modified to coordinate with the requirements of 2.20.8.1(c). [TN 07-1970]

[10] Requirement 2.26.9.3 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirement. [TN 07-1565]

[08a] Requirement 2.26.9.3(e) Revised

RATIONALE:
(a) To include car door interlocks and hoistway door electric contacts.
(b) To ensure that access switches and bypass switches do not render ineffective hoistway or car door interlocks or hoistway door or car door or gate electric contacts ineffective any time the switches are in the "OFF" position, not just when they are switched from the actuated position to the "OFF" position. [TN 05-1266]

[10] Requirement 2.26.9.3.1 Added

RATIONALE: Conditions for the design of circuits to comply with 2.26.9.3 [2.26.9.3.1] are being separated from the rules that require checking of the functioning of circuits in 2.26.9.4. Text was revised and moved from 2.26.9.4 to 2.26.9.3.1. These are two separate and distinct requirements that should not be grouped together.

Clarification that nonsoftware controlled means must also be used in this compliance alternative using positive language. [TN 07-1565]

[10] Requirement 2.26.9.3.2 Added

RATIONALE: Conditions for the design of circuits to comply with 2.26.9.3 [2.26.9.3.1] are being separated from the rules that require checking of the functioning of circuits in 2.26.9.4. Text was revised and moved from 2.26.9.4 to 2.26.9.3.1. These are two separate and distinct requirements that should not be grouped together.

Clarification that nonsoftware controlled means must also be used in this compliance alternative using positive language. [TN 07-1565]

[10] Requirement 2.26.9.4 Revised

RATIONALE: Conditions for the design of circuits to comply with 2.26.9.3 [2.26.9.3.1] are being separated from the rules that require checking of the functioning of circuits in 2.26.9.4. Text was revised and moved from 2.26.9.4 to 2.26.9.3.1. These are two separate and distinct requirements that should not be grouped together.

Clarification that nonsoftware controlled means must also be used in this compliance alternative using positive language. [TN 07-1565]

[10] Requirement 2.26.9.5.3 Revised

RATIONALE: Paragraphs 2.26.4.4, 2.26.7, 2.26.8.3, 2.26.9.5.3, and 2.26.9.6.3 were modified to coordinate with the requirements of 2.20.8.1(c). [TN 07-1970]

[10] Requirement 2.26.9.6.3 Revised

RATIONALE: Paragraphs 2.26.4.4, 2.26.7, 2.26.8.3, 2.26.9.5.3, and 2.26.9.6.3 were modified to coordinate with the requirements of 2.20.8.1(c). [TN 07-1970]

[10] Requirement 2.26.12.4 Deleted

RATIONALE: There is confusion in the industry about whether the push button should be called "HELP" or "PHONE," particularly with the Braille marking. The "PHONE" symbol is universally understood, and eliminating "HELP" will eliminate confusion without any loss of meaning for the button. With direct reference to "PHONE" in 2.27.1.1.3, there is no need for 2.26.12.4. [TN 08-1095]

[09b] Requirement 2.27.1.1.2 Revised

RATIONALE: To clarify that if the location is not staffed at all times, the means of two-way communications needs to be forwarded to another location staffed by authorized personnel to ensure a person in the car can always reach authorized personnel who can take appropriate action. Based on input from communications system suppliers, the response time is increased to 45 sec to allow adequate time to acknowledge the call and to prevent unnecessary forwarding. [TN 03-1840]

[09b] Requirement 2.27.1.1.3 Revised

RATIONALE: To clarify that code users need to be aware of the requirement in 2.26.12.4 to mark the HELP button with the "PHONE" symbol. [TN 03-1840]

[10] Requirement 2.27.1.1.3 Revised

RATIONALE: There is confusion in the industry about whether the push button should be called "HELP" or "PHONE," particularly with the Braille marking. The "PHONE" symbol is universally understood, and eliminating "HELP" will eliminate confusion without any loss of meaning for the button. With direct reference to "PHONE" in 2.27.1.1.3, there is no need for 2.26.12.4. [TN 08-1095]

[09b] Requirement 2.27.1.1.5 Revised

RATIONALE: Editorial clarification for consistency with the rest of 2.27.1.1. [TN 03-1840]

[09b] Requirement 2.27.1.1.6 Added

RATIONALE: Add verification requirements to the Two-Way Communications system in each elevator car (i.e., verify dial tone) that will activate an audible and visual signal at the designated landing to warn elevator users and the building owner if the two-way communications means (i.e., the telephone line) is not operative. This change was initiated from a preliminary hazard analysis in the Task Group on Electronic Door Restrictors (TR 98-55/TN 02-02046). Feedback from the inspection community indicates that a large number of phones are nonfunctional due to disconnected phone lines. Means other than a telephone line such as a VOIP or other type of communications network may not produce a dial tone. Equivalent verification of this means is required. [TN 03-1840]

[08a] Requirement 2.27.2 Revise

RATIONALE:

(a) Provide better description of the interaction between Emergency power and Fire Service, making it clear that the cars should return to the designated level (normal service or fire service) unless the smoke detector at that floor has initiated fire service.

(b) Define the behavior of the doors at the end of the recall; they should normally be left open to allow the firefighters to account for the location and occupancy of all cars.

(c) Specify what happens to cars on the services excluded from automatic recall.

(d) Treat standby and emergency power for elevators with Hospital Service the same as they are treated for Phase I.

(e) Ensure that all cars get a chance to recall or move to a floor (inspection, Fire Phase II, etc.) before allowing manual selection, so that passengers can exit the car.

(f) The current note suggesting the switch be left in AUTO was previously important because if the switch was left in another position and the power failed, passengers in other cars would be trapped until an authorized person realized what was wrong. The note was also not enforceable and has been deleted in this proposal. The new approach evacuates the cars automatically no matter which position the switch is in, so the note is no longer needed.

(g) Add an indicator to inform firefighters which cars are currently selected.

(h) Cars requiring manual intervention to close the door will not be able to recall but will not create an entrapment and therefore are not addressed.

(i) To prevent people from being trapped following a power interruption.

(j) The firefighter's light activates when the car is ready to run, so the firefighter knows that power has been restored to that car. [TN 04-399]

[09b] Requirement 2.27.3.1.6 Revised

RATIONALE: The rule was originally intended to address battery operated devices that automatically move the car to a floor to evacuate passengers in the event of a mainline power failure. The current language can be misread as applying to MRL elevators that have a small battery used to power a speed and position display in accordance with rule 2.7.6.4.1. [TN 08-465]

[08a] Requirement 2.27.3.1.6(d) and (e) Revised

RATIONALE: To address the need to close the doors in a fire situation while at the same time reducing the kinetic energy of the entire gate and door system to a value associated with the gate closing sequence operation.

2.27.3.1.6(e)(2): Equivalent to that currently required for vertical sliding doors during phase one operation. [TN 05-781]

[09b] Requirement 2.27.3.1.6(f) Revised

RATIONALE: Clarification of the requirement for elevators on Phase I and Phase II, and to add definitions for hall lanterns, car lanterns, and car-direction indicators. When some cars are on Phase II and others are on normal service, landing call buttons and registered lights may be operative for the cars on normal service. [TN 05-402]

[08a] Requirement 2.27.3.1.6(i) Revised

RATIONALE: Make button (potentially) plural. To make it clear that when the code refers to open or close buttons, it refers to rear open, side open, rear close, and side close buttons when applicable. [TN 05-978]

[09b] Requirement 2.27.3.2.1 Revised

RATIONALE: It is important to have a Fire Alarm Initiating Device (FAID) or smoke detector in a space containing a motor controller, electric driving machine, and hydraulic machine, since these devices have significant energy available to generate smoke and heat. This objective is reflected in the requirements prior to A17.1S-2005 for a FAID or smoke detector. However, requirement 2.7.6.3.2 does permit a motor controller to be located in a machinery space. Therefore in this case a FAID or smoke detector should also be required in the machinery space. Also in 2.27.3.2.2 control space and control room were added to be consistent with 2.2.7.3.2.1(b). [TN 07-462]

[09b] Requirement 2.27.3.2.2 Revised

RATIONALE: It is important to have a Fire Alarm Initiating Device (FAID) or smoke detector in a space containing a motor controller, electric driving machine, and hydraulic machine, since these devices have significant energy available to generate smoke and heat. This objective is reflected in the requirements prior to A17.1S-2005 for a FAID or smoke detector. However, requirement 2.7.6.3.2 does permit a motor controller to be located in a machinery space. Therefore in this case a FAID or smoke detector should also be required in the machinery space. Also in 2.27.3.2.2, control space and control room were added to be consistent with 2.2.7.3.2.1(b). [TN 07-462]

[09b] Requirement 2.27.3.2.2 Revised

RATIONALE: To ensure that pull stations are not used to initiate Phase I operation and to harmonize the requirements with 2.27.3.2.1. [TN 07-1157]

[09b] Requirement 2.27.3.2.3(a) Revised

RATIONALE: The structure of the rule 2.27.3.2.3 is intended to address lobby detectors in (a), machine room detectors in (b), and hoistway detectors in (c). Without this qualifier, machine room and hoistway detectors are addressed twice. [TN 07-1158]

[09b] Requirement 2.27.3.2.3(c) Revised

RATIONALE: To be consistent with the formatting of previous requirements that addresses the different jurisdictions as enforcing or not enforcing the NBCC. [TN 08-466]

[09b] Requirement 2.27.3.2.3(d) Revised

RATIONALE: To be consistent with the formatting of previous requirements that addresses the different jurisdictions as enforcing or not enforcing the NBCC. [TN 08-466]

[09b] Requirement 2.27.3.2.3(e) Revised

RATIONALE: To be consistent with the formatting of previous requirements that addresses the different jurisdictions as enforcing or not enforcing the NBCC. [TN 08-466]

[09b] Requirement 2.27.3.2.4 Revised

RATIONALE: Update to correct reference. [TN 07-1163]

[08a] Requirement 2.27.3.2.6 Revised

RATIONALE: Requirement 2.27.3.2.1(d) does not exist for heat detectors; therefore, the above requirements are meaningless and are confusing. [TN 07-1351]

[08a] Requirement 2.27.3.3.1 Revised

RATIONALE: To delete requirements for detection devices and momentary pressure operation, when the elevator is in Phase II. [TN 05-781]

[09b] Requirement 2.27.3.3.1 Revised

RATIONALE: The rule was originally intended to address battery operated devices that automatically move the car to a floor to evacuate passengers in the event of a mainline power failure. The current language can be misread as applying to MRL elevators that have a small battery used to power a speed and position display in accordance with rule 2.7.6.4.1. [TN 08-465]

[09b] Requirement 2.27.3.3.1(b) Revised

RATIONALE: Clarification of the requirement for elevators on Phase I and Phase II, and to add definitions for hall lanterns, car lanterns, and car-direction indicators. When some cars are on Phase II and others are on normal service, landing call buttons and registered lights may be operative for the cars on normal service. [TN 05-402]

[08a] Requirement 2.27.3.3.1(c) Revised

RATIONALE: To establish requirements for the labeling of other buttons located behind the firefighters' panel. [TN 05-978]

[08a] Requirement 2.27.3.3.1(d) Revised

RATIONALE: To clarify that any other door open buttons in the car are required to be functional on Phase II. [TN 05-978]

[08a] Requirements 2.27.3.3.1(e) Revised

RATIONALE: To clarify that any other close buttons in the car are to remain operational on Phase II. [TN 05-978]

[08a] Requirement 2.27.3.3.1(g) Revised

[08a] Requirement 2.27.3.3.1(h) Revised

RATIONALE: Establish the labeling requirements for the call cancel button. [TN 05-978]

[10] Requirement 2.27.3.3.1(i) Revised

RATIONALE:

(a) Eliminate use of undefined term "main car operating panel."

(b) Standardize the location of the firefighters' operation panel.

(c) The firefighter needs to be able to register a call to any floor from one operating location. The current wording does not require the car operating panel where the firefighters' panel is located to include floor selection means for all floors the elevator serves. For example, an elevator may serve 10 front openings and 15 rear openings, and under the current wording there is no requirement to include the selection means for the five unopposed rear openings in the car operating panel where the firefighters' operation panel is located (i.e.,

the selection means for the five unopposed rear openings could be located only in a second car operating panel located at the rear of the car).

(d) Ensure that the panel cover opens in a manner such that it does not interfere with the firefighter's use of the panel.

(e) Correct a metric conversion. [TN 07-1156]

[08a] Requirement 2.27.3.3.3(a) Revised

RATIONALE: To clarify that door open buttons that may be provided at the landing are to remain inoperative in conformance with 2.27.3.3.1(g). Distinguish in car-door open function from that of a door open button that may be in the hall. [TN 05-978]

[08a] Requirement 2.27.3.3.7 Revised

RATIONALE: To add labeling requirements for the buttons required behind the locked panel. To make it clear that text labels, not symbols, are to be used on buttons behind the locked cabinet. To clarify requirements for elevators with rear or side doors, and editorially correct wrong referenced requirements contained in 2.27.3.3.7. [TN 05-978]

[08a] Requirement 2.27.3.3.7 Revised

RATIONALE: To allow the firefighters' phone jack to be grouped together with the other FEO devices and prevent other devices from cluttering the panel. [TN 06-1428]

[08a] Figure 2.27.3.3.7 Revised

RATIONALE: Editorial [TN 05-978]

[09b] Requirement 2.27.3.3.7 Revised

RATIONALE: To standardize operation to be consistent with the Phase I and Phase II key switches. [TN 07-465]

[10] Requirement 2.27.3.3.7 Revised

RATIONALE:

(a) Eliminate use of the undefined term "main car operating panel."

(2) Standardize the location of the firefighters' operation panel.

(3) The firefighter needs to be able to register a call to any floor from one operating location. The current wording does not require the car operating panel where the firefighters' panel is located to include floor selection means for all floors the elevator serves. For example, an elevator may serve 10 front openings and 15 rear openings and under the current wording there is no requirement to include the selection means for the five unopposed rear openings in the car operating panel where the firefighters' operation panel is located (i.e., the selection means for the five unopposed rear openings could be located only in a second car operating panel located at the rear of the car).

(4) Ensure that the panel cover opens in a manner such that it does not interfere with the firefighter's use of the panel.

