ASME A17.2-2023
(Revision of ASME A17.2-2020)

Guide for Inspection of Elevators, Escalators, and Moving Walks

Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, Dumbwaiters, and Material Lifts

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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The next edition of this Guide is scheduled for publication in 2026.

This Guide was developed under procedures accredited as meeting the criteria for American National Standards. The standards committee that approved the Guide was balanced to ensure that individuals from competent and concerned interests had an opportunity to participate. The proposed Guide was made available for public review and comment, which provided an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

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FOREWORD

Following the publication of the 1925 edition of the Safety Code for Elevators, Dumbwaiters, and Escalators, requests for a handbook or manual covering the inspection of elevators were received by the A17 Committee. This Committee appointed a subcommittee to prepare such a manual. Cities, states, insurance companies, elevator manufacturers and maintenance companies, and the federal government furnished the Committee with material based on their field experiences. A final draft was prepared and was unanimously approved by the A17 Committee, the Code Sponsors, and the American Standards Association [currently known as the American National Standards Institute (ANSI)], and the first edition of the Manual was published in 1937 simultaneously with the fourth edition of the Code.

A second edition of the Manual was prepared by the Committee to bring it in line with the fourth edition of the Code, including the 1942 Supplement. A new Part, covering the inspection of escalators, and new Appendices, covering descriptions of various types of safeties, methods for determining stopping distances of gradual-type safeties, guide rail data, types of speed governors, and the handling and socketing of wire rope, were added. The second edition of the Manual was approved by the American Standards Association and was published in 1945.

The third edition of the Manual was published in 1960 and included revisions to bring it in line with the 1960 edition of the Code.

The fourth edition of the Manual was published in 1973 to bring it in line with the 1971 editions of the Code, including the 1972 Supplement, and to update the inspection procedures. A new Part, covering the inspection of moving walks, was also added.

The Inspectors' Manual Subcommittee was reactivated in 1976 to review the Manual and coordinate it with a proposed new edition of the Code. The Subcommittee, during its review, felt that it was time for the Manual to take a new format. Thus, the fifth edition of the Manual, published in 1979, was reorganized into four major Parts: Electric Elevators, Hydraulic Elevators, Escalators, and Moving Walks. Each Part was further divided into three major Divisions: Routine Inspection, Periodic Inspection and Test, and Acceptance Inspection and Test. New Appendices were added to this edition, containing sample inspection checklists for electric elevators, hydraulic elevators, escalators, and moving walks. A considerable amount of new material was also added to the Manual to bring it in line with the 1978 edition of the Code.

In order to keep the Manual as current as possible, the Committee began the policy of publishing supplements on a regular basis. Supplements were issued in 1980 and 1981 to update the 1979 edition.

The sixth edition of the Manual contained the revisions included in the 1980 and 1981 Supplements, as well as many other revisions made to keep the Manual in line with new Code requirements and to add more comprehensive inspection and testing procedures. The title of this edition was also changed to ANSI/ASME A17.2, Inspectors' Manual for Elevators and Escalators. This change was made to reflect a reorganization of the A17 Committee structure, and to shorten the title for convenience.

The seventh edition of the Manual included the revisions in the 1983 and 1984 Supplements, as well as other new revisions. One of the major revisions was the Inspection Checklists in Nonmandatory Appendix E, which were expanded to include routine and periodic inspections and tests in addition to acceptance inspections and tests.

The eighth edition included the revisions in the 1986 and 1987 Supplements, as well as other revisions that were detailed in the Summary of Changes section.

In 1989, the Inspectors' Manual Committee polled the inspection community to determine which portions of the Manual were most effective and the direction that should be taken to meet the needs of inspectors. In response to requests for equipment-specific inspection guidelines, techniques, and cautionary notes as well as field convenience, the concept of individual equipment inspection manuals was developed. The Committee decided to concentrate initially on three major segments. As a result, the Inspectors' Manual was published in three volumes: ASME A17.2.1, Electric Elevators; ASME A17.2.2, Hydraulic Elevators; and ASME A17.2.3, Escalators and Moving Walks. Each volume addressed inspection procedures for ensuring compliance with the ASME A17.1 Code since 1955 and the ASME A17.3 Code. It was the Committee's plan to publish additional manuals to address inspection of other equipments, such as roped hydraulic elevators, dumbwaiters, sidewalk elevators, private residence elevators, hand elevators, material lifts and dumbwaiters with automatic transfer devices, special-purpose personnel elevators, rack-and-pinion elevators, inclined elevators, screw-column elevators, elevators used for construction, wheelchair and stairway chairlifts, shipboard elevators, and rooftop elevators.

In 1993, the Inspectors' Manual Committee was asked to review equipment installed prior to the 1955 edition of ASME A17.1. ASME A17.2.3 included inspection and testing procedures for ensuring compliance with some requirements in pre-1955 editions of ASME A17.1.

In 1999, based on feedback from the user community, the A17 Main Committee approved the Inspectors' Manual Committee's recommendation to consolidate the three existing manuals: ASME A17.2.1-1996, Inspectors' Manual for Electric Elevators (including ASME A17.2.1a-1997 and ASME A17.2.1b-1998 Addenda); ASME A17.2.2-1997, Inspectors' Manual for Hydraulic Elevators (including ASME A17.2.2a-1998 Addenda); and ASME A17.2.3-1998, Inspectors' Manual for Escalators and Moving Walks (including ASME A17.2.3a-2000 Addenda). The resulting ASME A17.2-2001, Guide for Inspection of Elevators, Escalators, and Moving Walks, represented an editorial consolidation of the three manuals. The revised standard also included technical revisions that had been approved by the ASME A17.1 Committee since the previous publications.

The second edition of the consolidated Guide was published in 2004. Nonmandatory Appendix B appeared for the first time in this edition.

The third edition of the Guide included revisions that were detailed in the Summary of Changes section.

The fourth edition of the Guide included revisions that were detailed in the Summary of Changes section.

The fifth edition of the Guide included revisions that were detailed in the Summary of Changes section. This edition also added an Inspection Guide for Private Residence Elevators.

The sixth edition of the Guide included revisions that were detailed in the Summary of Changes section. This edition also added an inspection guide for limited-use/limited-application (LU/LA) elevators.

The seventh edition of the Guide included revisions detailed in the Summary of Changes section. This edition also added the Acceptance Checklist for Occupant Evacuation Operation.

The eighth edition of the Guide included revisions listed in the Summary of Changes section. This edition also added a guide for the inspection of dumbwaiters (Parts 12 through 16) and updated the ASME A17.2 subtitle accordingly. It also added inspection guidance for door reopening devices and an emergency power acceptance checklist.

This ninth edition of the Guide includes revisions listed in the Summary of Changes section. This edition adds a guide for the inspection of material lifts (Parts 17 through 21) and updates the ASME A17.2 subtitle accordingly. It also adds verification of requirements for motor controllers and a seismic checklist for hydraulic elevators.

The following is a list of past editions and supplements and the dates on which they received final approval. The dates of issuance are also included for documents published since 1979.

Editions and Supplements	Designation	Approved	Date of Issuance
First Edition	ASA ASME A17.2-1937	July 1937	...
Second Edition	ASA ASME A17.2-1945	October 22, 1945	...
Third Edition	ASA ASME A17.2-1960	August 10, 1960	...
Addenda	ASA ASME A17.2a-1965	July 29, 1965	...
Supplement	USAS ASME A17.2b-1967	July 7, 1967	...
Fourth Edition	ANSI ASME A17.2-1973	May 29, 1973	...
Fifth Edition	ANSI ASME A17.2-1979	February 18, 1979	May 15, 1979
Supplement	ANSI ASME A17.2a-1980	August 11, 1980	September 15, 1980
Supplement	ANSI ASME A17.2b-1981	November 23, 1981	January 15, 1982
Sixth Edition	ANSI/ASME A17.2-1982	September 22, 1982	November 30, 1982
Supplement	ANSI/ASME A17.2a-1983	September 23, 1983	December 20, 1983
Supplement	ANSI/ASME A17.2b-1984	August 16, 1984	September 16, 1984
Seventh Edition	ANSI/ASME A17.2-1985	July 23, 1985	October 31, 1985
Supplement	ANSI/ASME A17.2a-1986	September 8, 1986	October 31, 1986
Supplement	ANSI/ASME A17.2b-1987	September 11, 1987	October 30, 1987

Editions and Supplements	Designation	Approved	Date of Issuance
Eighth Edition	ANSI/ASME A17.2-1988	August 25, 1988	October 31, 1988
Addenda	ANSI/ASME A17.2a-1989	November 10, 1989	December 31, 1989
Addenda	ANSI/ASME A17.2b-1990	October 8, 1990	January 21, 1991
First Edition	ASME A17.2.1-1993	January 22, 1993	May 31, 1993
Addenda	ASME A17.2.1a-1994	August 18, 1994	December 31, 1994
Addenda	ASME A17.2.1b-1995	August 10, 1995	January 29, 1996
Second Edition	ASME A17.2.1-1996	September 6, 1996	January 31, 1997
Addenda	ASME A17.2.1a-1997	December 16, 1997	January 30, 1998
Addenda	ASME A17.2.1b-1998	November 13, 1998	February 19, 1999
First Edition	ASME A17.2.2-1994	April 14, 1994	May 31, 1994
Addenda	ASME A17.2.2a-1995	August 10, 1995	January 10, 1996
Addenda	ASME A17.2.2b-1996	September 6, 1996	December 31, 1996
Second Edition	ASME A17.2.2-1997	November 18, 1997	December 31, 1997
Addenda	ASME A17.2.2a-1998	November 13, 1998	February 5, 1999
First Edition	ASME A17.2.3-1994	August 19, 1994	October 21, 1994
Addenda	ASME A17.2.3a-1996	September 6, 1996	November 22, 1996
Addenda	ASME A17.2.3b-1997	November 18, 1997	December 31, 1997
Second Edition	ASME A17.2.3-1998	November 16, 1998	February 26, 1999
Addenda	ASME A17.2.3a-2000	June 22, 2000	August 10, 2000
First Edition	ASME A17.2-2001	October 4, 2001	December 31, 2001
Second Edition	ASME A17.2-2004	July 22, 2004	March 31, 2005
Third Edition	ASME A17.2-2007	July 11, 2007	October 5, 2007
Fourth Edition	ASME A17.2-2010	September 8, 2010	December 9, 2010
Fifth Edition	ASME A17.2-2012	September 14, 2012	October 22, 2012
Sixth Edition	ASME A17.2-2014	December 16, 2014	March 13, 2015
Seventh Edition	ASME A17.2-2017	October 26, 2017	January 26, 2018
Eighth Edition	ASME A17.2-2020	July 31, 2020	December 31, 2020
Ninth Edition	ASME A17.2-2023	August 28, 2023	February 29, 2024

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(May 2023)

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PREFACE

FORM AND ARRANGEMENT

This Guide addresses how-to inspection guidelines, techniques, and cautionary notes in a logical sequence. It is understood that "routine inspection" refers to A17.1d-2000 and earlier editions and "periodic inspection" refers to ASME A17.1-2000/CSA B44-00 and later editions. Subsections are arranged to focus on routine inspection requirements, followed by periodic test (annual and 5 yr) and acceptance criteria. Appropriate references to the latest edition of the Code, in effect at the time of this Guide's publication, are listed at the end of each subsection. The referenced numbers may not be the same in earlier editions. This Guide is organized as follows: Parts 1 through 6 apply to electric and hydraulic elevators [including limited-use/limited-application (LU/LA) elevators where applicable], Parts 7 and 8 apply to escalators, Parts 9 and 10 apply to moving walks, Part 11 applies to machine-room-less (MRL) elevators, Parts 12 through 16 apply to dumbwaiters, and Parts 17 through 21 apply to material lifts. The Parts are arranged to show the location of the inspection:

Part 1	Elevator — Inside of Car
Part 2	Elevator — Machine Room
Part 3	Elevator — Top of Car
Part 4	Elevator — Outside Hoistway
Part 5	Elevator — Pit
Part 6	Elevator — Firefighters' Service
Part 7	Escalator — External
Part 8	Escalator — Internal
Part 9	Moving Walk — External
Part 10	Moving Walk — Internal
Part 11	Elevator — Machine-Room-Less (MRL)
Part 12	Dumbwaiter — Inside of Car
Part 13	Dumbwaiter — Machine-Room
Part 14	Dumbwaiter — Top of Car
Part 15	Dumbwaiter — Outside of Hoistway
Part 16	Dumbwaiter — Pit
Part 17	Material Lift — Inside of Car
Part 18	Material Lift — Machine Room
Part 19	Material Lift — Top of Car
Part 20	Material Lift — Outside Hoistway
Part 21	Material Lift — Pit

Each inspection location is further subdivided as follows:

X	Location of inspection
X.X	Item to be inspected
X.X.1	Periodic inspections (routine)
X.X.1.1	Electric elevators (as applicable)
X.X.1.2	Hydraulic elevators (as applicable)
X.X.1.3	Electric LU/LA elevators (as applicable)
X.X.1.4	Hydraulic LU/LA elevators (as applicable)
X.X.2	Periodic test
X.X.2.1	Electric elevators (as applicable)
X.X.2.2	Hydraulic elevators (as applicable)
X.X.2.3	Electric LU/LA elevators (as applicable)
X.X.2.4	Hydraulic LU/LA elevators (as applicable)
X.X.3	Acceptance
X.X.3.1	Electric elevators (as applicable)
X.X.3.2	Hydraulic elevators (as applicable)
X.X.3.3	Electric LU/LA elevators (as applicable)
X.X.3.4	Hydraulic LU/LA elevators (as applicable)
X.X.4	Code references
X.X.4.1	Electric elevators (as applicable)
X.X.4.2	Hydraulic elevators (as applicable)
X.X.4.3	Electric LU/LA elevators (as applicable)
X.X.4.4	Hydraulic LU/LA elevators (as applicable)

When a requirement within ASME A17.1/CSA B44 or ASME A17.3 cross-references another requirement, the cross-reference is shown with the referring requirement in braces, { }. For ASME A17.1-2000/CSA B44-00 and later edition requirements, where no direct cross-reference is found within the ASME A17.1-2000/CSA B44-00 Cross-Reference Table, the prior code Rule (A17.1d-2000 and earlier editions) is shown in parentheses, ( ), with a preceding "NR" designation.

Subsection numbering of items may not be sequential when there are no inspection or test procedures indicated within this Guide.

NOTE: This Guide addresses the requirements of A17.1-1955 and later editions for elevators, escalators, and moving walks; the requirements of A17.1-1993 for dumbwaiters; and the requirements of A17.1-2000 and later editions for Material Lifts; and the latest edition of ASME A17.3. Some requirements in earlier editions of ASME A17.1 are also addressed. The inspector is referred to the particular edition of the ASME A17.1 Code that applies for requirements prior to 1955, 1993 or 2000, as applicable.

This Guide includes the pertinent requirements from prior editions of ASME A17.1/CSA B44 that differ from the requirements in the latest edition. As the inspector becomes familiar with the prescribed order of inspection procedures, variations may be appropriate. The Foreword, Preface, and Nonmandatory Appendices that are included in this Guide have been approved by the A17 Committee but are not part of this American National Standard.

NOTE: See also section 2, "Application," in the Introduction of this Guide.

REQUIREMENTS FOR EXISTING INSTALLATIONS

Elevators and escalators in jurisdictions that have adopted ASME A17.3, the Safety Code for Existing Elevators and Escalators, and installations that have been altered in accordance with Part XII of the Safety Code for Elevators and Escalators, A17.1d-1986 and later editions, must, as a minimum, conform to the requirements identified in this Guide as "ASME A17.3." If an existing installation does not meet the requirements of the ASME A17.3 Code, it must be upgraded. If an existing installation was required to meet more stringent requirements, it must continue to meet those requirements.

Alterations, if made, must conform to the requirements of ASME A17.1/CSA B44, Part XII, and the entire installation must conform to the requirements of ASME A17.3. The alteration requirements in ASME A17.1/CSA B44, Part XII may be more stringent than the requirements of ASME A17.3. The equipment must conform to the more stringent of the two.

METRIC (SI) UNITS

This edition of the Guide uses both imperial and metric (SI) units. The format of the units in the Guide are in the order found in the referenced Code [e.g., imperial (metric) or metric (imperial)]. Information on the usage of SI units and conversion to imperial units is contained in IEEE/ASTM SI 10-1997, Standard for the Use of the International System of Units (SI): The Modern Metric System; ASME Guide SI-1, Orientation and Guide for Use of SI (Metric) Units; or CAN/CSA-Z234-1, Canadian Metric Practice Guide.

DEFINITIONS

For definitions, see Section 3 of A17.1d-2000 and earlier editions (Section 1.3, ASME A17.1-2000/CSA B44-00 and later editions).

ASME ELEVATOR PUBLICATIONS

This Guide is one of the numerous codes and standards that have been or are being developed and published by The American Society of Mechanical Engineers (ASME). The following publications are of special interest to users of this Guide. For prices and availability, contact

ASME Order Department
150 Clove Road
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ASME website: www.asme.org/codes-standards

ASME A17.1/CSA B44, Safety Code for Elevators and Escalators. This American National Standard safety code covers the design, construction, installation, operation, testing, maintenance, alteration, and repair of elevators, dumbwaiters, escalators, moving walks, and material lifts and dumbwaiters with automatic transfer devices.

ASME A17.3, Safety Code for Existing Elevators and Escalators. This Code covers retroactive requirements for existing elevators and escalators. The purpose of this Code is to establish minimum requirements that will provide a reasonable degree of safety for the general public. Although many of these requirements also increase the degree of safety for the elevator mechanic and inspector, this area has not been addressed at this time.

ASME A17.4, Guide for Emergency Personnel. This Guide for emergency personnel (fire, police, etc.), building owners, lessees, and building operating managers explains the proper procedures to be used for the safe removal of passengers from stalled cars.

CSA B44.1/ASME A17.5, Elevator and Escalator Electrical Equipment. This Code contains requirements for obtaining, labeling, and listing electrical equipment for elevators, escalators, moving walks, dumbwaiters, material lifts, platform lifts, and stairway lifts.

ASME A17.7/CSA B44.7, Performance-Based Safety Code for Elevators and Escalators. This American National Standard performance-based safety code covers the design, construction, installation, operation, testing, maintenance, alteration, and repair of elevators, dumbwaiters, escalators, moving walks, and material lifts.

ASME A17.8/CSA B44.8, Safety Code for Wind Turbine Tower Elevators. This American National Standard covers elevators permanently installed in a wind tower to provide vertical transportation of authorized personnel and their tools and equipment only.

Published Interpretations. Interpretations of ASME A17.1 and ASME A17.2 approved by the A17 Committee from June 14, 1972, through June 1979 were published in a separate book in 1980.

Starting with the 1981 edition of the Code and ending with the 2016 edition, interpretations were published with each new edition and supplement of ASME A17.1/CSA B44. A compilation of Interpretations Nos. 2–13 (June 1979–May 1989) has also been published by ASME.

ASME A17.1/CSA B44 Handbook. This Handbook augments the ASME A17.1/CSA B44 Code with commentary, diagrams, and illustrations that are intended to explain the requirements of the ASME A17.1/CSA B44 Code.

The commentary contained in the Handbook is the opinion of the author and has not been approved by the A17 Committee or the B44 Technical Committee.

QEI-1, Standard for the Qualification of Elevator Inspectors. This Standard covers requirements for the qualification and duties of inspectors and inspection supervisors engaged in the inspection and testing of equipment within the scope of the ASME A17.1/CSA B44 Code.

ASME A18.1, Safety Standard for Platform Lifts and Stairway Chairlifts. This safety Standard covers the design, construction, installation, operation, inspection, testing, maintenance, and repair of inclined stairway chairlifts and inclined and vertical platform lifts intended for transportation of a mobility-impaired person only.

Abbreviations Used in This Guide

Abbreviation	Unit	Abbreviation	Unit
A	ampere	lb	pound (mass)
°C	degree Celsius	lbf	pound (force)
deg	degree (angle)	lx	lux
°F	degree Fahrenheit	m	meter
fc	footcandle	m/s	meter per second
ft	foot	m/s^2	meter per second per second
ft/min	foot per minute	m^2	square meter
ft/s	foot per second	m^3	cubic meter
ft^2	square foot	mA	milliampere
ft^3	cubic foot	mm	millimeter
ft/s^2	foot per second per second	mm^2	square millimeter
h	hour	mm^3	cubic millimeter
Hz	hertz	MPa	megapascal
in.	inch	N	newton
$in.^2$	square inch	psi	pound per square inch
$in.^3$	cubic inch	s	second
kg	kilogram	V	volt
kPa	kilopascal		

ASME A17.2-2023
SUMMARY OF CHANGES

Following approval by the ASME A17 Committee and ASME, and after public review, ASME A17.2-2023 was approved by the American National Standards Institute on August 28, 2023.

In ASME A17.2-2023, all figures, forms, and tables have been redesignated. This edition also includes the following changes identified by a margin note, **(23)**.

Page	*Location*	*Change*
xxviii	Correspondence With the A17 Committee	Added
xxix	Preface	Revised
9	1.6.2	Revised in its entirety
9	1.6.4.2	Revised
11	1.10.1	Revised
13	1.10.4.1	Revised
16	1.13.4.1	Revised
20	Item 1.20	Revised in its entirety
26	2.7.4.3	Revised
26	2.7.4.4	Revised
38	2.18.3	Revised
45	2.29.1	Revised
57	2.40.4.3	Revised
57	2.40.4.4	Revised
61	2.45.4	Revised
62	3.1.1	Revised
63	3.3.1	Revised
68	Item 3.7	Revised in its entirety
70	3.11.3	Revised
88	3.27.3.2	Revised
88	3.27.4.1	Revised
106	5.8.1	Revised
127	6.5.9.8	Revised
144	7.10.1(b)(3)	The phrase "added the following definition of 'accessible' " deleted by errata
144	7.10.4	Revised
150	Item 7.19	Revised in its entirety
152	8.1.4	Revised
160	8.13.3	Revised in its entrety
181	10.12.3	Subparagraph (b)(3)(-b) revised
183	10.13.3	Revised in its entirety
186	11.5.4	Editorially revised

Page	*Location*	*Change*
190	Item 11.23	Added
217	Part 17	Added
221	Part 18	Added
235	Part 19	Added
242	Part 20	Added
245	Part 21	Added
332	Nonmandatory Appendix B	Revised
410	Nonmandatory Appendix D	Paragraphs D-1 and D-2 and Tables D-2-1 through D-2-3 added
495	Table F-1	For Items 2.7 and 2.40, cross-references under "ASME A17.1-2000/CSA B44-00 and Later Requirements" revised
503	Table F-2	For Items 2.7 and 2.40, cross-references under "ASME A17.1-2000/CSA B44-00 and Later Requirements" revised
527	Nonmandatory Appendix K	Added

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Introduction

1 SCOPE

This Guide covers recommended inspection and testing procedures for electric and hydraulic elevators, escalators, and moving walks required to conform to A17.1-1955 and later editions, Safety Code for Elevators and Escalators, and ASME A17.3, The Safety Code for Existing Elevators and Escalators. This Guide also addresses some requirements from editions of A17.1 prior to 1955.

This Guide also includes Canadian references and applicable exceptions for CSA B44-00 and later editions.

NOTES:

(1) This Guide may not reflect the latest requirements in the current ASME A17.1/CSA B44 and ASME A17.3 Codes.

(2) The inspection procedures in Parts 1 through 6 apply for limited-use/limited-application (LU/LA) elevators, except as modified.

2 APPLICATION

This Guide is intended to assist qualified inspectors performing routine inspections and witnessing periodic and acceptance inspections and tests. It is not intended to serve as a basis for government regulations. This Guide does not contain information on handling discrepancies noted during an inspection and test. The authority having jurisdiction in their legislation adopting the Code is responsible for addressing this subject. The acceptance inspection and testing procedures apply only to the extent that they conform to the latest edition of the ASME A17.1/CSA B44 Code. The routine and periodic inspection and testing procedures apply only to the extent that they conform to the applicable Code requirements that were in effect at the time of installation or alteration. The inspection and testing procedures do not take into account local regulations that may differ.

It is recognized that inspectors will not be able to accomplish all the inspection procedures specified in this Guide during each inspection. Qualified inspectors have the knowledge and experience to recognize potential deficiencies and to focus the inspection in those areas.

This Guide uses the following format to describe the appropriate inspection and test:

(a) Periodic Inspections. The examination and operation of equipment at specified intervals by an inspector to check for compliance with the applicable Code requirements.

(b) Periodic Test. The testing and detailed examination and operation of equipment at specified intervals witnessed by an inspector to check for compliance with the applicable Code requirements.

(c) Acceptance. The initial inspection and test of new or altered equipment to check for compliance with the applicable Code requirements.

The procedures in this Guide are recommendations only and are intended to illustrate a method of complying with the requirements in A17.1d-2000 and earlier editions and ASME A17.1-2000/CSA B44-00 and later editions, Sections 8.10 and 8.11. The person performing the inspection and test may employ other methods to demonstrate compliance with the applicable Code requirement. Qualified inspectors have the knowledge and experience to recognize potential deficiencies and to focus the inspection where necessary.

Where, as an example, no inspection procedure is specified for periodic inspections or Periodic Test, it indicates that the Code requirements need no explanation. This does not indicate that no inspection or test of the specified item is required. The item is to be inspected or tested for compliance with the applicable Code requirements.

If, as an example, the acceptance inspection has a test procedure that differs from the test procedure specified under periodic test, the acceptance test procedure should be followed in addition to the periodic test procedure.

This Guide contains inspection procedures for compliance with the applicable Code only. A17.1d-2000 and earlier editions, Rule 1000.2 and ASME A17.1-2000/CSA B44-00 and later editions, requirements 8.10.1.2 and 8.11.1.2 read in part "the inspection and test required by this Part are to determine that the equipment conforms to the applicable Code requirements at the time of installation and any alteration." This Guide contains no recommendations that exceed the requirements of A17.1d-2000 and earlier editions, Rule 1000.2; ASME A17.1-2000/CSA B44-00 and later editions, requirements 8.10.1.2 and 8.11.1.2; and ASME A17.3.

To facilitate making inspections and tests, sample checklists can be found in Nonmandatory Appendix A of this Guide. The checklist Item numbers correspond to the Item numbers in this Guide. The checklists also contain appropriate ASME A17.1/CSA B44 and ASME A17.3 references for each Item.

NOTE: See also "Form and Arrangement" in the Preface of this Guide.

3 QUALIFICATIONS OF INSPECTORS

Inspectors and inspection supervisors are required by ASME A17.1-2010/CSA B44-10 and earlier editions to be certified by an organization accredited by The American Society of Mechanical Engineers Qualifications for Elevator Inspectors Committee in accordance with the requirements set forth in the Standard for the Qualification of Elevator Inspectors, ASME QEI-1, and to be recognized by the authority having jurisdiction. Effective January 1, 2014, accreditation of organizations to certify inspectors and inspection supervisors is no longer within the purview of The American Society of Mechanical Engineers.

4 PERSONAL SAFETY

Inspectors should have knowledge of the personal safety practices including, but not limited to, the safety practices contained in *The Elevator Industry Field Employees' Safety Handbook* (EIFESH) as required by ASME QEI-1.

The EIFESH contains safety precautions an inspector is likely to need for most inspections. Because of the large variation in elevator equipment and possible unique elevator designs, it is the responsibility of each inspector, mechanic, and consultant to determine the safe manner in which to conduct each test and inspection before starting each procedure. It is not the inspector's responsibility to ensure the safety of all participants in the tests and inspections. Inspectors are still advised to be aware of safety for themselves and others. Some elevator manufacturers, inspection organizations, and maintenance companies have safety procedures that go beyond the requirements in the EIFESH or are unique to their organization or equipment. When this is the case, the safer procedures should be followed. In past editions of ASME ASME A17.2, specific cautions and safety warnings were part of the body of the Guide. Those cautions and warnings were removed, with the inspector directed to use the EIFESH or other safety materials that may apply. This Inspectors' Guide is for the use of trained elevator personnel who are aware of the hazards inherent in working with elevator equipment. Trainee inspectors are advised to use extra caution while learning inspection techniques and test procedures.

NOTE: *The Elevator Industry Field Employees' Safety Handbook* is available from Elevator World, Inc., P.O. Box 6507, 354 Morgan Avenue, Mobile, AL 36606 (www.elevatorbooks.com).

5 DUTIES OF INSPECTORS

The duties of inspectors are

(a) when witnessing acceptance inspections and tests of new or altered installations, to determine whether all parts of the installation conform to the requirements of the applicable code or regulations and whether the required safety devices function as required.

(b) when making routine and/or periodic inspections and tests, to determine that the equipment conforms to the applicable Code edition (edition under which it was installed, ASME A17.3, and local requirements) and that alterations conform with Code requirements. Determine that Periodic Test performed by the owner or his agent are conducted in accordance with Code requirements and that the results of these tests demonstrate Code compliance.

(c) to report the results of inspections and tests in accordance with applicable local regulations.

It is not the function or duty of inspectors to make any repairs or adjustments to the equipment, nor to recommend methods or procedures for correction of deficiencies.

6 ARRANGEMENT FOR INSPECTION

The inspecting authority or the inspector should request that the owner or his agent make the following arrangements prior to an inspection or test:

(a) Provide qualified personnel for periodic and acceptance inspections and tests to perform the tests specified in the applicable code or regulations.

(b) Have a person familiar with the operation of the elevator available to accompany and assist during the inspections. The inspector should be accompanied by a person familiar with the operation of the equipment to assist him during his inspections.

7 RECOMMENDED EQUIPMENT

(a) It is recommended that the inspector have the following equipment:

(1) flashlight with a nonconductive case

(2) 6-ft (2-m) rule of nonconductive material

(3) set of thick gages

(4) small hammer, preferably a ½-lb (0.2-kg) ball peen

(5) marking chalk or crayon

(6) small metal mirror

(7) safety hat (nonconductive)

(8) copy of the latest applicable codes and standards (e.g., ASME A17.1/CSA B44, ASME A17.3, NFPA 70)

(9) copy of the applicable local regulations

(10) copy of the latest edition of *The Elevator Industry Field Employees' Safety Handbook*

(11) copy of the checklists contained in this Guide

(12) padlock, multiple lock device, and "Do Not Start" tags

(13) caliper

(14) telescoping pointer with an alligator clip and business cards or stiff paper

(15) other items such as an eraser, kitchen spatula, etc. (for escalators and moving walks)

(16) stopwatch or timer

(17) 50-ft (15-m) nonconductive tape and 25-ft (7.5-m) tape

(18) tachometer, which reads directly in feet per minute (meters per second)

(19) multimeter

(20) level, 30-deg/60-deg triangle, and protractor or angle finder

(21) door test scale (gage) to check closing door force

(22) a light meter that can accurately measure light levels from 0 fc to 19 fc (0 lx to 200 lx)

(b) Periodic and Acceptance Inspection and Tests. In addition to the equipment specified in (a), the following should be provided by the owner or contractor:

(1) suitable test weights.

(2) dynamometer.

(3) copy of all pertinent drawings, specifications, data sheets, and required test procedures.

(4) transceiver.

(5) come-along and "Chicago" grip or midline rope clamps.

(6) "Out of Service" signs and/or barricades at hoistway doors.

(7) pressure gage with damping (either liquid filled or an in-line snubber) to provide a steady reading. The gage should have full-scale reading of twice the expected pressure, an accuracy of no less than 1% of full-scale reading, and a calibration sticker that shows that it has been calibrated within the last year.

(8) no. 16-gage copper wire or equivalent.

(9) keys for access and operation of all elevator equipment.

(10) jack and pipe stand or other suitable support.

(11) plumb line (for escalators).

(12) torque wrench (for escalators).

(13) skirt/step performance index test apparatus and accessory apparatus.

(14) comb-step/comb-pallet device test apparatus and accessory apparatus.

(15) acceleration-measuring device that can record or display speed and the deceleration rate to use when testing a hydraulic elevator plunger gripper.

NOTE: If iron counterweight sections are used as test weights and scales are not available to accurately determine their weight in pounds, their approximate weight can be determined by multiplying the product of the length, breadth, and thickness in inches by 0.26. If weights are lead, multiply by 0.41. If weights are steel, multiply by 0.28. Deduct for the volume of any holes or slots. The above lists of recommended equipment do not constitute all the equipment that may be required to perform the inspections or tests.

8 REFERENCE DOCUMENTS

Documents referenced in this Guide can be obtained from the following organizations:

Organization	Full Name and URL
ANSI	American National Standards Institute, Inc. www.ansi.org
ASME	The American Society of Mechanical Engineers www.asme.org
ASTM	American Society for Testing and Materials (ASTM International) www.astm.org
CSA	Canadian Standards Association www.csagroup.org
Elevator World, Inc.	Elevator World, Inc. www.elevatorbooks.com
IEEE	Institute of Electrical and Electronics Engineers, Inc. www.ieee.org
NFPA	National Fire Protection Association www.nfpa.org

Part 1
Elevator — Inside of Car

ITEM 1.1
DOOR REOPENING DEVICE

1.1.1 Periodic Inspections

For elevators installed under A17.1-1955 through A17.1d-1975, power opening of the car door was permitted to take place anywhere in the hoistway. For elevators installed under A17.1e-1975, power opening of the car door was permitted to take place only within the landing zone.

CAUTION: In any of the following tests where the inspector uses an object to test the reopening device, the object must not be inserted when the door is nearing its fully closed position.

1.1.1.1 Detection Means of Objects in the Door Path

(a) Mechanical Reopening Device (Safety Edge). Actuate the device while the doors are being closed and note whether car and hoistway doors stop and reopen. For vertically sliding car doors or gates, a stop and reopen is not required for obstructions within 5 in. (127 mm) of the sides of the opening.

(b) Electronic Reopening Device. Place an object in front of the leading edge of the car door at various positions while it is being closed. The car and hoistway doors should stop and reopen. For vertically sliding car doors or gates, a stop and reopen is not required for obstructions within 5 in. (127 mm) of the sides of the opening.

(c) Photoelectric Reopening Device. To qualify as a reopening device that complies with the Code, the device must sense the presence of the obstruction anywhere within the opening along the leading edge of the car door. Determine the location of the light beam or beams with relation to the car floor. Where an invisible beam is used, the position of the beam can be determined by an examination of the equipment. While the car and hoistway doors are being closed, obstruct the beam, which should cause the doors to stop and reopen. This type of device is usually installed in addition to a mechanical or electronic reopening device.

(d) For freight or other elevators installed under ASME A17.1a-2008/CSA B44a-08 and later editions and provided with vertically power-operated doors, ensure that a means to detect various size objects within the opening is provided. Refer to ASME A17.1/CSA B44, Nonmandatory Appendix S for detailed drawings of the areas of detection and the size requirements for the objects to be detected. The installer should have a written procedure for demonstrating that the detection means complies with the Code, and the procedure should be documented in the Maintenance Control Program (MCP).

1.1.1.2 Detection Means of Approaching Objects. For passenger elevators installed under ASME A17.1-2019/CSA B44-19 and later editions, the following applies: When you walk at a normal pace toward the closing horizontally sliding elevator hoistway doors, the means is required to sense you approaching in a zone ranging from 500 mm (20 in.) to 226 mm (9 in.) when the doors are more than 450 mm (18 in.) from fully closed and when you are in front of the leading edge of the door panel(s). After the doors are less than 450 mm (18 in.) from the fully closed position [see ASME A17.1/CSA B44, requirement 2.12.2.2(a)] or 20 s after initial detection, the means is permitted to be rendered inoperative. Verify that when an approaching person is detected and 15 s have not yet transpired, the approaching objects detection means is not rendered inoperative, and the doors stop moving and reopen a minimum of 915 mm (36 in.) and/or to fully open.

NOTE: For LU/LA elevators, vertical reopening devices do not apply. Vertically opening doors are not permitted.

1.1.2 Periodic Test

1.1.3 Acceptance

1.1.4 References

1.1.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 112 and Rule 1001.2(a)(1).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2008/CSA B44-08 — Requirements 2.13, 8.10.2.2.1(a), and 8.11.2.1.1(a).

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2016/CSA B44-16 — Requirement 2.13.3.4.

ASME A17.1-2019/CSA B44-19 and later editions — Requirement 2.13.5.

ASME A17.3 — Section 2.8.

1.1.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 112 {Rule 300.13} and Rules 1001.2(a)(1) and 1004.2(a)(1).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2008/CSA B44-08 — Requirements 2.13 {3.13}, 8.10.3.2.1(a), and 8.11.3.1.1(a).

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2016/CSA B44-16 — Requirement 2.13.3.4 {3.13}.

ASME A17.1-2019/CSA B44-19 and later editions — Requirement 2.13.5.

ASME A17.3 — Section 2.8.

1.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Section 2500.13, 112 {NR 112.2(b)(3), 112.3(b), 112.3(d), and 112.6}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2016/CSA B44-16 — Requirements 5.2.1.13, 2.13 {NR 2.13.1(b), 2.13.2.2.3, and 2.13.6}.

ASME A17.1-2019/CSA B44-19 and later editions — Requirement 2.13.5.

1.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Section 2500.13, 112 {NR 112.2(b)(3), 112.3(b), 112.3(d), and 112.6}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2016/CSA B44-16 — Requirements 5.2.1.13, 2.13 {NR 2.13.1(b), 2.13.2.2.3, and 2.13.6}.

ASME A17.1-2019/CSA B44-19 and later editions — Requirement 2.13.5.

ITEM 1.2
STOP SWITCHES

1.2.1 Periodic Inspections

An emergency stop switch must be provided on freight elevators and existing passenger elevators with perforated enclosures. An emergency stop switch or in-car switch must be provided on passenger elevators.

(a) Emergency Stop Switch. Operate the emergency stop switch and note whether the car stops promptly. On elevators installed under A17.1b-1980 and later editions, the stop switch should also activate an audible signaling device. On elevators installed under A17.1a-1982 and later editions, an emergency stop switch is required to be located in or adjacent to each car operating panel (COP). Passenger elevators with nonperforated car enclosures may be equipped with an in-car stop switch in lieu of the emergency stop switch.

(b) In-Car Stop Switch. Passenger elevators installed under A17.1d-1986 and later editions do not require an in-car emergency stop switch but do require an in-car stop switch. The in-car stop switch must be key operated or behind a locked panel. Check the operation of this switch by placing it in the "STOP" position and attempting to operate the car by the normal means.

NOTE: For LU/LA elevators, emergency stop switch does not apply.

1.2.2 Periodic Test

1.2.3 Acceptance

1.2.4 References

1.2.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.2(e), 210.2(v), and 1001.2(a)(2).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.2.5, 2.26.2.21, 8.10.2.2.1(b), and 8.11.2.1.1(b).

ASME A17.3 — Paragraphs 3.10.4(t) and 3.10.4(u).

1.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 306.4(b)(1), 306.4(b)(6), and 1004.2(a)(2).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.26.4.2(a), 3.26.4.2(f), 8.10.3.2.1(b), and 8.11.3.1.1(b).

ASME A17.3 — Paragraphs 3.10.4(t) and 3.10.4(u) {4.7.4}.

1.2.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2510.11. Rule 210.2(e) does not apply.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.26. Requirement 2.26.2.5 does not apply.

1.2.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.7. Section 306, Rule 306.11 does not apply.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.13 and 3.26. Rule 3.27 does not apply.

ITEM 1.3
OPERATING CONTROL DEVICES

1.3.1 Periodic Inspections

(a) Continuous-Pressure Operation. Operate the car in each direction by means of the operating buttons or other devices in the car to verify that they do not stick or bind, that they are properly marked, and that the car stops when the operating device is released.

(b) Automatic Operation and Signal Operation. Operate the car, making stops in both the up and down directions. At each stop, open the car door or gate and note the relation of the car platform sill to the landing sill. Verify that operating push buttons work properly.

(c) Hand Rope, Lever, Wheel, or Crank Operation. These types of operation are prohibited for elevators installed under A17.1-1955 and later editions and by ASME A17.3.

(d) Dual and Attendant Operation. Where the elevator can be operated at times only from the car and at times as an automatic elevator (dual or attendant operation), check the operation under both operating conditions.

(e) Emergency Release Switch in Car. Emergency release switches that permit operation with the car door or gate open and other permanent devices that render door interlocks and door or gate electric contacts inoperative are not permitted under A17.1-1955 and later editions or by ASME A17.3.

1.3.1.1 Electric Elevators

(a) Car Leveling and Truck Zoning Device. When an automatic leveling device is provided, the accuracy of stopping in both directions of travel should be noted at each landing. A leveling tolerance may be required by an accessibility or handicapped code. Where inching buttons are provided, test them to determine that they will operate the car only within the zone allowed by the Code. While the car is leveling, operate the emergency or in-car stop switch as outlined in 1.2.1. This should stop the car.

NOTE: Leveling devices cannot be expected to stop the car exactly level with the landing sill.

(b) Car Switch Operation. Operate the car switch to determine whether the operating handle returns to the "STOP" position and latches in this position when the hand is removed. Note any evidence of excessive friction or weakened or broken centering springs.

1.3.1.2 Hydraulic Elevators. *Car Leveling and Truck Zoning Device.* When an automatic leveling device is provided, the accuracy of stopping in both directions of travel should be noted at each landing. A leveling tolerance may be required by an accessibility or handicapped code. Where inching buttons are provided, test them to verify that they will operate the car only within the zone allowed by the Code. While the car is leveling, operate the emergency or in-car stop switch as outlined in 1.2.1.

NOTE: Leveling devices cannot be expected to stop the car exactly level with the landing sill.

1.3.2 Periodic Test

1.3.3 Acceptance

1.3.4 References

1.3.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.1a, 210.1e, and 1001.2(a)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.1.1, 2.26.1.6, 8.10.2.2.1(c), and 8.11.2.1.1(c).

ASME A17.3 — Paragraphs 3.10.1, 3.10.2, and 3.10.7.

1.3.4.2 Hydraulic Elevators. A17.1d-2000 and later editions — Rules 210.1a {306.1}, 306.3, and 1004.2(a)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.1.1 {3.26.1}, 3.26.3, 8.10.3.2.1(c), and 8.11.3.1.1(c).

ASME A17.3 — Paragraphs 3.10.1 and 3.10.2 {Section 4.7}, 3.10.7 {4.7.6}, and 3.10.9 {4.7.7}.

1.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2510.11 and Section 210.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.26 and 2.26.

1.3.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.7. Section 306, Rule 306.11 does not apply.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.13 and 3.26. Requirement 3.27 does not apply.

ITEM 1.4
SILLS AND CAR FLOOR

1.4.1 Periodic Inspections

(a) Hinged Car Platform Sills

(1) Visually examine the sill plate for cracks, wear, broken welds, and loose rivets. Check the area under the sill for foreign material, which would prevent proper operation at the landing.

(2) Check all bolts on the counterweight housing and stop angles. Inspect the ropes or chains that connect the sill to the counterweight. Check pivot points and sheaves for wear and proper lubrication.

(3) Inspect the hand lever and linkage for excess wear and loose or missing cotter pins or bolts. Check the operation of the hinged car-platform sill electric contact.

(b) Hinged Hoistway Landing Sills

(1) Visually examine the sill plate for cracks, wear, broken welds, and loose rivets. Check the area under the sill for foreign material, which would prevent proper operation at the landing.

(2) Check all bolts on the counterweight housing and stop angles. Inspect the ropes or chains that connect the sill to the counterweight. Check pivot points and sheaves for wear and proper lubrication. Check the operation of the hinged hoistway landing sill. It should be possible to lower the hinged sill only when the hoistway door is fully opened.

(c) Sills and Car Floor

(1) Determine the condition of the car floor and car and landing sills. Look especially for damage to floors and sills as well as loose sills. Verify the clearance between the car and landing sills. See Table 3.14.3(a).

(2) A floating platform is not permitted by A17.1a-1957 and later editions or by ASME A17.3. A floating platform is a car platform that permits operation of the car with the car gate or door open.

(3) Elevator systems may, however, use isolated platform construction that may have load weighing signaling devices. Such use is not prohibited. Try operating

the car from the landing operating device with a load of 30 lb (13.6 kg) on the platform with the car gate or door in the open position. Repeat this test with the test load placed in various locations. The car should not operate under such conditions.

1.4.2 Periodic Test

1.4.3 Acceptance

Check that landing sills are substantially flush with the floor surface of the landings and the sill does not present a tripping hazard. Changes in level up to ¼ in. (6 mm) may be vertical and without edge treatment. Changes in level between ¼ in. (6 mm) and ½ in. (13 mm) must be beveled, and changes in level greater than ½ in. (13 mm) must be ramped.

1.4.4 References

1.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 108.1, 110.10d, 110.11a, 110.13a, 203.16, 210.12, and 1001.2(a)(4).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5.1, 2.11.10.3, 2.11.11.1, 2.11.13.1, 2.15.16, (NR 210.12), 8.10.2.2.1(d), and 8.11.2.1.1(d).

ASME A17.3 — Paragraphs 3.3.3 and 3.3.4.

ANSI A117.1.

1.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 108.1 {300.9}, 110.10d {300.11}, 110.11a, 110.13a, 203.16 {301.6}, 210.12, and 1004.2(a)(4).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5.1 {3.5}, 2.11.10.3 {3.11}, 2.11.11.1, 2.11.13.1, 2.15.16 {3.15}, (NR 210.12), 8.10.3.2.1(d), and 8.11.3.1.1(d).

ASME A17.3 — Paragraphs 3.3.3 and 3.3.4 {4.2.2}.

ANSI A117.1.

1.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.9 and 108.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.5 and 2.5.

1.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.9 and 108.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.5 and 2.5.

ITEM 1.5
CAR LIGHTING AND RECEPTACLES

1.5.1 Periodic Inspections

(a) Normal Illumination. Examine lighting fixtures to determine whether they are securely fastened. At least two lamps must be provided. Examine the electric lighting fixtures to verify that bulbs or tubes are guarded to prevent injury to persons in the event of breakage. For elevators installed under A17.1d-2000 and earlier editions, verify that means are provided to contain shattered glass if the light diffuser is of the open "egg-crate" type.

For elevators installed under ASME A17.1-2010/CSA B44-10 and later editions, ensure that either two lamps or two sets of lamps are provided. Each lamp or set of lamps is required to produce at least the minimum amount of illumination at the threshold(s) as required by the Code. If two lamps are provided, disable them one at a time and take readings at the threshold to ensure the remaining lamp is capable of producing at least the minimum amount of illumination required.

Where sets of lamps are provided, verify that at least two sets of lamps are installed and that each set is capable of producing at least the minimum amount of illumination at the threshold independent of the other set. There is no requirement for both lamps or both sets of lamps to be illuminated concurrently. If a secondary lamp or set of lamps is provided and is not operating under normal conditions, ensure that the secondary lamp or set of lamps illuminates automatically if the primary lamp or set of lamps fails. Verify that an audible or visual signal is provided to alert personnel that one of the lamps or set of lamps is inoperative.

(b) Auxiliary Illumination. A17.1b-1968 and later editions and ASME A17.3 require auxiliary illumination of passenger elevator cars in case of failure of the normal car lighting power supply. When auxiliary lighting is supplied, check its operation by disconnecting the normal lighting supply. Where the auxiliary lighting is supplied by batteries, check that such batteries are in good condition and properly maintained, and that any recharging equipment is operable. Check that the auxiliary power supply is located on each elevator.

Freight elevators installed under A17.1a-2005 and later editions are required to be provided with auxiliary illumination. The illumination values are the same as for passenger elevators.

(c) Car lamps and diffusers, if provided, should be in place for all safety and buffer tests. They must remain in place during the test. When there is a question as to the adequate capacity of the emergency power supply, an endurance test should be made.

(d) Illumination readings should be taken during each periodic inspection to ensure that minimum illumination levels are still in compliance with the Code.

1.5.2 Periodic Test

1.5.3 Acceptance

When the hoistway doors are closed, the Code requires a minimum illumination at the threshold(s) of the car door sill(s) of 5 fc (54 lx) for passenger elevators, and 2½ fc (27

lx) for freight elevators. Measurements for auxiliary illumination should be taken in front of the main car operating panel (COP) approximately at a depth from the face of the panel of 12 in. (300 mm) and at a height from the platform of between 35 in. (900 mm) and 48 in. (1 220 mm). The illumination level should not be below 0.2 fc (2 lx). See Code requirements for determining the main COP when more than one is provided.

Determine that light bulbs and tubes are guarded or recessed to provide protection from accidental breakage. Glass panels and their structure must be capable of withstanding the required elevator tests without damage.

Check if glass exceeding 1 ft^2 (0.093 m^2) in area and abutting panels whose total area is greater than 1 ft^2 (0.093 m^2) meet the requirements for laminated glass or, in jurisdictions enforcing the National Building Code of Canada (NBCC), safety glass or safety plastic in compliance with the applicable standard.

Car lights may be turned off automatically. A17.1b-1989 and later editions specify certain conditions that must be met before lights can be automatically turned off.

1.5.4 References

1.5.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.7 and 1001.2(a)(5).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 2.14.7, 8.10.2.2.1(e), and 8.11.2.1.1(e).

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 2.14.7.

ASME A17.3 — Paragraphs 3.4.5 and 3.4.6.

1.5.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 301.7 and 1004.2(a)(5).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 3.14, 8.10.3.2.1(e), and 8.11.3.1.1(e).

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 2.14.7 {3.14}.

ASME A17.3 — Paragraphs 3.4.5 and 3.4.6 {4.2.3}.

1.5.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 5.2.1.14 and 2.14.

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 2.14.7 {5.2.1.14}.

1.5.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 5.2.1.14 and 2.14.

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 5.2.1 {5.2.2}.

ITEM 1.6
CAR EMERGENCY SIGNAL AND COMMUNICATION DEVICES

1.6.1 Periodic Inspections

Elevators installed under A17.1-1955 through A17.1b-1980, which are operated without a designated attendant, must be provided with an emergency signal audible outside the hoistway or with a telephone.

All elevators installed under A17.1b-1980 through A17.1-2000 and ASME A17.3 are required to have emergency signaling devices. A17.1a-1991 and later editions require that the switch marked "ALARM" be illuminated when activated and that elevators with a travel greater than 100 ft (30.4 m) be provided with a second audible signaling device at the designated level. Operate the audible signaling device (alarm) and the means of two-way conversation. As of A17.1a-2002, the audible alarm is no longer required except as in ASME A17.1/CSA B44, requirement 2.26.2.5, and focus was made on the communication means. However, if an audible alarm is provided, it should operate properly.

NOTE: For elevators installed in seismic areas under ASME A17.1-2016/CSA B44-16 and later editions, refer to ASME A17.1/CSA B44, requirement 8.4.10.1.1(i) for alarm requirements.

For those elevators where an alarm is provided, disconnect the normal power source to check that the emergency power source will operate the lighting, alarm, and means of two-way conversation. In buildings that do not have someone in continuous attendance, check the outdoor signal or means of conversation with outside emergency services. Elevators installed under A17.1-1955 through A17.1a-1979 are required to have an emergency signaling device only if the car is operated at any time without a designated operator in the car.

A17.1b-1968 through A17.1-1971 required means of two-way conversation (e.g., an intercom) on automatic elevators having a travel of 65 ft (19.8 m) or more or a distance exceeding 15 ft (4.5 m) between landings. The means of two-way conversation must be to a location within the building. A17.1-1978 and later editions require means of two-way conversation on all automatic elevators. Intercoms are also required to operate in case of failure of the normal building power supply where they are supplied by normal building power.

ASME A17.1b-2009/CSA B44b-09 and later editions require the communication device to be provided with a visual and audible alarm to indicate when the telephone line is no longer operative. The visual and audible signaling features are required to be located at the designated level adjacent to the Phase I keyed switch.

The activation of the device must be by push button, normally located on the main car operating panel. The recipient of the call must be able to determine the caller's location and the elevator ID without the caller

establishing voice communication. An indicator light on the communication device or car operating panel is required to indicate that the call has been acknowledged and that assistance is forthcoming.

NOTE: For purposes of clarity, the two-way communication device required to be between the elevator car and a location in the building can be thought of as an "intercom device," whereas the device that is required to be connected to a 24-hr location can be thought of as a "telephone device." However, there is no Code requirement that states that an intercom and/or telephone device is specifically required. The communication device requirements are written more in performance language than in prescriptive language.

(23) ### 1.6.2 Periodic Test: Category 1

ASME A17.1-2013/CSA B44-13 and later editions require the communication devices be tested for conformity with the applicable standards to which they were installed [see requirements 8.6.4.19.15 and 8.6.5.14.3(l)].

1.6.3 Acceptance

Check the device and verify that it connects to a location that is staffed continuously and recognizes that the call is from an emergency elevator telephone. Ensure communication devices conform to ANSI/ICC A117.1 (non-NBCC areas) or ASME A17.1/CSA B44 (NBCC areas), Nonmandatory Appendix E.

It should be noted that there is no Code requirement for a telephone/communication device to be connected to a "dedicated" telephone line. The two-way communication means shall provide on demand to authorized personnel information that identifies the building location and elevator number and that assistance is required. There is also no Code requirement for cars in a group to be connected to individual phone lines. Thus, several cars may be connected to the same phone line.

As of ASME A17.1b-2009/CSA B44b-09, the phone lines are required to be monitored for connectivity. Check to ensure that if a phone line fails, a visual and audible signal located at the designated level activates. There is no requirement for there to be a visual and audible signal for each phone line.

1.6.4 References

1.6.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 211.1 and 1001.2(a)(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 2.27.1, 8.10.2.2.1(f), and 8.11.2.1.1(f).

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 8.6.4.19.15.

ASME A17.3 — Paragraph 3.11.1.

(23) **1.6.4.2 Hydraulic Elevators.** A17.1d-2000 and earlier editions — Rules 211.1 {306.11} and 1004.2(a)(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 2.27.1 {3.27}, 8.10.3.2.1(f), and 8.11.3.1.1(f).

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 8.6.5.14.3(k), 8.6.5.14.3(l), and 8.6.5.14.3(m).

ASME A17.3 — Paragraph 3.11.1 {4.7.8}.

1.6.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.12.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirement 5.2.1.27.

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 8.6.4.19.15.

1.6.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.12.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirement 5.2.2.14.

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 8.6.4.19.15.

ITEM 1.7
CAR DOOR OR GATE

1.7.1 Periodic Inspections

(a) Examination of Doors or Gates. Examine the car door or gates and note any broken, bent, or sprung members. Operate doors or gates to verify that they operate freely and that bottom sill-guide tracks or bottom guiding members are in place, are securely fastened, and are not worn enough to permit the doors or gates to come out of their tracks at any position of their travel. Verify that all depressions and moldings are not raised or depressed from the exposed surface more than permitted by the Code. A17.1d-2000 and earlier editions allowed up to $\frac{1}{4}$ in. (6.3 mm). Collapsible-type gates are not permitted on passenger elevators installed under A17.1a-1988 and later editions. Check collapsible gates for proper restraint of vertical members to restrict horizontal deflection.

(b) Test for Closed Position. With the hoistway doors or gates in the closed position, check the closed position of the car doors or gates as outlined in 4.2.1(b) for hoistway door or gate interlocks. A door or gate is considered to be in the closed position when the clear open space between the leading edge of the door or gate and the nearest face of the jamb or sill does not exceed 2 in. (51 mm) or, in the case of biparting doors, when the door panels are within 2 in. (51 mm) of contact with each other.

(c) Location of Car Doors or Gates. ASME A17.3 and A17.1-1937 and later editions specify the maximum distance from the face of the car door or gate to the face of the hoistway door. Where the distance is exceeded, verify that space guards are provided on either car or hoistway doors and that sight guards are provided for

horizontally sliding hoistway doors. Take measurements to confirm compliance with these requirements.