(5) Correct a metric conversion. [TN 07-1156]

[09b] Requirement 2.27.3.5 Revised

RATIONALE: To correct publishing mistake and reference and to correct requirements. [TN 07-1817]

[09b] Requirement 2.27.3.5.3 Revised

RATIONALE: Editorial

[09b] Requirement 2.27.4 Revised

RATIONALE: To harmonize 2.27.4 and delete the Canadian exceptions. The requirements for all elevators to have automatic recall have now been harmonized and will be reflected in the next edition of the code. During the process this area of the code was overlooked unintentionally and needs to be brought in line with the requirements for automatic elevators to provide an increased level of safety. [TN 07-464]

[08a] Requirement 2.27.4.2 Revised

RATIONALE: Requirement 2.27.3.2.1(d) does not exist for heat detectors; therefore, the above requirements are meaningless and are confusing. [TN 07-1351]

[08a] Requirement 2.27.8 Revised

RATIONALE: To clarify intent and coordinate with new 8.1 (TN 03-1933). [TN 06-797]

[08a] Requirement 2.27.8 Revised

RATIONALE: To establish a direction of implementation of the bitting code, as the Committee recently became aware that there is no industry standard. To ensure that the FEO-K1 keys work in all FEO-K1 cylinders regardless of manufacturer. [TN 07-441]

[10] Figure 2.27.9 Revised

RATIONALE: To better define the dimensional requirements and aspect ratio for the pictograph. To allow the background inside the circles to be either white, or base metal, as long as the base metal is white or a single color contrasting with black and red. Brings A17 into agreement with A117.1, which requires that the picto symbols "shall contrast with their background" but does not require them to be white. [TN 07-1155]

[09b] Requirement 2.28.1 Revised

RATIONALE: To ensure elevator inspectors have the necessary dimensions to take measurements from the

top landing to verify that top car clearance complies with the Code requirement. [TN 02-2268]

[09b] Requirement 3.4.4 Revised

RATIONALE: Coordination with revised definition and top car clearance requirements. To codify a condition that is referred to in a number of Code requirements. [TN 02-2268]

[09b] Requirement 3.4.5 Revised

RATIONALE: Coordination with electric elevator requirements. [TN 02-2268]

[09b] Requirement 3.4.7 Revised

RATIONALE: Coordination with electric elevator requirements. [TN 02-2268]

[09b] Requirement 3.4.8 Deleted

RATIONALE: This issue is addressed in 3.4.6 and 3.4.7. [TN 02-2268]

[09b] Requirement 3.4.8 Added

RATIONALE: To specify clearance requirements when a hydraulic jack extends above the car enclosure top. ISO 15534-3-4000 anthropometric data used to establish sufficient space over hydraulic jack. [TN 02-2268]

[09b] Requirement 3.16.3 Revised

RATIONALE: For hydraulic elevator data plates, wire rope data is only required for roped-hydraulic elevators. A rail lubrication plate is only required where car safeties are used. [TN 071651]

[09b] Requirement 3.18.3.8.2(c) Revised

RATIONALE: The term "accepted industry practices" is substituted for "recognized industry standards" to better define the industry terminology. [TN 05-1403]

[10] Requirement 3.26.3.1.5 Revised

RATIONALE: Oil tank temperature shutdown changes have been made in TN 03-626 and it is needed to refer to the new rules in Requirements 3.26.3.1.5 and 3.27.1 through 3.27.4. [TN 07-1738]

[10] Requirement 3.26.6.5 Added

RATIONALE: To prevent the hydraulic liquid from continuing to heat above its maximum operating temperature due to failure in the motor controller. Other requirements (i.e., 3.25.2.3, 3.26.3.1.5, and 3.26.5) already address overheating. [TN 03-626]

[08a] Requirements 3.26.9.3 Revised

RATIONALE: Make button (potentially) plural. To make it clear that when the code refers to open or close buttons, it refers to rear open, side open, rear close, and side close buttons when applicable. [TN 05-978]

[09b] Requirement 3.27 Revised

RATIONALE: It is important to have a Fire Alarm Initiating Device (FAID) or smoke detector in a space containing a motor controller, electric driving machine, and hydraulic machine since these devices have significant energy available to generate smoke and heat. This objective is reflected in the requirements prior to A17.1S-2005 for a FAID or smoke detector. However, requirement 2.7.6.3.2 does permit a motor controller to be located in a machinery space. Therefore in this case a FAID or smoke detector should also be required in the machinery space. Also in 2.27.3.2.2, control space and control room were added to be consistent with 2.2.7.3.2.1(b). [TN 07-462]

[08a] Requirement 3.27.1 Revised

RATIONALE: Make button (potentially) plural. To make it clear that when the code refers to open or close buttons, it refers to rear open, side open, rear close, and side close buttons when applicable. [TN 05-978]

[10] Requirement 3.27.1 Revised

RATIONALE: Oil tank temperature shutdown changes have been made in TN 03-626, and it is needed to refer to the new rules in Requirements 3.26.3.1.5 and 3.27.1 through 3.27.4. [TN 07-1738]

[08a] Requirement 3.27.2 Revised

RATIONALE: Make button (potentially) plural. To make it clear that when the code refers to open or close buttons, it refers to rear open, side open, rear close, and side close buttons when applicable. [TN 05-978]

[10] Requirement 3.27.2 Revised

RATIONALE: Oil tank temperature shutdown changes have been made in TN 03-626, and it is needed to refer to the new rules in Requirements 3.26.3.1.5 and 3.27.1 through 3.27.4. [TN 07-1738]

[10] Requirement 3.27.3 Revised

RATIONALE: Oil tank temperature shutdown changes have been made in TN 03-626, and it is needed to refer to the new rules in Requirements 3.26.3.1.5 and 3.27.1 through 3.27.4. [TN 07-1738]

[08a] Requirement 3.27.3(b) Revised

RATIONALE: Make button (potentially) plural. To make it clear that when the code refers to open or close buttons, it refers to rear open, side open, rear close, and side close buttons when applicable. [TN 05-978]

[10] Requirement 3.27.4 Revised

RATIONALE: Oil tank temperature shutdown changes have been made in TN 03-626, and it is needed to refer to the new rules in Requirements 3.26.3.1.5 and 3.27.1 through 3.27.4. [TN 07-1738]

[10] Requirement 5.2.1.4.2.1 Revised

RATIONALE: To comply with the recommendations from the A17 Ad Hoc Signage Committee and to provide clarification and additional requirements. [TN 08-121]

[10] Requirement 5.2.1.4.4 Revised

RATIONALE: To comply with the recommendations from the A17 Ad Hoc Signage Committee and to provide clarification and additional requirements. [TN 08-121]

[09b] Requirement 5.2.1.15.2 Revised

RATIONALE: For a LU/LA elevator with a maximum speed of 0.15 m/s (30 ft/min) and a speed governor tripping speed maximum of 0.38 m/s (75 ft/min), the device used to conform to requirement 2.19.2 will by design typically stop and hold the car within a very short distance. The maximum distance of 220 mm (48 in.) is still retained, but in those design cases where the equipment will function in a shorter distance, it should not be required to have an apron guard protecting a distance greater than that within which the device can operate. This therefore defeats the lesser pit depth requirements described within the text of Section 5.2. The additional required marking plate data allows for the proper inspection of the apron guard length. Requirement 5.2.1.15.2 has been modified to be performance based in reference to this design choice. [TN 04-1343]

[09b] Requirement 5.2.1.19 Revised

RATIONALE: For a LU/LA elevator with a maximum speed of 0.15 m/s (30 ft/min) and a speed governor tripping speed maximum of 0.38 m/s (75 ft/min), the device used to conform to requirement 2.19.2 will by design typically stop and hold the car within a very short distance. The maximum distance of 220 mm (48 in.) is still retained, but in those design cases where the equipment will function in a shorter distance it should not be required to have an apron guard protecting a distance greater than that within which the device can operate. This therefore defeats the lesser pit depth requirements described within the text of Section 5.2. The additional required marking plate data allows for the proper inspection of the apron guard length. Requirement 5.2.1.15.2 has been modified to be performance based in reference to this design choice. [TN 04-1343]

[09b] Requirement 5.2.1.19.1 Revised

RATIONALE: For a LU/LA elevator with a maximum speed of 0.15 m/s (30 ft/min) and a speed governor tripping speed maximum of 0.38 m/s (75 ft/min), the device used to conform to requirement 2.19.2 will by design typically stop and hold the car within a very short distance. The maximum distance of 220 mm (48 in.) is still retained, but in those design cases where the equipment will function in a shorter distance it should not be required to have an apron guard protecting a distance greater than that within which the device can operate. This therefore defeats the lesser pit depth requirements described within the text of Section 5.2. The additional required marking plate data allows for the proper inspection of the apron guard length. Requirement 5.2.1.15.2 has been modified to be performance based in reference to this design choice. [TN 04-1343]

[09b] Requirement 5.2.1.20.1 Revised

RATIONALE: To harmonize with the latest reference document. [TN 08-12]

[08a] Requirement 5.2.1.27 Revised

RATIONALE: LULA elevators should not be available for public use during fire emergencies. The hazard analysis conducted by LULA and Emergency Operations Committees indicates that LULA elevators should have Phase I but not Phase II operation. [TN 05-184]

[10] Requirement 5.2.2.14 Revised

RATIONALE: TN 05-184 modified this requirement for electric LULA elevators, but inadvertently missed the hydraulic units. LULA elevators should not be available for public use during fire emergencies. The hazard analysis conducted by the LULA and Emergency Operations Committees indicates that LULA elevators should have Phase I but not Phase II operation. [TN 09-82]

[10] Requirement 5.2.2.14.1 Added

RATIONALE: TN 05-184 modified this requirement for electric LULA elevators, but inadvertently missed the hydraulic units. LULA elevators should not be available for public use during fire emergencies. The hazard analysis conducted by the LULA and Emergency Operations Committees indicates that LULA elevators should have Phase I but not Phase II operation. [TN 09-82]

[09b] Requirement 5.3.1.4.2 Revised

RATIONALE: To provide correlation with the requirements in Section 2 and with the requirements of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities. [TN 07-1641]

[09b] Requirement 5.3.1.17.1 Revised

RATIONALE: Editorial [TN 07-1663]

[10] Requirement 5.3.1.18.2 Revised

RATIONALE: The intent of this revision is to provide a means within the controller design to detect the bridging of a car gate contact. A number of accidents have

occurred where people, especially children, have been killed by the actions of persons making ineffective the car gate or door safety contact on manually operated car doors or gates. A number of suggestions have been made in the past, such as self-closing doors, alarms, and signs, but all were rejected by the committee as being too inconvenient or alarming to the users. This proposal will allow the proper level of latent and inherent safety to be reached without requiring graphic signs and warnings or any actions on the part of the user. [TN 05-1459]

[10] Requirement 5.3.1.18.2.1 Added

RATIONALE: The intent of this revision is to provide a means within the controller design to detect the bridging of a car gate contact. A number of accidents have occurred where people, especially children, have been killed by the actions of persons making ineffective the car gate or door safety contact on manually operated car doors or gates. A number of suggestions have been made in the past, such as self-closing doors, alarms, and signs, but all were rejected by the committee as being too inconvenient or alarming to the users. This proposal will allow the proper level of latent and inherent safety to be reached without requiring graphic signs and warnings or any actions on the part of the user. [TN 05-1459]

[10] Requirement 5.3.1.18.2.2 Added

RATIONALE: The intent of this revision is to provide a means within the controller design to detect the bridging of a car gate contact. A number of accidents have occurred where people, especially children, have been killed by the actions of persons making ineffective the car gate or door safety contact on manually operated car doors or gates. A number of suggestions have been made in the past, such as self-closing doors, alarms, signs, but all were rejected by the committee as being too inconvenient or alarming to the users. This proposal will allow the proper level of latent and inherent safety to be reached without requiring graphic signs and warnings or any actions on the part of the user. [TN 05-1459]

[09b] Requirement 5.5.1.1 Revised

RATIONALE: To reflect the requirements in 2.1.4 as also being applicable for sidewalk elevators so that they can be arranged for freight handlers to ride them through the sidewalk opening in accordance with the following proposal. [TN 05-1419]

[09b] Requirement 5.5.1.25.2 Revised

RATIONALE: To provide the necessary precautions for safe operation of sidewalk elevators through the sidewalk opening from on the car in a manner that will permit authorized personnel to safely ride and operate sidewalk elevators through sidewalk openings. This proposal has been deemed to be necessary, as it has been found that building owners and operators are currently utilizing sidewalk elevators in this manner without the necessary safety features included in this proposal. [TN 05-1419]

[10] Requirement 5.8 Revised Name and Scope

RATIONALE:

(a) The scope of Section 5.8 is realigned with the scope of vessels as regulated by the AHJ for design and safety of marine vessels. See the definition of "elevator, marine."

(b) References to ships and offshore drilling rigs are no longer appropriate and are deleted. The AHJ for the design and safety of marine vessels will define the types of vessels for which compliance with A17.1 and Section 5.8 is required.

(c) Reference to the exclusion of platform elevators in A17.1, para. 1.1.2.u will be incorporated by reference to Part 1 within the body of 5.8 under a different TN and is not required to be repeated in the scope.

(d) An explanatory list of marine elevator uses is no longer required or appropriate. [TN 06-1153]

[08a] Requirement 5.9.20.1 Added

RATIONALE: To require corrosion resistant ropes in mines where subjected to a hostile environment. Although many mine elevator hoistways are suitable for use of standard wire ropes, others are extremely wet. Standard ropes corrode rapidly, which can result in an unsafe condition caused by corrosion fatigue and corrosion embrittlement. Corrosion does not include surface discoloration from rust that can be cleaned with a wire brush, provided that the rope does not show any evidence of pitting or loss of cross-sectional area. [TN 02-2917]

[09b] Requirement 6.1.1.1 Revised

RATIONALE: To clarify that floor opening protection is addressed in the applicable building code. Moving handrails are not intended to be used for floor opening protection. [TN 06-1474]

[09b] Requirement 6.1.3.5.4 Revised

RATIONALE: To eliminate an incorrect reference. [TN 07-1119]

[09b] Requirement 6.1.3.5.4 Revised

RATIONALE: To add correct figure in Appendix I. 6.1.3.5.4, Clearance Between Steps. Refers to Appendix I, Fig. I-6. Propose that a diagram is developed and placed Appendix I as Fig. I-12.

NOTE: At the September 26, 2007 Standards Meeting, it was voted to remove the reference to Figure I-6 in 6.1.3.5.4 as an editorial change. [TN 07-1119] [TN 07-1852]

[09b] Requirement 6.1.3.6.6 Deleted requirements relocated to 6.1.1.1.

RATIONALE: To clarify that floor opening protection is addressed in the applicable building code. Moving handrails are not intended to be used for floor opening protection. [TN 06-1474]

[09b] Requirement 6.1.3.9 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m2 or ft2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.1.3.9.1 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.1.3.9.2 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.1.3.9.3 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.1.3.15 Revised

RATIONALE: To clarify the type of water to prevent from accumulating. [TN 06-798]

[10] Requirement 6.1.4.1 Revised

RATIONALE: In the interest of energy conservation and sustainability related to wear and tear on people-moving equipment paramount to today's world, building and end use equipment owners are requesting the ability to operate equipment at reduced speeds during slack times of passenger usage. Provided that passenger safety is not compromised and is mitigated, the code should not stand in the way of such operational improvements, especially in view of today's advancements in drives and controls technologies. Consequently, the escalator and walk speed rule has been revised to permit such operation within the guidelines and requirements resulting from the hazard analysis performed on such operation.

NOTE: Regarding 6.1.4.1(e)(2) and 6.2.4.1(e)(2) and "normal walking speed," from previous ballots, see Pedestrian Planning and Design, John J. Fruin, Ph.D. pps. 39–42. This section of the book addresses pedestrian walking speeds and states "average free-flow walking speed for all males, females, and the combination of all pedestrians in the surveys were 270, 254, and 265 feet per minute, respectively." [TN 02-2375]

[08a] Requirement 6.1.5.3.1(d)(5) Revised

RATIONALE: A requirement was added to 6.1.6.3.16 to cover the maximum stopping distance.

The dynamic skirt panel obstruction device was added to detect objects caught between the dynamic skirt panel and the dynamic skirt panel cover in the transition zone. The function is very similar to the skirt obstruction device of requirement 6.1.6.3.6. Like the skirt obstruction device, this device removes power from the driving machine motor and brake. The escalator should stop before the step attached to the dynamic skirt panel reaches the comb plate. Without this revision the device may be placed at a distance from the comb plate less than the maximum stopping distance. The result would be that the object caught between the panel and panel cover will impact at the point where the panel enters the balustrade. There is no similar device or requirement for moving walks. [TN 05-1264]

[10] Requirement 6.1.6.2.2(a)(1)(h) Deleted

RATIONALE: To harmonize the escalator and elevator inspection operation requirements in response to Inquiry 05-51. New requirement 6.1.6.10.1(f), in combination with checked redundancy requirements 6.1.6.10.2 and 6.1.7.4.3, provide equivalent safety. [TN 07-91]

[09b] Requirement 6.1.6.3.1 Revised

RATIONALE: To clarify the intent of the requirement. This is the basic text, as it was found in B44 prior to the harmonization of B44/A17.1-2007, with the exception that auxiliary emergency-stop was changed to remote. [TN 07-1118]

[10] Requirement 6.1.6.3.2 Revised

RATIONALE: A17.1 requirements 6.1.6.3.2 and 6.2.6.3.2 currently requires over speed detection (a speed governor) on escalators and moving walks that utilize alternating current squirrel cage induction motors if the motor is operated with variable frequency control, since malfunction of such a device could cause an interruption of power to the motor without effecting a stop (removing power to the brake) and result in a potential overspeed situation.