NOTE: For LU/LA elevators, vertical sliding car doors are not permitted. Car doors must be of the unperforated horizontally sliding type. Folding doors (accordion or bi-fold types) are not permitted on LU/LA elevators installed under ASME A17.1-2016/CSA B44-16 and later editions. Verify that no more than two entrances are provided on the car.

1.7.2 Periodic Test

1.7.3 Acceptance

Verify that the car door or gate electric contact or car door interlock is inaccessible from inside the car. Verify that the distance from the face of the car door or gate to the face of the hoistway door does not exceed the Code requirements or a car door interlock is provided and the car door complies with the structural requirements in the Code. Verify that openings in vertically sliding gates do not exceed the Code requirements. Verify that two independent suspension means are provided for vertically sliding car doors or gates and weights for balancing or closing comply with Code requirements. Verify that when the car is stopped within the unlocking zone and power is cut off to the door operator, the car door and connected hoistway doors can be opened by hand.

1.7.4 References

1.7.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.2a, 204.4 through 204.6, 210.2(q), and 1001.2(a)(7).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5.1.5.3, 2.13.2.1, 2.14.4 through 2.14.6, 2.26.2 (2.26.2.15), 8.10.2.2.1(g), and 8.11.2.1.1(g).

ASME A17.3 — Paragraphs 3.4.2 and 3.4.3 and Appendix A.

1.7.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 111.7(c) {300.12}, 112.2a {300.13}, 204.4 through 204.6 {301.7}, 210.2(q) {306.4}, and 1004.2(a)(7).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5.1.5.3 {3.5}, 2.12.7.3 {3.12}, 2.13.2.1 {3.13}, 2.14.4 through 2.14.6 {3.14}, 2.26.2 (2.26.2.15) {3.26.4}, 8.10.3.2.1(g), and 8.11.3.1.1(g).

ASME A17.3 — Paragraphs 3.4.2 and 3.4.3 {4.2.3} and Appendix A.

1.7.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204 {NR 204.4a, 204.4(c), 204.4(d), 204.4(h), 204.4(j), 204.4(m)(2), 204.5(a), 204.5(b), and 204.5(d) through 204.5(i)}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14 {NR 2.14.3, 2.14.4.1, 2.14.4.7, 2.14.4.9, 2.14.4.11(b), 2.14.5.1, 2.14.5.2, and 2.14.6}.

1.7.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204 {NR 204.4a, 204.4(c), 204.4(d), 204.4(h), 204.4(j), 204.4(m)(2), 204.5(a), 204.5(b), and 204.5(d) through 204.5(i)}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.14 and Section 2.14 {NR 2.14.3, 2.14.4.1, 2.14.4.7, 2.14.4.9, 2.14.4.11(b), 2.14.5.1, 2.14.5.2, and 2.14.6}.

ITEM 1.8
DOOR CLOSING FORCE

1.8.1 Periodic Inspections

To test the door closing force, park the car at floor level and start the doors in the closing direction. Allow the doors to close between one-third and two-thirds of their normal travel and stop them. Push a force-measuring device with a range appropriate to measure 30 lbf (133 N) against the stopped door, removing the stop so the door is held stationary by the force-measuring device. Slowly back off on the device until the point where the door just starts to move. At this point, the door and measuring forces are in equilibrium and the force can be read.

1.8.2 Periodic Test: Category 1 (Annual) Test

Check the closing speed of a horizontal sliding door for compliance with the kinetic energy requirement. For elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, and for elevators with this data on the door operator data plate, verify that closing time in the code zone is not less than the minimum closing time shown on the door operator data plate.

1.8.3 Acceptance

1.8.4 References

1.8.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.4(b), 1001.2(a)(8), and 1002.2h.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007 — Requirements 2.13.4.2.3, 8.10.2.2.1(h), 8.11.2.1.1(h), 2.13.4.2.4, and 8.11.2.2.8.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirement 8.6.4.19.8.

ASME A17.3 — Paragraph 2.8.1.

1.8.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.4(b), 301.7, and 1004.2(a)(8).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007 — Requirements 2.13.4.2.3, 3.14, 8.10.3.2.1(h), 2.13.4.2.4, and 8.11.3.1.1(h).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirement 8.6.5.14.3(g).

ASME A17.3 — Paragraph 2.8.1 {Section 4.1}.

1.8.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d)}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.13 and 2.13 (NR 2.13.3.4, 2.13.6).

1.8.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d), 112.6}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.13 and 2.13 (NR 2.13.3.4, 2.13.6).

ITEM 1.9
POWER CLOSING OF DOORS OR GATES

1.9.1 Periodic Inspections

Where a door open button is provided, check that when the button is depressed and the door is closing, it causes the door to stop or to stop and reopen. Where sequence closing is provided on a vertically sliding door, check its operation.

1.9.2 Periodic Test

1.9.3 Acceptance

1.9.4 References

1.9.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.3 and 1001.2(a)(9).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3, 8.10.2.2.1(i), and 8.11.2.1.1(i).

ASME A17.3 — Paragraph 2.8.2.

1.9.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.3 {300.13} and 1004.2(a)(9).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3 {3.13}, 8.10.3.2.1(i), and 8.11.3.1.1(i).

ASME A17.3 — Paragraph 2.8.2 {Section 4.1}.

1.9.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d), 112.6}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.13 and 2.13 (NR 2.13.3.4, 2.13.6).

1.9.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d), 112.6}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.13 and 2.13 (NR 2.13.3.4, 2.13.6).

ITEM 1.10
POWER OPENING OF DOORS OR GATES

1.10.1 Periodic Inspections (23)

For elevators installed under A17.1-1955 through A17.1d-1975, power opening of the car door was permitted to take place anywhere in the hoistway. For elevators installed under A17.1e-1975 and later editions, power opening of the car door was permitted to take place only within the landing zone.

If collapsible gates are power operated, check that power opening is limited. Check finger guards on collapsible gates.

NOTE: For LU/LA elevators, power-operated swing doors and horizontally operating car doors are permitted.

1.10.2 Periodic Test

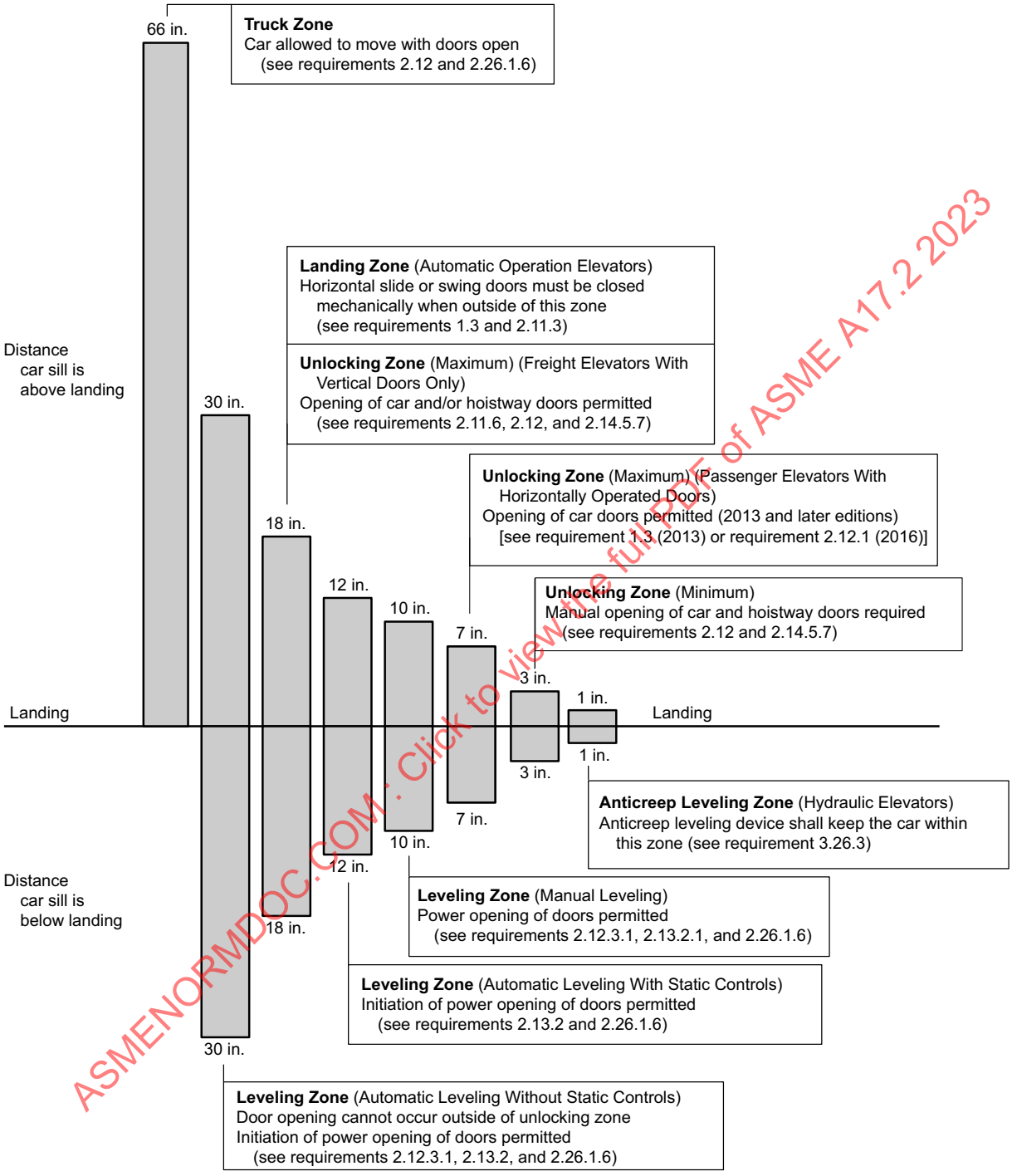
(a) 5-yr Test, Advance Power Opening (for A17.1d-2000 and Earlier Editions); Category 5 Test, Advance Power Opening (for ASME A17.1-2000/CSA B44-00 Through ASME A17.1-2010/CSA B44-10). Verify that power opening of the doors can occur only when the car is within 18 in. (457 mm) of the landing. In the case of static control, installed under A17.1a-1988 and later editions, the person or firm performing the test must demonstrate that power is not applied to open the doors when the car is more than 12 in. (305 mm) from the landing. Verify that the car is stopped or substantially level with the landing before the hoistway door is fully open. Also, see Figure 1.10.2-1.

(b) 5-yr Test of Leveling Zone and Leveling Speed (for A17.1d-2000 and Earlier Editions); Category 5 Test of Leveling Zone (for ASME A17.1-2000/CSA B44-00 and Later Editions). Check that the zone in which the leveling device will move the car toward the landing does not exceed 30 in. (762 mm) for an automatic device or 10 in. (254 mm) for a manual device. The leveling speed is not permitted to exceed 150 ft/min (0.76 m/s).

For static control elevators installed under A17.1a-1988 and later editions, the person or firm installing or maintaining the elevator must provide a written checkout procedure and demonstrate to the authority having jurisdiction that the leveling speed with the doors open is limited to a maximum of 150 ft/min (0.76 m/s) and that the limiting means (or speed monitor) is independent of the operation of the normal means to control this speed.

For equipment installed under ASME A17.1-2013/CSA B44-13 and later editions, verify that passenger elevator power door opening does not occur unless the elevator is within ±175 mm (7 in.) of floor level. Power opening remains the same for freight elevators with vertically sliding doors [±450 mm (18 in.)]. The testing procedures should be part of the Maintenance Control Program.

Figure 1.10.2-1
Door Operation Relative to Car Position



GENERAL NOTES:
(a) Refer to ASME A17.1/CSA B44 requirement numbers for details.
(b) 1 in. = 25.4 mm.
(c) Refer to the applicable edition of the Code.

1.10.2.1 Electric Elevators. *5-yr Test of Inner Landing Zone (for A17.1d-2000 and Earlier Editions); Category 5 Test of Inner Landing Zone (for ASME A17.1-2000/CSA B44-00 Through ASME A17.1-2010/CSA B44-10).* On static control elevators installed under A17.1a-1988 and later editions, the person or firm installing or maintaining the equipment is required to submit a written procedure and to demonstrate that the zone in which the car can move with the doors open is no more than 3 in. (76 mm) above or below the landing.

1.10.2.2 Hydraulic Elevators. For static control elevators installed under A17.1a-1988 and later editions, the person or firm installing or maintaining the elevator must provide a written checkout procedure and demonstrate to the authority having jurisdiction that the leveling speed with the doors open is limited to a maximum of 150 ft/min (0.76 m/s) and that the limiting means (or speed monitor) is independent of the operation of the normal means to control this speed.

1.10.3 Acceptance

1.10.4 References

(23) **1.10.4.1 Electric Elevators.** A17.1d-2000 and earlier editions — Rules 111.12, 210.1e, 210.9c, 1001.2(a)(10), and 1002.3g through 1002.3i.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.12.5, (NR 111.12), 2.26.1.6, 2.26.9 (2.26.9.3), 8.10.2.2.1(j), 8.11.2.1.1(j), 8.11.2.2.8, 8.11.2.3.7, 8.11.2.3.8, and 8.11.2.3.9.

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2010/CSA B44-10 — Requirements 2.12.5, (NR 111.12), 2.26.1.6, 2.26.9 (2.26.9.3), 8.10.2.2.1(j), 8.11.2.1.1(j), 8.6.4.19.8, and 8.6.4.20.7 through 8.6.4.20.9.

ASME A17.1-2013/CSA B44-13 — Section 1.3 and requirements 2.14.5.7, 2.26.1.6, 2.26.9 (2.26.9.3), 8.10.2.2.1 (j), 8.11.2.1.1(j), 8.6.4.19.8, and 8.6.4020.7 through 8.6.4.20.9.

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.12.1, 2.14.5.7, 2.26.9 (2.26.9.3), 8.10.2.2.1(j), 8.11.2.1.1(j), 8.6.4.19.8, and 8.6.4.20.7 through 8.6.4.20.9.

1.10.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 111.5 {300.12}, 210.1e, 210.9(c), 306.3, and 1004.2(a)(10).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.12.5 {3.12}, 2.26.1.6, 2.26.9 (2.26.9.3), 3.26.3, 8.10.3.2.1(j), 8.11.3.1.1(j), and 8.11.3.2.3(g).

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2010/CSA B44-10 — Requirements 2.12.5 {3.12}, 2.26.1.6, 2.26.9 (2.26.9.3), 3.26.3, 8.10.3.2.1(j), and 8.6.5.14.3(g).

ASME A17.1-2013/CSA B44-13 — Section 1.3 and requirements 2.14.5.7 {3.14}, 2.26.1.6, 2.26.9 (2.26.9.3) {3.26}, 8.10.3.2.1(j), 8.11.3.1.1(j), and 8.6.5.14.3(g).

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.12.1 {3.12}, 2.26.9 (2.26.9.3) {3.26}, 8.10.2.2.1(j), 8.11.2.1.1(j), and 8.6.5.14.3(g).

1.10.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d), 112.6}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 5.2.1.13 and 2.13 {NR 2.13.3.4, 2.13.6}.

ASME A17.1-2013/CSA B44-13 — Section 1.3 and requirements 2.14.5.7, 2.26.1.6, 2.26.9 (2.26.9.3), 8.10.2.2.1(j), 8.11.2.1.1(j), 8.6.4.19.8, and 8.6.4.20.7 through 8.6.4.20.9.

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.12.1 {5.2.1.12}, 2.14.5.7 {5.2.1.14(m)}, 2.26.9 (2.26.9.3) {5.2.1.26}, 8.10.5.13, and 8.11.5.12.

1.10.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.13 and Section 112 {NR 112.3(d) and 112.6}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 5.2.1.13 and 2.13 {NR 2.13.3.4 and 2.13.6}.

ASME A17.1-2013/CSA B44-13 — Section 1.3 and requirements 2.14.5.7 {3.14}, 2.26.1.6, 2.26.9 (2.26.9.3) {3.26}, 8.10.3.2.1(j), 8.11.3.1.1(j), and 8.6.514.3(g).

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.12.1 {3.12}, 2.26.9 (2.26.9.3) {3.26}, 8.10.5.13, and 8.11.5.12.

ITEM 1.11
CAR VISION PANELS AND GLASS CAR DOORS

1.11.1 Periodic Inspections

If the glass in the door panel is less than 60%, or 80% for elevators installed under A17.1b-1989 through A17.1a-1994, of the total surface area of the door, it is a vision panel and must conform to those requirements. Car vision panels are required to be of wire or laminated glass and have a maximum area of 144 in.^{2} (0.093 m^2) and maximum panel width of 152 mm (6 in.). A17.1d-1970 through A17.1-2004, in addition to the above requirements, required glazing materials to conform to ANSI Z97.1 or 16 CFR Part 1201. A17.1a-2005, A17.1S-2005, and later editions require glazing materials to conform to 16 CFR Part 1201. These Standards require that the glazing material be marked as follows: ANSI Z97.1-1984 or 16 CFR Part 1201; manufacturer's mark or designation. A17.1a-1997 through A17.1d-2000 required vision panels to comply with 16 CFR Part 1201 or to be made of wire glass. A17.1b-1989 and later editions require glass doors to be provided with laminated

glass that complies with ANSI Z97.1 and 16 CFR Part 1201. In addition, in Canada, safety glass or safety plastic was permitted in ASME A17.1-2000/CSA B44-00. Check that the leading edge of the panels is not made out of glass and that the glass surface on the car side is substantially flush.

Verify that the glass is the right type (wired or laminated), is not cracked or broken, and is marked with the glazing standard. Since ANSI Z97.1 and 16 CFR Part 1201 cover many types of glazing materials, the required marking does not ensure that the glazing is laminated glass. If laminated glass is tapped lightly with the edge of a coin, the sound will be dampened and different from nonlaminated glass.

1.11.2 Periodic Test

1.11.3 Acceptance

When a glass door is provided, check the type of glass, thickness, minimum surface area, and edging.

1.11.3.2 Hydraulic Elevators. When 80% of the surface area of the door is glass, it is classified as a glass door.

1.11.4 References

1.11.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.2e, 204.5i, and 1001.2(a)(11).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.2.5, 2.14.5.8, 8.10.2.2.1(k), and 8.11.2.1.1(k).

ASME A17.3 — Paragraphs 3.4.2 and 3.4.3.

1.11.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 204.2e, 204.5i {301.7}, and 1004.2(a)(11).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.2.5, 2.14.5.8 {3.14}, 8.10.3.2.1(k), and 8.11.3.1.1(k).

ASME A17.3 — Paragraphs 3.4.2 and 3.4.3 {4.2.3}.

1.11.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14.

1.11.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14.

ITEM 1.12
CAR ENCLOSURE

1.12.1 Periodic Inspections

Verify that the car enclosure is structurally sound and is securely fastened to the platform. Verify that capacity plates and any required certificates are posted in the car. Note any evidence of alterations or additions to the car that have materially changed the car weight. Also, note any alteration to the car enclosure, including decorative panels. (See 1.12.3.)

(a) For freight elevators installed under A17.1a-1982 and later editions, verify that signs specifying the class of loading are in place and the loading imposed on the elevator is as specified on the sign. Verify that signs restricting passenger use are posted.

(b) Freight elevators installed under A17.1-1955 through A17.1-1981 are required to have one of the following signs:

(1) "THIS ELEVATOR DESIGNED FOR GENERAL FREIGHT LOADING."

(2) "THIS ELEVATOR DESIGNED FOR MOTOR-VEHICLE LOADING."

(3) "THIS ELEVATOR DESIGNED FOR LOADED INDUSTRIAL TRUCKS WEIGHING _____ LB MAXIMUM."

On elevators not permitted to carry passengers, the following additional sign must be posted: "THIS IS NOT A PASSENGER ELEVATOR. NO PERSONS OTHER THAN THE OPERATOR AND FREIGHT HANDLERS ARE PERMITTED TO RIDE ON THIS ELEVATOR."

The preceding sign regarding passengers is also required by ASME A17.3.

In elevators permitted to carry employees, the sign should read: "NO PASSENGERS EXCEPT EMPLOYEES PERMITTED."

(c) For freight elevators installed under A17.1-1984 and later editions, check the Code for required sign wording.

(d) For passenger elevators and freight elevators that are permitted to carry passengers installed under A17.1-1987 and later editions, check to see that there are no openings, other than those required for signal, operating, or communication equipment; entrances; vision panels; emergency exits; and ventilation. In addition, A17.1-2000 and later editions permit access panels for maintenance and cleaning of glass on observation elevators.

(e) Napped, tufted, woven, looped, or similar materials are allowed on car enclosure walls if they meet the test requirements. Test reports should be available to indicate compliance with acceptance criteria.

(f) Note any equipment inside cars other than that used for the operation of the elevator. The Code permits lighting, heating, ventilating, and air-conditioning devices to be installed inside all cars, and permits conveyor tracks, lift hooks, and support beams mounted in the ceiling of passenger elevators. Check structural supports and clearances from the floor.

(g) A17.1-1990 and later editions require the car to have an identification number on the car control station when more than one elevator's machinery is in a hoistway or machine room.

(h) A17.1a-1991 and later editions require that panels be attached to the enclosure with tamper-resistant fasteners, or when the panels are removed that any

perforations greater than ½ in. (13 mm) diameter be guarded.

(i) Perforations in car enclosures for freight elevators installed under A17.1d-2000 and earlier editions should reject a ball 1½ in. (38 mm) in diameter.

(j) Check that a written procedure is available for cleaning inside the hoistway for observation elevators. Verify that the elevator will not operate unless all access panels are in the closed and locked position.

NOTE: For LU/LA elevators, cars shall have one compartment. Freight-handling equipment is not permitted, and doors shall be of unperforated-type construction.

1.12.2 Periodic Test

1.12.3 Acceptance

Check the headroom in the car. Check laminated glass or, in jurisdictions enforcing the NBCC, safety glass or safety plastic for the required markings. Where glass is used in wall panels, check that the opening is guarded. Check access panels for cleaning transparent enclosures, when provided.

NOTE: Bonded glass is considered equivalent to laminated glass since it must meet testing requirements of ANSI Z97.1 or 16 CFR Part 1201; it will bond fragments and retain broken glass, and it prohibits the use of film coatings (organic-coated glass) that are easily damaged, which would render them ineffective.

Check that the car enclosure material (exposed to the car interior or the hoistway) is metal or laminated glass, or has been type-tested in its end-use configuration and that the flame spread smoke contribution, vertical burn, and test and critical radiant flux of the enclosure material conform to Code requirements. Material ¼ in. (6.4 mm) or less in thickness can be installed over an existing car enclosure without type testing in the end-use configuration. The flame spread rating for the added material and adhesive is more severe than that required for a new car enclosure tested in its end-use configuration. If in doubt, request a copy of the test report.

Verify that ventilation openings are properly located, sized, and, where required, guarded against through openings. Check for the minimum clear headroom.

1.12.4 References

1.12.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules (NR 2.7.5.1.4), 204, 204.1b, 204.1h, (NR 2.14.2.6), 207.2b, 207.4, 207.5, 211.9, 1104, 1206.9, 1202.5, 1001.2(a)(12), 204.2b, (NR 2.14.2.6), and (NR 8.1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.7.5.1.4, 2.14, 2.14.1.2, 2.14.1.8, 2.14.2.6, 2.16.2.2, 2.16.4, 2.16.5, 2.29.1, 8.3.7, 8.6.10.3, 8.7.2.14, 8.10.2.2.1(l), and 8.11.2.1.1(l).

ASME A17.3 — Paragraphs 3.4.1 and 3.7.5.

NFPA 70 or CSA C22.1, as applicable.

1.12.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 204.1b, 204.1h {Rule 301.7}, and 1104; and Rules 204.2d {301.7}, 211.9 {306.11}, 1004.2(a)(12), 1202.5, and 1203.2e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14 {3.14}, 8.3.7, 2.29.1 {3.27}, 8.10.3.2.1(l), 8.11.3.1.1(l), 8.7.2.14, and 8.7.3.13.

ASME A17.3 — Paragraphs 3.4.1 {4.2.3} and 3.7.5 {4.2.4}.

1.12.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204 {NR 204.1(d), 204.1(e), 204.1(i), 204.3, 204.4(a), 204.4(c), 204.4(d), 204.4(g), 204.4(h), 204.4(j), 204.4(m)(2), 204.5(a) through 204.5(c), and 204.6}.

A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14 {NR 2.14.1.4, 2.14.1.9.1(c), 2.14.3, 2.14.4.1, 2.14.4.3, 2.14.4.4, 2.14.4.7, 2.14.4.9, 2.14.4.11(b), 2.14.5.1 through 2.14.5.3, and 2.14.6}.

1.12.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5 and Section 204 {NR 204.1(d), 204.1(e), 204.1(i), 204.3, 204.4(a), 204.4(c), 204.4(d), 204.4(g), 204.4(h), 204.4(j), 204.4(m)(2), 204.5(a) through 204.5(c), and 204.6}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14 {NR 2.14.1.4, 2.14.1.9.1(c), 2.14.3, 2.14.4.1, 2.14.4.3, 2.14.4.4, 2.14.4.7, 2.14.4.9, 2.14.4.11(b), 2.14.5.1 through 2.14.5.3, and 2.14.6}.

ITEM 1.13
EMERGENCY EXIT

1.13.1 Periodic Inspections

1.13.1.1 Electric Elevators. Determine that top emergency exit panels are in place and not obstructed (see Item 3.8); and determine whether on elevators installed under ASME A17.1-2000/CSA B44-00 and earlier editions, side emergency exit doors are closed and locked. Check the electric contact on the side emergency exit doors. Check that the key for unlocking the side emergency exit is available only to elevator personnel. Verify that any side emergency exit door is so hinged as to swing in, that it can be opened from the inside only by using a special-shaped removable key, that it can be opened from the outside by means of a nonremovable handle, and that it is provided with a properly functioning contact to cause power to be removed from the drive machine and brake when it is opened. Side emergency exits were required on passenger elevators installed to A17.1-1955 through A17.1-1990, and were permitted on passenger and freight elevators installed or altered to A17.1a-1991 through ASME A17.1-2000/CSA B44-00 where there is an adjacent elevator within 30 in. (762 mm) and there are no intervening obstructions. Side emergency exits were required

on hydraulic passenger elevators with safeties installed to A17.1-1955 through A17.1-1995, and were permitted on passenger and freight elevators installed to A17.1-1996 and later editions. A17.1a-2002 and later editions prohibit side emergency exits.

NOTE: For LU/LA elevators, emergency exits are permitted; if provided, they should conform to ASME A17.1/CSA B44, requirement 2.14.1.5.

1.13.2 Periodic Test

1.13.3 Acceptance

1.13.4 References

(23) **1.13.4.1 Electric Elevators.** A17.1d-2000 and earlier editions — Rules 204.1e, 204.1j, 204.2d, and 1001.2(a)(13).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.5, 2.14.1.10, 2.14.2.4, 8.1.2, 8.10.2.2.1(m), and 8.11.2.1.1(m).

ASME A17.3 — Paragraph 3.4.4.

1.13.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 204.1j {301.7} and 1004.2(a)(13).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.10, 3.14, 8.1.2, 8.6.10.2, 8.10.3.2.1 (m), and 8.11.3.1.1(m).

ASME A17.3 — Paragraph 3.4.4 {4.2.3}.

1.13.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5(b) and 204.1e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.14(b) and 2.14.1.5.

1.13.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5(b) and 204.1e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.14(b) and 2.14.1.5.

ITEM 1.14
VENTILATION

1.14.1 Periodic Inspections

If ventilating fans are installed inside the car, verify that they are properly guarded, adequately supported, and securely fastened in place and do not obstruct the emergency exit. Ventilating fan blowers, if provided, should be located above the car ceiling or outside the car enclosure.

Check that observation elevators exposed to direct sunlight installed under A17.1a-1985 and later editions are provided with forced ventilation and that an emergency power source that is capable of operating the ventilation for 1 hr is on each car. The minimum capacity for this ventilation is one air change per minute.

NOTE: In ASME A17.1-2007/CSA B44-07 and later editions, where a hydraulic elevator is provided with auxiliary power lowering, the power supply for the forced ventilation is not required (ASME A17.1/CSA B44, Section 3.14).

1.14.2 Periodic Test

1.14.3 Acceptance

1.14.4 References

1.14.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.1i, 204.2c, 204.3c, and 1001.2(a)(14).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.9.1(f), 2.14.2.3, 2.14.3.3, 8.10.2.2.1 (n), and 8.11.2.1.1(n).

NFPA 70 or CSA C22.1, as applicable.

1.14.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 204.1i, 204.2c, 204.3c {301.7}, and 1004.2(a)(14).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.9.1(f), 2.14.2.3, 2.14.3.3 {3.14}, 8.10.3.2.1(n), and 8.11.3.1.1(n).

NFPA 70 or CSA C22.1, as applicable.

1.14.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501 and Section 204.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14.

1.14.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501 and Section 204.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.14 and Section 2.14.

ITEM 1.15
SIGNS AND OPERATING DEVICE SYMBOLS

1.15.1 Periodic Inspections

Check that symbols are substituted for, or used in conjunction with, the required wording for operating devices on elevators installed under A17.1a-1979 and later editions and that the main floor is identified by a star.

1.15.2 Periodic Test

1.15.3 Acceptance

1.15.4 References

1.15.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.13 and 1001.2(a)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.12, 8.10.2.2.1(o), and 8.11.2.1.1(o).

1.15.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 210.13 {306.12} and 1004.2(a)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.12 (NR 306.12), 8.10.3.2.1(o), and 8.11.3.1.1(o).

1.15.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 210.13 and 1001.2(a)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.12 and 8.11.2.1.1(o).

1.15.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 210.13 {306.12} and 1004.2(a)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.12 (NR 306.12) and 8.11.3.1.1(o).

ITEM 1.16
RATED LOAD, PLATFORM AREA, AND DATA PLATE

1.16.1 Periodic Inspections

Check that the data (capacity) plate is installed inside the car.

1.16.2 Periodic Test

1.16.3 Acceptance

Measure the inside dimensions of the car 36 in. (914 mm) above the floor, inside of any panels or wall surfaces, but exclusive of any handrails and space for doors, and compute the inside net platform area. Compare this area with the maximum area permitted for the rated load. The Code includes limitations of inside net platform area in relation to the rated load for freight elevators for three classes of loading, including special requirements where the loading is by industrial trucks. Determine that signs and capacity and data plates are provided.

NOTE: For LU/LA elevators, the maximum capacity should not exceed 635 kg (1,400 lb). The maximum net platform area should not exceed 1.67 m^2 (18 ft^2).

1.16.4 References

1.16.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 207 and Rule 1001.2(a)(16).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.16, 8.10.2.2.1(p), and 8.11.2.1.1(p).

ASME A17.3 — Section 3.7.

1.16.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 207 {Rule 301.10} and Rule 1004.2(a)(16).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.16 {3.16}, 8.10.3.2.1(p), and 8.11.3.1.1(p).

ASME A17.3 — Section 3.7 {para. 4.2.4}.

1.16.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Section 2501.8 and Rule 207.1 {NR 207.1(a), 207.1(b), 207.3(b)(2), 207.3(c), 207.8}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.16.

1.16.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Section 2501.8 and Rule 207.1 {NR 207.1(a), 207.1(b), 207.3(b)(2), 207.3(c), 207.8}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.16.

ITEM 1.17
STANDBY POWER OPERATION

1.17.1 Periodic Inspections

Visually inspect the transfer switch and means of transfer for evidence of damage or misuse. Verify that the key used to operate the selection switch is adequately controlled.

1.17.2 Periodic Test

1.17.2.1 Electric Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Have the elevator(s) taken out of normal service and placed at the floor where the ELEVATOR EMERGENCY POWER selector switch is located, if provided. Otherwise, have the elevator(s) taken out of normal service and placed at the bottom terminal. Have the system transferred, by the responsible party, to standby or emergency power. Verify that the ELEVATOR EMERGENCY POWER selector switch (automatic sequence operation override switch), if provided, functions as required to manually select each elevator, one at a time, when on standby or emergency power. Verify that the elevator selected can be taken out of service with the ELEVATOR EMERGENCY POWER selector switch only when the elevator is stopped. Operate each elevator selected to be operated on standby or emergency power, one at a time, with no load in the car. Make several trips and stops, checking for proper operation. Verify that the elevator is running at normal speed, especially in the up direction (speed must not attain the governor electrical overspeed trip setting, or 125% of rated speed in both directions, whichever is less). If a separate power absorption means such as a resistor bank is used to absorb regenerative power, verify that it is provided on the load side of each elevator disconnect switch or that a common resistor load bank is provided on the elevator feeder. Have the system transferred, by the responsible party, back to normal power and verify that each elevator tested operates properly in normal service.

1.17.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Have the

elevator(s) taken out of normal service and placed at the floor where the ELEVATOR EMERGENCY POWER selector switch is located, if provided. Otherwise, have the elevator (s) taken out of normal service and placed at the bottom terminal. Have the system transferred, by the responsible party, to standby or emergency power. Verify that the ELEVATOR EMERGENCY POWER selector switch (automatic sequence operation override switch), if provided, functions as required to manually select each elevator, one at a time, when on standby or emergency power. Verify that the elevator can be taken out of service with the ELEVATOR EMERGENCY POWER selector switch only when that elevator is stopped. Operate each elevator designated to be operated on standby or emergency power, one at a time, with no load in the car. Make several trips and stops, checking for proper operation. Have the system transferred, by the responsible party, back to normal power and verify that each elevator tested operates properly in normal service.

1.17.3 Acceptance

In addition to the test outlined in 1.17.2.1, verify that the ELEVATOR EMERGENCY POWER selector switch (automatic sequence operation override switch), if provided, is key operated or behind a locked cover. Verify that the key is available only to emergency personnel and complies with Group 3 security.

1.17.3.1 Electric Elevators

(a) Verify with the authorized personnel if there are other building loads used to absorb elevator regenerative power and that they are automatically connected to the standby or emergency power system when the elevator is transferred to standby or emergency power. If other building loads used to absorb elevator regenerative power are not automatically connected, verify that a separate regenerative power absorption means, such as a resistor load bank, is provided on the load side of each elevator disconnect switch or a common resistor load bank is provided on the elevator feeder.

(b) Have the elevator taken out of normal service and placed at the top terminal with rated load in the car for freight elevators or 125% of rated load for passenger elevators and freight elevators that are permitted to carry passengers. Have the system transferred, by the responsible party, to standby or emergency power as in 1.17.2.1. For each elevator designated to be operated on standby or emergency power, run the elevators down, one at a time, nonstop, to the bottom terminal. The speed of each operating elevator must not attain the governor electrical overspeed trip or 125% of rated speed, whichever is less. Then, for passenger elevators and freight elevators that are permitted to carry passengers, reduce the load in the car to rated load (full load) and run the elevators, one at a time, up and down with several stops, checking for proper operation. Have the system transferred, by the responsible party, back to normal power and verify that the elevators tested operate properly in normal service.

1.17.3.2 Hydraulic Elevators. The testing of hydraulic elevators is as specified in 1.17.3.1(b) with the exception that 100% of the load is used.

1.17.4 References

1.17.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 207.8, 210.10, 211.2, 1001.2(a)(17), 1002.2g, and 1002.3e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.16.8, 2.26.10, 2.27.2, 8.10.2.2.1(q), 8.11.2.1.1(q), 8.11.2.2.7, and 8.11.2.3.5.

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2010/CSA B44-10 — Requirements 2.16.8, 2.26.10, 2.27.2, 8.10.2.2.1(q), 8.11.2.1.1(q), 8.6.4.19.7, and 8.6.4.20.5.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.16.8, 2.26.10, 2.27.2, 8.6.4.19.7, 8.10.2.2.1(q), and 8.11.2.1.1(q).

ASME A17.3 — Paragraph 3.11.2.

1.17.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 211.2 {306.11}, 1002.2g {1005.2c(6)}, and 1004.2(a)(17).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.27.2 {3.27}, 8.10.3.2.1(q), 8.11.2.2.7 {8.11.3.2.3(f)}, and 8.11.3.1.1(q).

ASME A17.1a-2008/CSA B44-08 and later editions — Requirements 2.27.2 {3.27}, 8.10.3.2.1(q), and 8.6.5.14.3 (f).

ASME A17.3 — Paragraph 3.11.2 {4.7.8}.

1.17.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.12 and 211 (NR 211.3 through 211.8).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.27 and 2.27 (NR 2.27.3 through 2.27.8).

1.17.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.12 and 211.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.27 and 2.27 (NR 2.27.3 through 2.27.8).

ITEM 1.18
RESTRICTED OPENING OF CAR OR HOISTWAY DOORS

1.18.1 Periodic Inspections

(a) All passenger elevators installed under A17.1b-1980 and later editions must comply with restricted opening of the hoistway or car doors. When the car is

outside a specified zone, this requires that either the hoistway door or car door can be opened no more than 4 in. (102 mm) from inside the car but the car door can be opened from outside the car without special tools. The specified zone in which restricted opening applies depends on when an elevator was installed as follows:

(1) On elevators installed under A17.1b-1980 through A17.1a-1982, the specified zone is outside the landing zone [18 in. (457 mm) above or below the landing].

(2) On elevators installed under A17.1b-1983 through A17.1a-1988 and those that must comply with ASME A17.3, the specified zone is outside the unlocking zone. The unlocking zone is a distance set by the manufacturer between 0 in. and 18 in. (457 mm) above and below the landing. (An unlocking zone is not required.)

(3) On elevators installed under A17.1b-1989 through ASME A17.1-2010/CSA B44-10, the doors must be able to be opened from 0 in. to 3 in. (76 mm) above and below the landing [an unlocking zone is required and doors may be opened up to 18 in. (457 mm) above and below the landing]. The car or hoistway door must meet the restricted opening requirements when the car is more than 18 in. (457 mm) above or below the landing.

(4) For elevators installed under ASME A17.1-2013/CSA B44-13 and later editions, the passenger elevator unlocking zone was reduced from 18 in. (450 mm) to 7 in. (175 mm). Freight elevators were not affected by this change. In addition, in ASME A17.1-2013/CSA B44-13, the requirement for the means to restrict opening was changed to apply only to the car door. Previous language included the hoistway door and allowed a car door interlock in lieu of the means to restrict the car door opening.

(b) Some manufacturers comply with this by locking the car door rather than the hoistway door. Some manufacturers incorporate the locking into the door operator, and some install vanes or other mechanisms on the doors and hoistway to achieve compliance. Follow the procedure below to verify compliance with this requirement.

(1) For elevators installed under A17.1b-1980 through ASME A17.1-2010/CSA B44-10 and elevators required to comply with ASME A17.3, have the car stopped at a point beyond 18 in. (457 mm) above and then below the landing. With the power off, attempt to manually open the car door. If the car door opens more than 4 in. (102 mm), the hoistway door must not open more than 4 in. (102 mm) from inside the car with the car in any position more than 18 in. (457 mm) above or below the landing.

(2) For elevators installed under ASME A17.1-2013/CSA B44-13 and later editions, have the car stopped at 7 in. (75 mm) above and then below the landing. With the power off, attempt to manually open the car door. Verify that the car door does not open more than 4 in. (100 mm). If one or more hoistway doors are coupled to car doors to allow for preopening doors, the hoistway door may be unlocked but must not open more than 4 in. (100 mm). Next have the car stopped at a point beyond 7 in. (175 mm) where the car door(s) are not coupled to the hoistway door(s). Verify that the car door does not open more than 4 in. (100 mm) and that the hoistway door remains locked.

(3) For elevators installed under A17.1b-1989 and later editions, follow the previous procedure. If found satisfactory, have the car stopped at the 3 in. (76 mm) point and verify that the doors can be manually opened.

(4) The previous checks will only be required at one or two landings if the restricted opening mechanism can be inspected from the car top.

1.18.2 Periodic Test

1.18.3 Acceptance

See Figure 1.10.2-1.

1.18.4 References

1.18.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 111.12 and 1001.2(a)(18).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements (NR 111.12), 8.10.2.2.1(r), and 8.11.2.1.1(r).

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.14.5.7, (NR 111.12), 8.10.2.2.1(r), and 8.11.2.1.1(r).

ASME A17.3 — Paragraph 2.7.5.

1.18.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 111.5 {300.12} and 1004.2(a)(18).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 2.12.5 {3.12}, 8.10.3.2.1(r), and 8.11.3.1.1(r).

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.14.5.7 {3.14}, 8.11.3.1.1(r), and 10.3.2.1(r).

ASME A17.3 — Paragraph 2.7.5 {Section 4.1}.

1.18.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5 and 204.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirement 5.2.1.14 and Section 2.14.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.14.5.7, (NR 111.12), 8.10.2.2.1(r), and 8.11.2.1.1(r).

1.18.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5 and 204.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirement 5.2.1.14 and Section 2.14.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.14.5.7 {3.14}, 8.11.3.1.1(r), and 10.3.2.1(r).

ITEM 1.19
CAR RIDE

1.19.1 Periodic Inspections

Operate the car at normal operation speed from one terminal landing to the other, listen for unusual noise, and observe whether there is excessive or irregular motion of the car, which may indicate that the car or counterweight guide rails are not properly aligned. If such motion occurs, when on top of the car, check for loose or worn guide shoes or rollers and proper alignment of the guide rails.

1.19.2 Periodic Test

1.19.3 Acceptance

1.19.4 References

1.19.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 200 and Rules 203.2 and 1001.2(a)(19).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.23, 2.15.2, 8.10.2.2.1(s), and 8.11.2.1.1(s).

1.19.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 301.1a, 301.6, 1004.2(a)(19), and 1206.1a {1206.5a}.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.23.1, 3.15, 8.10.3.2.1(s), 8.11.3.1.1(s), and 8.6.1.6.2 {8.6.5}.

1.19.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.1, 2501.4, and 1001.2(a)(19).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.15, 5.2.1.23, and 8.11.2.1.1(s).

1.19.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2, 1004.2(a)(19), and 1206.1a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.2.3, 5.2.2.10, 8.6.1.6.2, and 8.11.3.1.1(s).

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.2.3, 5.2.2.11, 8.6.1.6.2, and 8.11.3.1.1(s).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.3, 5.2.2.10, 8.6.1.6.2, and 8.11.3.1.1(s).

ITEM 1.20
EARTHQUAKE INSPECTION AND TESTS (ELEVATOR SEISMIC REQUIREMENTS) (23)

1.20.1 Periodic Inspections

Verify that the top emergency exit is secured with a spring-return cylinder lock and can be opened with a key from inside the car and that the key is readily accessible only to authorized persons (for elevators installed to A17.1-1993 through A17.1d-2000 editions for all electric elevators with counterweights). No other key in the building is permitted to open the emergency exit with exception of a hoistway access key, where used to also open the exit.

For elevators installed under A17.1-2000 and later editions, where a hoistway access key is used for this purpose, it must be kept in Group 1 security. The exit must be capable of being opened from the top of the car without the use of a key.

For elevators installed to A17.1-1993 through ASME A17.1-2013/CSA B44-13, the emergency exit must be equipped with an electrical device that is inaccessible from inside the car and will limit the speed of the elevator to 0.75 m/s (150 ft/min) or less when the contact is opened. The references to the car door electric contact conforming to 2.14.1.5.1(f) and the operation to limit the speed of the car with this contact opened were removed from ASME A17.1-2016/CSA B44-16 and later editions in Section 8.4.

NOTE: This does not obviate ASME A17.1/CSA B44, requirement 2.14.1.5.1(f).

1.20.2 Periodic Test

1.20.3 Acceptance

Where elevator seismic requirements apply (see ASME A17.1/B44, requirement 8.4.10), verify proper operation when the top exit is open.

1.20.3.1 Electric Elevators

(a) Electric Elevators Installed Under A17.1-1993 Through ASME A17.1-2013/CSA B44-13. For counterweighted elevators with a speed of 0.75 m/s (150 ft/min) or more, installed where elevator seismic requirements apply and where required by ASME A17.1/CSA B44, requirement 8.4.4.1 (or rule 2406.1 in A17.1-1996 and earlier editions), ensure that the emergency exit is provided with a spring-return five-pin or five-disk tumbler. The exit must be capable of being opened from the top of the car without the use of a key. The emergency exit key must be kept on the premises. The exit must be equipped with an electrical device. Upon the opening of the electrical device, the speed of the car is limited to 0.75 m/s (150 ft/min) or less.

(b) Elevators Installed Under A17.1-2000 and Later Editions. Elevators installed in seismic areas are still required to be provided with a car top emergency exit as described in requirement 1.20.3.1. The key to open the emergency exit is subject to Section 8.1, Group 1 Security if the key is the same key used for hoistway access.

LULA elevators are exempt from seismic requirements [see ASME A17.1/CSA B44, requirement 8.4(d)].

1.20.3.2 Hydraulic Elevators. The emergency exit in ASME A17.1/CSA B44, requirement 8.4.4 does not apply to hydraulic elevators.

1.20.4 References

A17.1-1993 through A17.1d-2000 — Rule 2406.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.4.4.1.

Part 2
Elevator — Machine Room

ITEM 2.1
ACCESS TO MACHINERY SPACE

2.1.1 Periodic Inspections

(a) Check that permanent, safe, and convenient means of access to machine rooms and machinery spaces have been provided and maintained. Check stairways and ladders to verify that they are stable and secure.

(b) Check that the access door is maintained in the closed and locked position. It must be self-closing and openable from the inside without a key. For elevators installed under A17.1-1978 and later editions, also check that the door is self-locking.

2.1.2 Periodic Test

2.1.3 Acceptance

Check that stairs leading to a roof access, machine room, control room, or control space do not exceed 60 deg from the horizontal.

NOTE: There are Occupational Safety and Health Administration (OSHA) requirements for industrial stairs (industrial stairs are those that lead to machinery spaces within a building). Industrial stairs should not be confused with stairs that are used for egress, which are covered under the building code. Since OSHA limits the slope of the stair to between 35 deg and 50 deg, it is recommended that the installer consult with the authority having jurisdiction to determine whether OSHA requirements are being used in lieu of the elevator requirements.

2.1.3.1 Electric Elevators. Check that access to the machine room meets the accessibility requirements of the Code. For access doors required to have fire-protection ratings, check for proper labeling. Access to the machine room includes passage from the top building floor to the machine room.

2.1.3.2 Hydraulic Elevators. Check that access to the machine room meets the accessibility requirements of the Code. For access doors required to have fire-protection ratings, check for proper labeling.

2.1.4 References

2.1.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 101.1a, 101.3a through 101.3d, and 1001.2(b)(1).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.1.1, 2.7.3.1 through 2.7.3.4, 8.10.2.2.2(a), and 8.11.2.1.2(a).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.1.1, 2.7.3.1 through 2.7.3.4, 8.10.2.2.2 (d), and 8.11.2.1.2(b).

ASME A17.3 — Paragraph 2.2.2.

NFPA 70 or CSA C22.1, as applicable.

2.1.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 300.1, 300.2, and 1004.2(b)(1).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.7, 8.10.3.2.2(a), and 8.11.3.1.2(a).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.7, 8.10.3.2.2(d), and 8.11.3.1.2(b).

ASME A17.3 — Paragraph 2.2.2 {Section 4.1}.

NFPA 70 or CSA C22.1, as applicable.

2.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

2.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

NOTE: For LU/LA elevators, wood floors are permitted.

ITEM 2.2
HEADROOM

2.2.1 Periodic Inspections

2.2.2 Periodic Test

2.2.3 Acceptance

Verify that machine and control rooms have the minimum overhead clearances. Clear headroom measurements are taken from the floor to the bottom of the lowest obstruction below the ceiling (e.g., wiring raceways, conduit, beams).

NOTE: LU/LA elevators have a reduced headroom requirement.

2.2.4 References

2.2.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 101.4 and 1001.2(b)(2).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.4, 8.10.2.2.2(b), and 8.11.2.1.2(b).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.4, 8.10.2.2.2(e), and 8.11.2.1.2(c).

2.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 101.4 {300.2} and 1004.2(b)(2).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.7, 8.10.3.2.2(b), and 8.11.3.1.2(b).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.4 {3.7}, 8.10.3.2.2(e), and 8.11.3.1.2(c).

2.2.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2(h).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.1.7.8.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.1.7.1.

NFPA 70 or CSA C22.1, as applicable.

2.2.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2(h).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.1.7.8.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.1.7.1.

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.3
LIGHTING AND RECEPTACLES

2.3.1 Periodic Inspections

Check machine room for adequate lighting. For elevators installed under A17.1a-1988 and later editions, check that a duplex receptacle has been provided in the machine room and machinery spaces, and that it is operable.

2.3.2 Periodic Test

2.3.3 Acceptance

Ensure that the room or space illumination is compliant with Code requirements. Light fixtures should be located above the minimum headroom required by Code. Where practical, the light switch needs to be located within easy reach of the strike side of the access door or at a logical location entering a machinery space. Fixtures should be located so as to clearly illuminate areas in front of and behind (if accessible) controllers, machines, and other elevator equipment.

Beginning with the 1993 edition of NFPA 70, receptacles in machine and control rooms are required to be ground fault circuit interrupter (GFCI) protected. As of the 1996 edition of NFPA 70, the receptacles in pits, car tops, and spaces are also required to be of the GFCI type. Ensure that lighting is not connected to the load side of a GFCI.

Beginning with the 2017 edition of NFPA 70, machine room lighting is required to be on a separate circuit from the machine room receptacles. The pit lighting and receptacles are also required to be on separate circuits.

In jurisdictions enforcing the NBCC, the following applies: Each 125-V single-phase receptacle installed in pits, hoistways, elevator and enclosed vertical platform lift car tops, and escalator or moving walk wellways shall be of the Class A GFCI type. All 125-V single-phase receptacles installed in machine rooms and machinery spaces shall have Class A GFCI-type protection. A single receptacle supplying a permanently installed sump pump shall not require GFCI protection.

2.3.4 References

2.3.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 101.5a, 101.5c, and 1001.2(b)(3).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.5.1, (NR 101.5c), 8.10.2.2.2(c), and 8.11.2.1.2(c).

A17.1S-2005 — Requirements 2.7.9, 8.10.2.2.2(c), and 8.11.2.1.2(c).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.9, 8.10.2.2.2(h), and 8.11.2.1.2(f).

ASME A17.3 — Paragraph 2.2.3.

NFPA 70 or CSA C22.1, as applicable.

2.3.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 101.5a, 101.5c {300.2}, and 1004.2(b)(3).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.5.1, (NR 101.5c) {3.7}, 8.10.3.2.2(c), and 8.11.3.1.2(c).

A17.1S-2005 — Requirements 2.7.9 {3.7.1}, 8.10.3.2.2(c), and 8.11.3.1.2(c).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.9 {3.7.1}, 8.10.3.2.2(h), and 8.11.3.1.2(f).

ASME A17.3 — Paragraph 2.2.3 {Section 4.1}.

NFPA 70 or CSA C22.1, as applicable.

2.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

NFPA 70 or CSA C22.1, as applicable.

2.3.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.4
MACHINERY SPACE

2.4.1 Periodic Inspections

Check the condition of the equipment in the machine room, overhead machinery spaces, and machinery space located in the hoistway by examining the following:

(a) overhead gratings or platforms to verify that they are properly supported and secure.

(b) the machine room and secondary machine rooms for any leaks in the roof or windows. Machines, control equipment, sheaves, and other machinery should be protected from the elements.

Verify that a clear maintenance path is kept at all times.

2.4.1.1 Electric Elevators. For elevators installed under A17.1-1993 and later editions where remote machine rooms or control rooms are provided, check the access to ropes and sheaves. Check the communication between the elevator car and machine room.

2.4.1.2 Hydraulic Elevators. Check that machinery is separated from other parts of the building by required enclosure. A17.1b-1989 and later editions prohibit machine and control rooms to be located in the hoistway.

2.4.2 Periodic Test

2.4.3 Acceptance

2.4.3.1 Electric Elevators. For elevators installed under A17.1-1996 and earlier editions, check that a sign stating the maximum allowable floor load has been prominently displayed in all main and secondary machine rooms. The sign is required to be metal with black letters and figures at least 100 mm (4 in.) high on a white background.

Bar-type overhead gratings and platform openings and fabricated or expanded metal must comply with Code size requirements. Measure and verify openings for compliance.

2.4.3.2 Electric/Hydraulic Elevators. A path for maintenance must be kept as follows:

(a) Machine and Control Rooms: Verify a clear path of 450 mm (18 in.) to all maintainable components.

(b) Machinery and Control Spaces: Check for safe and convenient access to maintainable equipment. However, if the space is to be used for full bodily entry, it shall have a path of 450 mm (18 in.).

2.4.4 References

2.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.3c, 100.3d, 100.5, 101.1a, 101.2, 101.8, and 1001.2(b)(4).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.1.3.3, 2.1.3.4, 2.1.5, 2.7.1.1, 2.7.2.1, 2.7.8, 8.10.2.2.2(d), and 8.11.2.1.2(d).

A17.1S-2005 — Requirements 2.1.3.3, 2.1.3.4, 2.1.5, 2.7.1.1, 2.7.2, 2.7.8, 8.10.2.2.2(d), and 8.11.2.1.2(d).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.1.3.3, 2.1.3.4, 2.1.5, 2.7.1.1, 2.7.2, 2.7.8, 8.10.2.2.2(i), and 8.11.2.1.2(g).

ASME A17.3 — Section 2.2.

2.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 101.1a {300.2}, 105.2, 105.4 {300.6}, and 1004.2(b)(4).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.1.1 {3.7}, 2.9.2, 2.9.4 {3.9}, 8.10.3.2.2(d), and 8.11.3.1.2(d).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.1.1 {3.7}, 2.9.2, 2.9.4 {3.9}, 8.10.3.2.2 (i), and 8.11.3.1.2(g).

ASME A17.3 — Section 2.2 {4.1}.

2.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

NFPA 70 or CSA C22.1, as applicable.

2.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.204.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.5
HOUSEKEEPING

2.5.1 Periodic Inspections

Check that the machine room area is not used for the storage of any flammable liquids with a flash point less than 110°F (43°C) or for materials and articles not necessary for the maintenance and operation of the elevator. Check the floor area for cleanliness, noting any accumulation of oil, grease, or dirt.

For observation elevators with glass car enclosures or hoistway enclosures, check to see that a written procedure for cleaning the glass exists. The written procedure is not required to be kept in the machine room, but must be kept on premises. In jurisdictions enforcing the NBCC, if access openings in the hoistway or car for cleaning are not provided, cleaning must be performed under the direct supervision of a maintenance mechanic.

Check that the tops of cars are kept clean and dry and are not used for storage.

2.5.2 Periodic Test

2.5.3 Acceptance

2.5.4 References

2.5.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 1001.2(b)(5), 1206.2b, and 1206.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.1.2, 8.6.4.8, 8.6.10.3, 8.10.2.2.2(e), and 8.11.2.1.2(e).

ASME A17.1a-2005/CSA B44a-05 — Requirements 8.6.1.2, 8.6.4.8, 8.6.11.3, 8.10.2.2.2(e), and 8.11.2.1.2(e).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.1.2, 8.6.4.8, 8.6.11.3, 8.10.2.2.2(j), and 8.11.2.1.2(h).

2.5.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 1004.2(b)(5), 1206.1, 1206.2b {1206.5a}, and 1206.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.1.2, 8.6.4.8 {8.6.5}, 8.6.10.3, 8.10.3.2.2(e), and 8.11.3.1.2(e).

ASME A17.1a-2005/CSA B44a-05 — Requirements 8.6.1.2, 8.6.4.8 {8.6.5}, 8.6.11.3, 8.10.3.2.2(e), and 8.11.3.1.2(e).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.1.2, 8.6.4.8 {8.6.5}, 8.6.11.3, 8.10.3.2.2(j), and 8.11.3.1.2(h).

2.5.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 1001.2(b)(5), 1206.2b, and 1206.9.

ASME A17.1-2000/CSA B44-00 — Requirements 8.11.2.1.2(e) and 8.6.4.8.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 8.11.2.1.2(h) and 8.6.4.8.