Advances in drive control technologies can now result in the use of other power control devices ((e.g., soft starters and energy saving devices), which do not vary in frequency but still have a potential to interrupt power to the motor due to their location between the motor and contactors again without effecting a stop (removing power from the brake) and result in a potential overspeed situation. In addition, the failure in a VVF drive can also cause an overspeed. It is prudent to provide for overspeed detection when these technologies are used as well. Further, to simplify when and if overspeed detection is required with respect to any particular control device and/or its location in the control system, it is prudent to require overspeed detection of all escalators and moving walks. In addition, improvements in control and monitoring technology utilized today enable more precise overspeed detection, so the overspeed detection magnitude has been reduced from 40% down to 20% to minimize further the magnitude and effect of any overspeed situation.

The squirrel cage induction motors exception has been eliminated due to the increasingly common practice of providing power management systems that bypass the function of a fail safe brake and permit an overspeed condition. [TN 07-1120]

[08a] Requirement 6.1.6.3.16 Revised

RATIONALE: A requirement was added to 6.1.6.3.16 to cover the maximum stopping distance.

The dynamic skirt panel obstruction device was added to detect objects caught between the dynamic skirt panel and the dynamic skirt panel cover in the transition zone. The function is very similar to the skirt obstruction device of requirement 6.1.6.3.6. Like the skirt obstruction device, this device removes power from the driving machine motor and brake. The escalator should stop before the step attached to the dynamic skirt panel reaches the comb plate. Without this revision the device may be placed at a distance from the comb plate less than the maximum stopping distance. The result would be that the object caught between the panel and panel cover will impact at the point where the panel enters the balustrade. There is no similar device or requirement for moving walks. [TN 05-1264]

[09b] Requirement 6.1.6.7 Revised

RATIONALE: Requirement 6.1.6.7, Step Demarcation Lights, was deleted in the 2007 edition. However, the subsequent requirements were not renumbered. As a result, the numbers are out of sequence. This editorial change is recommended to avoid confusion and superfluous inquiries. [TN 07-1850]

[10] Requirement 6.1.6.10 Revised

RATIONALE: Revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.1.6.10.1 Revised

RATIONALE: Revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.1.6.10.1 Revised

RATIONALE: To harmonize with elevator inspection operation requirements in response to Inquiry 05-51 [see 2.26.9.3(d)]. To editorially clarify that all items in the list are to be prevented. The note has been modified due to the renumbering in 6.1.6.10.1. [TN 07-91]

[10] Requirement 6.1.6.10.2 Revised

RATIONALE: As a result of Inquiry 06-0046, clarification that nonsoftware controlled means must also be used with positive language, and harmonization of language with like requirements in the elevator section [see 2.26.9.4].

Conditions for the design of circuits to comply with 6.1.6.10.1, and 6.2.6.9.1 are being separated from the rules which require checking of the functioning of circuits in 6.1.6.10.3, and 6.2.6.9.3. Text was revised and moved from 6.1.6.10.3 to 6.1.6.10.2 and 6.2.6.9.3 to 6.2.6.9.2.

Clarification that non-software controlled means must also be used in this compliance alternative using positive language. [TN 07-1565]

[10] Requirement 6.1.6.10.3 Revised

RATIONALE: As a result of Inquiry 06-0046, clarification that non-software controlled means must also be used using positive language, and harmonization of language with like requirements in the elevator section [see 2.26.9.4].

Conditions for the design of circuits to comply with 6.1.6.10.1 and 6.2.6.9.1 are being separated from the rules that require checking of the functioning of circuits in 6.1.6.10.3 and 6.2.6.9.3. Text was revised and moved from 6.1.6.10.3 to 6.1.6.10.2 and 6.2.6.9.3 to 6.2.6.9.2.

Clarification that nonsoftware controlled means must also be used in this compliance alternative using positive language. [TN 07-1565]

[10] Requirement 6.1.6.10.4 Revised

RATIONALE: Revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.1.6.15 Revised

RATIONALE: Reference revised to reflect the changes in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.1.7.4.3 Revised

RATIONALE: To harmonize with elevator inspection operation requirements in response to Inquiry 05-51 [see 2.26.4.4]. [TN 07-91]

[09b] Requirement 6.1.8.2 Revised

RATIONALE: To clarify the type of water to be prevented from accumulating at any place within the escalator. [TN 06-798]

[09b] Requirement 6.2.3.10 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.2.3.10.1 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.2.3.10.2 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.2.3.10.3 Revised

RATIONALE: While working on another brake rated load (TN 05-619), it was observed that the rated load equations have evolved to a state that is not consistent with good engineering and physics practices. The units on either side of the equation neither match nor reflect the underlying basic parameters of load (kg or lbs) per unit area (m^2 or ft^2). This revision is simply a dimensional restructuring to correct and clarify this condition and is considered to be editorial. [TN 07-1855]

[09b] Requirement 6.2.3.13 Deleted

RATIONALE: The safety factor for power transmission chains (6.2.3.11.3) adequately covers the requirements for moving walk chains. This is consistent with the requirements for escalators (6.1.3.10.3). [TN 06-1647]

[09b] Requirement 6.2.3.18 Added

RATIONALE: To address the type of water to be prevented from accumulating. [TN 07-297]

[10] Requirement 6.2.4.1 Revised

RATIONALE: In the interest of energy conservation and sustainability related to wear and tear on people-moving equipment paramount to today's world, building and end-use equipment owners are requesting the ability to operate equipment at reduced speeds during slack times of passenger usage. Provided that passenger safety is not compromised and is mitigated, the code should not stand in the way of such operational improvements especially in view of today's advancements in drives and controls technologies. Consequently, the escalator and walk speed rule has been revised to permit such operation within the guidelines and requirements resulting from the hazard analysis performed on such operation.

NOTE: Regarding 6.1.4.1(e)(2) and 6.2.4.1(e)(2) and "normal walking speed," from previous ballots, see Pedestrian Planning and Design, John J. Fruin, Ph.D. pps. 39–42. This section of the book addresses pedestrian walking speeds and states "average free-flow walking speed for all males, females, and the combination of all pedestrians in the surveys were 270, 254, and 265 feet per minute, respectively." [TN 02-2375]

[10] Requirement 6.2.6.2.2(a)(1)(h) Deleted

RATIONALE: To harmonize the moving walk and elevator inspection operation requirements in response to Inquiry 05-51. New requirement 6.2.6.9.1(e), in combination with checked redundancy requirements 6.2.6.9.2 and 6.2.7.4.3, provide equivalent safety. [TN 07-91]

[09b] Requirement 6.2.6.3.1 Revised

RATIONALE: To clarify the intent of the requirement. This is the basic text as it was found in B44 prior to the harmonization of B44/A17.1-2007 with the exception

that auxiliary emergency-stop was changed to remote. [TN 07-1118]

[10] Requirement 6.2.6.3.2 Revised

RATIONALE: A17.1 Requirements 6.1.6.3.2 and 6.2.6.3.2 currently requires overspeed detection (a speed governor) on escalators and moving walks that utilize alternating current squirrel cage induction motors if the motor is operated with variable frequency control, since malfunction of such a device could cause an interruption of power to the motor without effecting a stop (removing power to the brake) and result in a potential overspeed situation.

Advances in drive control technologies can now result in the use of other power control devices (e.g., soft starters and energy saving devices), which do not vary in frequency but still have a potential to interrupt power to the motor due to their location between the motor and contactors again without effecting a stop (removing power from the brake) and result in a potential overspeed situation. In addition, the failure in a VVF drive can also cause an overspeed. It is prudent to provide for overspeed detection when these technologies are used as well. Further, to simplify when and if overspeed detection is required with respect to any particular control device and/or its location in the control system, it is prudent to require overspeed detection for all escalators and moving walks. In addition, improvements in control and monitoring technology utilized today enable more precise overspeed detection, so the overspeed detection magnitude has been reduced from 40% down to 20% to minimize further the magnitude and effect of any over speed situation.

The squirrel cage induction motors exception has been eliminated due to the increasingly common practice of providing power management systems that bypass the function of a fail-safe brake and permit an overspeed condition. [TN 07-1120]

[10] Requirement 6.2.6.9 Revised

RATIONALE: Revised to reflect the change in location of the referenced requirement. [TN 07-1565]

[10] Requirement 6.2.6.9 Revised

RATIONALE: To harmonize with elevator inspection operation requirements in response to Inquiry 05-51 [see 2.26.9.3(d)]. To editorially clarify that all items in the list are to be prevented. The note has been modified due to the renumbering in 6.2.6.9.1. [TN 07-91]

[10] Requirement 6.2.6.9.1 Revised

RATIONALE: As a result of Inquiry 06-0046, clarification that non-software controlled means must also be used using positive language, and harmonization of language with like requirements in the elevator section [see 2.26.9.4].

Conditions for the design of circuits to comply with 6.1.6.10.1, and 6.2.6.9.1 are being separated from the rules which require checking of the functioning of circuits in 6.1.6.10.3, and 6.2.6.9.3. Text was revised and moved from 6.1.6.10.3 to 6.1.6.10.2 and 6.2.6.9.3 to 6.2.6.9.2 [new numbering]. These are two separate and distinct requirements which should not be grouped together. [TN 07-1565]

[10] Requirement 6.2.6.9.2 Revised

RATIONALE: As a result of Inquiry 06-0046, clarification that non-software controlled means must also be used using positive language, and harmonization of language with like requirements in the elevator section [see 2.26.9.4].

Conditions for the design of circuits to comply with 6.1.6.10.1, and 6.2.6.9.1 are being separated from the rules which require checking of the functioning of circuits in 6.1.6.10.3, and 6.2.6.9.3. Text was revised and moved from 6.1.6.10.3 to 6.1.6.10.2 and 6.2.6.9.3 to 6.2.6.9.2 [new numbering]. These are two separate and distinct requirements that should not be grouped together. [TN 07-1565]

[10] Requirement 6.2.6.9.3 Revised

RATIONALE: As a result of Inquiry 06-0046, clarification that nonsoftware controlled means must also be used with positive language, and harmonization of language with like requirements in the elevator section [see 2.26.9.4].

Conditions for the design of circuits to comply with 6.1.6.10.1 and 6.2.6.9.1 are being separated from the rules that require checking of the functioning of circuits in 6.1.6.10.3 and 6.2.6.9.3. Text was revised and moved from 6.1.6.10.3 to 6.1.6.10.2 and 6.2.6.9.3 to 6.2.6.9.2 [new numbering]. These are two separate and distinct requirements that should not be grouped together. [TN 07-1565]

[10] Requirement 6.2.6.9.4 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.2.6.14 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 6.2.7.4.3 Revised

RATIONALE: To harmonize with elevator inspection operation requirements in response to Inquiry 05-51 [see 2.26.4.4]. [TN 07-91]

[09b] Requirement 6.2.8.2 Revised

RATIONALE: To clarify the type of water to be prevented from accumulating at any place within the moving walk. [TN 06-798]

[10] Requirement 6.2.8.2.1 Revised

RATIONALE: The geometry of moving walks in a relative motion between the treadway and skirt, where provided, precludes the need for skirt deflector devices. This is consistent with the absence of requirements for skirt obstruction devices on moving walks. [TN 08-803]

[08a] Requirement 7.1.1.1 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.1.3 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.1.4 Deleted

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.1.5 Renumbered as 7.1.1.4 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7.3 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7.5 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7.6 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7.6.2 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.7.9 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.8.2 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.8.3 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.9.4 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.1.10 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[09b] Requirement 7.1.12.1.1 Revised

RATIONALE: To correct references. [TN 08-689]

[08a] Requirement 7.2.12 Renumber 7.2.12.29 through 7.2.12.37 as 7.2.12.31 through 7.2.12.39

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.2.12.29 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.2.12.30 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[10] Requirement 7.2.12.35 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 7.2.12.36 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 7.3.11.7 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[08a] Requirement 7.4.9 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.9.1 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.9.2 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.9.3 Added

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.10 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.10.2 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.10.3 Revised

RATIONALE: The rationale for these changes are due to changes proposed to Part 2 via TR 97-81 that are not applicable to dumbwaiters or material lifts. [TN 05-833]

[08a] Requirement 7.4.13.2.5 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[09b] Requirement 7.4.14 Revised

RATIONALE: To allow a Type B Material lift to leave the floor while the doors or gates are closed but not locked. Motion with doors not locked is only permitted in a small zone. The qualities of an interlock are maintained outside of this zone. Once out of the zone the interlock circuit will be checked. This is a similar operation to private residence locks. This operation will permit fixed cams to be used on the car rather than a retiring cam.

This project was started for a few reasons:

(a) The anti-creep requirements and truck leveling zone requirements for a Type "B" material lift should not be the same as for a Hydraulic Elevator, as the Type "B" material lift has special conditions that require specific rules for consistency.

(b) Next, there are few modes of automatic operation that seem to conflict with the safety principle of maintaining operator control through the use of continuous pressure. The operation modes giving concern were automatic leveling and anticreep operation with 18-in. zone and low oil protection that automatically lowers a car.

(c) Finally, the changes ease up on a requirement that is probably not necessary on a lift with limitations in speed, control, and travel. Instead of requiring the door or gate to be closed and locked before leaving a landing, the proposal permits the car to leave the landing with the door or gate only closed. Once out of a small zone, interlocks must be used to lock the doors or gates shut.

In implementing these changes, it was discovered conflicts in the intended requirements are present as a result of section 7.6 referencing both section 7.5 and 3.26, which in turn both modify section 2.26 in their own way. The referencing has been updated in this proposal to eliminate potential conflicts in the requirements.