2.5.4.4 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 1001.2(b)(5), 1206.2b, and 1206.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.11.2.1.2(e) and 8.6.4.8.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 8.11.2.1.2(h), 8.6.4.8, and 8.6.11.3.

ITEM 2.6
VENTILATION

2.6.1 Periodic Inspections

(a) Check that mechanical ventilation and air conditioning are in operating condition. Check that natural machine room/control space ventilation is open and functioning.

(b) Verify the temperature and humidity requirements are posted.

(c) Verify that current conditions are within the posted requirements.

2.6.2 Periodic Test

2.6.3 Acceptance

(a) Check that adequate ventilation is provided by natural or mechanical means to ensure safe and normal operation of the elevator.

(b) Verify the temperature and humidity requirements are posted.

(c) Verify that current conditions are within the posted requirements.

2.6.4 References

2.6.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 101.5(b)(5), 102.4, and 1001.2(b)(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.5.2, 2.8.4, 8.10.2.2.2(f), and 8.11.2.1.2(f).

A17.1S-2005 — Requirements 2.7.9.2, 2.8.5, 8.10.2.2.2(f), and 8.11.2.1.2(f).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.9.2, 2.8.5, 8.10.2.2.2(k), and 8.11.2.1.2(i).

ASME A17.3 — Paragraph 2.2.4.

2.6.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 101.5b {300.2}, 102.4, and 1004.2(b)(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.7.5.2 {3.7}, 2.8.4, 8.10.3.2.2(f), and 8.11.3.1.2(f).

A17.1S-2005 — Requirements 2.7.9.2, 2.8.5, 8.10.3.2.2(f), and 8.11.3.1.2(f).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.7.9.2, 2.8.5, 8.10.3.2.2(k), and 8.11.3.1.2(i).

ASME A17.3 — Paragraph 2.2.4 {Section 4.1}.

2.6.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

2.6.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.7.

ITEM 2.7
FIRE EXTINGUISHER

2.7.1 Periodic Inspections

In jurisdictions not enforcing the NBCC, verify that a class ABC fire extinguisher is mounted convenient to the access door. The extinguisher should be tagged to indicate monthly check and required annual maintenance.

NOTE: The elevator Code does not specify the size of the fire extinguisher to be provided.

2.7.2 Periodic Test

2.7.3 Acceptance

2.7.4 References

2.7.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 1001.2(b)(7) and 1206.1h.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 8.6.1.6.5, 8.10.2.2.2(g), and 8.11.2.1.2(g).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.1.6.5, 8.10.2.2.2(l), and 8.11.2.1.2(j).

2.7.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 1004.2(b)(7) and 1206.1h {1206.5a}.

ASME A17.1-2000/CSA B44-00 through A17.1S-2005 — Requirements 8.6.1.6.5 {8.6.5}, 8.10.3.2.2(g), and 8.11.3.1.2(g).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.1.6.5, 8.10.3.2.2(l), and 8.11.3.1.2(j).

(23) **2.7.4.3 Electric LU/LA Elevators.** A17.1d-2000 and earlier editions — Rules 1004.2(b)(7) and 1206.2f {1206.5a}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.11.2.1.2(g) and 8.6.1.6.5.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 8.6.1.6.5, 8.10.2.2.2(l), and 8.11.2.1.2(g).

(23) **2.7.4.4 Hydraulic LU/LA Elevators.** A17.1d-2000 and earlier editions — Rules 1004.2(b)(7) and 1206.2f {1206.5a}.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.11.3.1.2(g) and (NR 1206.2f) {8.6.5}.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 8.6.1.6.5, 8.10.2.2.2(l), and 8.11.3.1.2(g).

ITEM 2.8
PIPES, WIRING, AND DUCTS

2.8.1 Periodic Inspections

Only such pipes, wiring, and ducts used in direct connection with the elevator are permitted to be installed in the machine room or machinery spaces. Check permitted sprinkler piping for any leakage. For elevators required to meet ASME A17.3, pipes conveying gases, vapors, or liquids not connected with the operation of the elevator must be guarded so that any discharge will not affect the operation of the elevator.

2.8.2 Periodic Test

2.8.3 Acceptance

Check that sprinkler risers and return piping have been located outside the machine room and machinery spaces. Check to see that an automatic, nonresetting means independent of the elevator control is provided to disconnect the mainline power to the affected elevators before the sprinkler water is discharged into the machine room or machinery spaces. A shunt trip circuit breaker activated by a heat detector is one method of meeting these requirements. The Code prohibits sprinkler activation or disconnection of mainline power by smoke detectors.

2.8.4 References

2.8.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 102.1, 102.2, and 1001.2(b)(8).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.8.1, 2.8.2, 8.10.2.2.2(h), and 8.11.2.1.2(h).

A17.1S-2005 — Requirements 2.8.1 through 2.8.3, 8.10.2.2.2(h), and 8.11.2.1.2(h).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.8.1 through 2.8.3, 8.10.2.2.2(m), and 8.11.2.1.2(k).

ASME A17.1 — Inquiry 88-26.

ASME A17.3 — Paragraph 2.2.5.

NFPA 13.

2.8.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 102.1, 102.2 {300.3}, and 1004.2(b)(8).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.8.1, 2.8.2 {3.8}, and 8.11.3.1.2(h).

A17.1S-2005 — Requirements 2.8.1 through 2.8.3 {3.8}, 8.10.2.2.2(h), and 8.11.3.1.2(h).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.8.1 through 2.8.3 {3.8}, 8.10.3.2.2(m), and 8.11.3.1.2(k).

ASME A17.1 — Inquiry 88-26.

ASME A17.3 — Paragraph 2.2.5 {Section 4.1}.

NFPA 13.

2.8.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.8.

2.8.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.3 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44a-03 — Requirements 5.2.1.10 and 2.10.

ASME A17.1-2004/CSA B44-04 and later editions — Requirements 5.2.1.8 and 5.2.2.

ITEM 2.9
GUARDING OF EXPOSED AUXILIARY EQUIPMENT

2.9.1 Periodic Inspections

Check that guards of auxiliary equipment are in place and secure.

2.9.2 Periodic Test

2.9.3 Acceptance

2.9.4 References

2.9.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 104.1 and 1001.2(b)(9).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.10.1, 8.10.2.2.2(i), and 8.11.2.1.2(i).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.10.1, 8.10.2.2.2(n), and 8.11.2.1.2(l).

2.9.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 104.1 {300.5} and 1004.2(b)(9).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.10.1 {3.10}, 8.10.3.2.2(i), and 8.11.3.1.2(i).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.10.1 {3.10}, 8.10.3.2.2(n), and 8.11.3.1.2(l).

2.9.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.1, 104.1, and 1001.2(b)(9).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2003/CSA B44a-03 — Requirement 8.10.2.2.2(i).

ASME A17.1-2004/CSA B44-04 and later editions — Requirements 5.2.1.10, 2.10.1, and 8.11.2.1.2.

2.9.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 104.1 {300.5}, and 1004.2(b)(9).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirement 8.10.2.2.2(i).

ASME A17.1-2005/CSA B44-05 and later editions — Requirements 2.10.1 {3.10}, 5.2.1.10, 5.2.2, and 8.11.3.1.2.

ITEM 2.10
NUMBERING OF ELEVATORS, MACHINES, CONTROLLERS, AND DISCONNECT SWITCHES

2.10.1 Periodic Inspections

For elevators installed under A17.1-1960 through A17.1b-1989, where the machinery of more than one elevator is in a single machine room, check that the number for each car has been painted or securely attached to the drive machine, controllers, and disconnect switch. A17.1-1990 through A17.1d-2000 require numbers to be at least $1\frac{1}{2}$ in. (38 mm) in height.

2.10.2 Periodic Test

2.10.3 Acceptance

When there is more than one elevator in the building, verify that disconnects, controllers, machines, governors, and other equipment related to each elevator are clearly marked with an identification to indicate to which elevator they belong. Ensure that the markings are at least 2.0 in. (50 mm) in height and are contrasting to the background. Numbering must also appear on the crosshead, or on the car frame where no crosshead exists. Numbers must be visible from the landing.

2.10.4 References

2.10.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 208.10, 210.4, 211.9, and 1001.2(b)(10).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements (NR 208.10), 2.26.4.1, 2.29.1, 8.10.2.2.2(j), and 8.11.2.1.2(j).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements (NR 208.10), 2.26.4.1, 2.29.1, 8.10.2.2.2(o), and 8.11.2.1.2(m).

NFPA 70 or CSA C22.1, as applicable.

2.10.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 210.4, 211.9 {306.11}, and 306.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.4.1, 2.29.1 {3.29}, 8.10.3.2.2(j), and 8.11.3.1.2(j).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.4.1, 2.29.1 {3.29}, 8.10.3.2.2(o), and 8.11.3.1.2(m).

NFPA 70 or CSA C22.1, as applicable.

2.10.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 208.10, 210.4, 211.9, and 1001.2(b)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements (NR 208.10), 2.26.4, 2.29.1, and 8.11.2.1.2(j).

NFPA 70 or CSA C22.1, as applicable.

2.10.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 208.10, 210.4, 211.9, and 1001.2(b)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements (NR 208.10), 2.26.4, 2.29.1, and 8.11.2.1.2(j).

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.11
DISCONNECTING MEANS AND CONTROL

2.11.1 Periodic Inspections

Check that the mainline disconnecting means is in good working order and securely mounted.

2.11.1.1 Hydraulic Elevators. For elevators installed under A17.1a-1994 and later editions, verify that the sign "KEEP SWITCH CLOSED EXCEPT DURING MAINTENANCE, REPAIRS, AND INSPECTIONS" is placed on the switch when the anticreep device is dependent on availability of power.

2.11.2 Periodic Test

2.11.3 Acceptance

(a) Location. Check that the mainline disconnecting means has been located where it is readily accessible to qualified persons. Also, see 2.11.3.1 for electric elevators and 2.11.3.2 for hydraulic elevators.

Check that the disconnecting means for the car lighting, receptacles, and ventilation and the disconnecting means for any car heating or air conditioning are located in the machine room or control room. If there is no machine room or control room, check that these disconnecting means are in the same space as the mainline disconnecting means.

(b) Power — From More Than One Source. For elevators with more than one power source, check to see that a separate disconnecting means has been provided for each source of electrical power, and that the mainline disconnecting means is within sight of the equipment served. Check to see that warning signs for multiple disconnecting means indicating that parts of the control panel are not deenergized by one switch are mounted on or adjacent to the disconnecting means.

(c) Type. Check that the disconnecting means for the mainline power and for the car light, receptacle(s), and ventilation is an enclosed, externally operable fused motor circuit switch or circuit breaker capable of being locked in the open position and that it is a listed device.

(d) Identification and Signage. If the disconnecting means for more than one elevator is in the same machine room, the disconnecting means must be numbered or identified to correspond to the unique alphabetical or numerical identification assigned to the elevator car the disconnecting means controls.

Verify that a sign is provided for each disconnecting means that indicates the location of the supply side overcurrent protective device (fuse or circuit breaker).

Verify that arc flash warning signs, where required, are in place and clearly visible.

(e) Branch Circuits. Check that the disconnecting means for the cab lighting/ventilation circuit does not disconnect power to the door operator, door protection device, or the means of two-way communication. Verify that the mainline disconnecting means does not control the car lighting, receptacles, ventilation, heating, or air conditioning or the pit lighting or receptacles.

2.11.3.1 Electric Elevators

(a) For elevators without generator field control, the mainline disconnecting means must be located within sight of the motor controller.

When the drive machine or motion controller and operation controllers are not within sight of the disconnecting means, an additional manually operated switch to prevent starting is required to be installed adjacent to remote equipment that is connected in the control circuit.

(b) For elevators with generator field control, the mainline disconnecting means must be located within sight of the motor controller (motor starter) for the drive motor of the motor-generator set.

When the drive machine or motion controller and operation controllers are not within sight of the disconnecting means, an additional manually operated switch to prevent starting is required to be installed adjacent to remote equipment that is connected in the control circuit.

(c) For electric elevators equipped with an additional power source connected to the load side of the disconnecting means, which allows automatic movement of the car to permit evacuation of passengers, verify that when the mainline disconnecting means is in the open position the additional power source is disconnected from its load and the car does not move.

2.11.3.2 Hydraulic Elevators. The mainline disconnecting means is required to be installed, to be located within sight of the motor starter, and to remove power from both the motor and control valve.

When the drive machine of a hydraulic machine of a hydraulic elevator is located in a remote machine room or remote machinery space, verify that a single means for disconnecting all ungrounded main power-supply conductors is provided and is capable of being locked in the open position.

For hydraulic elevators equipped with auxiliary power lowering, verify that with the main disconnect in the open position, the additional power source is disconnected from its load and the car does not lower.

2.11.4 References

2.11.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.4 and 1001.2(b)(11).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.4.1, 8.10.2.2.2 (k), and 8.11.2.1.2(k).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.4.1, 8.10.2.2.2(r), and 8.11.2.1.2(p).

ASME A17.3 — Paragraph 3.10.5.

NFPA 70 or CSA C22.1, as applicable.

ASME A17.5-1991 — Clause 20.7.

2.11.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 306.3a(5)(b), 306.4, 306.6, and 1004.2(b)(11).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.26.3.1 {3.26.3.1.4 (b)}, 8.10.3.2.2(k), and 8.11.3.1.2(k).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.26.3.1 {3.26.3.1.4(b)}, 8.10.3.2.2(r), and 8.11.3.1.2(p).

ASME A17.3 — Paragraph 3.10.5 {4.7.5}.

NFPA 70 or CSA C22.1, as applicable.

2.11.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.3, 102.1, 210.4, and 1001.2(b)(11).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.8, 2.8, and 8.11.2.1.2(k).

NFPA 70 or CSA C22.1, as applicable.

2.11.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.3, 102.1, 210.4, and 1001.2(b)(11).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.2.1, 5.2.1.8, 2.8.1, 2.26.4, and 8.11.2.1.2(k).

ASME A17.1-2004/CSA B44-04 and later editions — Requirements 5.2.2, 5.2.1.8, 2.8, and 8.11.2.1.2(k).

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.12
CONTROLLER WIRING, FUSES, GROUNDING, ETC.

2.12.1 Periodic Inspections

2.12.1.1 Electric Elevators

(a) Inspection Made With Power Off. Examine all controller and selector relays, switches, contactors, control circuit rectifiers, transformers, capacitors, resistors, vacuum tubes, printed circuit boards, etc., and

(1) note any excessively worn or burned contacts, broken connectors, broken or cracked resistance grids, or resistance tubes.

(2) note proper fuse type and rating. No fuses should be jumped or shorted.

(3) check for

(-a) jumper wires or temporary wiring changes.

(-b) wiring diagrams and Code data plate for identification of SIL-rated devices. Where SIL-rated devices are used and the checkout procedure is required to be in the on-site documentation, verify that there is a written checkout procedure in the on-site documentation [ASME A17.1/CSA B44, requirement 8.6.1.2.2(c)(2)] that demonstrates their safety functions and related circuit operations (see ASME A17.1, Table 2.26.4.3.2).

(-c) any accumulation of combustible materials, especially on resistance grids or wires, or on control circuit rectifiers.

(-d) whether contacts of reverse-phase relay, where provided, are open.

(-e) excessively worn hinge pins and shunt wiring on relays or contactors.

(-f) mechanical interlock between relays.

(-g) blocked relays or circuits defeated by any other means and ensure that there is no evidence of a safety device being rendered inoperative.

(4) verify that jumpers are not stored in the machinery space, truss, or pits.

(5) check that signage is legible and maintained. For elevators subject to NFPA 70 and CSA 22.1 where power is supplied from more than one source, check for warning signs.

(6) check that all "no touch" shields (barriers) and guards, where provided, are in place and not damaged.

(b) Inspection Made With Power On. Observe the operation of the control equipment when the elevator is run in each direction. Note any arcing of contacts, excessive heating of coils or resistance, and misalignment of relays, contactors, and switches.

2.12.1.2 Hydraulic Elevators. Hydraulic elevators installed under A17.1c-1986 and later editions require a reverse-phase relay or other means to prevent overheating in the event of a phase failure or reversal. If a reverse-phase relay is not provided, a low oil timer, line starters with phase protection, rotation sensors, and thermistors in motor and oil, etc., may be used to meet the requirement to prevent overheating in the event of a phase reversal and/or failure. The condition of the control provided should be checked.

2.12.2 Periodic Test

Category 1 Test (for ASME A17.1-2013/CSA B44-13 and Later Editions). Where SIL-rated devices subject to category testing are identified as such on the wiring diagram and the checkout procedure is required to be in the on-site documentation, then have the procedure performed and witness the operation of the SIL-rated devices and rated circuits.

2.12.3 Acceptance

Check that sufficient clear working space has been provided around control panels and disconnecting means, to provide safe and convenient access to all live parts of the equipment necessary for maintenance and adjustment.

When an installation or alteration contains SIL-rated devices, verify that the Code data plate or an additional plate adjacent to the Code data plate is marked "Installation Contains SIL-Rated Devices." Review the wiring diagrams and verify that SIL-rated devices are identified with part identification, certification identification information, and the SIL rating equal to or greater than the values required, as applicable. Have the persons performing the test demonstrate compliance with protection against failures and removal of power from motors. When an assembly contains SIL-rated devices, verify that it is labeled or tagged to so indicate. The label or tag should read "Assembly Contains SIL-Rated Devices. Refer to Maintenance Control Program and Wiring Diagrams Prior to Performing Work."

2.12.4 References

2.12.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 102.1, 210.4, 1001.2(b)(12), and 1206.1f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.4, 8.10.2.2.2(l), 8.11.2.1.2(l), 8.6.1.6.1, and 8.6.1.6.3.

ASME A17.1-2007/CSA B44-07 through ASME A17.1-2010/CSA B44-10 — Requirements 2.26.4, 2.26.9.5.1(b), 8.6.1.6.1, 8.6.1.6.3, 8.10.2.2.2(s), 8.6.1.2.2, 8.6.4.19.10, Table 2.26.4.3.2, 8.10.2.8, 8.9, and 8.11.2.1.2(q).

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 2.26.4.3.2, 2.26.8.2, and 2.26.9.

ASME A17.3 — Paragraph 3.10.6.

NFPA 70 or CSA C22.1, as applicable.

2.12.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 102.1 {300.3}, 306.5, 306.6, 1004.2(b)(12), 1206.1f, and 1206.5a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.26, 8.10.3.2.2(l), 8.11.3.1.2(l), 8.6.1.6.3, and 8.6.1.6.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.26, 8.6.1.6.1, 8.6.1.6.3, 8.10.3.2.2(s), and 8.11.3.1.2(q).

ASME A17.3 — Paragraph 3.10.6.

NFPA 70 or CSA C22.1, as applicable.

2.12.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.3, 102.1, 210.4, and 1001.2(b)(11).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.2.13, 3.26, 8.10.2.2.2(l), and 8.11.2.1.2(l).

ASME A17.1-2004/CSA B44-04 and later editions — Requirements 5.2.1.8, 2.8, and 8.11.2.1.2(l).

NFPA 70 or CSA C22.1, as applicable.

2.12.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.3, 102.1, 210.4, and 1001.2(b)(11).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.2.13, 3.26, 8.10.2.2.2(l), and 8.11.2.1.2(l).

ASME A17.1-2004/CSA B44-04 and later editions — Requirements 5.2.2.1, 5.2.1.8, 2.8, and 8.11.2.1.2(l).

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.13
GOVERNOR, OVERSPEED SWITCH, AND SEAL

2.13.1 Periodic Inspections

2.13.1.1 Electric Elevators — Inspection Made With Power Off

(a) Examine governor fastening bolts to verify that the governor is securely fastened in place and that the governor rope is free of the governor jaws and other obstructions.

(b) Examine all linkages, gears, pins, collars, bushings, and latches that are used to connect the weights and the rope-gripping devices for evidence of excessive wear and lost motion, and note that all bearings and rubbing surfaces are not restricted by paint or other foreign substances.

(c) Manually lift the weights or flyballs and note whether all moving parts, including the governor-rope jaws, operate freely and that there is ample room for the rotation of the governor weight or flyballs in their extreme extended position. Check all parts of the governor for lubrication.

(d) Examine rope-gripping surfaces.

(e) Where the governor is provided with a speed-reducing switch and an overspeed (stopping) switch, determine by manually operating the governor mechanism, where practical, whether these switches operate.

(f) Verify that means of adjusting tripping speed and pull-through force are sealed.

(g) Where special or unique methods are required to test the governor, refer to the MCP for the appropriate procedure.

2.13.2 Periodic Test

2.13.2.1 Electric Elevators

(a) Yearly Test of Governor (for A17.1d-2000 and Earlier Editions); Category 1 Test of Governor (for ASME A17.1-2000/CSA B44-00 and Later Editions). Make a general

examination of the governor-rope system, including the condition of the governor, governor rope, governor-rope tension sheave assembly, and releasing carrier. Check that the proper type of rope, identified on the governor marking plate, has been installed.

Where special or unique methods are required to test the governor, refer to the MCP for the appropriate procedure.

(1) Inspection Made With Power Off. With the mainline switch in the open position, inspect governors by a manual extension of the governor weights to make sure there is no restriction of motion and verify that all parts, including the rope-gripping jaws, operate freely. Check all bearings, pins, governor-rope jaws, and rubbing surfaces to make sure they are not worn excessively and are properly lubricated and free of paint.

(2) Inspection Made With Power On. Open the governor overspeed (stopping) switch, where provided, and check to be sure that the elevator cannot be operated. Reset the governor switch, and have the car operated at normal speed in each direction and note

(-a) any tendency of the governor rope to slide on the sheave groove when the car is started or stopped

(-b) any eccentric or lateral motion of the governor sheave

(-c) whether the rope runs free of the jaws at all times

(3) Adjustment Means Seal. A test of the governor-tripping speed is not required unless the seal on the governor has been disturbed or the inspection indicates that for other reasons a test is necessary. If a test is made, the governor must be sealed and tagged after the test.

(b) 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Where special or unique methods are required to test the governor, refer to the MCP for the appropriate procedure.

After the car and counterweight guide shoes, safety parts, and governors have been inspected, check as follows:

(1) Determine the acceptable range of tripping speed of the governor using Table 2.13.2.1-1 based on the rated speed. Also, the tripping speed should be stamped on the governor marking plate for elevators installed under A17.1-1955 and later editions.

(2) Have governors calibrated to the setting as shown in Table 2.13.2.1-1.

(3) The sheave must be free to rotate with no obstruction by the governor rope. To accomplish this, have the person performing the test park the elevator car about 12 in. (305 mm) below the top opening and open the mainline disconnect switch.

(-a) Lift the governor rope to ensure sufficient slack to spin the sheave. When installing a clamp on a governor rope, be careful not to damage the rope. [See (5).]

(-b) With a rubber drive wheel held against the governor sheave driven by a variable-speed drill motor, gradually build up the governor speed until it trips.

(-c) To read the tripping speed, use a calibrated tachometer reading in ft/min (m/s). Hold the wheel inside the governor sheave groove at the centerline of the rope. Take several readings and record the average.

(4) If any adjustments are made, be sure the locknuts are tight and install a new seal. Use a No. 36 [0.106 in. (2.69 mm)] or smaller drill. Install the seal with a sealing tool. Retest as outlined above, and record the tripping speed. Check the tripping speed of the governor switches using the same procedure. Place the rope on the governor sheave.

Remove the clamp and inspect the governor rope for any damage or kinks. Reinstall all sheave and switch covers. Check the releasing carrier. On drum-operated safeties, check for slack rope between the releasing carrier and drum.

NOTE: If an elevator, for any reason, is running below the rated speed, the governor calibration must be based on the rated speed.

(5) For Class B-type safeties, check the force necessary to pull the governor rope through the governor. In no case may the pull-through force exceed one-fifth of the rated ultimate strength of the governor rope. The force required to pull the governor rope from the releasing carrier is required to be no more than 60% of the pull-through force.

One method of performing this test is as follows: The best place to check this is from the top of the car since the governor rope and release carrier are usually accessible from there (see Figure 2.13.2.1-1). Make this connection fairly direct with minimum angle between the governor rope and the sling. Take special care that the attachment does not damage the governor rope. In most cases the attachment can be made to a portion of the governor rope that does not reach the governor when the car is at the upper landing. When clamps (fist grip) are used for this purpose, they should comply with non-babbitted rope fastenings as outlined in Item 3.29, and the nuts should be tightened with a torque wrench to the torque recommended by the manufacturer. Typical torques are 45 ft-lb (61 N·m) for $\frac{3}{8}$ in. (9.5 mm) rope, 65 ft-lb (88 N·m) for $\frac{7}{16}$ in. (11 mm) and $\frac{1}{2}$ in. (13 mm) rope, and 130 ft-lb (176 N·m) for $\frac{9}{16}$ in. (14 mm) and $\frac{5}{8}$ in. (16 mm) rope; either over- or under-tightening will likely damage the governor rope and require its replacement. A so-called Chicago grip that is used for pulling large-diameter electrical conductors is also recommended for this connection since it would be less likely to damage the governor rope. These grips can be ordered with jaws that are machined to the diameter of the rope. Midline rope clamps that grip with a wedge conforming to the rope size may also be used. Regardless of the method used, extra care must be taken to provide a

Table 2.13.2.1-1
Governor Adjustment Settings

Rated Car Speed, ft/min	Car Governor-Tripping Speed		Cwt. Governor-Tripping Speed [Note (1)]		Car Governor Overspeed Switch Settings, Down Direction			Car Governor Overspeed Switch Settings, Up Direction	Cwt. Governor Overspeed Switch Settings
	Rqmt. 2.18.2.1, Minimum, ft/min	Rqmt. 2.18.2, Maximum, ft/min	Rqmt. 2.18.2.2, Minimum, ft/min	Rqmt. 2.18.2.2, Maximum, ft/min	Rqmts. 2.18.4.2.1 and 2.18.4.2.2	Rqmt. 2.18.4.2.3	Rqmt. 2.18.4.2.5	Rqmt. 2.18.4.2.4	Rqmt. 2.18.4.1
0 to 125	144	175	145	192	Not required	Not more than 90% of car governor down tripping setting for elevators with static controls	Not required	Not required	Counterweight governor overspeed switch required for any speed
150	173	210	174	231					
175	202	250	203	275	Not more than 90% of car governor down tripping setting		Not more than 100% of car governor down tripping setting if a speed-reducing switch is provided	Not more than 100% of car governor down tripping setting	
200	230	280	231	308					
225	259	308	260	338					
250	288	337	289	370					
300	345	395	346	434					
350	403	452	404	497					
400	460	510	461	561					
450	518	568	519	624					
500	575	625	575	687					
600	690	740	691	814	Not more than 95% of car governor down tripping setting				
700	805	855	806	940					
800	920	970	921	1,067					
900	1,035	1,085	1,036	1,193					
1,000	1,150	1,200	1,151	1,320					
1,100	1,265	1,320	1,266	1,452					
1,200	1,380	1,440	1,381	1,584					
1,300	1,495	1,560	1,496	1,716					
1,400	1,610	1,680	1,611	1,848					
1,500	1,725	1,800	1,726	1,980					
1,600	1,840	1,920	1,841	2,112					
1,700	1,955	2,040	1,956	2,244					
1,800	2,070	2,160	2,071	2,376					
1,900	2,185	2,280	2,186	2,508					
2,000	2,300	2,400	2,301	2,640					

GENERAL NOTE: Requirements (Rqmts.) are in ASME A17.1/CSA B44.

NOTE: (1) The counterweight (cwt.) governor-tripping speed must exceed the car governor-tripping speed.

secure connection that will not damage the governor rope. Note the spring tension of the safety releasing carrier so that it can be restored to its original setting after completion of the test.

Remove the spring tension from the releasing carrier so that it will not restrain the rope. Trip the governor, and pop up the governor-rope tension sheave to allow approximately 1 ft (0.305 m) movement of the governor rope without lifting the tension sheave. Operate the come-along, pulling at least 6 in. (152.4 mm) of the governor rope through the governor. Note the reading on the dynamometer and compare it to the rated ultimate strength of the rope. If a release carrier is used, it must release at no more than 60% of the governor pull-through force. This can be checked with the same equipment by connecting the dynamometer and come-along between the governor rope at the releasing carrier and the existing connection and the governor rope.