On a final note, the changes in leveling and locking would result in a material lift seen frequently in Ontario, Canada under variances from code. These Hydraulic Type B lifts have swing doors with interlocks, a 3-in. door zone, automatic anticreep (door open), no leveling with door open, inching within zone when door is closed, ability to leave landing with door closed but unlocked (interlock checked outside zone), and no automatic lowering under low oil (power removed from pump but operator controls down valve with constant pressure buttons). The combination of features works well. [TN 07-103]

[09b] Requirement 7.5.2.4 Revised

RATIONALE: When Type B material lifts can operate in a leveling or trucking zone above a landing with doors or gate open, etc., then the shear hazard between the platform and the landing sill needs to be eliminated. If it cannot operate in the leveling zone with the doors or gates open, then a platform apron is not required. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.1.16 Revised

RATIONALE: [TN 07-103]

[10] Requirement 7.5.12.1.21 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 7.5.12.1.22 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 7.5.12.1.24 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[10] Requirement 7.5.12.1.25 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[09b] Requirement 7.5.12.2.5 Revised

RATIONALE: This requirement will become 7.5.12.2.5, and current subsequent numbers will be incremented accordingly. It is very similar to rule 3.26.3.2. The speed limitation has been removed so that the maximum rated Type B speed may be used. It is only 0.025 m/s (5 ft/min) faster than the ordinary elevator leveling speed. It is placed in section 7.5.12.2 because it also applies to Electric Type B Material Lifts. Numbering will have to be updated. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.2.5.1 Added

RATIONALE: This is a copy of 2.26.1.6.1. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.2.5.2 Added

RATIONALE: Create a Type B material lift leveling zone specific to the characteristics of a device with no car doors, little or no car apron, and continuous pressure operation. The same small zone will be used for anticreep operation. Add requirement for car apron when leveling zone extends above a landing. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.2.5.3 Added

RATIONALE: To create conditions that will permit a truck zone. Current rules do not restrict them even through aprons are not required. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.2.5.4 Added

RATIONALE: More rules for truck and leveling zone. Same as elevators. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirements 7.5.12.2.5 through 7.5.12.2.17 Became 7.5.12.2.6 through 7.5.12.2.18

RATIONALE: More rules for truck and leveling zone. Same as elevators. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.5.12.2.19 Added

RATIONALE: To define the hoistway door close contacts as a Type B material Lift Electrical Protective Device. It should be numbered 7.5.12.2.19 to coordinate with other EPDs. Subsequent numbering requires update. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirements 7.5.12.2.18 through 7.5.12.2.32 Became 7.5.12.2.20 through 7.5.2.34

RATIONALE: More rules for truck and leveling zone. Same as elevators. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8 Revised

RATIONALE: Because of high-speed possibility, automatic operation, car doors, and car apron, Type A hydraulics can meet the same anticreep requirements as a hydraulic elevator. Special conditions of Type B require specific rules. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.1 Added

RATIONALE: Because of high speed possibility, automatic operation, car doors, and car apron, Type A hydraulics can meet the same anticreep requirements as a hydraulic elevator. Special conditions of Type B require specific rules. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2 Added

RATIONALE: Because of high speed possibility, automatic operation, car doors, and car apron, Type A

hydraulics can meet the same anticreep requirements as a hydraulic elevator. Special conditions of Type B require specific rules. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2.1 Added

RATIONALE: Anticreep (form of automatic leveling) zone is the same size as leveling zone. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2.2 Added

RATIONALE: This is the floor level tolerance for the anticreep feature. Same as hydraulic elevator (3.26.3.1.2). Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2.3 Added

RATIONALE: Same as hydraulic elevator (3.26.3.1.2). Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2.4 Added

RATIONALE: Same as hydraulic elevator. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.2.5 Added

RATIONALE: Correct references to point to the modified versions of the switches found. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.3 Added

RATIONALE: Simplified version of requirement 3.26.4. The references to 2.26.2 and "hydraulic machine" are relocated to appropriate places. Deceleration not discussed. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.4 Added

RATIONALE: Features that can be copied exactly from the hydraulic elevator section. Also see rationale for 7.4.14. [TN 07-103]

[09b] Requirement 7.6.8.5 Added

RATIONALE: To limit the amount of automatic operation on these lifts. Having a lift go automatically down while the operator is pressing the continuous pressure button to go up removes the operator's control of the device. Ideally, only leveling including anticreep in a very small zone will be operated automatically. All other operation should be continuous pressure to allow the operator to maintain control at all times. This special low oil feature will not allow the car to go up or the pump to run, but will allow the car to descend under control of the operator. Also see rationale for 7.4.14. [TN 07-103]

[08a] Requirement 8.1.2(b) Revised

RATIONALE: Since nonelevator personnel have access to machine rooms, etc., any access into the hoistway from such space must be additionally protected from access by such nonelevator personnel. This requirement ensures that nonelevator personnel would only have supervised access to the elevator hoistway even from an elevator equipment area that they are permitted to enter. [TN 02-2281]

[10] Figure 8.2.7 Editorially revised

RATIONALE: Editorial

[10] Requirement 8.3(b)(6) Added

RATIONALE: Implementation of proposed 2.20.8, Suspension Means Monitoring and Protection, will provide thorough and effective requirements to ensure that the suspension means will not part as a result of loss of traction during automatic operation of the elevator. It is, however, recognized that during construction, and replacement or repair, carried out under inspection operation, the suspension means monitoring and protection system may be by-passed or otherwise rendered ineffective. During these phases of elevator operation, it is prudent to ensure that the suspension means will not part if traction is lost. Moreover, it is recognized that during safety tests and buffer tests performed at acceptance or periodically, as well as during emergency stops, it is common that traction is lost. It is wise to ensure that damage to the suspension means that could jeopardize its performance does not occur under such conditions.

The most effective way of ensuring the integrity of the suspension means is to require appropriate engineering tests to verify endurance of the suspension means. Two tests are proposed: one to address the conditions pertaining to construction, and the other relating to traction loss as a result of emergency stops or testing required by Code. Engineering test reports are required to document the test procedure and results.

The test required by 8.3.12.2 is proposed to verify endurance of the suspension means for a reasonable interval of time, at inspection speed. This level of endurance must consider the conditions found in construction, where the falling counterweight is the one unprotected mode of failure in a loss of suspension scenario that would endanger elevator personnel. Such unprotected conditions only occur in construction when inspection speeds are being used.

During construction startup, in general, the first time traction is required to move a car is getting a newly built platform running at inspection speed. The first movement is typically done with a construction/inspection operating device. Using constant pressure operation, elevator personnel observe relative movement to confirm the correct wiring of the motor and control system. In this case, loss of traction is determined visually.

If the platform or counterweight does not move, it would be noticed almost immediately.

Movement of the car from startup to adjustment is typically performed by elevator personnel while riding the car to complete the construction of the elevator. During this period, the motor speed sensing means required by 2.26.2.4 may not yet be assembled, or the drive motor control system may not yet be fully functional. Under these circumstances, the car is still operating at inspection speed, and loss of traction will be observed visually. To provide a conservative criterion for the suspension means durability, a loss of traction test duration of 4 min is appropriate to ensure that parting cannot occur at inspection speed. This is based on the premise that during the construction phase, with all of the suspension means protections intentionally bypassed, slippage between the suspension means and the traction sheave could inadvertently occur. This is not likely to take place more than once or twice. It is also unlikely that such an occurrence would not be noticed within a minute of initiation. It was thus deemed that 4 min is a conservative and appropriate value on which to base the criterion.

A construction procedure common to many computer-controlled systems is the use of an inspection hoistway scan operation. This is often a semi-automatic function, where the car travels the length of the hoistway at inspection speed to record locations of floors and establish positional baselines. During this mode of operation, all speed monitoring devices and suspension means protective devices are functional, and any loss of traction would be sensed and the elevator stopped before the suspension means part.

In establishing load criteria for the test, the following would be taken into account:

(a) The maximum load that a suspension member is to be qualified for is selected by the elevator manufacturer.

(b) The manufacturer can be guided by two parameters in establishing the maximum capacity/load in the suspension member:

(1) the factor of safety parameter, which comes from a specific Code requirement; or

(2) limiting groove/surface pressure established by the manufacturer

(c) The selection criteria of a suspension member is based on the gross load, which is the car weight + rated load + compensation + traveling cables. The rated load is only a part of that selection criteria.

The test required by 8.3.12.3 is proposed to verify the endurance of the suspension means when traction is lost as a result of an emergency stop or a Code required test such as a buffer test or a safety test. It is essential that the suspension means is not damaged to the point where replacement would be necessary — hence the reference to the replacement criteria of ASME A17.6 as the condition for passing the test. The test recognizes that the duration is dependent upon the dynamics of the system, considering the initial momentum of the moving masses and the frictional resistance of the suspension means moving over a stalled drive sheave. To verify the durability of the system, three successive tests over substantially the same portion of the suspension means is deemed appropriate. The concept of three successive tests without violating a criterion is well established (e.g., 8.3.2.5.1, Buffer Retardation Tests).

This proposal specifically exempts engineering tests for suspension means conforming to Section 2.20 with diameters not less than 9.5 mm (0.375 in.) and with outer wire diameters not less than 0.56 mm (0.024 in.), steel wire ropes with diameters not less than 8 mm (0.315 in.) with outer wire diameters not less than 0.48 mm (0.019 in.), and steel wire ropes conforming to the requirements of 5.2.1.20, 5.3.1.12, 5.4.8, 7.2.6, and 7.5.6 for the following reasons: Proposed 2.20.8 covers all suspension means, thus codifying the current industry practice of stopping the elevator before the suspension means part if loss of traction occurs. During the construction phase when these protection means may not be in place, and during emergency stops or Code required testing when traction may be lost, history has not shown it to be necessary to verify the integrity of steel wire ropes not less than 9.5 mm in diameter or steel wire ropes conforming to the requirements of 5.2.1.20, 5.3.1.12, 5.4.8, 7.2.6, and 7.5.6. Engineering testing of these would merely reveal what is already well known and would thus be unnecessarily burdensome.

By implementing proposed 2.20.8 and the proposed engineering tests 8.3.12, which are consistent with similar tests required by the Code, the integrity of all suspension systems will be ensured. Documentation of the engineering tests will provide verification. [TN 07-1970]

[08a] Requirement 8.3.2.5.5 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it

was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[08a] Requirement 8.3.7.3 Revised

RATIONALE: To update references as permitted by revisions to CSP 9. [TN 06-335]

[10] Requirement 8.3.12 Added

RATIONALE: Implementation of proposed 2.20.8, Suspension Means Monitoring and Protection, will provide thorough and effective requirements to ensure that the suspension means will not part as a result of loss of traction during automatic operation of the elevator. It is, however, recognized that during construction and replacement or repair, carried out under inspection operation, the Suspension Means Monitoring and Protection system may be bypassed or otherwise rendered ineffective. During these phases of elevator operation, it is prudent to ensure that the suspension means will not part if traction is lost. Moreover, it is recognized that during safety tests and buffer tests performed at acceptance or periodically, as well as during emergency stops, it is common that traction is lost. It is wise to ensure that damage to the suspension means that could jeopardize its performance does not occur under such conditions.

The most effective way of ensuring the integrity of the suspension means is to require appropriate engineering tests to verify endurance of the suspension means. Two tests are proposed: one to address the conditions pertaining to construction, and the other relating to traction loss as a result of emergency stops or testing required by Code. Engineering test reports are required to document the test procedure and results.

The test required by 8.3.12.2 is proposed to verify endurance of the suspension means for a reasonable interval of time, at inspection speed. This level of endurance must consider the conditions found in construction, where the falling counterweight is the one unprotected mode of failure in a loss of suspension scenario that would endanger elevator personnel. Such unprotected conditions only occur in construction when inspection speeds are being used.

During construction startup, in general, the first time traction is required to move a car is getting a newly built platform running at inspection speed. The first movement is typically done with a construction/inspection operating device. Using constant pressure operation elevator personnel, observe relative movement to confirm the correct wiring of the motor and control system. In this case, loss of traction is determined visually. If the platform or counterweight does not move, it would be noticed almost immediately.

Movement of the car from startup to adjustment is typically performed by elevator personnel while riding the car to complete the construction of the elevator. During this period, the motor speed sensing means required by 2.26.2.4 may not yet be assembled, or the drive motor control system may not yet be fully functional. Under these circumstances, the car is still operating at inspection speed, and loss of traction will be observed visually. To provide a conservative criterion for the suspension means durability, a loss of traction test duration of 4 min is appropriate to ensure that parting cannot occur at inspection speed. This is based on the premise that during the construction phase, with all of the suspension means protections intentionally bypassed, slippage between the suspension means and the traction sheave could inadvertently occur. This is not likely to take place more than once or twice. It is also unlikely that such an occurrence would not be noticed within a minute of initiation. It was thus deemed that 4 min is a conservative and appropriate value on which to base the criterion.

A construction procedure common to many computer-controlled systems is the use of an inspection hoistway scan operation. This is often a semi-automatic function, where the car travels the length of the hoistway at inspection speed to record locations of floors and establish positional baselines. During this mode of operation, all speed monitoring devices and suspension means protective devices are functional, and any loss of traction would be sensed and the elevator stopped before the suspension means part.

In establishing load criteria for the test, the following would be taken into account:

(a) The maximum load that a suspension member is to be qualified for is selected by the elevator manufacturer.

(b) The manufacturer can be guided by two parameters in establishing the maximum capacity/load in the suspension member:

(1) the factor of safety parameter, which comes from a specific Code requirement; or

(2) limiting groove/surface pressure established by the manufacturer.

(c) The selection criteria of a suspension member is based on the gross load, which is the car weight + rated load + compensation + traveling cables. The rated load is only a part of that selection criteria.

The test required by 8.3.12.3 is proposed to verify the endurance of the suspension means when traction is lost as a result of an emergency stop or a Code required test such as a buffer test or a safety test. It is essential that the suspension means is not damaged to the point where replacement would be necessary — hence the reference to the replacement criteria of ASME A17.6 as the condition for passing the test. The test recognizes that the duration is dependent upon the dynamics of the system, considering the initial momentum of the moving masses and the frictional resistance of the suspension means moving over a stalled drive sheave. To verify the durability of the system, three successive tests over substantially the same portion of the suspension means is deemed appropriate. The concept of three successive tests without violating a criterion is well established (e.g., 8.3.2.5.1, Buffer Retardation Tests).

This proposal specifically exempts engineering tests for suspension means conforming to Section 2.20 with diameters not less than 9.5 mm (0.375 in.) and with outer wire diameters not less than 0.56 mm (0.024 in.), steel wire ropes with diameters not less than 8 mm (0.315 in) with outer wire diameters not less than 0.48 mm (0.019 in.), and steel wire ropes conforming to the requirements of 5.2.1.20, 5.3.1.12, 5.4.8, 7.2.6, and 7.5.6 for the following reasons: Proposed 2.20.8 covers all suspension means, thus codifying the current industry practice of stopping the elevator before the suspension means part if loss of traction occurs. During the construction phase when these protection means may not be in place, and during emergency stops or Code required testing when traction may be lost, history has not shown it to be necessary to verify the integrity of steel wire ropes not less than 9.5 mm in diameter or steel wire ropes conforming to the requirements of 5.2.1.20, 5.3.1.12, 5.4.8, 7.2.6, and 7.5.6. Engineering testing of these would merely reveal what is already well known and would thus be unnecessarily burdensome.

By implementing proposed 2.20.8 and the proposed engineering tests 8.3.12, which are consistent with similar tests required by the Code, the integrity of all suspension systems will be ensured. Documentation of the engineering tests will provide verification. [TN 07-1970]

[08a] Requirement 8.4 Revised

RATIONALE: Conforms to current definitions. [TN 02-45]

[10] Requirement 8.4.3.1 Revised

RATIONALE: The term "rope" or "ropes" has been changed to "suspension member" or "suspension members" to reflect the allowance to use the types of suspension members identified in ASME A17.6. [TN 07-1970]

[10] Requirement 8.4.3.1.1 Revised

RATIONALE: The term "rope" or "ropes" has been changed to "suspension member" or "suspension members" to reflect the allowance to use the types of suspension members identified in ASME A17.6. [TN 07-1970]

[10] Requirement 8.4.3.1.2 Revised

RATIONALE: The term "rope" or "ropes" has been changed to "suspension member" or "suspension members" to reflect the allowance to use the types of suspension members identified in ASME A17.6. [TN 07-1970]

[10] Requirement 8.4.3.1.3 Revised

RATIONALE: The term "rope" or "ropes" has been changed to "suspension member" or "suspension members" to reflect the allowance to use the types of suspension members identified in ASME A17.6. [TN 07-1970]

[10] Requirement 8.4.3.1.4 Revised

RATIONALE: The term "rope" or "ropes" has been changed to "suspension member" or "suspension members" to reflect the allowance to use the types of suspension members identified in ASME A17.6. [TN 07-1970]

[10] Requirement 8.4.3.2 Revised

RATIONALE: The term "ropes" or "chains" has been changed to "means" or to reflect the terminology identified in ASME A17.6 where used in a general context. [TN 07-1970]

[08a] Requirement 8.4.5 Revised

RATIONALE: Titles revised to more accurately depict components and concept affected by requirement. [TN 02-45]

[08a] Requirement 8.4.5.1 Revised

RATIONALE: Titles revised to more accurately depict components and concept affected by requirement. [TN 02-45]

[08a] Requirement 8.4.5.2 Revised

RATIONALE: Titles revised to more accurately depict components and concept affected by requirement. [TN 02-45]

[10] Requirement 8.4.8.9.3 Added

RATIONALE: To provide useful information to the users of the elevator layouts about the existence of an expansion joint and the maximum displacement across the joint as determined by the building designer. [TN 02-195]

[08a] Requirement 8.4.11 Revised

RATIONALE: All possible configurations cannot be covered by the code. The most common types have been

evaluated. A statement similar to that of 8.2.2.1 indicates how other cases should be considered.

The hydraulic elevator section has been revised to more closely follow the order of the electric elevator section of the Earthquake Code. Certain requirements have been renumbered with no change in wording. [TN 02-45]

[08a] Requirement 8.4.11.1 Revised

RATIONALE:

NOTE: Requirements 8.4.11.1 through 8.4.11.3 renumbered as 8.4.11.11 through 8.4.11.13. The hydraulic elevator section has been revised to more closely follow the order of the electric elevator section of the Earthquake Code. Certain requirements have been renumbered with no change in wording.

Former 8.4.11.4 indicated counterweights could be provided on hydraulic elevators. If they are provided, it is necessary to provide the proper clearances. [TN 02-45]

[08a] Requirement 8.4.11.2 Revised

RATIONALE:

NOTE: Requirements 8.4.11.1 through 8.4.11.3 renumbered as 8.4.11.11 through 8.4.11.13. The hydraulic elevator section has been revised to more closely follow the order of the electric elevator section of the Earthquake Code. Certain requirements have been renumbered with no change in wording. Requirement 8.4.2 for electric elevators is the basis for proposed 8.4.11.2. Requirement 8.4.2 has been revised to specify components unique to the hydraulic elevator. [TN 02-45]

[08a] Requirement 8.4.11.3 Revised

RATIONALE: NOTE: Requirements 8.4.11.1 through 8.4.11.3 renumbered as 8.4.11.11 through 8.4.11.13. The hydraulic elevator section has been revised to more closely follow the order of the electric elevator section of the Earthquake Code. Certain requirements have been renumbered with no change in wording. Proposed 8.4.11.3 is added for roped hydraulic elevators. Additional requirements for snag points were not included. Due to the lower heights and speeds of the hydraulic elevators, in comparison to its traction counterpart, it is expected much smaller clearances could be accommodated before any guarding would be necessary. [TN 02-45]

[08a] Requirement 8.4.11.4 Revised

RATIONALE: Reference Inquiry 95-25. Counterweighted hydraulic elevators above 150 fpm are not commercially available. [TN 02-45]

[08a] Requirement 8.4.11.5 Added

RATIONALE: Requirement 8.4.11.5 has been added as a direct requirement for hydraulic elevators. Current code only refers to guiding members and position restraints required for hydraulic elevators through former 8.4.11.7 (information on "hydraulic" elevator layouts). Requirement 8.4.11.5.1 and its subrequirements have been added to address roped hydraulic elevators. [TN 02-45]

[08a] Requirement 8.4.11.6 Added

RATIONALE: Hydraulic elevators do not approach speed application requirement (700 fpm, 3.5 m/s) listed in 2.17.17. [TN 02-45]

[08a] Requirement 8.4.11.7 Renumbered from the former 8.4.11.4

RATIONALE: Counterweights are extremely rare but are not prohibited on hydraulic elevators. [TN 02-45]

[08a] Requirement 8.4.11.8 Renumbered from the former 8.4.11.5

RATIONALE: Editorial. [TN 02-45]

[08a] Requirement 8.4.11.9 Added

RATIONALE: Requirement 8.4.9 has been revised to specify components unique to hydraulic elevators. [TN 02-45]

[08a] Requirement 8.4.11.10 Added

RATIONALE: Reference Inquiry 95-25. Counterweighted hydraulic elevators above 150 fpm are not commercially available. [TN 02-45]

[08a] Requirement 8.4.11.11 Renumbered from the former 8.4.11.1

RATIONALE: Requirement renumbered for clarity. See "Rationale for Clarity" at beginning of section. [TN 02-45]

[08a] Requirement 8.4.11.12 Renumbered from the former 8.4.11.2

RATIONALE: Requirement renumbered for clarity. See "Rationale for Clarity" at beginning of section. [TN 02-45]

[08a] Requirement 8.4.11.13 Renumbered from the former 8.4.11.3

RATIONALE: Requirement renumbered for clarity. See "Rationale for Clarity" at beginning of section. [TN 02-45]

[08a] Table 8.4.11.13 Renumbered from the former 8.4.11.3

RATIONALE: Editorial. [TN 02-45]

[08a] Requirement 8.4.11.14 Renumbered from the former 8.4.11.7

RATIONALE: Provisions for elevators provided with counterweights, roped hydraulic elevators, and traveling sheaves have been included in the existing formulas.

For counterweights and roped hydraulic elevator cars, the formulas given in 8.4.8.9.1 and 8.4.8.9.2 should prevail. By making $Wp = 0$ for these two cases, 8.4.8.9.1 and 8.4.8.9.2 are recreated. For traveling sheaves guided on separate rails, only the plunger weight and added sheave weight need to be considered. The traveling sheave position restraints are assumed to be in line with the sheave center of gravity. The 1.5 factor is included in determining *W* for traveling sheave calculations to reposition the center of gravity accordingly. *Wp* is handled as with direct acting elevators. For traveling sheaves riding on car guide rails, the sheave will always be above the car's upper guide restraints. Due to its location and the lower weight expected for this assembly, the weight of the traveling sheave and plunger is ignored for this case. [TN 02-45]

[08a] Requirement 8.4.12 Revised

RATIONALE: Added proper references for roped hydraulic elevators. Tie brackets were not considered for use on hydraulic elevators. Also see rationale for 8.4.11.14. [TN 02-45]

[10] Requirement 8.4.16 Added

RATIONALE: To provide guidance to the elevator designers that when the elevator equipment spans building expansion joints, neither elevator operation is impeded nor equipment is harmed should maximum displacement occur. This more aptly reflects current industry practice. [TN 02-195]

[08a] Requirement 8.5.3.2.2 Revised

RATIONALE: To correct a previous error. [TN 06-582]

[08a] Requirement 8.6 Revised

RATIONALE: Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6 Revised

RATIONALE: Harmonized Section 8.6 applies to A17.1/B44. [TN 02-4174]

[08a] Requirement 8.6.1.1.2 Revised

RATIONALE: Revised to include tests. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6.1.1.2 Revised

RATIONALE: Clarification that the adopted code is applicable. [TN 02-4174]

[10] Requirement 8.6.1.2.1(e) Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[08a] Requirement 8.6.1.2.1 Revised

RATIONALE: Certain procedures are required by code. It is necessary for these procedures to be available to elevator personnel. [TN 05-1216]

[08a] Requirement 8.6.1.2.1 Revised

RATIONALE: To require the test schedule to be part of the maintenance control program. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.1.2.1 Revised

RATIONALE: Help ensure proper maintenance and testing of traction loss detection means. [TN 07-1970]

[08a] Requirement 8.6.1.3 Revised

RATIONALE: To include testing. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.1.4.1 Revised

RATIONALE: Added new requirement to ensure that data critical to replacement is documented in the appropriate Section of the Code. [TN 07-1970]

[09b] Requirement 8.6.1.5.1 Deleted

RATIONALE: Requirement 8.6.1.5.1 is not necessary because it is covered by Section 8.9. Section 8.9 applies to existing equipment and is retroactive. [TN 02-4174]

[09b] Requirement 8.6.1.6.3(f) Added

RATIONALE: Add new subparagraph (f) from B44. This requirement was not previously covered by A17.1. [TN 02-4174]

[08a] Requirement 8.6.1.7 Added

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.1.7.1 Added

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.1.7.2 Added

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.1.7.3 Added

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.1.7.4 Added

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.2.3 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.2.5 Revised

RATIONALE: To add noncircular elastomeric coated steel suspension members to the requirement. [TN 07-1970]

[10] Requirement 8.6.3.2 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2 Added

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.1 Revised

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.2 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.2 Added

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.3 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.3 Added

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.4 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.5 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.2.6 Deleted

RATIONALE: All of the requirements of 8.6.3.2 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.3 Deleted

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.3 Revised; formerly numbered 8.6.3.3.2

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[09b] Requirement 8.6.3.3.1(e) Revised

RATIONALE: Revised subparagraph (e) from B44 to clarify that the rope data tag and the maintenance records are updated at each rope replacement. [TN 02-4174]

[10] Requirement 8.6.3.3.1 Deleted

RATIONALE: A17.1 requirements are clarified to mandate conformance with the replacement criteria in ASME A17.6. All of the requirements of 8.6.3.3.1 were included in ASME A17.6. [TN 07-1970]

[10] Requirement 8.6.3.3.1 Revised; formerly numbered 8.6.3.3.2(a)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.3.2 Revised

RATIONALE: To clarify that the essential element of the requirements is to ensure that the load-carrying ropes remain in line with the shackle rods. During the January 2007 Mechanical Design Committee meeting, it was discussed and agreed upon that incidental contact between shackles resulting from minor rotation of the them during elevator operation does not present a safety concern as long as alignment is maintained; see requirement 2.20.9.5.6. (reference Item 7.4, Inquiry 06-42, January 2007 MDC meeting minutes). Requirement 8.6.3.3.2 is intended to prevent the use of a physically larger rope-fastening device than originally provided that could result in a misalignment of the load path from the shackle rod through the socket to the suspension rope. [TN 07-1626]

[10] Requirement 8.6.3.3.2 Revised; formerly numbered 8.6.3.3.2(b)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.3.3 Revised; formerly numbered 8.6.3.3.2(c)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.3.4 Revised; formerly numbered 8.6.3.3.2(d)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[09b] Requirement 8.6.3.4.6 Added

RATIONALE: New requirement for rope data tag from B44. Not covered by A17.1. [TN 02-4174]

[09b] Requirement 8.6.3.8 Revised

RATIONALE: To clarify the requirements for replacements of door reopening device. [TN 04-536]

[10] Requirement 8.6.3.12 Revised; formerly numbered 8.6.3.3.3

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.12.1 Revised; formerly numbered 8.6.3.3.3(a)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.12.2 Revised; formerly numbered 8.6.3.3.3(b)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.12.3 Revised; formerly numbered 8.6.3.3.3(c)

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[10] Requirement 8.6.3.12.4 Added

RATIONALE: Renumbered to realign requirements and to ensure that fastening and hitchplate requirements apply to all types of suspension means. [TN 07-1970]

[08a] Requirement 8.6.4 Revised

RATIONALE: See revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.4.1 Revised

RATIONALE: To ensure that there is no confusion regarding lubrication of steel wire ropes and not other suspension means that may not require lubrication. [TN 07-1970]

[08a] Requirement 8.6.4.2.2 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.3.3 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6.4.5.1 Revised

RATIONALE: Add “corrosion” for clarification and to include B44 requirement. [TN 02-4174]

[08a] Requirement 8.6.4.6.3 Added

RATIONALE: To ensure continued compliance with the requirements for emergency brakes. Proposal was chosen to be consistent with maintenance requirements for driving machine brakes, 8.6.4.6.2. [TN 03-91]

[08a] Requirement 8.6.4.12.1 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase “by hand” was not intended to be taken literally as meaning that only a human hand may be used to “manually trip” or “manually reset” a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[08a] Requirement 8.6.4.17 Revised

RATIONALE: Clarification. [TN 03-91]

[08a] Requirement 8.6.4.18 Relocated from 8.11.2.2

RATIONALE: Relocated from 8.11.2.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.1 Relocated from 8.11.2.2.1

RATIONALE: Relocated from 8.11.2.2.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.2 Relocated from 8.11.2.2.2

RATIONALE: Relocated from 8.11.2.2.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.3 Relocated from 8.11.2.2.3

RATIONALE: Relocated from 8.11.2.2.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.4 Relocated from 8.11.2.2.4

RATIONALE: Relocated from 8.11.2.2.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.5 Relocated from 8.11.2.2.5

RATIONALE: Relocated from 8.11.2.2.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.6 Relocated from 8.11.2.2.6

RATIONALE: Relocated from 8.11.2.2.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.7 Relocated from 8.11.2.2.7

RATIONALE: Relocated from 8.11.2.2.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.8 Relocated from 8.11.2.2.8

RATIONALE: Relocated from 8.11.2.2.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.18.9 Relocated from 8.11.2.2.9

RATIONALE: Relocated from 8.11.2.2.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19 Relocated from 8.11.2.3

RATIONALE: Relocated from 8.11.2.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.1 Relocated from 8.11.2.3.1

RATIONALE: Relocated from 8.11.2.3.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.2 Relocated from 8.11.2.3.2

RATIONALE: Relocated from 8.11.2.3.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.3 Relocated from 8.11.2.3.3

RATIONALE: Relocated from 8.11.2.3.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.4 Relocated from 8.11.2.3.4

RATIONALE: Relocated from 8.11.2.3.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.5 Relocated from 8.11.2.3.5

RATIONALE: Relocated from 8.11.2.3.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.6 Relocated from 8.11.2.3.6

RATIONALE: Relocated from 8.11.2.3.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.7 Relocated from 8.11.2.3.7

RATIONALE: Relocated from 8.11.2.3.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.8 Relocated from 8.11.2.3.8

RATIONALE: Relocated from 8.11.2.3.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.9 Relocated from 8.11.2.3.9

RATIONALE: Relocated from 8.11.2.3.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.4.19.10 Relocated from 8.11.2.3.10

RATIONALE: Relocated from 8.11.2.10.3. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.4.19.11 Revised

RATIONALE: Inspections and tests are needed for all locations. [TN 09-104]

[10] Requirement 8.6.4.19.12 Added

RATIONALE: To provide periodic, Category 1 testing consistent with other important testing requirements in ASME A17.1. A test will demonstrate compliance as required by 2.20.8. [TN 07-1970]

[10] Requirement 8.6.4.19.13 Added

RATIONALE: To provide periodic, Category 1 testing consistent with other important testing requirements in ASME A17.1. A test will demonstrate compliance as required by 2.20.8. [TN 07-1970]

[10] Requirement 8.6.4.20.1 Revised

RATIONALE: Clarification for the testing of broken rope type safeties. Broken rope type safeties do not have governors. [TN 09-804]

[10] Requirement 8.6.4.21 Added

RATIONALE: To provide conservative requirements for replacement criteria of the nonmetallic drive sheave groove surfaces and steel wire ropes. [TN 07-1970]

[08a] Requirement 8.6.5 Revised

RATIONALE: Revised. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.1.1 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.2 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.3 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.5.5.1 Revised

RATIONALE: This verification is required upon replacement of a cylinder packing or seal or a pressure piping seal to verify the integrity of the system. This is not part of a periodic inspection; it is a repair, so witnessing is not required.