After this test, perform the following three steps:

(-a) Carefully inspect the governor rope at the point of connection to ensure that it has not been damaged.

(-b) Restore the governor release carrier.

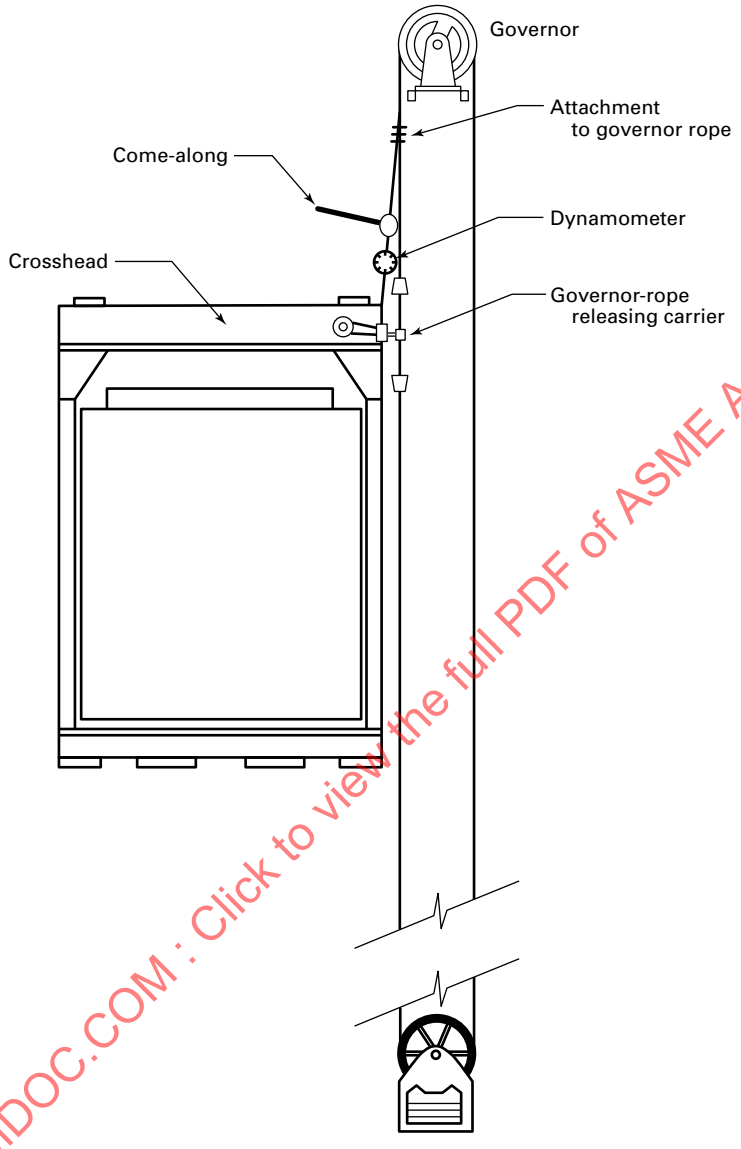
(-c) Reset and inspect the governor.

(6) Ensure the governor has been sealed and tagged.

2.13.2.2 Hydraulic Elevators

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Make a general examination of the governor-rope system, including the condition of the

Figure 2.13.2.1-1
Dynamometer Connections for Testing the Pull-Through of Governor Jaws



governor, governor rope, governor-rope tension sheave assembly, and releasing carrier. Check to verify that the type of rope identified on the governor marking plate has been installed. Where special or unique methods are required to test the governor, refer to the MCP for the appropriate procedure.

(1) Inspection Made With Power Off. With the mainline switch in the open position, governors shall be inspected by a manual extension of the governor weights to make sure there is no restriction of motion and to verify that all parts, including the rope-gripping jaws, operate freely. All bearings, pins, rope jaws, and rubbing surfaces shall be checked to make sure they are not worn excessively, are properly lubricated, and are free of paint.

(2) Inspection Made With Power On. Open the governor overspeed (stopping) switch, where provided, and check to be sure that the elevator cannot be operated in either direction. Reset the governor switch, and have the car operated at normal speed in each direction and note

(-a) any tendency of the governor rope to slide on the sheave groove when the car is started or stopped

(-b) any eccentric or lateral motion of the governor sheave

(b) 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Where special or unique methods are required to test the governor, refer to the MCP for the appropriate procedure. After the car and counterweight guide shoes, safety parts, and governors have been inspected, check as follows:

(1) The acceptable range of tripping speed for the governor shall be determined using Table 2.13.2.1-1, except that the tripping speed shall be based on the elevator operating speed in the down direction. The governor switch should operate before or at the application of the safety. If a tripping speed is stamped on the governor marking plate, it should be considered the maximum for that governor.

(2) Governors shall be calibrated to the setting as shown in Table 2.13.2.1-1 or the manufacturer's marking plate, whichever is less.

(3) The sheave must be free to rotate with no obstruction by the governor rope. To accomplish this, park the elevator car about 12 in. (305 mm) below the top opening and open the mainline disconnect switch.

(-a) Lift the governor rope to ensure sufficient slack to spin the sheave. When installing a clamp on a governor rope, be careful not to damage the rope.

(-b) With a rubber drive wheel held against the governor sheave driven by a variable-speed electric drill, gradually build up the governor speed until it trips.

(-c) To read the tripping speed, use a tachometer reading in ft/min (m/s). Hold the tachometer wheel at the pitch diameter of the governor sheave. Take several readings and record the average.

(4) If any adjustments are made, be sure the locknuts are tight and install a new seal. Use a No. 36 [0.106 in. (2.69 mm)] or smaller drill. Install the seal with a sealing tool. Retest as outlined above, and record the tripping speed. Check the tripping speed of the governor switches using the same procedure. Place the rope on the governor sheave. Remove the clamp and inspect the governor rope for any damage or kinks. Reinstall all sheave and switch covers.

NOTE: If an elevator, for any reason, is running below the rated speed, the governor calibration must be based on the rated speed.

(5) For Type B safeties, the force necessary to pull the governor rope through the governor shall be checked. In no case may the pull-through force exceed one-fifth of the rated ultimate strength of the governor rope. The force required to actuate the releasing carrier, where provided, shall be no more than 60% of the pull-through force. One method of performing this test is as follows: The best place to check this is from the top of the car since the governor rope and release carrier, where provided, are usually accessible from there (see Figure 2.13.2.1-1). Make this connection fairly direct with minimum angle between the governor rope and the sling. Take special care that the attachment does not damage the governor rope. In most cases, the attachment can be made to a portion of the governor rope that does not reach the governor when the car is at the upper landing. When clamps (fist grip) are used for this purpose, they shall comply with non-babbitted rope fastenings, and the nuts shall be tightened with a torque wrench to the torque recommended by the manufacturer. This is usually 45 ft-lb (61 N·m) for $\frac{3}{8}$ in. (9.5 mm) rope, 65 ft-lb (88 N·m) for $\frac{7}{16}$ in. (11 mm) and $\frac{1}{2}$ in. (13 mm) rope, and 130 ft-lb (176 N·m) for $\frac{9}{16}$ in. (14 mm) and $\frac{5}{8}$ in. (16 mm) rope. Either over- or under-tightening will likely damage the governor rope and require its replacement. A so-called Chicago grip that is used for pulling large-diameter electrical conductors is also recommended for this connection since it would be less likely to damage the governor rope. These grips can be ordered with jaws that are machined to the diameter of the rope. Midline rope clamps that grip with a wedge conforming to the rope size may also be used. Regardless of the method used, extra care must be taken to provide a secure connection that will not damage the governor rope. Note the spring tension of the safety releasing carrier so that it can be restored to its original setting after completion of the test.

Remove the spring tension from the releasing carrier so that it will not restrain the rope. The governor shall be tripped, and the governor-rope tension sheave propped up to allow approximately 1 ft (0.305 m) movement of the governor rope without lifting the tension sheave. Operate the come-along, pulling at least 152 mm (6 in.) of the governor rope through the governor. Note the reading on the dynamometer and compare it to the rated ultimate strength of the rope. If a release carrier is used, it must release at no more than 60% of the governor pull-through force. This can be checked with the same equipment by connecting the dynamometer and come-along between the governor rope at the releasing carrier and the existing connection and the governor rope.

After this test, perform the following three steps:

(-a) Carefully inspect the governor rope at the point of connection to ensure that it has not been damaged.

(-b) Restore the governor release carrier.

(-c) Reset and inspect the governor.

(6) The governor should be sealed and a metal test tag installed by the person that performed the test.

2.13.3 Acceptance

2.13.3.1 Electric Elevators

(a) Governor Tests. Check the governor marking plate to determine that it is marked with size, material, and construction of the governor rope used and the governor-tripping speed.

(b) Speed-Load Tests. The use of a tachometer in making speed-load tests is required. The tachometer reading must be taken after the car has reached its constant speed. Take

and record speed readings with no load in the car and with rated load in the car in both the up and down directions. Tachometer readings must be taken from the side of the governor rope or hoisting ropes. Speed readings from any other position on the governor rope or hoisting ropes will be inaccurate. Where the car is roped 2:1, the car speed is one-half the hoist rope speed.

(c) If the governor can only be inspected or serviced within the hoistway, verify the following:

(1) the car is secured against movement before servicing the governor

(2) required signage is present

(3) switches are the manual reset type; see ASME A17.1/CSA B44, Note (2.18.6.5) for definition of what is considered manual

(4) the governor is arranged to be manually tripped or activated; see ASME A17.1/CSA B44, Note (2.18.6.5) for definition of what is considered manual

(5) a manually reset pit governor tension sheave switch is used if the governor is dependent on the tension of the sheave weight to operate

2.13.3.2 Hydraulic Elevators

(a) Governor Tests. Check the governor marking plate to verify that it is marked with size, material, and construction of the governor rope for which it was designed and the governor-tripping speed.

(b) Speed-Load Tests. The tachometer reading must be taken after the car has reached its constant speed. Speed readings shall be taken and recorded with no load in the car and with rated load in the car in both the up and down directions. Tachometer readings must be taken by holding the tachometer wheel at the pitch diameter of the governor sheave.

(c) If the governor can only be inspected or serviced within the hoistway, verify the following:

(1) the car is secured against movement before servicing the governor

(2) required signage is present

(3) switches are the manual reset type; see ASME A17.1/CSA B44, Note (2.18.6.5) for definition of what is considered manual

(4) the governor is arranged to be manually tripped or activated; see ASME A17.1/CSA B44, Note (2.18.6.5) for definition of what is considered manual

(5) a manually reset pit governor tension sheave switch is used if the governor is dependent on the tension of the sheave weight to operate

NOTE: For consistency of measurement, the oil should be at normal operating temperature when checking rated speed, operating speed in the down direction, relief valve setting, etc.

2.13.4 References

2.13.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 206 and Rules 205.15, 210.2(j), 1001.2(b)(28), 1002.2c, 1002.3a, 1002.3b, 1003.2a, and 1206.1a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.18, 2.17.15, 2.26.2 {2.26.2.10}, 8.7.2.19, 8.11.2.1.2(bb), 8.11.2.2.3, 8.11.2.3.1, 8.11.2.3.2, 8.10.2.2.2(aa), and 8.6.1.6.2.

ASME A17.1S-2005/CSA B44S-05 — Requirements 2.7.6.3.4, 2.18.4.4, 2.18.6.5, and 2.18.7.2.

ASME A17.1-2007/CSA B44-07 — Requirements 2.18, 2.17.15, 2.26.2 {2.26.2.10}, 8.6.1.6.2, 8.7.2.19, 8.10.2.2.2 (hh), 8.11.2.1.2(ff), 8.11.2.2.3, and 8.11.2.3.2.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.18, 2.17.15, 2.26.2 {2.26.2.10}, 8.6.1.6.2, 8.7.2.19, 8.10.2.2.2(hh), 8.11.2.1.2(ff), 8.6.4.19.3, and 8.6.4.20.2.

ASME A17.3 — Paragraphs 3.6.1 and 3.10.4(g).

2.13.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 205 and 206 and Rules 301.8, 1002.2(b), 1005.2c, 1005.4, 1202.7, and 1206.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.18, 8.6.1.6.2, 8.7.3.16 {8.7.2.19}, 8.10.3.2.2(y), 8.11.2.2.2, 8.11.3.1.2 (v), 8.11.3.2.3, and 8.11.3.4.

ASME A17.1S-2005/CSA B44S-05 — Requirements 2.7.6.3.4, 2.18.4.4, 2.18.6.5, and 2.18.7.2.

ASME A17.1-2007/CSA B44-07 — Requirements 2.18, 8.6.1.6.2, 8.7.3.16 {8.7.2.19}, 8.10.3.2.2(ff), 8.11.3.1.2(bb), and 8.11.3.4.1.

ASME A17.1b-2008/CSA B44b-08 and later editions — Requirements 2.18, 8.6.1.6.2, 8.7.3.16 {8.7.2.19}, 8.10.3.2.2(ff), 8.6.5.14.3(b), and 8.6.5.16.1.

ASME A17.3 — Paragraph 4.9.7.

2.13.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.7; Section 206; and Rules 205.15, 210.2(j), 1001.2(b)(28), 1002.2c, 1002.3a, 1002.3b, 1003.2a, and 1206.1a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.18, 2.18, 2.17.15, 2.26.2 {2.26.2.10}, 8.11.2.1.2(bb), 8.11.2.2.3, 8.11.2.3.1, 8.11.2.3.2, 8.10.2.2.2(cc)(1), and 8.6.1.6.2.

2.13.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.7; Sections 205 and 206; and Rules 301.8, 1002.2(b), 1005.2c, 1005.4, 1202.7, and 1206.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.1, 5.2.1.18, 2.17, 2.18, 3.17.1, 8.11.2.2.2, 8.11.3.2.3, 8.11.3.4, 8.7.2.19, and 8.6.1.2.

ITEM 2.14
CODE DATA PLATE

2.14.1 Periodic Inspections

Check that the Code data plate is installed. This is the Code that is to be used for the inspection and test.

2.14.2 Periodic Test

2.14.3 Acceptance

2.14.4 References

2.14.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 215 and Rule 1200.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 8.9, 8.7.1.8, 8.10.2.2.2(ee), and 8.11.2.1.2(dd).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.9, 8.7.1.8, 8.10.2.2.2(ll), and 8.11.2.1.2 (hh).

2.14.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 309 and Rule 1200.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 8.9, 8.7.1.8, 8.10.3.2.2(w), and 8.11.3.1.2(u).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.9, 8.7.1.8, 8.10.3.2.2(dd), and 8.11.3.1.2 (aa).

2.14.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.8b, Section 215, and Rule 1200.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.16.2, 8.9, and 8.7.1.8.

2.14.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.9, Section 309, and Rule 1200.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.1, 5.2.1.16.2, 8.9, and 8.7.1.8.

NOTE: Items 2.15 through 2.29 apply to electric LU/LA elevators only.

ITEM 2.15
STATIC CONTROL

2.15.1 Periodic Inspections

2.15.2 Periodic Test

2.15.2.1 Electric Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). The person or firm installing or maintaining an elevator with a drive motor employing static control without a motor-generator set should demonstrate conformance with the Code as follows:

(a) Run the car and demonstrate that there are two devices that will each independently remove power from the drive machine motor and cause the car to stop. At least one of the devices is required to be an electromechanical contactor, which also opens the drive machine brake circuit.

(b) Prevent the electromechanical contactor in (a) from being energized and register a call. Demonstrate, with the doors closed, that the brake will not lift and the car will not move.

(c) Demonstrate that either of two contactors in the brake circuit will prevent the brake from lifting.

(d) Demonstrate that the operation of any of the electrical protective devices will cause both devices specified in 2.13.2.1(a) to remove power from the drive machine motor and brake.

2.15.3 Acceptance

2.15.4 References

2.15.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.2, 210.9(d), 1001.2(b)(13), and 1003.2h.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.9.5, 8.11.2.1.2 (m), and 8.10.2.2.2(m).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.9.5, 8.10.2.2.2(t), and 8.11.2.1.2(r).

2.15.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.11, 210.2, 210.9(d), 1001.2(b)(13), and 1003.2h.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.25, 2.26.2, 2.26.9.5, 8.11.2.1.2(m), and 8.10.2.2.2(m).

ITEM 2.16
OVERHEAD BEAM AND FASTENINGS

2.16.1 Periodic Inspections

2.16.1.1 Electric Elevators. Examine overhead beams to determine whether they are securely fastened to supports or firmly embedded in walls. Note any settlement of supports. Examine all exposed bolt fastenings of beams supporting machinery or sheaves.

2.16.2 Periodic Test

2.16.3 Acceptance

2.16.3.1 Electric Elevators. Examine overhead machine and sheave beam supports. Record the dimensions and span of beams and check them against layout drawings.

2.16.4 References

2.16.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 105.1 through 105.3 and 1001.2(b)(14).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.9.1 through 2.9.3, 8.10.2.2.2(n), and 8.11.2.1.2(n).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.9.1 through 2.9.3, 8.10.2.2.2(u), and 8.11.2.1.2(s).

2.16.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.6, 105.1 through 105.3, and 1001.2(b)(14).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.9, 2.9.1 through 2.9.3, and 8.11.2.1.2(n).

ITEM 2.17
DRIVE MACHINE BRAKE

2.17.1 Periodic Inspections

2.17.1.1 Electric Elevators

(a) Inspection Made With Power On. Run the car and observe the operation of the brake. The brake should not chatter. It may apply on or before the completion of the slowdown and leveling operation. Check to see that the brake is automatically applied on or after normal stops. The clearance between the brake shoe and the brake drum when the car is running should not be greater than necessary to permit free running. Examine the brake pins to determine whether they are properly lubricated and not frozen, and that retainers are in place. Note any harsh and abrupt brake action. Examine brake-activated contacts (if provided) for proper operation.

(b) Inspection Made With Power Off

(1) Examine the brake and drum to determine that the brake linings are free of oil and whether there is any scoring of the drum.

(2) If the elevator has been running, the brake drum may be warm but should not be uncomfortable to the touch. A hot drum usually indicates a dragging brake shoe.

NOTE: The design of the actuating linkage of some brakes is such that a single unit or link is used to govern both the spring pressure applying the brake shoes when the brake applies and the amount of clearance between the brake shoes and the brake drum when the brake is released. With this type of design, it is possible to improperly adjust the releasing feature so that it will prevent the brake shoes from gripping the brake drum when the brake applies. The adjustment of this type of brake should be examined to determine that the adjustment is such that the brake shoes are not prevented from properly applying and that there is sufficient margin in the adjustment for the brake lining wear (no part of the brake should contact the machine for at least the thickness of the lining).

2.17.2 Periodic Test

2.17.2.1 Electric Elevators

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). For elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, have the brake setting verified in accordance with the data on the brake marking plate.

(b) 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). At an upper landing from which the maximum attainable speed in the down direction can be attained with 125% load, place 125% load in the car for passenger elevators and freight elevators permitted to carry passengers, and for freight elevators place the rated load in the car.

(1) Run the car to the lowest landing by the normal operating means. The drive machine must safely lower, stop, and hold the car with this overload. The elevator is not required to attain rated load performance under overload conditions, but should stop the car within a reasonable distance (e.g., the distance between the initial slowdown and the bottom terminal landing sill). The drive machine is not required to raise this load or stop level within normal limits, but the car should not activate the final terminal stopping device. After the elevator has stopped, have the mainline disconnect means opened and verify that the brake will hold the elevator.

(2) For elevators installed to A17.1-2000 and later editions, in addition to the procedure performed above, run the car down by the normal operating means and have the safety circuit opened after the car has reached constant speed. It is not recommended that the mainline disconnect switch be opened as the means to stop the car due to the possibility of a flash over. The braking system must safely stop and hold the load.

For freight elevators designed for Class C2 loading, with the car parked at the landing, increase the load inside the car up to the maximum load indicated on the freight elevator loading sign. The drive machine motor, brake, and available traction must hold and level this load.

2.17.2.2 Hydraulic Elevators: Category 5 Test. For freight elevators designed for Class C2 loading, with the car parked at the landing, increase the load inside the car up to the maximum load indicated on the freight elevator loading sign. The hydraulic system must hold and level this load.

2.17.3 Acceptance

Verify that the brake marking plate is permanently attached to the drive machine.

See 2.43.3.1 for the emergency brake.

2.17.4 References

2.17.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 207.2b, 207.8, (NR 2.24.8), 210.8, 1001.2(b)(15), [NR 8.11.2.3.10(a)], and 1002.3d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.10.2.2.2(o), 8.11.2.1.2(o), 8.11.2.3.10 (a), and 8.11.2.3.4.

ASME A17.1-2007/CSA B44-07 — Requirements 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.10.2.2.2(v), 8.11.2.1.2 (t), and 8.11.2.3.4.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.10.2.2.2 (v), 8.11.2.1.2(t), and 8.6.4.20.4.

ASME A17.3 — Paragraph 3.8.4.

2.17.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rule 301.10.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirement 3.16.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.16, 8.10.3.2.2(hh), and 8.6.5.16.6.

ASME A17.3 — Paragraph 4.2.4.

2.17.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501, (NR 2.24.8), 210.8, 1001.2(b)(15), [NR 8.11.2.3.10(a)], and 1002.3d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.11.2.1.2(o), 8.11.2.3.10(a), and 8.11.2.3.4.

ITEM 2.18
TRACTION-DRIVE MACHINES

2.18.1 Periodic Inspections

2.18.1.1 Electric Elevators

(a) Inspection Made With Power On

(1) Have the elevator operated in each direction, making frequent stops, and observe the operation of the motor. Observe commutators for excessive sparking or brush chatter. Observe bearings for excessive noise and wear.

(2) Inspect all motor fastening bolts for tightness.

(3) Inspect the brushes; note any sparking or chattering.

(b) Inspection Made With Power Off. Examine brush holders and commutators or slip rings, and determine

(1) the condition of the brush holders and brushes.

(2) whether commutators or slip rings are burned, pitted, grooved, or scored, and are clean and free from oil and high mica.

(3) if there is any accumulation of carbon, copper dust, oil, or other substances in the slot of an undercut commutator.

(4) that exposed armature and field terminal conditions are tight. Give special attention to the shunt field connections of direct-current (DC) motors.

(5) that the leads are not broken and their insulation is not cracked or broken.

(6) that the motor windings are free of oil, dust, and lint deposits.

2.18.2 Periodic Test

2.18.2.1 Electric Elevators — Category 5. The slipping traction or drive motor stalling test procedure is as follows:

(a) With the empty car moving in the up direction at inspection speed, the car and hoistway doors in the closed position, the top terminal stopping devices temporarily rendered ineffective, and the counterweight stopped by the buffer, verify that either of the following occurs:

(1) The hoist ropes slip on the drive machine sheave.

(2) The drive machine motor stalls.

(b) All the top terminal stopping devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

(c) With the empty car moving in the down direction at inspection speed, the car and hoistway doors in the closed position, the bottom terminal stopping devices temporarily rendered ineffective, and the car stopped by the buffer, verify that either of the following occurs:

(1) The hoist ropes slip on the drive machine sheave.

(2) The drive machine motor stalls.

(d) All the bottom terminal stopping devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

NOTE [2.18.2.1(a) and 2.18.2.1(c)]: Power may be removed by the control from the drive machine motor and brake after loss of traction or the drive machine motor has stalled.

2.18.3 Acceptance (23)

The slipping traction or drive motor stalling test procedure is as follows:

(a) With the empty car moving in the up direction at inspection speed, the car and hoistway doors in the closed position, the top terminal stopping devices temporarily rendered ineffective, and the counterweight stopped by the buffer, verify that either of the following occurs:

(1) The hoist ropes slip on the drive machine sheave.

(2) The drive machine motor stalls.

(b) All the top terminal stopping devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

(c) With the empty car moving in the down direction at inspection speed, the car and hoistway doors in the closed position, the bottom terminal stopping devices

temporarily rendered ineffective, and the car stopped by the buffer, verify that either of the following occurs:

(1) The hoist ropes slip on the drive machine sheave.

(2) The drive machine motor stalls.

(d) All the bottom terminal stopping devices shall be restored to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

NOTE [2.18.3(a) and 2.18.3(c)]: Power may be removed by the control from the drive machine motor and brake.

2.18.4 References

2.18.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 208 and Rules 1001.2(b)(16), 1003.2, and [NR 8.11.2.3.10(b)].

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24, 8.10.2.2.2(p), and 8.11.2.1.2(p).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.24, 8.10.2.2.2(w), and 8.11.2.1.2(u).

ASME A17.3 — Paragraph 3.8.1.

2.18.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501, (NR 2.24.8), 210.8, 1001.2(b)(15), [NR 8.11.2.3.10(a)], and 1002.3d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.11.2.1.2(o), 8.11.2.3.10(a), and 8.11.2.3.4.

ASME A17.3 — Paragraph 3.8.3.

ITEM 2.19
GEARS, BEARINGS, AND FLEXIBLE COUPLINGS

2.19.1 Periodic Inspections

2.19.1.1 Electric Elevators

(a) Inspection Made With Power On

(1) Have the elevator operated in each direction, making frequent stops. Observe if there is any excessive play or backlash in the bearings or gearing. Unusual noise or play is usually an indication of gear or thrust bearing trouble, or damage to bearing liners, rollers, or balls. It may be constructive to run the elevator at inspection speed as well as rated speed to fully observe any deterioration.

(2) Observe through the access covers to determine whether gears are carrying oil and that oil rings, chains, or other methods of feeding lubricant, where used, operate freely.

(b) Inspection Made With Power Off. Examine the oil in the gear case and bearing oil wells to determine that it is free of damaging metallic particles or other foreign substances. Check the oil level and note any leakage. Visually check the gears and sleeve bearings, where feasible, for excessive wear and scoring. Examine for any oil leaks that may damage the flexible part of the coupling and for any excessive wear.

Verify that when the flexible part of the coupling fails, it will not completely disengage from each unit. Inspect flexible couplings for wear and excess slack.

2.19.2 Periodic Test

2.19.2.1 Electric Elevators. If possible, visually inspect flexible couplings to determine that failure of the flexible element will not result in disengagement.

2.19.3 Acceptance

2.19.4 References

2.19.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 208 and Rules 1001.2(b)(17) and 1206.1a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24, 8.10.2.2.2(q), 8.11.2.1.2(q), and 8.6.1.6.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.24, 8.6.1.6.2, 8.10.2.2.2(x), and 8.11.2.1.2(v).

ASME A17.3 — Paragraph 3.8.1.

2.19.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501, (NR 2.24.8), 210.8, 1001.2(b)(15), [NR 8.11.2.3.10(a)], and 1002.3d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.16.2.2, 2.16.8, 2.24.8, 2.26.8, 8.11.2.1.2(o), 8.11.2.3.10(a), and 8.11.2.3.4.

ITEM 2.20
WINDING DRUM MACHINE AND SLACK ROPE DEVICE, STOP-MOTION SWITCH, AND ROPE FASTENING

2.20.1 Periodic Inspections

2.20.1.1 Electric Elevators

(a) Winding Drum Machine. Elevators with winding drum machines driven by two-phase or three-phase alternating-current motors installed under editions prior to A17.1-1937 shall be equipped with adjustable machine automatic terminal stop mechanisms set to directly open the mainline circuit to the drive machine motor and brake before or coincident with the opening of the final terminal stopping switch located in the hoistway.

(b) Winding Drum Machine. A17.1-1937 and later editions require that for elevators with winding drum machines driven by two-phase or three-phase alternating-current motors, the mainline circuit to the motor and brake be directly opened either by the contacts in the machine stop-motion switch (machine final) or by hoistway final limit switches operated by a cam attached to the car. This requirement does not apply to elevator

machines with alternating-current motors and direct-current brakes and direct-current mainline or potential switches controlled by final terminal stopping switches.

(c) Winding Drum Machine. For elevators installed under A17.1-1955 and later editions, winding drum machines may be used for freight elevators only and require final terminal stopping devices located in the hoistway operated by cams attached to the car as well as a machine final terminal stopping device (stop-motion switch) located on and operated by the drive machine.

(d) Terminal Stopping Device. Chain-, belt-, or rope-driven mechanisms shall not be used to operate the machine final terminal stopping device (stop-motion switch).

(e) Inspection and Tests — Rope Fastening and Drum

(1) Open the mainline switch and examine hoist rope fastenings in the drum.

(2) Note that the required tag indicates that the ropes have been refastened within 12 months for machines located over the hoistway and within 24 months for machines located at the bottom or at the side of the hoistway, except where provided with an auxiliary rope-fastening device.

(3) Visually examine and hammer test the drum for defects or cracks.

(4) Where ropes extend beyond their clamps or sockets, check to see that means have been provided to prevent the rope ends from coming out of the inside of the drum and interfering with other parts of the machine.

(f) Slack Rope Device. Slack rope devices are required on winding drum machines.

(1) Inspection Made With Power Off. Determine that there is no interference with free and complete movement of the slack rope device. Determine that it is located as close as possible to the machine drum so that the switch will open with a minimum of slack rope.

(2) Inspection Made With Power On. Manually trip the slack rope device and attempt to run the car. The enclosed contact must remain open until it is manually reset.

NOTE: The location of slack rope switches can be found

(a) in a basement machine, in the machine itself

(b) in an overhead machine, on top of the crosshead or inside or near the machine

(c) in a pulley-type machine, on the overhead machine

(g) Final Terminal Stopping Switch. Inspect both the final terminal stopping switches located on and operated by the drive machine (stop-motion switch) and the additional stopping switches located in the hoistway and operated by cams attached to the car for condition and operation.

(1) Verify that these final limits directly open all contacts in the power circuit for machines equipped with single- or two-speed AC motors and AC brake coils.

(2) For machines equipped with DC motors and DC brakes, verify that each final limit operates independent relays to remove power from the drive machine and brake.

(3) Verify that the machine stopping switches are not driven by chains, ropes, or belts.

2.20.2 Periodic Test

2.20.2.1 Electric Elevators

(a) Machine. With the car resting on its fully compressed buffers, check that at least one turn of rope is remaining on the drum.

(b) Slack Rope Device

(1) With the car running, trip the device manually using a piece of wood or similar object. The enclosed contact must remain open until it is manually reset. If there is any question about the operation of the device, lower the car onto suitable blocking in the pit and determine that the resulting slack rope will actually trip the device and stop the car.

(2) For a double-belt drum machine, check that the driving belt is shifted to the idler pulley.

(c) Final Limits. Test operation of both final limits (machine limit and limit located in the hoistway operated by cams on the car) by disabling the normal stopping means and normal terminal stopping means. Then run the car to each terminal and verify

(1) that the machine final limit located on the drive machine operates before or coincident with the final limit located in the hoistway

(2) that the final limit located in the hoistway operates before the car contacts the spring buffer

2.20.3 Acceptance

2.20.3.1 Electric Elevators. Check that the speed and Code limits of travel are not exceeded and that no counterweight is provided. Verify that the terminal limits will continue to operate, at the bottom, until the car rests on the fully compressed buffer and, at the top, until the car has reached its maximum upward movement.

2.20.4 References

2.20.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 208.1, 209.3c(2), 209.3e, 210.2, 212.6, 212.7, 212.10, 1001.2(b)(18), 1002.2d, and 1206.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24.1, 2.26.2.1, 2.20.2, 2.20.7, 2.20.10, 8.10.2.2.2(r), 8.11.2.1.2(r), 8.11.2.2.4, and 8.6.4.10.

ASME A17.1-2007/CSA B44-07 — Requirements 2.24.1, 2.26.2.1, 2.20.2, 2.20.7, 2.20.10, 8.6.4.10, 8.10.2.2.2(y), 8.11.2.1.2(w), and 8.11.2.2.4.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.24.1, 2.26.2.1, 2.20.2, 2.20.7, 2.20.10, 8.6.4.10, 8.10.2.2.2(y), 8.11.2.1.2(w), and 8.6.4.19.4.

ASME A17.3 — Paragraphs 3.8.2, 3.10.4(a), 3.12.6, 3.12.7, and 3.12.9.

2.20.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 208.1, 210.2, 212.6, 212.7, 212.10, 1001.2(b)(18), 1002.2d, and 1206.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.24.1, 2.26.2, 2.20.2, 2.20.7, 2.20.10, 5.1.20.5, 8.11.2.1.2(r), 8.11.2.2.4, and 8.6.4.10.

ITEM 2.21
BELT- OR CHAIN-DRIVE MACHINE

2.21.1 Periodic Inspections

2.21.1.1 Electric Elevators

(a) The installation of belt-drive machines or chain-drive machines was permitted for freight elevators in A17.1-1937 and earlier editions when rated speeds did not exceed 60 ft/min (0.30 m/s) subject to the following:

(1) Single-belt-drive machines and single-chain-drive machines were permitted, if provided with electrically released brakes applied directly to the drive machine and with terminal stopping devices as required for electric elevators.

(2) Chains for chain-drive machines were required to be of the multiple-link belt type.

(3) Double-belt-drive machines were permitted only when driven from a line shafting supplying power for other purposes.

(b) Belt-drive and chain-drive machines were prohibited in A17.1-1955 through A17.1b-1983. In A17.1b-1983 and later editions, belt-drive and chain-drive machines, also known as indirect-drive machines, were permitted subject to limitations.

Check for the proper number of belts or chains. Examine belts for splice condition, proper tension, wear, burns, and cuts and breaks in the surface. Check drive chains for excessive wear. Belts and chains are required to be replaced in matched sets. Check that all machine belt guards and chain guards are in place and secure.

Check that the broken belt or broken chain device interrupts power to the drive machine and applies the brake if any belt or chain becomes slack. Examine belt-shifting forks of double-belt machines to determine whether they are worn excessively by the edge of the belts, and check their operation while the car is being operated up and down the hoistway; verify that the belts shift to the proper pulley without excessive effort.

Check all machine-fastening bolts, belt guards, and chain guards. Also, check the fastenings of any platforms under ceiling machinery. Verify that the brake is located on the traction sheave or drum assembly side of the drive machine.

2.21.2 Periodic Test

2.21.3 Acceptance

2.21.4 References

2.21.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 208.9 and 1001.2(b)(19).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24.9, 8.10.2.2.2(s), and 8.11.2.1.2(s).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.24.9, 8.10.2.2.2(z), and 8.11.2.1.2(x).

ASME A17.3 — Paragraph 3.8.3.

2.21.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.9, 208.9, and 1001.2(b)(19).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.24.9, and 8.11.2.1.2(s).

ASME A17.3 — Paragraph 3.8.3.

ITEM 2.22
MOTOR GENERATOR

2.22.1 Periodic Inspections

2.22.1.1 Electric Elevators. Motor-generator sets and exciters that are part of the elevator control system should operate smoothly, without excessive noise or vibration. Inspect brushes and commutators as indicated in 2.18.1.

2.22.2 Periodic Test

2.22.3 Acceptance Test of Generator Suicide Circuit

2.22.3.1 Electric Elevators. Make a full-speed run, without releveling, with either an empty car to the bottom landing or a fully loaded car to the top landing. Observe the suicide circuit operation in the machine room.

(a) If the loop circuit is of the type that is not opened when the car stops, connect a voltmeter to brushes on the adjacent brush stems of the motor. With the suicide circuit temporarily defeated, observe whether the voltage steadily increases. If it does, immediately reestablish the suicide circuit and observe a decrease in voltage, which verifies that the suicide circuit is operating.

(b) If the loop circuit is the type that is opened when the car stops, connect a voltmeter to brushes on adjacent brush stems of the motor generator and check for zero voltage with the brake set.

(c) Make a full-speed run, without releveling, with either an empty car to the bottom landing or a fully loaded car to the top landing, and allow the brake to set. Observe that the machine does not pull through the brake, thereby ensuring that the restored suicide circuit is effective.

2.22.4 References

2.22.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.9f, 1001.2(b)(20), and 1003.2j.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.9.7, 8.11.2.1.2(t), and 8.10.2.2.2(t).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.9.7, 8.10.2.2.2(aa), and 8.11.2.1.2(y).

2.22.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.11, 210.9f, 1001.2(b)(20), and 1003.2j.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.26, 2.26.9.7, 8.11.2.1.2(t), and 8.10.2.2.2(t).

ITEM 2.23
ABSORPTION OF REGENERATED POWER

2.23.1 Periodic Inspections

2.23.2 Periodic Test

2.23.3 Acceptance

2.23.3.1 Electric Elevators. If the normal power source is incapable of absorbing the energy generated by an overhauling load, a separate means such as a resistor bank must be provided on the load side of each elevator power supply line disconnecting means to absorb the regenerated power.

2.23.4 References

2.23.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.10, 1001.2(b)(21), and 1003.2k.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.10, 8.11.2.1.2(u), and 8.10.2.2.2(u).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.10, 8.10.2.2.2(bb), and 8.11.2.1.2(z).

ASME A17.3 — Paragraph 3.10.10.

2.23.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.11, 210.9f, 1001.2(b)(20), and 1003.2j.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.26, 2.26.9.7, 8.11.2.1.2(t), and 8.10.2.2.2(t).

ITEM 2.24
AC DRIVES FROM A DC SOURCE

2.24.1 Periodic Inspections

2.24.2 Periodic Test

2.24.2.1 Electric Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). The person or firm installing or maintaining an AC drive from a DC source should demonstrate that the elevator conforms to Code requirements.

(a) Run the car and demonstrate that either of two devices will prevent the flow of alternating current to the AC motor and cause the car to stop. At least one of the devices must be an electromechanical relay, which in its de-energized position prevents alternating current from flowing in the hoist motor.

(b) Prevent the relay described in (a) from being energized and register a call. Demonstrate, with the doors closed, that the brake will not lift and the car will not move.

(c) Demonstrate that either of two contactors in the brake circuit will prevent the brake from lifting.

(d) Demonstrate that the operation of any of the electrical protective devices will cause both devices specified in (a) to prevent the flow of alternating current to the hoist motor.

2.24.3 Acceptance

Conduct the tests described in 2.24.2.1.

2.24.4 References

2.24.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.2, 210.9(e), 1001.2(b)(22), and 1003.2i.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.9.6, 8.11.2.1.2(v), and 8.10.2.2.2(m)(3).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.9.6, 8.10.2.2.2(oo), and 8.11.2.1.2(j).

2.24.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.11, 210.9f, 1001.2(b)(20), and 1003.2j.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.26, 2.26.9.7, 8.11.2.1.2(t), and 8.10.2.2.2(t).

ITEM 2.25
TRACTION SHEAVES

2.25.1 Periodic Inspections

2.25.1.1 Electric Elevators

(a) Inspection Made With Power Off. Inspect fastenings for tightness where demountable sheaves are attached to the sheave spider. Note any evidence of lost motion or misalignment of the traction sheaves with other sheaves.

Examine the traction sheaves for worn grooves and determine that all ropes seat to the same depth in the grooves. Particles of metal under rope sheaves are evidence of groove or sheave wear. Carefully examine the sheave for cracks or other deficiencies. See 2.24.2.1.

(b) Inspection Made With Power On. Excessive lubrication of the wire ropes or wear of the sheave grooves may result in reduction of traction. Test traction by operating the empty car in the up direction and stop it by opening the emergency stop switch. Any material reduction of traction may be noted by observing slippage between ropes and traction sheaves.

(c) Regrooving. Prior to regrooving any sheave or drum, check that the minimum groove bottom diameter will be maintained for structural integrity. For elevators installed under A17.1d-1986 and later editions, the sheave or drum must be marked to indicate the minimum permissible groove bottom diameter.

(d) Rope Changes. Where the material, grade, number, or diameter of ropes has changed and the existing sheave has been retained, check for approval by a licensed professional engineer or the original equipment manufacturer.

2.25.2 Periodic Test

2.25.2.1 Electric Elevators: 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). For passenger elevators and freight elevators permitted to carry passengers, the drive machine must safely stop and hold the car with 125% of the rated load. See 2.17.2.1(b)(2).

See 2.18.2.1 and 2.29.2(e) for the test procedure (when the car or counterweight bottoms on its buffer and when the car or counterweight safeties are applied, respectively) for checking either that the ropes will slip in the traction sheave or that the machine stalls.

2.25.3 Acceptance

2.25.3.1 Electric Elevators. Check that the sheaves and drums are permanently and legibly marked to state the minimum groove bottom diameter permissible for regrooving and required to maintain structural integrity.

2.25.4 References

2.25.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 207.8, 208.2, 208.3, 212, 1001.2(b)(23), 1202.14, 1206.1a, and 1206.1b.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24.2, 2.24.3, 2.20, 8.11.2.1.2(w), 8.7.2.21, 8.6.1.6.2, 8.6.4.1, and 8.10.2.2.2(v).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.24.2, 2.24.3, 2.20, 8.6.1.6.2, 8.6.4.1, 8.7.2.21, 8.10.2.2.2(cc), and 8.11.2.1.2(aa).

ASME A17.3 — Paragraph 3.8.1.

2.25.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.9, 208.2, 208.3, 212, 1001.2(b)(23), 1202.14, 1206.1a, and 1206.1b.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.16.8, 2.24.2, 2.24.3, 2.20, 8.11.2.1.2(w), 8.7.2.21, 8.6.1.6.2, and 8.6.4.1.

ASME A17.3 — Paragraph 3.8.3.

ITEM 2.26
SECONDARY AND DEFLECTOR SHEAVES

2.26.1 Periodic Inspections

2.26.1.1 Electric Elevators. Examine the overhead secondary and deflector sheaves and test them with light blows from a small hammer. If the sound resulting from the blows is dull and flat, unlike the ring given by sound metal, sheave parts should be examined carefully for cracks.

Examine the sheaves for worn grooves and determine whether all ropes seat to the same depth in the grooves. Look for evidence of any misalignment of sheaves. Determine whether bearing bolts are secure.

Inspect sheave shafts and bearings for wear and other defects. Determine whether the shafts and bearings are adequately lubricated.

2.26.2 Periodic Test

2.26.3 Acceptance

2.26.3.1 Electric Elevators. Record and check the following for conformity with approved drawings and specifications: the diameter of drums, overhead sheaves, and secondary sheaves.

2.26.4 References

2.26.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 208 and Rules 1001.2(b)(24) and 1206.1a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.24, 8.10.2.2.2(w), 8.11.2.1.2(x), and 8.6.1.6.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.24, 8.6.1.6.2, 8.10.2.2.2(dd), and 8.11.2.1.2(bb).

ASME A17.3 — Paragraph 3.8.1.

2.26.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.9, Section 208, and Rules 1001.2(b)(24) and 1206.1a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.24, 8.11.2.1.2(x), and 8.6.1.6.2.

2.26.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.9, Section 208, and Rules 1001.2(b)(24) and 1206.1a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.24, 2.24, 8.11.2.1.2(x), and 8.6.1.6.2.

ITEM 2.27
ROPE FASTENINGS

2.27.1 Periodic Inspections

2.27.1.1 Electric Elevators. Examine that section of rope between the top of the car and the point on the counterweight side that could not be examined from the top of the car or from openings in the counterweight runway enclosure.

Where multiple roping is used, examine overhead rope anchorages (dead-end hitches). Verify that the hitch plate supporting the wire rope fastenings is mounted on the top of supporting members. (See Item 3.22.)

Verify that all lock nuts and cotter pins are in place. Verify the data shown on the rope data tag attached to one of the wire rope fastenings.

2.27.2 Periodic Test

2.27.3 Acceptance

2.27.4 References

2.27.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 105.3c and 1001.2(b)(25) and Section 212.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.9.3.3, 2.20, 8.10.2.2.2(x), and 8.11.2.1.2(y).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.20, 2.9.3.3, 8.10.2.2.2(ee), and 8.11.2.1.2(cc).

ASME A17.3 — Section 3.12.

2.27.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13, 105.3c, and 1001.2(b)(25) and Section 212.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.20, 2.9.3.3, 8.11.2.1.2(y), and 2.20.

2.27.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2501.13, 105.3c, and 1001.2(b)(25) and Section 212.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2, 5.2.1.20, 2.9.3.3, 8.11.2.1.2(y), and 2.20.

ITEM 2.28
TERMINAL STOPPING DEVICES

2.28.1 Periodic Inspections

2.28.1.1 Electric Elevators

(a) Traction Machines. In some cases, the normal terminal stopping switches are located in the machine room and operated by a rope, tape, or chain attached to the car. Examine these switches for alignment, fastening, cleanliness, and general condition of operation mechanisms.

(b) Winding Drum Machines. Examine the final terminal stopping switch operated by the machine for alignment, fastening, cleanliness, lubrication, and general operating condition.

2.28.2 Periodic Test

2.28.2.1 Electric Elevators

(a) Yearly Test of Normal Terminal Stopping Devices (for A17.1d-2000 and Earlier Editions); Category 1 Test of Normal Stopping Devices (for ASME A17.1-2000/CSA B44-00 and Later Editions). Check normal terminal stopping devices as follows:

(1) Have the normal elevator stopping means disabled.

(2) Have the emergency terminal stopping device, where provided, disabled. Do not disable the emergency terminal speed-limiting device where provided.

(3) Run the car by normal operating means into the bottom terminal and demonstrate that the car slows down and stops in the vicinity of the bottom terminal.

(4) Repeat the test in (3) at the top terminal.

(5) Have the normal stopping means and emergency terminal stopping devices (where provided) restored. Check normal operation.

(b) 5-yr Test of Emergency Terminal Stopping and Emergency Speed-Limiting Devices (for A17.1d-2000 and Earlier Editions); Category 5 Test of Emergency Terminal Stopping and Emergency Speed-Limiting Devices (for ASME A17.1-2000/CSA B44-00 and Later Editions). For static control elevators with rated speeds over 500 ft/min (2.54 m/s) installed under A17.1b-1983 through A17.1a-1991, or with rated speeds over 200 ft/min (1.02 m/s) installed under A17.1b-1992 and later editions, use emergency terminal stopping devices where required, except if an emergency terminal speed-limiting device is used (see 3.5.2) or if the normal terminal stopping device limits the generator shunt field directly. Check as follows:

(1) Have the normal elevator stopping means disabled.

(2) Have the normal terminal stopping device disabled.

(3) Have the car run at rated speed into the bottom terminal and verify that the car stops and power is removed from the drive machine motor and brake. It is permissible for the car to restart automatically, provided that no other electrical protective device has operated.

(4) Repeat the test in (3) at the top terminal.

(5) Restore the normal stopping means and normal terminal stopping device. Check normal operation.

2.28.2.2 Hydraulic Elevators: Yearly Test of Normal Terminal Stopping Devices (for A17.1d-2000 and Earlier Editions); Category 1 Test of Normal Stopping Devices (for ASME A17.1-2000/CSA B44-00 and Later Editions). Check normal terminal stopping devices as follows:

(a) Have the normal elevator stopping means disabled.

(b) Run the car without load into the bottom terminal and demonstrate that the car slows down and stops in the vicinity of the bottom terminal.

(c) Do not disable the terminal speed-reducing device (emergency terminal speed-limiting device).

(d) Repeat the test in (c) at the top terminal.

(e) Have the normal stopping means restored. Check normal operation.

2.28.3 Acceptance

2.28.3.1 Electric Elevators. Perform the test in 2.28.2.1(a) for the bottom normal terminal stopping device in the down direction with 125% of rated load for passenger elevators and freight elevators permitted to carry passengers. The bottom normal terminal stopping devices of freight elevators not permitted to carry passengers are to be tested with rated load. The top normal terminal stopping devices for all elevators must be tested with no load. The car should stop at or near the terminal landings with all loads, except where an automatic leveling device is provided, in which case the normal terminal stopping device should stop the car within the range of the leveling device.

2.28.3.2 Hydraulic Elevators. Perform the test in 2.28.2.2 with rated load in the car. The car should stop at or near the terminal landings with rated load.

2.28.4 References

2.28.4.1 Electric Elevators. ASME A17.1d-2000/CSA B44-00 and earlier editions — Section 209 and Rules 1001.2(b)(26) and 1002.3f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.25, 8.10.2.2.2(y), 8.11.2.1.2(z), and 8.11.2.3.6.

ASME A17.1-2007/CSA B44-07 — Requirements 2.25, 8.10.2.2.2(ff), 8.11.2.1.2(dd), and 8.11.2.3.6.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.25, 8.10.2.2.2(ff), 8.11.2.1.2(dd), and 8.6.4.20.6.

ASME A17.3 — Paragraphs 3.8.2, 3.9.1, 3.9.2, 3.10.4(h), 3.10.4(i), and 3.10.4(q).

2.28.4.2 Hydraulic Elevators. ASME A17.1d-2000/CSA B44-00 and earlier editions — Section 305 and Rules 1005.2(c)(8) and 1006.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.25, 8.11.3.2.3(a), and 8.10.3.2.3(e).

2.28.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.10, Section 209, and Rules 1001.2(b)(26) and 1002.3f.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.25, 2.25, 8.11.2.1.2(z), and 8.11.2.3.6.

ITEM 2.29
CAR AND COUNTERWEIGHT SAFETIES

2.29.1 Periodic Inspections (23)

See Item 3.29 and 5.8.1.1.

2.29.2 Periodic Test

(a) Yearly Inspection (Power Off) of Steel Guide Rail Safeties (for A17.1d-2000 and Earlier Editions); Category 1 Test (Power Off) of Steel Guide Rail Safeties (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(1) Examine the car and counterweight guide shoes and their fastenings to determine that they are properly secured, aligned, and adjusted. Check the gibs or rollers for excessive wear.

(2) See 5.8.1.1 for the running clearances between the guide rails and the gripping face of the safeties.

(3) Determine that all moving parts of the safety are clean, lubricated, not corroded, and free to operate.

(4) On drum-operated Type B safeties, inspect the safety rope and its deflecting sheaves and their fastenings to determine that they are not worn excessively or corroded, and that the rope sheaves are securely fastened and are in operating condition.

Safety drum rope must be of a corrosion-resistant material and not be of tiller rope construction. Before any test is made on drum safeties, ensure that the proper safety wrench is available, then pull out the safety drum rope until the safety jaws contact the rail and start to exert pressure. The movement of the safety drum rope, starting from a fully retracted position, must not exceed the values based on rated speed shown in Table 2.29.2-1.

The number of turns of rope remaining on the safety drum must be sufficient to allow for additional pullout of the safety drum rope to ensure proper operation of the safety when the governor is operated due to an overspeed condition.

Table 2.29.2-1
Maximum Safety Rope Pullout

Speed of Safety, ft/min	Maximum Pullout, in.
For Car Safeties	
200 or less	42
201 to 375	36
Over 375	30
For Counterweight Safeties	
All speeds	42

GENERAL NOTES:
(a) For elevators installed prior to A17.1-1955.
(b) 1 ft/min = 5.08 E−03 m/s.
(c) 1 in. = 25.4 mm.

Reset the safety on completion of the above inspection. Keep sufficient tension on the safety drum rope to prevent kinking and to ensure that the rope will be evenly and uniformly wound on the safety drum with no slack.

(5) On Type A and Type B safeties that are self-releasing, it is not necessary to actuate the safety prior to a test. Inspect the mechanism to see that it is clean and lubricated and that there is no corrosion present.

(6) Before checking the adjustments of the trip (finger) rods and rollers, examine all crosshead pivot points and linkage for lost motion, loose or missing set screws, and excessive friction. Any lost motion in the actuation lever should be removed. Lost motion and the inertia of the governor-rope system may cause safety applications under normal starting conditions.

(7) With the elevator car platform at a convenient height, the safety can readily be checked from the pit to determine that

(-a) all rollers are properly in place.

(-b) trip (finger) rods are in position to pick up the rollers.

(-c) when the governor rope is pulled to impart motion to the trip (finger) rods, the roller moves upward into the ultimate wedged positions in the safety block without restriction. The operation shall be repeated several times, observing that the rollers fall toward the rail. When the "finger" engages the roller, if there is any tendency for the roller to fall away from the rail, a jam between the roller and safety block can result in a safety failure.

Normally, the rollers should be at the lowest point of travel resting against the guard; have the trip (finger) rods adjusted so that the rollers engage simultaneously when wedged between the roller pocket and the guide rail.

(8) The Code requires a safety mechanism switch, operated by the car safety, to be installed on all safeties. While inspecting the safety, determine that the switch contacts open before the safety jaws or rollers contact the guide rails. Then open the switch manually and determine that the car will not run when the switch is open.

(b) Yearly Inspection (Power Off) of Wood Guide Rail Safeties (for A17.1d-2000 and Earlier Editions); Category 1 Test (Power Off) of Wood Guide Rail Safeties (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(1) The effectiveness of safeties of this type depends on a substantial initial engagement of the toothed safety jaw with the wood guide rail in a manner to produce an increasing engagement with the rail until the car or counterweight is brought to rest. Therefore, the condition of the guide rails is a prime consideration in making an examination of the equipment.

(2) The guide rails must be of first-quality selected wood with the width sized to fill the car guide shoe minus the normal running clearance. Guide rails that are more than $\frac{1}{8}$ in. (3.2 mm) undersize in width or that show evidence of "combing" by the safety jaws should be replaced.

(3) From the top of the car, examine all safety operating parts including levers and linkage to be sure that all keys and set screws are in place and tight. There should not be an excessive amount of lost motion in the transmittal of movement to the finger rods actuating the safety jaws.

(4) From the pit, with the elevator car platform at a convenient height, the safety jaws can be readily examined and applied against the guide rails by pulling the governor rope. Bring the safety jaws in contact with both guide rails in such a manner that any downward motion of the car would cause the jaw teeth to dig into the rails.

(5) When a safety operating switch is provided, the motion of bringing the safety jaws in contact with the rails must be sufficient to operate the switch.

(6) See 5.8.1.1 for the running clearances between the guide rails and the gripping face of the safeties.

(c) Yearly Test of Safeties (for A17.1d-2000 and Earlier Editions); Category 1 Test of Safeties (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(1) After the safety has been inspected, verify that the switch operated by the safety will open when the safety operates and that it will remove power from the drive machine motor and brake. With this switch open try to move the car by normal means. Then position the car or counterweight in the lower portion of the hoistway so that it will be accessible after the test. Jump out the switches on the governor and safety (or that part of the safety circuit) that would prevent a full setting of the safety. Start the car or counterweight, whichever is being tested, in the down direction at the slowest operating speed and manually trip the governor. Type A safeties without governors that are operated as a result of the breaking or slackening of the hoisting ropes shall be tested by obtaining the necessary slack rope to cause it to function. On centrifugal governors that do not have a dropping jaw, engage the flyweight into the actuating device before starting the car down. Run the car down until the machine stalls or drives through the hoisting ropes. Next,

open the mainline disconnect switch, remove any jumpers, and proceed to the safety being tested.

NOTE: Examine all parts of the safety equipment to determine if anything is broken or out of order. See that all ropes are properly on the drum to fully apply the safety; be sure that not less than three turns of rope remain on the drum. This is necessary to meet the requirement of not less than three turns remaining on the drum after a rated load, rated speed test. Flexible guide clamp safeties that are drum operated do not require any turns of rope to remain on the drum after a test. Verify that there is no excess slack in the suspension ropes that could result in the car falling should the safety slip. Examine all parts of the safety equipment to determine if anything is broken or out of order.

(2) Check the platform for level. All elevators installed under A17.1-1955 and later editions must not be out of level more than $^{3}/_{8}$ in./ft (31 mm/m) in any direction.

Elevators installed prior to A17.1-1955 must not be out of level more than $^{1}/_{2}$ in./ft (42 mm/m) in any direction. Counterweight safeties may be set in the pit or just above the car. In either case, be careful of the final location so that the safety will be accessible after the test.

After the safety has been examined, restore power and, if necessary, jump the slack rope switch. Then release the safety. Restore and reset the governor to the operating position.