NOTE: Incorporates approved TN 02-04 [TN 08-632]

[08a] Requirement 8.6.5.5.2 Revised

RATIONALE:
(a) For coordination with 3.18.3.7, Collection of Oil Leakage.
(b) If the intent of the requirement is to limit collected oil leakage to 20 L, then 3.18.3.7 needs to be changed. If the intent to limit the collected oil to 5 gal, the corrected conversion to liters is 5 x 3.7854 = 18.927 L.
(c) Other revisions for editorial coordination. [TN 05-1217]

[08a] Requirement 8.6.5.7 Revised

RATIONALE: Reference updated. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12 Relocated from 8.11.3.2

RATIONALE: Relocated from 8.11.3.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12.1 Relocated from 8.11.3.2.1

RATIONALE: Relocated from 8.11.3.2.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12.2 Relocated from 8.11.3.2.2

RATIONALE: Relocated from 8.11.3.2.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12.3 Relocated from 8.11.3.2.3

RATIONALE: Relocated from 8.11.3.2.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12.4 Relocated from 8.11.3.2.4

RATIONALE: Relocated from 8.11.3.2.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.12.5 Relocated from 8.11.3.2.5

RATIONALE: Relocated from 8.11.3.2.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.13 Relocated from 8.11.3.3

RATIONALE: Relocated from 8.11.3.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.13 Added

RATIONALE: To maintain the proper adjustment to overspeed valves. [TN 05-1218]

[08a] Requirement 8.6.5.13.1 Relocated from 8.11.3.3.1

RATIONALE: Relocated from 8.11.3.3.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.13.2 Relocated from 8.11.3.3.2

RATIONALE: Relocated from 8.11.3.3.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.14 Relocated from 8.11.3.4

RATIONALE: Relocated from 8.11.3.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.14.1 Relocated from 8.11.3.4.1

RATIONALE: Relocated from 8.11.3.4.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.14.2 Relocated from 8.11.3.4.2

RATIONALE: Relocated from 8.11.3.4.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.14.3 Relocated from 8.11.3.4.3

RATIONALE: Relocated from 8.11.3.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.5.14.4 Relocated from 8.11.3.4.4

RATIONALE: Relocated from 8.11.3.4.4. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.6.5.14.6 Added

RATIONALE: Procedure for test is in A17.1 but there is not a requirement for it. This test is needed to ensure proper operation of the device. [TN 08-1422]

[08a] Requirement 8.6.6 Revised

RATIONALE: Revised. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.6.1.1 Relocated from 8.11.5.11

RATIONALE: Test requirements relocated from 8.11.5.11. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.6.2.1 Relocated from 8.11.5.9

RATIONALE: Test requirements relocated from 8.11.5.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.6.3.1 Relocated from 8.11.5.3

RATIONALE: Test requirements relocated from 8.11.5.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7 Revised

RATIONALE: Revised. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.1.1 Relocated from 8.11.5.7

RATIONALE: Test requirements relocated from 8.11.5.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.2.1 Relocated from 8.11.5.12

RATIONALE: Test requirements relocated from 8.11.5.12. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.3.1 Relocated from 8.11.5.2

RATIONALE: Test requirements relocated from 8.11.5.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.4.1 Relocated from 8.11.5.2

RATIONALE: Test requirements relocated from 8.11.5.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.5.1 Relocated from 8.11.5.1

RATIONALE: Test requirements relocated from 8.11.5.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.6.1 Relocated from 8.11.5.10

RATIONALE: Test requirements relocated from 8.11.5.10. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6.7.7 Revised

RATIONALE: To recognize that Section 5.7 is not applicable in jurisdictions enforcing NBCC. SPPEs are covered by the CSA B311 Code. [TN 02-4174]

[08a] Requirement 8.6.7.7.1 Relocated from 8.11.5.6

RATIONALE: Test requirements relocated from 8.11.5.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.8.1 Relocated from 8.11.5.8

RATIONALE: Test requirements relocated from 8.11.5.8. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6.7.9 Added

RATIONALE: To recognize that Section 5.9 is not applicable in jurisdictions enforcing NBCC. Mine elevators are covered by other standards in Canada. [TN 02-4174]

[08a] Requirement 8.6.7.9.4 Added

RATIONALE: Test requirements added for mine elevators. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.9.4 Added

RATIONALE: To require corrosion resistant ropes in mines where they are subjected to a hostile environment. These editorial changes are for clarification only and do not change the intent of the proposed requirement. The words "These emergency replacement" were added to clarify that not all elevator ropes need to be replaced within one year. The word "means" was struck out to eliminate confusion and clarify that this requirement only applies to wire rope. [TN 02-3211]

[08a] Requirement 8.6.7.10.1 Relocated from 8.11.5.13.2

RATIONALE: Test requirements relocated from 8.11.5.13.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.10.2 Relocated from 8.11.5.13.3

RATIONALE: Test requirements relocated from 8.11.5.13.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.7.10.3 Relocated from 8.11.5.13.4

RATIONALE: Test requirements relocated from 8.11.5.13.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8 Revised

RATIONALE: Revised. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.1 Revised

RATIONALE: To permit the current handrail speed monitoring requirements to apply to any handrail speed monitoring device, where one is provided. [TN 06-430]

[09b] Requirement 8.6.8.3.3 Revised

RATIONALE: To include applicable B44 Codes. [TN 02-4174]

[09b] Requirement 8.6.8.5 Revised

RATIONALE: To add the B44 requirement not currently included in A17.1 to include skirt obstruction devices. [TN 02-4174]

[08a] Requirement 8.6.8.15 Relocated from 8.11.4.2

RATIONALE: Test requirements relocated from 8.11.4.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.1 Relocated from 8.11.4.2.1

RATIONALE: Test requirements relocated from 8.11.4.2.1. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.6.8.15.1 Revised

RATIONALE: To add B44 requirements not currently covered in A17.1. [TN 02-4174]

[08a] Requirement 8.6.8.15.2 Relocated from 8.11.4.2.2

RATIONALE: Test requirements relocated from 8.11.4.2.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.3 Relocated from 8.11.4.2.3

RATIONALE: Test requirements relocated from 8.11.4.2.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.4 Relocated from 8.11.4.2.4

RATIONALE: Test requirements relocated from 8.11.4.2.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.5 Relocated from 8.11.4.2.5

RATIONALE: Test requirements relocated from 8.11.4.2.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.6 Relocated from 8.11.4.2.6

RATIONALE: Test requirements relocated from 8.11.4.2.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.7 Relocated from 8.11.4.2.7

RATIONALE: Test requirements relocated from 8.11.4.2.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.8 Relocated from 8.11.4.2.8

RATIONALE: Test requirements relocated from 8.11.4.2.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.9 Relocated from 8.11.4.2.9

RATIONALE: Test requirements relocated from 8.11.4.2.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.10 Relocated from 8.11.4.2.10

RATIONALE: Test requirements relocated from 8.11.4.2.10. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.11 Relocated from 8.11.4.2.11

RATIONALE: Test requirements relocated from 8.11.4.2.11. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.12 Relocated from 8.11.4.2.12

RATIONALE: Test requirements relocated from 8.11.4.2.12. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.13 Relocated from 8.11.4.2.13

RATIONALE: Test requirements relocated from 8.11.4.2.13. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.14 Relocated from 8.11.4.2.14

RATIONALE: Test requirements relocated from 8.11.4.2.14. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.15 Relocated from 8.11.4.2.15

RATIONALE: Test requirements relocated from 8.11.4.2.15. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.16 Relocated from 8.11.4.2.16

RATIONALE: Test requirements relocated from 8.11.4.2.16. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.17 Relocated from 8.11.4.2.17

RATIONALE: Test requirements relocated from 8.11.4.2.17. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.18 Relocated from 8.11.4.2.18

RATIONALE: Test requirements relocated from 8.11.4.2.18. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.19 Relocated from 8.11.4.2.19

RATIONALE: Test requirements relocated from 8.11.4.2.19, and subpara. (f) editorially clarified. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.20 Relocated from 8.11.4.2.20

RATIONALE: Test requirements relocated from 8.11.4.2.20. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.21 Relocated from 8.11.4.2.21

RATIONALE: Test requirements relocated from 8.11.4.2.21. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.8.15.22 Relocated from 8.11.4.2.22

RATIONALE: Test requirements relocated from 8.11.4.2.22. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.9 Revised

RATIONALE: Revised. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.9.1 Revised

RATIONALE: To permit the current handrail speed monitoring requirements to apply to any handrail speed monitoring device, where one is provided. [TN 06-430]

[08a] Requirement 8.6.9.1.1 Relocated from 8.11.5.4

RATIONALE: Test requirements relocated from 8.11.5.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.9.2.1 Relocated from 8.11.5.5

RATIONALE: Test requirements relocated from 8.11.5.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.6.10.1 Revised

RATIONALE: Clarification of the intent of the requirements. [TN 06-434]

[09b] Requirement 8.6.11 Add 8.6.11.2 and renumber the rest of 8.6.11.

RATIONALE: To add annual testing requirements for the Two-Way Communications means in 2.27.1.1. Some parts of the means such as the correct phone number for an autodialer can only be checked manually. [TN 03-1840]

[08a] Requirement 8.6.11.1 Revised

RATIONALE: To clarify that the monthly operation check be done by the authorized personnel. [TN 06-432]

[08a] Requirement 8.6.11.5.2 Revised

RATIONALE: Clarification. [TN 06-1220]

[10] Requirement 8.6.11.6 Revised

RATIONALE: The procedures are imperative for elevator personnel safety, and the added requirements ensure that they will be available when needed and conform to the appropriate safety standard. [TN 07-594]

[10] Requirement 8.6.11.7 Revised

RATIONALE: The procedures are imperative for elevator personnel safety, and the added requirements ensure that they will be available when needed and conform to the appropriate safety standard. [TN 07-594]

[10] Requirement 8.6.11.8 Revised

RATIONALE: The procedures are imperative for elevator personnel safety and the added requirements ensure that they will be available when needed and conform to the appropriate safety standard. [TN 07-594]

[10] Requirement 8.6.11.9 Revised

RATIONALE: To verify that the loss of traction has not caused damage to the drive sheave or suspension means that can result in an unsafe condition. [TN 07-1970]

[10]Requirement 8.6.11.10 Added

RATIONALE: To verify that no damage to the drive sheave, other sheaves, suspension members, or retainers, has occurred as a result of slackening of the suspension members due to differences in stopping retardation of the elevator and counterweight, and to require remediation as necessitated by the condition of the equipment, if damaged. [TN 07-1970]

[10] Requirement 8.6.11.11 Added

RATIONALE: To ensure that an unsafe operating condition is not caused due to a broken suspension member. [TN 07-1970]

[09b] Requirement 8.6.12 Deleted

RATIONALE: With the acceptance of revisions in TN 02-4174, a separate B44 maintenance section is no longer required. [TN 02-4174]

[08a] Requirement 8.6.12.5.4 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.4.1 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.4.2 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.4.3 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.5 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.5.1 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they

were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.5.2 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.5.3 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.6 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[08a] Requirement 8.6.12.5.7 Added

RATIONALE: The proposal incorporates the remaining modifications formerly in CSA B44; as an oversight they were not covered by TN 06-778, which was previously approved. [TN 07-1485]

[10] Requirement 8.7.2.1.1 Revised

RATIONALE: To correct reference to requirement 2.7.3.4.6. [TN 09-653]

[09b] Requirement 8.7.2.7 Revised

RATIONALE: Section 2.7, previously titled Machine Rooms and Machinery Spaces, changed in A17.1S-2005 to "Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms." The alteration requirements of 8.7.2.7.1 needed to be updated to remain aligned with the restructured section 2.7. Revised the title of 8.7.2.7 and body of 8.7.2.7.1 to address new control rooms and spaces. [TN 07-1593]

[09b] Requirement 8.7.2.7.1 Revised

RATIONALE: Section 2.7, previously titled Machine Rooms and Machinery Spaces, changed in A17.1S-2005 to "Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms." The alteration requirements of 8.7.2.7.1 needed to be updated to remain aligned with the restructured section 2.7. Revised the title of 8.7.2.7 and body of 8.7.2.7.1 to address new control rooms and spaces. [TN 07-1593]

[09b] Requirement 8.7.2.10.1 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[08a] Requirement 8.7.2.14.2(i) Added

RATIONALE: To ensure that the installation of car doors or gates conforms to the requirements of Part 2 of A17.1. [TN 05-1229]

[10] Requirement 8.7.2.21.1 Revised

RATIONALE: To be consistent in the use of suspension members where appropriate in the Code. [TN 07-1970]

[10] Requirement 8.7.2.21.2 Revised

RATIONALE: To be consistent in the use of suspension members where appropriate in the Code. [TN 07-1970]

[10] Requirement 8.7.2.21.3 Revised

RATIONALE: To be consistent in the use of suspension members where appropriate in the Code. [TN 07-1970]

[10] Requirement 8.7.2.21.4 Added

RATIONALE: History has not shown it to be necessary to add suspension monitoring and protection means to existing elevators installed in compliance with previous editions. The addition of suspension and protection means to existing elevators would not enhance safety and would be unnecessarily burdensome. The reason for the last requirement is that a traction loss detection means might be added to an elevator system to address unique conditions. [TN 07-1970]

[09b] Requirement 8.7.2.25.1 Revised

RATIONALE: The requirements of 2.7.2.2 were moved to 2.7.2 — not 2.7.2.3 as shown in the revised requirement. The previous editorial change is incorrect. The referencing needs to be corrected. [TN 07-1643]

[09b] Requirement 8.7.2.25.2 Revised

RATIONALE: The requirements of 2.7.2.2 were moved to 2.7.2. The editorial changes should reflect this renumbering. [TN 07-1643]

[08a] Requirement 8.7.2.27.3 Revised

RATIONALE: To clarify the use of the "Controller" term in Section 8.7 of the A17.1 Code. [TN 05-568]

[08a] Requirement 8.7.2.27.4 Revised

RATIONALE: To clarify the use of the "Controller" term in Section 8.7 of the A17.1 Code. [TN 05-568]

[08a] Requirement 8.7.2.27.4 Revised

RATIONALE: To clarify the requirements when installing firefighters' emergency operation on existing controllers. [TN 06-1168]

[09b] Requirement 8.7.2.27.4 Revised

RATIONALE: To make alteration requirements for electric and hydraulic elevators consistent for installation of controllers and change in type of motion control. The requirements of firefighters' emergency operation (firefighters' emergency operations includes all previous descriptions for firefighters' service) are consistent with A17.3, NFPA 101 (section 9432), NFPA 1 (Section 1131), and International Fire Code (IFC, section 607.1). Requirements applicable to the building structure are not within the scope of the alteration. [TN 02-2442]

[09b] Requirement 8.7.2.27.4 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[09b] Requirement 8.7.2.27.5 Revised

RATIONALE: To make alteration requirements for electric and hydraulic elevators consistent for installation of controllers and change in type of motion control. The requirements of firefighters' emergency operation (firefighters' emergency operations includes all previous descriptions for firefighters' service) are consistent with A17.3, NFPA 101 (section 9432), NFPA 1 (Section 1131), and International Fire Code (IFC, section 607.1). Requirements applicable to the building structure are not within the scope of the alteration. [TN 02-2442]

[09b] Requirement 8.7.2.27.5 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[09b] Requirement 8.7.2.27.6 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[08a] Requirement 8.7.2.28 Revised

RATIONALE: To clarify the requirements when installing firefighters' emergency operation on existing controllers. [TN 06-1168]

[08a] Requirement 8.7.3.31.4 Revised

RATIONALE: To clarify the use of the "Controller" term in Section 8.7 of the A17.1 Code. [TN 05-568]

[08a] Requirement 8.7.3.31.5 Revised

RATIONALE: Many private residences have been converted to convention centers, banquet facilities, museums, etc., where the elevators are used by the general public or as a limited-use/limited-application elevator. In these cases, the more stringent safety requirements of ASME A17.1 need to be applied. [TN 05-04]

[08a] Requirement 8.7.3.31.5 Revised

RATIONALE: To clarify the requirements when installing firefighters' emergency operation on existing controllers. [TN 06-1168]

[09b] Requirement 8.7.3.31.5 Revised

RATIONALE: To make alteration requirements for electric and hydraulic elevators consistent for installation of controllers and change in type of motion control. The requirements of firefighters' emergency operation (firefighters' emergency operations includes all previous descriptions for Fire Fighters' Service) are consistent with A17.3, NFPA 101 (section 9432), NFPA 1 (Section 1131), and International Fire Code (IFC, section 607.1). Requirements applicable to the building structure are not within the scope of the alteration. [TN 02-2442]

[09b] Requirement 8.7.3.31.5 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[09b] Requirement 8.7.3.31.6 Revised

RATIONALE: To make alteration requirements for electric and hydraulic elevators consistent for installation of controllers and change in type of motion control. The requirements of firefighters' emergency operation (firefighters' emergency operations includes all previous descriptions for Fire Fighters' Service) are consistent with A17.3, NFPA 101 (section 9432), NFPA 1 (Section 1131), and International Fire Code (IFC, section 607.1). Requirements applicable to the building structure are not within the scope of the alteration. [TN 02-2442]

[09b] Requirement 8.7.3.31.6 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[09b] Requirement 8.7.3.31.7 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on

these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[08a] Requirement 8.7.3.31.8 Revised

RATIONALE: To clarify the requirements when installing firefighters' emergency operation on existing controllers. [TN 06-1168]

[10] Requirement 8.7.3.31.10 Revised

RATIONALE: Reference revised to reflect the change in location of the referenced requirements. [TN 07-1565]

[08a] Requirement 8.7.5.4 Revised

RATIONALE: Many private residences have been converted to convention centers, banquet facilities, museums, etc., where the elevators are used by the general public or as a limited-use/limited-application elevator. In these cases, the more stringent safety requirements of ASME A17.1 need to be applied. [TN 05-04]

[10] Requirement 8.9.1 Revised

RATIONALE: To clarify the original intent that a separate data plate is required for each piece of equipment. [TN 07-1089]

[09b] Requirement 8.9.2 Revised

RATIONALE: Clarification based on Inquiry 05-58. [TN 07-2035]

[10] Requirement 8.9.2 Revised

RATIONALE: To clarify the original intent that a separate data plate is required for each piece of equipment. [TN 07-1089]

[10] Requirement 8.9.2 Revised

RATIONALE: Clarification as a result of Inquiry 08-47, which questioned whether a code data plate was required at both starting switches. [TN 09-805]

[10] Requirement 8.9.3 Revised

RATIONALE: Permanent record data plates, marking plates, and capacity plates are essential for proper maintenance, inspection, and testing. The data must be available for the life of the equipment. This proposal will promote the uniform application of requirements to ensure that the data will remain available to elevator personnel for the life of the equipment. Current industry practice has proven insufficient in keeping the information contained on these data plates, marking plates, and capacity plates legible for the life of the equipment. This is because the information became obscured by common materials (e.g., paint, masking tape) or exposure to the elements. In addition, requirements for the method of attachment currently are not addressed. Also, see TN 07-2035. [TN 07-1083]

[08a] Requirement 8.10.1.1.3 Revised

RATIONALE: Supports minimum requirements for inspector qualifications as recommended by the Association of Provincial Chief Elevator Inspectors. [TN 07-1484]

[10] Requirement 8.10.1.2 Revised

RATIONALE: To include the correct name of the A17.2 Inspections Guide, delete reference to "Divisions," and add a note to the effect that guide content is neither exclusive nor comprehensive. [TN 08-155]

[10] Requirement 8.10.1.4 Revised

RATIONALE: Procedures and any devices needed to complete these tests must be available to elevator personnel. It is up to the service provider to make them readily available at the point of inspection. [TN 07-1617]

[10] Requirement 8.10.2.2.1(m) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.10.2.2.1(q) Added

RATIONALE: To ensure the intent is clear after the proposed changes are made to A17.1 and to cover Class C2 loading. [TN 02-3536]

[08a] Requirement 8.10.2.2.2 Revised

RATIONALE: To ensure continued compliance with the requirements for emergency brakes. [TN 03-91]

[08a] Requirement 8.10.2.2.2(o) Revised

RATIONALE: Revised A17.1 for clarification, to correct erroneous information. Class C2 freight elevators must only sustain and level loads that exceed the rated load. Also, covered testing of hydraulic elevator requirements. [TN 04-1443]

[08a] Requirement 8.10.2.2.2(o) Revised

RATIONALE: To add the requirements for checking the brake marking plate and the brake setting as recommended by the Mechanical Design Committee. [TN 07-190]

[10] Requirement 8.10.2.2.2(cc)(3) Revised

RATIONALE: To provide acceptance testing consistent with other important testing requirements in ASME A17.1. A test will demonstrate compliance as required by 2.20.8.

[10] Requirements 8.10.2.2.2(cc)(3)(a) and (b) Revised

RATIONALE: Editorial changes have been made to correct terminology to be consistent with 2.24.2.3.1. The Note for 8.10.2.2.2(cc)(3)(b) and 8.10.2.2.2(cc)(3)(c) is intended to clarify that it might not be physically possible to cause a loss of traction. For this reason, the alternatives in 8.10.2.2.2(cc)(3)(b) and 8.10.2.2.2(cc)(3)(c) are given.

[10] Requirement 8.10.2.2.2(cc)(3)(c) Revised

RATIONALE: Additions to 8.10.2.2.2(cc)(3) are to provide acceptance testing consistent with other testing requirements. A physical test will demonstrate compliance as required by 2.20.8.1(e). [TN 07-1970]

[08a] Requirement 8.10.2.2.2(ii)(2)(a) Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[10] Requirement 8.10.2.2.2(ii)(4) Revised

RATIONALE: Clarify requirement for condition of the SOS switch operation during test. This is the same language used in 8.10.2.2.2 for safety tests. [TN 07-191]

[10] Requirement 8.10.2.2.2(pp) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.2(qq) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.2(qq) Revised

RATIONALE: To provide acceptance testing consistent with other testing requirements. A test will demonstrate compliance as required by 2.20.8.2 and 2.20.8.3. [TN 07-1970]

[10] Requirement 8.10.2.2.3(g) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.2.2.3(jj) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.3(kk) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.5(e) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.2.2.5(h) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.5(q) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.2.2.5(r) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[09b] Requirement 8.10.2.3.2 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items were incorporated into the inspection process for altered equipment. [TN 06-1003]

[10] Requirement 8.10.2.3.2 Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the

changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[08a] Requirement 8.10.2.3.2(j) Revised

RATIONALE: For existing installations with traction elevators undergoing alterations, re-testing on standby or emergency power is required under 8.10.2.3.2(d) if the masses of the system are increased by more than 5%, 8.10.2.3.2(g) if the rated load is increased, 8.10.2.3.2(l) for alterations of the standby or emergency power system, and 8.10.2.3.2(s) for a controller change.

NOTE: Because an increase in car speed requires more output HP from the hoist motor, the requirement to re-test on standby or emergency power should be a part of a speed increase alteration. A larger drive or MG set may have been installed to obtain the speed increase that imposes a greater load on the standby or emergency power system. Therefore, as part of this TR, the 8.10.2.3.2(j) requirement of "increase in speed" should be revised to include a reference to 8.10.2.2.1(q). To require standby or emergency power testing for all alterations that may change the power requirements. [TN 02-3536]

[10] Requirement 8.10.2.3.2(u) Revised

RATIONALE: To correct the references to appropriate requirements. [TN 09-802]

[10] Requirement 8.10.3.2.1(m) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.10.3.2.1(q)(1) Added

RATIONALE: To make sure the intent is clear after the proposed changes are made to A17.1 and to cover Class C2 loading. [TN 02-3536]

[08a] Requirement 8.10.3.2.2 Added

RATIONALE: Revised A17.1 for clarification, to correct erroneous information. Class C2 freight elevators must only sustain and level loads that exceed the rated load. Also, covered testing of hydraulic elevator requirements. [TN 04-1443]

[09b] Requirement 8.10.3.2.2(cc) Revised

RATIONALE: To provide the correct reference. The 3.25 numbering was changed in 2007. [TN 08-798]

[10] Requirement 8.10.3.2.2(cc) Revised

RATIONALE: There is no requirement number 3.25.2.2.5(b). [TN 09-100]

[10] Requirement 8.10.3.2.2(hh) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.3.2.3(b) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[09b] Requirement 8.10.3.2.3(e) Revised

RATIONALE: The testing is performed in the machine room, Item 2.8 " not in the hoistway, Item 3.5. [TN 08-800]

[10] Requirement 8.10.3.2.3(i) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.3.2.3(u) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[09b] Requirement 8.10.3.2.3(jj) Added

RATIONALE: The broken rope, chain, or tape switch for roped hydraulic elevators should be checked in 3.26, but need to be added to 8.10 first. [TN 06-1341]

[10] Requirement 8.10.3.2.5(i) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.3.2.5(o) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[09b] Requirement 8.10.3.3.2 Revised

RATIONALE: To incorporate the requirements of 2.29 when appropriate alterations are completed. Based on these proposed changes to Section 8.7, these items must be incorporated into the inspection process for altered equipment. [TN 06-1003]

[10] Requirement 8.10.3.3.2(b) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.3.3.2(d) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements

in 8.10.2.2.2 where revised in their entirety and the changes were not made in above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.3.3.2(g) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in above requirements to reflect the revisions. [TN 09-809]

[08a] Requirement 8.10.3.3.2(j) Revised

RATIONALE: For existing installations with hydraulic elevators undergoing alterations, re-testing on standby or emergency power is required under 8.10.3.3.2(d) if the masses of the system are increased by more than 5%, 8.10.3.3.2(g) if the rated load is increased, 8.10.3.3.2(l) for alterations of the standby or emergency power system, and 8.10.3.3.2(p) for a controller change.

NOTE: Since an increase in car speed requires more output HP from the pump motor, the requirement to re-test on standby or emergency power should be a part of a speed increase alteration. A larger pump and motor may have been installed to obtain the speed increase that imposes a greater load on the standby or emergency power system. Therefore, as part of this TR, 8.10.3.3.2(j) "increase in speed" should be revised to include a reference to 8.10.3.2.1(q). To require standby or emergency power testing for all alterations that may change the power requirements. [TN 02-3536]

[10] Requirement 8.10.3.3.2(q) Revised

RATIONALE: To correct the references to appropriate requirements. [TN 09-802]

[10] Requirement 8.10.3.3.2(s) Revised

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in above requirements to reflect the revisions. [TN 09-809]

[10] Requirement 8.10.4.1.1(o) Revised

RATIONALE: Provide the correct reference due to numbering change in 6.1. Also, the reference to 8.6.8.3 in 8.11.4.2.19(f) to specify step/skirt performance index requirements for existing units. [TN 08-788]

[10] Requirement 8.10.4.1.1(t) Revised

RATIONALE: Provide the correct reference due to numbering change in 6.1. Also the reference to 8.6.8.3 in 8.11.4.2.19(f) to specify step/skirt performance index requirements for existing units. [TN 08-788]

[10] Requirement 8.10.4.1.2(a)(5) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.4.1.2(w) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.10.4.1.2(x) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.10.5.2 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[08a] Section 8.11 Relocated test requirements to 8.6

RATIONALE:

(a) Recognition that testing is a requirement [ASME A17.1S-2005, requirements 8.6.1.2.1(a)(1) and 8.11.1.1.2(b)] performed by maintenance personnel and witnessed by an inspector [ASME A17.1S-2005, requirement 8.11.1.1.2(a)].

(b) No revisions have been made to the testing requirements other than editorially relocating them from Section 8.11 to Section 8.6.

(c) Requirements that are not being revised are not included in this proposal.

(d) With the requirement for a maintenance control program this revision requires maintenance testing to be done and reports prepared even in jurisdictions that do not perform inspections.

(e) This proposal is based on the requirements in ASME A17.1-2004 including Addenda ASME

A17.1a-2005 and Supplement ASME A17.1S-2005. Any further revisions or additions to the periodic testing requirements in Section 8.11 that are being balloted or approved and not yet published will be incorporated in the relocation of the periodic test requirements to Section 8.6.

(f) Coordination of revisions and terminology in ASME A17.1 and ASME A17.2.

(g) Recommend that the inspection and testing frequency be established based on risk.

(h) Provide guidelines for using monitoring to assist with inspections.

(i) ASME to renumber any Sections and cross references that have been added to the Code after this proposal was drafted.

(j) This proposal is to reflect all TNs that have been approved at the time of publication. [TN 02-04]

[08a] Requirement 8.11.1 Relocated to 8.6

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.1 Relocated to 8.6.1.2

RATIONALE: See revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.1 Revised

RATIONALE: Supports minimum requirements for inspector qualifications as recommended by the Association of Provincial Chief Elevator Inspectors. [TN 07-1484]

[08a] Requirement 8.11.1.1.1 Revised

RATIONALE: To require a written record of the inspection. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.1.2(a) Revised

RATIONALE: Clarification of location of testing requirements. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.1.2(b) Revised

RATIONALE: To require a written record of the test(s). Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.1.2(b) Revised

RATIONALE: Requirements incorporated in 8.6.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.2 Testing requirements relocated to 8.6

RATIONALE: Testing requirements relocated to 8.6 and clarification of reference. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.1.2 Revised

RATIONALE: To include correct name of A17.2 Inspections Guide, delete the reference to "Divisions," and add a note to the effect that guide content is neither exclusive nor comprehensive. [TN 08-155]

[08a] Requirement 8.11.1.5 Relocated to 8.6

RATIONALE: Relocated to 8.6.1.7.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.1.6 Relocated to 8.6.1.7.2

RATIONALE: Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.1.6 Revised

RATIONALE: To better define tag location. [TN 08-789]

[10] Requirement 8.11.1.7 Revised

RATIONALE: The procedures and any devices needed to complete these tests must be available to elevator personnel. It is up to the service provider to make them readily available at the point of inspection. [TN 07-1617]

[08a] Requirement 8.11.2 Testing requirements relocated to 8.6.

RATIONALE: Testing requirement relocated to 8.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.1 Revised

RATIONALE: Coordination with language in the ASME A17.2 Inspectors' Guide. Recognition that QEI CEI and CES have the expertise to focus inspections properly based on the condition of the equipment. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.2.1.1(m) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.2(mm) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.2(nn) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3 Revised

RATIONALE: This information has been relocated to ASME A17.6, which includes all suspension means, not just steel wire rope. It makes the document stand alone and comprehensive per its Scope. Tables 1.10.1 and 1.10.3 replace deleted Tables 8.11.2.1.3(cc)(1) and (3). [TN 07-1970]

[10] Requirement 8.11.2.1.3(jj) Added

RATIONALE: To provide inspection instruction for replacement of the non-metallic drive sheave groove surfaces and steel wire ropes. [TN 07-1970]

[10] Requirement 8.11.2.1.3(l) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3(t) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3(jj) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3(kk) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3(ll) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.2.1.3(mm) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.11.2.2 Relocated to 8.6.4.1.8

RATIONALE: Relocated to 8.6.4.1.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.1 Relocated to 8.6.4.18.1.

RATIONALE: Relocated to 8.6.4.18.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.2 Relocated to 8.6.4.18.2.

RATIONALE: Relocated to 8.6.4.18.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.2(b) Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[08a] Requirement 8.11.2.2.3 Relocated to 8.6.4.18.3

RATIONALE: Relocated to 8.6.4.18.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.4 Relocated to 8.6.4.18.4

RATIONALE: Relocated to 8.6.4.18.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.5 Relocated to 8.6.4.18.5

RATIONALE: Relocated to 8.6.4.18.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.6 Relocated to 8.6.4.18.6

RATIONALE: Relocated to 8.6.4.18.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.7 Relocated to 8.6.4.18.7

RATIONALE: Relocated to 8.6.4.18.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.2.8 Relocated to 8.6.4.18.8

RATIONALE: Relocated to 8.6.4.18.8. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.2.2.8 Revised and relocated to 8.6.4.19.8

RATIONALE: Require testing of closing force and speed for hydraulic elevators in the same manner as electric elevators. The data plate required by requirement 2.13.4.2.4 was first required in A17.1-2000/B44-00; however, it may sometime be required during alteration. The revised language will cover both situations. [TN 07-191]

[08a] Requirement 8.11.2.2.9 Relocated to 8.6.4.18.9

RATIONALE: Relocated to 8.6.4.18.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3 Relocated to 8.6.4.19

RATIONALE: Relocated to 8.6.4.19. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.2.3 Revised and relocated to 8.6.4.20

RATIONALE: Clarify requirement for condition of the SOS switch operation during test. This is the same language used in 8.10.2.2.2 for safety tests. [TN 07-191]

[08a] Requirement 8.11.2.3.1 Relocated to 8.6.4.19.1.

RATIONALE: Relocated to 8.6.4.19.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.1 Revised

RATIONALE: It was intended that certain devices be activated by means other than automatic operation for the purpose of testing and, conversely, be reset by means requiring intervention by a person rather than by automatic means. The use of the phrase "by hand" was not intended to be taken literally as meaning that only a human hand may be used to "manually trip" or "manually reset" a device or component. The changing of the wording in the requirements allows for the use of devices other than the human hand to activate or reset a device safely.

Although the generalized term "tripped by hand" was intended to convey a performance requirement that the governor be designed to allow for manual activation, it was also intended that the method of hand tripping the numerous designs of governors in the marketplace be done safely and without causing equipment damage. It was intended that hand tripping be applied to a stationary or relatively slow moving means and not to any components rotating at the same speed as the governor sheave.

Manual tripping or manual resetting may also be done from a location remote from the device by authorized persons or elevator personnel in areas and by means not readily accessible to the public. [TN 02-2347]

[10] Requirement 8.11.2.3.1 Revised and relocated to 8.6.4.20.1

RATIONALE: Clarify requirement for condition of the SOS switch operation during test. This is the same language used in 8.10.2.2.2 for safety tests. [TN 07-191]

[08a] Requirement 8.11.2.3.2 Relocated to 8.6.4.19.2

RATIONALE: Relocated to 8.6.4.19.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.3 Relocated to 8.6.4.19.3

RATIONALE: Relocated to 8.6.4.19.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.4 Relocated to 8.6.4.19.4

RATIONALE: Relocated to 8.6.4.19.4 Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.4 Revised

RATIONALE: Revised A17.1 for clarification, to correct erroneous information. Class C2 freight elevators must only sustain and level loads that exceed the rated load. Also, covered testing of hydraulic elevator requirements. [TN 04-1443]

[08a] Requirement 8.11.2.3.4 Revised

RATIONALE: To add the requirements for checking the brake marking plate and the brake setting as recommended by the Mechanical Design Committee. [TN 07-190]

[08a] Requirement 8.11.2.3.5 Relocated to 8.6.4.19.5

RATIONALE: Relocated to 8.6.4.19.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.5 Revised

RATIONALE: Editorially revised. [TN 02-3536]

[08a] Requirement 8.11.2.3.6 Relocated to 8.6.4.19.6

RATIONALE: Relocated to 8.6.4.19.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.7 Relocated to 8.6.4.19.7

RATIONALE: Relocated to 8.6.4.19.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.8 Relocated to 8.6.4.19.8

RATIONALE: Relocated to 8.6.4.19.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.9 Relocated to 8.6.4.19.9

RATIONALE: Relocated to 8.6.4.19.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.10 Relocated to 8.6.4.19.10

RATIONALE: Relocated to 8.6.4.19.10. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.2.3.11 Revised

RATIONALE: To ensure continued compliance with the requirements for emergency brakes. [TN 03-91]

08a] Requirement 8.11.3 Testing requirements relocated to 8.6

RATIONALE: Relocated to 8.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.1 Revised

RATIONALE: Coordination with language in the ASME A17.1 Inspectors' Guide. Recognition that the QEI CEI and CES have the expertise to focus inspections properly based on the condition of the equipment. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.3.1.1(m) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[10] Requirement 8.11.3.1.2(r) Revised

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[09b] Requirement 8.11.3.1.3(hh) Revised

RATIONALE: The broken rope, chain, or tape switch for roped hydraulic elevators should be checked in 3.26, but need to be added to 8.10 first. [TN 06-1341]

[10] Requirement 8.11.3.1.5(q) Added

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.11.3.2 Relocated to 8.6.5.14

RATIONALE: Relocated to 8.6.5.12. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.2.1 Relocated to 8.6.5.12.1

RATIONALE: Relocated to 8.6.5.12.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.2.2 Relocated to 8.6.5.12.2

RATIONALE: Relocated to 8.6.5.12.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.2.3 Relocated to 8.6.5.12.3

RATIONALE: Relocated to 8.6.5.12.3. Also see revision to Section 8.11. [TN 02-04]

[09b] Requirement 8.11.3.2.3(a) Revised

RATIONALE: The testing is performed in the machine room, Item 2.8 — not in the hoistway, Item 3.5. [TN 08-800]

[08a] Requirement 8.11.3.2.4 Relocated to 8.6.5.12.4

RATIONALE: Relocated to 8.6.5.12.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.2.5 Relocated to 8.6.5.12.5

RATIONALE: Relocated to 8.6.5.12.5. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.3.2.6 Revised and relocated to 8.6.5.14.6

RATIONALE: Require testing of closing force and speed for hydraulic elevators in the same manner as electric elevators. The data plate required by requirement 2.13.4.2.4 was first required in A17.1-2000/B44-00; however, it may sometime be required during alteration. The revised language will cover both situations. [TN 07-191]

[08a] Requirement 8.11.3.3 Relocated to 8.6.5.13

RATIONALE: Relocated to 8.6.5.13. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.3.1 Relocated to 8.6.5.13.1

RATIONALE: Relocated to 8.6.5.13.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.3.2 Relocated to 8.6.5.13.2

RATIONALE: Relocated to 8.6.5.13.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4 Relocated to 8.6.5.14

RATIONALE: Relocated to 8.6.5.14. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4.1 Relocated to 8.6.5.14.1

RATIONALE: Relocated to 8.6.5.14.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4.2 Relocated to 8.6.5.14.2

RATIONALE: Relocated to 8.6.5.14.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4.3 Relocated to 8.6.5.14.3

RATIONALE: Relocated to 8.6.5.14.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4.4 Relocated to 8.6.5.14.4

RATIONALE: Relocated to 8.6.5.14.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.3.4.5 Added

RATIONALE: Revised A17.1 for clarification and to correct erroneous information. Class C2 freight elevators must only sustain and level loads that exceed the rated load. Also, covered testing of hydraulic elevator requirements. [TN 04-1443]

[10] Requirement 8.11.3.4.5 Relocated 8.6.5.16.5

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.11.4 Testing requirements relocated to 8.6

RATIONALE: Testing requirements relocated to 8.6. Coordination with language in the ASME A17.2 Inspectors' Guide. Recognition that the QEI CEI and CES have the expertise to focus inspections properly based on the condition of the equipment. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.1 Revised

RATIONALE: Coordination with language in the ASME A17.2 Inspectors' Guide. Recognition that the QEI CEI and CES have the expertise to properly focus inspections based on the condition of the equipment. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2 Relocated to 8.6.8.15

RATIONALE: Relocated to 8.6.8.15. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.1 Relocated to 8.6.8.15.1

RATIONALE: Relocated to 8.6.8.15.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.2 Relocated to 8.6.8.15.2

RATIONALE: Relocated to 8.6.8.15.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.3 Relocated to 8.6.8.15.3

RATIONALE: Relocated to 8.6.8.15.3. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.4 Relocated to 8.6.8.15.4

RATIONALE: Relocated to 8.6.8.15.4. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.5 Relocated to 8.6.8.15.5

RATIONALE: Relocated to 8.6.8.15.5. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.6 Relocated to 8.6.8.15.6

RATIONALE: Relocated to 8.6.8.15.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.7 Relocated to 8.6.8.15.7

RATIONALE: Relocated to 8.6.8.15.7. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.8 Relocated to 8.6.8.15.8

RATIONALE: Relocated to 8.6.8.15.8. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.9 Relocated to 8.6.8.15.9

RATIONALE: Relocated to 8.6.8.15.9. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.10 Relocated to 8.6.8.15.10

RATIONALE: Relocated to 8.6.8.15.10. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.11 Relocated to 8.6.8.15.11

RATIONALE: Relocated to 8.6.8.15.11. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.12 Relocated to 8.6.8.15.12

RATIONALE: Relocated to 8.6.8.15.12. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.13 Relocated to 8.6.8.15.13

RATIONALE: Relocated to 8.6.8.15.13. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.14 Relocated to 8.6.8.15.14

RATIONALE: Relocated to 8.6.8.15.14. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.15 Relocated to 8.6.8.15.15

RATIONALE: Relocated to 8.6.8.15.15. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.16 Relocated to 8.6.8.15.16

RATIONALE: Relocated to 8.6.8.15.16. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.17 Relocated to 8.6.8.15.17

RATIONALE: Relocated to 8.6.8.15.17. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.18 Relocated to 8.6.8.15.18

RATIONALE: Relocated to 8.6.8.15.18. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.4.2.18 Revised and relocated to 8.6.8.15.18

RATIONALE: Clarify requirements for tests needed to ensure safe operation of the device. This language was in A17.1a-1997 but was omitted in A17.1-2000/B44-00. [TN 07-191]

[08a] Requirement 8.11.4.2.19 Relocated to 8.6.8.15.19

RATIONALE: Relocated to 8.6.8.15.19. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.4.2.19 Revised and relocated to 8.6.8.15.19

RATIONALE: Provide the correct reference due to numbering change in 6.1. Also, the reference to 8.6.8.3 in 8.11.4.2.19(f) to specify step/skirt performance index requirements for existing units. [TN 08-788]

[08a] Requirement 8.11.4.2.20 Relocated to 8.6.8.15.20

RATIONALE: Relocated to 8.6.8.15.20. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.21 Relocated to 8.6.8.15.21

RATIONALE: Relocated to 8.6.8.15.21. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.4.2.22 Relocated to 8.6.8.15.22

RATIONALE: Relocated to 8.6.8.15.22. Also see revision to Section 8.11. [TN 02-04]

[10] Requirement 8.11.4.2.23 Relocated to 8.6.8.15.23

RATIONALE: To update inspection guidelines to include earthquake requirements. [TN 02-2322]

[08a] Requirement 8.11.5 Test requirements relocated to 8.6

RATIONALE: Test requirements relocated to 8.6. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.1 Test requirements relocated to 8.6.7.5.1

RATIONALE: Test requirements relocated to 8.6.7.5.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.2 Test requirements relocated to 8.6.7.3.1

RATIONALE: Test requirements relocated to 8.6.7.3.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.3 Test requirements relocated to 8.6.6.3.1

RATIONALE: Test requirements relocated to 8.6.6.3.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.4 Test requirements relocated to 8.6.9.1.1

RATIONALE: Test requirements relocated to 8.6.9.1.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.5 Test requirements relocated to 8.6.9.2.1

RATIONALE: Test requirements relocated to 8.6.9.2.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.6 Test requirements relocated to 8.6.7.7.1

RATIONALE: Test requirements relocated to 8.6.7.7.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.7 Test requirements relocated to 8.6.7.1.1

RATIONALE: Test requirements relocated to 8.6.7.1.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.8 Test requirements relocated to 8.6.7.8.1

RATIONALE: Test requirements relocated to 8.6.7.8.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.9 Test requirements relocated to 8.6.6.2.1

RATIONALE: Test requirements relocated to 8.6.6.2.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.10 Test requirements relocated to 8.6.7.6.1

RATIONALE: Test requirements relocated to 8.6.7.6.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.11 Test requirements relocated to 8.6.6.1.1

RATIONALE: Test requirements relocated to 8.6.6.1.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.12 Test requirements relocated to 8.6.7.2.1

RATIONALE: Test requirements relocated to 8.6.7.2.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.13.2 Relocated to 8.6.7.10.1

RATIONALE: Relocated to 8.6.7.10.1. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.13.3 Relocated to 8.6.7.10.2

RATIONALE: Relocated to 8.6.7.10.2. Also see revision to Section 8.11. [TN 02-04]

[08a] Requirement 8.11.5.13.4 Relocated to 8.6.7.10.3

RATIONALE: Relocated to 8.6.7.10.3. Also see revision to Section 8.11. [TN 02-04]

[10] Section 9 Revised

RATIONALE: The procedures are imperative for elevator personnel safety, and the added requirements ensure that they will be available when needed and conform to the appropriate safety standard. [TN 07-594]

[10] Section 9.1 Added

RATIONALE: Include reference to ASME A17.6. [TN 07-1970]

[10] Section 9.1 Revised

RATIONALE: CAN/CGSB-12.5 was withdrawn by the Canadian General Standards Board in 2004. [TN 08-1059]

[08a] Section 9.1 Revised

RATIONALE: To update references as permitted by revisions to CSP 9 and correct titles of some of the referenced standards. [TN 06-331]

[08a] Section 9.1 Revised

RATIONALE: To update references as permitted by revisions to CSP 9. [TN 06-335]

[09b] Section 9.1 Added MIL-DTL 83420M Specification

RATIONALE: To harmonize with the latest reference document. [TN 08-12]

[08a] Section 9.1 Added NEHRP

RATIONALE: Requirement 8.5.3.2.2(b) refers to NEHRP-1997. This reference does not appear in

Section 9. The following should be added to Section 9. [TN 07-1486]

[09b] Section 9.1 Added

RATIONALE: To add the appropriate UL reference standard and make both applicable in the U.S. and Canada. [TN 07-1153]

[08a] Section 9.2 Revised

RATIONALE: To update references as permitted by revisions to CSP 9. [TN 06-335]

[08a] Section 9.2 Added FEMA

RATIONALE: Requirement 8.5.3.2.2(b) refers to NEHRP-1997. This reference does not appear in Section 9. The following should be added to Section 9. [TN 07-1486]

[08a] Section 9.2 Add BSI

RATIONALE: See Requirement 2.26.4.4 [TN 07-575]

[09b] Nonmandatory Appendix G Revised

RATIONALE: Figures G1 and G2 deleted; new Figs. G1 through G5 inserted. [TN 02-2268]

[10] Nonmandatory Appendix M

RATIONALE: Proposed editorial revision to A17.1, corrections to inspection references. The test requirements in 8.10.2.2.2 were revised in their entirety, and the changes were not made in the above requirements to reflect the revisions. [TN 09-809]

[10] Nonmandatory Appendix X

RATIONALE: To provide inspection instruction for replacement of the nonmetallic drive sheave groove surfaces and steel wire ropes. [TN 07-1970]

[10] Nonmandatory Appendix Y

RATIONALE: To provide inspection instruction for replacement of the nonmetallic drive sheave groove surfaces and steel wire ropes. [TN 07-1970]

[09b] Nonmandatory Figure I-7 Revised

RATIONALE: To correct reference to Fig. I-7. [TN 07-1845]

[09b] Nonmandatory Figure I-12 Revised

RATIONALE: To add correct figure in Appendix I. Requirement 6.1.3.5.4, Clearance Between Steps, refers to Appendix I, Fig. I-6. Propose a diagram to be developed and placed in Appendix I as Fig. I-12.

NOTE: At the September 26, 2007 Standards Meeting it was voted to remove the reference to Fig. I-6 in 6.1.3.5.4 as an editorial change. [TN 07-1119, TN 07-1852]

[08a] Nonmandatory Table N1 Revised

RATIONALE: Also see revision to Section 8.11. [TN 02-04]

[08a] Nonmandatory Table N2 Added Guidelines on Use of Monitoring to Provide Inspection Data

RATIONALE: Also see revision to Section 8.11. [TN 02-04]

ERRATA

The errata for the 2007 ASME A17.1/CSA B44 Code and Addenda was published on the ASME A17 Committee Web site.

ASME A17.1-2007/CSA B44-07 Errata

Page 12 of A17.1-2007: The following definition should read as follows:

machinery, machine space, elevator, dumbwaiter, material lift: a space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains elevator, dumbwaiter, or material lift mechanical equipment, and could also contain electrical equipment used directly in connection with the elevator, dumbwaiter, or material lift. This space could also contain the electric driving machine or the hydraulic machine. (See Nonmandatory Appendix Q.)

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 Code and ASME A17.7/CSA B44.7 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 1.1.2 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 the CSA B44-04 recognize 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 state 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. 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 U.S. initiated a similar approach shortly thereafter. The European Common Market followed suit in recent years.