(3) Type A and self-releasing Type B safeties are released by moving the car or counterweight in the up direction. This should be accomplished with one short move. After one move, be sure that the governor has released the governor rope. If it is not released, move the governor sheave or the jaw to gain this release.

(4) A drum-operated Type B safety is released with a safety wrench from inside the car or at the counterweight. This is a two-person operation. One person must be stationed on top of the car, or in the pit, to hold the governor rope so it does not overhaul while the second person releases and resets the governor. The second person should then proceed to the car or counterweight and release the safety while the first person holds back on the rope and reinserts it into the releasing carrier.

(5) Examine all of the safety parts to determine that they have returned to their normal running positions, and be sure that there is no slack in the safety rope.

(6) Inspect the guide rails for scoring and loose hardware. Dress any scored rail surface.

(7) It is not necessary to record the stopping distance in this test.

(8) Determine that all jumpers have been removed.

(d) Yearly Test of Wood Guide Rail Safeties (for A17.1d-2000 and Earlier Editions); Category 1 Test of Wood Guide Rail Safeties (for ASME A17.1-2000/CSA B44-00 and Later Editions). With governor-operated safeties, set the governor in the applied position and run the car in the down direction from the controller to see that it will operate the safety. Continue to operate until the ropes slip on traction machines or slacken on drum machines. For Type A safeties without governors, set blocking in the pit securely and run the car down slowly to see that the jaws come into proper position when a slack rope is obtained.

(e) 5-yr Test of Steel Guide Rail Safeties (Rated Load, Rated Speed) (for A17.1d-2000 and Earlier Editions); Category 5 Test of Steel Guide Rail Safeties (Rated Load, Rated Speed) (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(1) Place the rated load on the elevator car platform using test weights, centered on each quarter symmetrically with relation to the centerline. Test counterweight safeties with no load in the car. Jump out any governor switches, or any part of the safety circuit, that will prevent a full setting of the safety. Shut down adjacent cars during the test. If you are testing a drum-type safety, you must shut down any car adjacent to the releasing carrier, and keep it shut down until all slack in the safety rope is under control. If a safety wrench is to be used, put it in the elevator car and remove the release hole cover on the car floor. Do not insert the wrench into the release hole until after the safety is applied.

(2) For Type B and Type C safeties, the safety mechanism switch (plank switch) must not be jumped out. The switch shall be tested for proper operation and, for the duration of the test, temporarily adjusted to open as close as possible to the position at which the car safety mechanism is in the fully applied position. The opening of this switch has an effect on the safety slide, which must be taken into consideration.

(3) When testing safeties, the following steps must be considered:

(-a) Before setting the car safety, tie down any counterweight safety lift lever with four wraps of No. 16 gage copper wire or equivalent. This will avoid an accidental setting of the counterweight safety by inertia. Do not block the counterweight safety; it must remain workable. Reverse the procedure for testing counterweight safeties.

(-b) Most compensating-rope sheaves have a tie-down device. This device will probably lock when a safety is set. To avoid the work required to release the device, it is recommended that the device be made inoperative or be removed and the compensating-rope sheave be tied down with a line to keep it in place.

(-c) Make sure that any adjustable stops on the governor tension sheave are set very close to the movable unit.

(-d) Make sure that the buffers are fully extended and filled to a normal level with oil.

(4) Add the dimension of the safety rope pullout to the estimated stopping distance in order to determine the distance the car will travel after the governor is tripped. Spot the car or counterweight this distance above the point where the stop is desired. Put a reference mark

Table 2.29.2-2
Minimum and Maximum Stopping Distances for Type B Car Safeties With Rated Load, and Type B Counterweight Safeties With No Load in the Car

	Stopping Distances	
Rated Speed, ft/min	Minimum, ft-in.	Maximum, ft-in.
0 to 125	0-1	1-0
150	0-1	1-1
175	0-2	1-3
200	0-2	1-4
225	0-3	1-6
250	0-3	1-7
300	0-5	1-11
350	0-7	2-4
400	0-9	2-10
450	0-11	3-4
500	1-1	3-11
600	1-7	5-3
700	2-2	6-10
800	2-9	8-9
900	3-6	10-10
1,000	4-4	13-2
1,100	5-2	15-9
1,200	6-2	18-7
1,300	7-3	21-8
1,400	8-5	25-0
1,500	9-8	28-7
1,600	11-0	32-5
1,700	12-5	36-5
1,800	13-11	40-9

GENERAL NOTES:
(a) This table is for rated load, rated speed test only. Use ASME A17.1/CSA B44, Table 2.17.3 for rated load, overspeed test only.
(b) Use ASME A17.1/CSA B44, Table 2.17.3 when performing acceptance tests.
(c) 1 ft/min = 5.08 E−03 m/s.
(d) 1 in. = 25.4 mm.

on a suspension rope (chalk mark or tape). Move the car or counterweight up a few floors, far enough to reach your mark at full speed. Start the car or counterweight down and manually trip the governor when you see the mark. Let the elevator run until either the suspension ropes slip in the traction sheave or the drive machine stalls (on winding drum machines, stop at the first indication of slack rope), then immediately remove power from the hoisting machine. Type A safeties without governors that are operated as a result of the breaking or slackening of the hoisting ropes shall be tested by obtaining the necessary slack rope to cause it to function. If a normal safety setting occurs, put all the cars back in service, except the one being worked on and the one adjacent to the releasing carrier. On an elevator with a winding drum machine, be sure to take up any slack rope before the safety is released.

(5) Remove electrical jumpers and reset the governor, unless it is a drum-operated safety. If it is drum operated, one person will go to the car top and hold the safety rope as the governor is reset. Inspect the governor for any damage.

(6) Proceed to the elevator car to release the safety. Before the safety is released, check the platform for level. Elevators installed under A17.1-1955 and later editions must not be out of level more than $^{3}/_{8}$ in./ft (31 mm/m) in any direction. Elevators installed prior to A17.1-1955 must not be out of level more than $^{1}/_{2}$ in./ft (42 mm/m) in any direction. Elevators installed prior to A17.1-1955 are allowed a greater flexibility of stopping distance than shown in Table 2.29.2-2. For gradual wedge clamp, flexible guide clamp, and wedge clamp (constant retarding force) Type B safeties, see Tables 2.29.2-3 through 2.29.2-5.

(7) Generally, it will not be possible to inspect the safety due to the location of the car; therefore, the safety must be released. To do this on other than drum-operated Type B safeties, move the car or counterweight, whichever is being tested, in the up direction. On drum-operated safeties, after checking for at least three turns of rope remaining on the drum, wind in the safety drum rope while a second person stands on top of the car holding back on the rope. To complete the winding, the person on top of the car must insert the minie ball into the releasing carrier. Move the car, or counterweight, and measure the safety slide mark on the rails. The stopping distance is the average length of the continuous marks on all four rail faces after deducting the length of the safety jaw or wedge. See (f) for a detailed description of measuring safety slide marks.

(8) The stopping distance must be within the range shown in Table 2.29.2-2. The stopping distance permitted is determined by the tripping speed of the governor. When performing a rated load, rated speed test, the rated speed is the speed at which the governor is tripped during this test.

(9) Check the rails and dress any scored surface. Also, check for any loose rail or bracket fastenings.

(10) To inspect a car safety, move the car to a convenient height above the pit floor. A counterweight safety can be inspected from the car top. Examine all parts of the equipment to determine if any are broken or out of order. Be sure that the ropes are in their sheave grooves and are properly wound on the drum. Be sure that the safety has returned to the normal running position.

(11) After the safety tests are complete
(-a) remove any jumpers from the safety switches
(-b) remove any line from the compensating-rope sheave

Table 2.29.2-3
Gradual Wedge Clamp Safety

Governor-Tripping Speed, ft/min	Maximum Stopping Distance	Minimum Stopping Distance	
	Car + Rated Load or for Counterweight, ft-in.	Car + 150 lb, ft-in.	Car + Rated Load or for Counterweight, ft-in.
175	6-2	1-5	1-11
200	6-3	1-5	2-0
300	6-11	1-6	2-4
400	7-10	1-8	2-7
500	8-10	1-11	2-11
600	9-11	2-1	3-4
700	11-1	2-4	3-10
800	12-4	2-7	4-6
900	13-6	3-0	5-4
1,000	14-8	3-6	6-1
1,100	16-0	4-0	7-0
1,200	17-4	4-7	8-0
1,300	18-6	5-1	9-0
1,400	19-8	5-8	10-1
1,500	21-1	6-2	11-1

GENERAL NOTES:
(a) For elevators installed prior to A17.1-1955.
(b) 1 ft/min = 5.08 E–03 m/s.
(c) 1 in. = 25.4 mm.

Table 2.29.2-4
Flexible Guide Clamp Safety

Governor-Tripping Speed, ft/min	Maximum Stopping Distance	Minimum Stopping Distance	
	Car + Rated Load or for Counterweight, ft-in.	Car + 150 lb, ft-in.	Car + Rated Load or for Counterweight, ft-in.
175	0-10	0-5	0-6
200	0-11	0-6	0-7
300	1-7	0-7	0-8
400	2-5	0-8	1-1
500	3-5	0-11	1-6
600	4-10	1-2	1-11
700	6-5	1-6	2-5
800	8-2	1-10	3-2
900	10-4	2-2	3-11
1,000	12-7	2-7	4-8
1,100	15-2	3-0	5-8
1,200	18-0	3-6	6-8
1,300	21-1	4-0	7-10
1,400	24-7	4-7	8-11
1,500	28-0	5-2	10-0

GENERAL NOTES:
(a) 1 ft/min = 5.08 E–03 m/s.
(b) 1 in. = 25.4 mm.

(-c) replace the tie-down device or any of its parts that were removed

(-d) remove any tie down that was wrapped on the car or counterweight safety lift lever

(-e) readjust the safety-mechanism switch

(12) Ensure the required test tags are installed.

(f) Determination of Slide on the Guide Rails for Type B Safeties

(1) General. Following a safety test, there is often considerable difficulty determining the actual slide of the safety jaws on the guide rails. In the case of a well-lubricated rail, the first action of the closing jaws is to squeeze out the film of oil or grease. This area of reduced lubrication is often mistaken for part of the mark but should not be included in the measured sliding distance. Start the measurement at the point where actual contact is made by a jaw on the guide rail, which is generally indicated by a slight roughening along the line of travel of the jaw. This has a somewhat different color; the guide rail looks gray in contrast with the polished surface.

(2) Effect of Illumination. The angle of illumination and the position of the observer have much to do with the ease with which the marks may be identified. The marks showing in Figures 2.29.2-1 and 2.29.2-2 are the same marks viewed from the same position with identical exposures but with the illumination changed from 60 deg with the light level with the end of the marks to 45 deg with the light considerably below the marks. Often it is possible to pick up the marks with the light source almost in line with the face of the guide rail.

(3) Marks on Dry Guide Rails. When the guide rail is dry, as is the case with roller guides, the mark may be very difficult to determine as there is no disturbed film of lubricant to aid in its location. However, by carefully adjusting the position of the light source and changing the angle of vision, it is generally possible to determine the point at which the mark starts.

(4) Determination of Final Position of Jaws. As the jaws tend to bite more deeply into the guide rail after full application, even with types where the pressure of the jaws on the guide rail is designed to remain constant, there is little difficulty, as a rule, in determining the final position of the jaws. Where the guide rails are lubricated, the terminal mark may generally be indicated by the piling up of oil or grease below the safety shoe; frequently the entire print of the shoe or gib may be seen on the guide rail in the final stop position.

(5) Interrupted Marks. It occasionally happens that the safety jaws will come in contact with the guide rail and leave a mark for a certain distance, and then the mark will be lost for a distance of a few inches or

Table 2.29.2-5
Wedge Clamp Safety
(Constant Retarding Force)

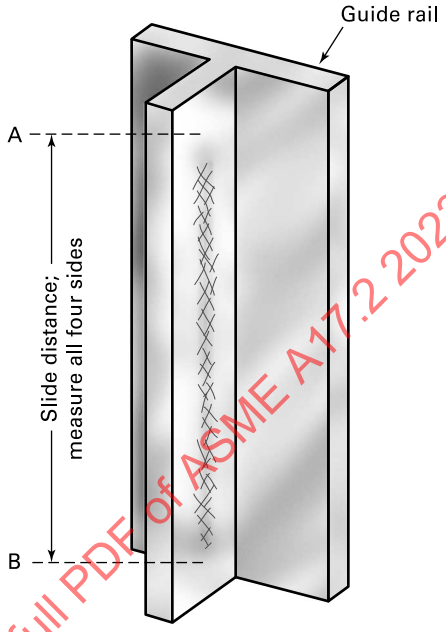
Governor-Tripping Speed, ft/min	Maximum Stopping Distance	Minimum Stopping Distance	
	Car + Rated Load or for Counterweight, ft-in.	Car + 150 lb, ft-in.	Car + Rated Load or for Counterweight, ft-in.
175	1-4	0-10	0-10
200	1-6	0-11	1-0
300	2-0	1-0	1-2
400	2-10	1-2	1-7
500	3-11	1-5	2-0
600	5-2	1-7	2-5
700	6-8	1-11	3-0
800	8-6	2-2	3-7
900	10-8	2-7	4-4
1,000	12-11	3-0	5-1
1,100	15-6	3-6	6-0
1,200	18-5	4-0	7-1
1,300	21-8	4-7	8-2
1,400	25-0	5-1	9-4
1,500	28-3	5-7	10-5

GENERAL NOTES:
(a) For elevators installed prior to A17.1-1955.
(b) 1 ft/min = 5.08 E−03 m/s.
(c) 1 in. = 25.4 mm.

perhaps a foot. This may be due to several causes, including slight deviations in the alignment of the guide rails, variations in thickness, or the sudden engagement of the governor rope by the governor, with a following jump of the governor rope that will permit the jaws to clear for a small fraction of a second. In no case should these preliminary marks be considered in the measurement of the slide. Measure the slide from the highest point of the continuous marking only.

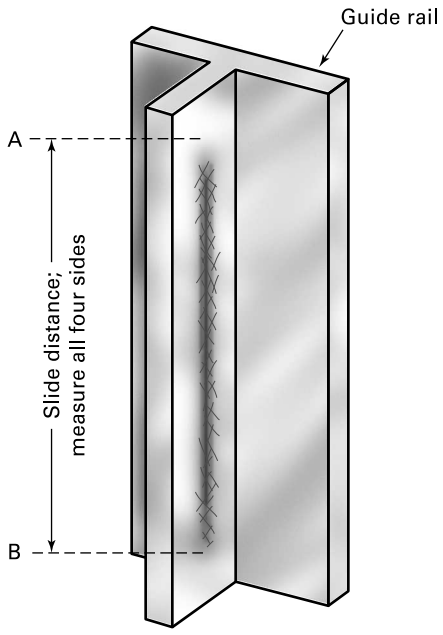
(6) Measurement of Stopping Distance. Determine the stopping distance by measuring the length of the marks made by the safety on both sides of each guide rail, deducting the length of the safety jaw or wedge, and taking the average of the four measurements.

Figure 2.29.2-1
Safety Marks on Guide Rails, Poor Illumination



GENERAL NOTE: A = start of slide; B = end of slide.

Figure 2.29.2-2
Safety Marks on Guide Rails, Good Illumination



GENERAL NOTE: A = start of slide; B = end of slide.

2.29.3 Acceptance Test of Governor and Safeties

(a) Test Type A governor-operated safeties by operating the car at its normal speed in the down direction by manually tripping the governor jaws. Also, test the inertia application of the safety. Type A safeties without governors that are operated as a result of the breaking or slackening of the hoisting ropes shall be tested by obtaining the necessary slack rope to cause them to function.

(b) Type B and Type C safeties on electric elevators are tested as outlined in 2.29.2(e), and must be subject to overspeed tests. The acceptance test for hydraulic elevators is the same as the Category 5/5-yr test [see 2.29.2(e)]. Gradually increase the speed of the car until the governor causes application of the safety. Determine that the stopping distance is in compliance with the maximum and minimum slide distances allowed. On elevators equipped with AC drive machine motors, where the car with its rated load does not cause sufficient overspeed when the machine brake is released to trip the governor jaws, the safeties must be tested by operating the car at its normal speed in the down direction and manually tripping the governor jaw.

(c) Counterweight safeties, where provided, must be tested with no load in the car.

2.29.4 References

2.29.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Sections 205 and 1306; Table 205.3; and Rules 1001.2(b)(29), 1002.2b, 1002.3a, 1003.2, and 1202.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.17, 8.2.6; Table 2.17.3, 8.11.2.1.2(cc), 8.11.2.2.2, 8.11.2.3.1, 8.10.2.2.2 (bb), and 8.7.2.18.

ASME A17.1-2007/CSA B44-07 — Requirements 2.17, 8.2.6, 8.7.2.18, 8.10.2.2.2(ii), 8.11.2.1.2(gg), and 8.11.2.2.2 and Table 2.17.3.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.17, 8.2.6, 8.7.2.18, 8.10.2.2.2(ii), 8.11.2.1.2(gg), 8.6.4.19.2, and 8.6.4.20.1 and Table 2.17.3.

ASME A17.3 — Sections 3.5 and 3.6 and para. 3.10.4(m).

2.29.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.6; Sections 205 and 1306; Table 205.3; and Rules 1001.2(b)(29), 1002.2b, 1002.3a, 1003.2, and 1202.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.17; Section 2.17 and requirement 8.2.6; Table 2.17.3; and Requirements 8.11.2.1.2(cc), 8.11.2.2.2, 8.11.2.3.1, 8.10.2.2, and 8.7.2.18.

2.29.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502 and 2501.6; Sections 205 and 1306; Table 205.3; and Rules 1001.2(b)(29), 1002.2b, 1002.3a, 1003.2, and 1202.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2, 5.2.1.17, 2.17, and 8.2.6; Table 2.17.3; and Requirements 8.11.2.1.2(cc), 8.11.2.2.2, 8.11.2.3.1, 8.10.2.2, and 8.7.2.18.

NOTE: Items 2.30 through 2.37 apply to hydraulic elevators only.

ITEM 2.30
HYDRAULIC POWER UNIT

2.30.1 Periodic Inspections

2.30.1.2 Hydraulic Elevators

(a) Motor. Have the elevator operated in the up direction, making several starts, and observe the operation of the motor, pump, and drive. Check for excessive noise, misalignment, and loose mounting.

(b) Pump. The pump should be checked for leaks around the shaft and for unusual noise that could be caused by cavitation due to a partially plugged suction line or strainer or low oil level.

2.30.2 Periodic Test

2.30.3 Acceptance

2.30.4 References

2.30.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 304 and Rules 1004.2(b)(13) and 1206.5.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.24, 8.10.3.2.2(m), 8.11.3.1.2(m), and 8.6.5.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.24, 8.6.5, 8.10.3.2.2(t), and 8.11.3.1.2(r).

NFPA 70 or CSA C22.1, as applicable.

2.30.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.3, Section 304, and Rules 1004.2(b)(13) and 1206.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.8, 3.24, 8.11.3.1.2(m), and 8.6.5.

NFPA 70 or CSA C22.1, as applicable.

ITEM 2.31
RELIEF VALVES

2.31.1 Periodic Inspections

2.31.1.2 Hydraulic Elevators. Examine the relief valve and verify that it is sealed to prevent tampering. If the means of sealing the valve is not intact, test adjustment and sealing are required.

2.31.2 Periodic Test

2.31.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Have the person performing the test install the pressure gage in the system. There is usually a fitting provided for this in the machine room. Test the relief valve by gaining control of the car at the bottom floor, and block both the car and hoistway doors to prevent opening operation. Close the machine room shutoff valve. Have someone stand by the mainline disconnect. Cause the controls to attempt to run the car at full speed. Ensure that the relief valve bypasses with the full output of the pump at a gage reading of 150% or less of the working pressure. Once proper operation of the relief valve has been verified, then place the car on inspection operation, open the shutoff valve, and run the car to the top landing. Inch the car at slow speed against the stop ring. Then cause the controls to attempt to run the car at full speed, and read the gage. The full output of the pump should bypass at a gage reading 150% or less of the working pressure.

After the test, check the car for proper operation, and visually inspect the system for leaks. After this test, the means of adjustment must be sealed. The annual test of flexible hydraulic hose and fitting assembly (see Item 2.34) may be conducted concurrently with this relief valve test.

A17.1-1971 and later editions require that the working pressure be on a plate mounted on the power unit.

2.31.3 Acceptance

2.31.3.2 Hydraulic Elevators. Check the working pressure given on the elevator layout with that on the tank plate. If these agree, verify them by installing an inspector's pressure gage in the system, at or near the cylinder; run the car up at rated speed with rated load. The gage should read the working pressure. For elevators with Class C2 loading, place the maximum static load on the elevator and then run it down about 2 in. to 3 in. (54 mm to 76 mm) on inspection operation. Then turn it back on automatic and read the pressure as the car levels up. If the gage is installed at the power unit, the pressure will be slightly more than the pressure at the cylinder. This difference is dependent on the length and configuration of the supply piping and speed of the elevator. In some cases, this difference is very small and can be ignored.

2.31.4 References

2.31.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 308; Rules 303.1, 303.2, 303.4b, 1004.2(b)(13), 1005.2a, and 1006.2b; and Section 3 (Definitions).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.19.1, 3.19.2, 3.19.4.2, 8.10.3.2.2(n), 8.11.3.1.2(n), 8.11.3.2.1, and 8.10.3.2.2(m) and 1.3 (Definitions).

ASME A17.1-2007/CSA B44-07 — Requirements 1.3 (Definitions), 3.19.1, 3.19.2, 3.19.4.2, 8.10.3.2.2(u), 8.11.3.1.2(s), and 8.11.3.2.1.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 1.3 (Definitions), 3.19.1, 3.19.2, 3.19.4.2, 8.10.3.2.2(u), 8.11.3.1.2(s), and 8.6.5.14.1.

ASME A17.3 — Paragraph 4.4.1.

2.31.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.4; Section 308; Rules 303.1, 303.2, 303.4b, 1004.2(b)(13), 1005.2a, and 1006.2b; and Section 3 (Definitions).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.8, 3.28, 3.19.1, 3.19.2, 3.19.4.2, 8.11.3.1.2(m), 8.11.3.2, 8.10.3.2.2(m), and 1.3 (Definitions).

ITEM 2.32
CONTROL VALVE

2.32.1 Periodic Inspections

2.32.1.2 Hydraulic Elevators

(a) Control Valve. The valves, fittings, and interconnecting piping should be checked for pressure rating, leakage, and adequate support.

(b) Manual Lowering Valve and Anticreep Elevators. Manual lowering valve and anticreep elevators installed under A17.1-1984 and later editions are required to have a manual lowering valve identified and located on or adjacent to the control valve.

Check the operation of the manual lowering valve and the anticreep leveling device as follows:

(1) Position the car at a landing in response to operation by the normal landing device.

(2) Lower the car by opening the manual lowering valve to initiate a downward movement. The pump motor should start when or before the car exceeds 1 in. (25 mm) from the floor.

(3) Close the manual lowering valve [the car should be within 1 in. (25 mm) of the floor when the pump motor stops].

See Item 3.7 for additional information and procedures for testing the anticreep device when there is no manual lowering valve.

2.32.2 Periodic Test

2.32.3 Acceptance

2.32.3.2 Hydraulic Elevators. Check the manual lowering valve for identification, function, and location.

2.32.4 References

2.32.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 303 and Rule 1004.2(b)(15).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.19, 8.10.3.2.2(o), and 8.11.3.1.2(o).

ASME A17.1-2007/CSA B44-07 — Requirements 3.19, 8.10.3.2.2(v), 8.11.3.1.2(t), and 8.11.3.3.2.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.19, 8.10.3.2.2(v), 8.11.3.1.2(t), and 8.6.5.15.2.

ASME A17.3 — Section 4.4.

2.32.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.4; Section 308; Rules 303.1, 303.2, 303.4b, 1004.2(b)(13), 1005.2a, and 1006.2b; and Section 3 (Definitions).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.8, 3.28, 3.19.1, 3.19.2, 3.19.4.2, 8.11.3.1.2(m), 8.11.3.2, 8.10.3.2.2(m), and 1.3 (Definitions).

ITEM 2.33
TANKS

2.33.1 Periodic Inspections

2.33.1.2 Hydraulic Elevators

(a) Atmospheric Storage and Discharge Tanks. Visually inspect the tank for defects such as leaks, corrosion, and damage. Cover to prevent entrance of foreign materials.

(1) Have the car moved to the top landing and check the hydraulic fluid level. While the car is moving up, listen for sounds that may indicate cavitation or obstructed strainers. The liquid should be above the minimum level indicated. A17.1-1955 through A17.1-1965 required that the minimum liquid level be clearly indicated. A17.1-1971 and later editions require that the means of checking the liquid level be accessible without removal of any cover or other parts.

(2) Observe drip pans for excess accumulation of hydraulic fluid that leaked from the system.

(b) Pressure Tanks

(1) Determine whether the tank installed under A17.1-1971 and later editions, or any replacement tank, is marked to indicate that it was made and tested in conformance with ASME Boiler and Pressure Vessel Code, Section VIII. This may be stamped on the tank or on a data plate attached in such a manner that removal would result in its destruction. The following information should be included:

(-a) name of manufacturer

(-b) maximum allowable working pressure at temperature

(-c) minimum design metal temperature

(-d) manufacturer's serial number

(-e) the year built

(2) Examine for corrosion, leaks, badly corroded surfaces, or any indication of cracking or failure of the metal. If any of these conditions exist, recommend that a hydraulic elevator static test be performed in accordance with the ASME Boiler and Pressure Vessel Code. Check the tank for

(-a) a pressure gage

(-b) a place to install an inspector's gage

(-c) a liquid level gage

Verify that these are in good working order and install an inspector's gage to check the accuracy of the permanently installed gage.

2.33.2 Periodic Test

2.33.2.2 Hydraulic Elevators: 3-yr Inspection and Test of Pressure Tanks (for A17.1d-2000 and Earlier Editions); Category 3 Test and Test of Pressure Tanks (for ASME A17.1-2000/CSA B44-00 and Later Editions)

WARNING Hydraulic elevator static tests can be dangerous if not performed by qualified persons.

The pressure tank should be thoroughly cleaned and inspected both internally and externally. It should be subjected to a hydraulic elevator static test at 150% of the working pressure. This is done by removing all control devices and isolating the tank. A calibrated inspector's gage with maximum reading twice the test pressure must be installed.

Fill the tank completely with water. Care must be taken to remove all of the air from the tank. If air or any compressible gas is trapped in the tank, the test will become dangerous. A hand pump can then be used to provide the test pressure. The tank should be held at the test pressure for at least 1 min and inspected for leaks, distortions, or damage. Since there is no compressible fluid (air or other gas) in the tank, a very small leak will cause a rapid loss of pressure. This may be cause for replacement of the tank.

After the test, the tank must be thoroughly cleaned before returning to service.

2.33.3 Acceptance

2.33.3.2 Hydraulic Elevators. The tank should be visually inspected for damage that may have resulted from handling and installation. The data required by the ASME Boiler and Pressure Vessel Code should be verified (see 2.33.1.2).

2.33.4 References

2.33.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 304 and Rules 1004.2(b)(16), 1005.3b, 1203.6, and 1206.5b.

Table 2.34.3-1
Minimum Bend Radius for SAE 100R2 Hose

I.D., in.	O.D., in.	Minimum Burst Pressure, psi	Minimum Bend Radius, in.
1/2	31/32	14,000	7
5/8	1 3/32	11,000	8
3/4	1 1/4	9,000	9 1/2
7/8	1 1/8	8,000	11
1	1 9/16	8,000	12
1 1/4	2	6,500	16 1/2
1 1/2	2 1/4	5,000	20
2	2 3/4	4,000	25

GENERAL NOTES:
(a) 1 in. = 25.4 mm.
(b) This table is from SAE J517.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.24, 8.10.3.2.2(p), 8.11.3.1.2(p), 8.11.3.3.2, 8.7.3.29, 8.6.5.1, 8.6.5.2, 8.6.5.5, and 8.6.5.6.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.24, 8.7.3.29, 8.6.5.1, 8.6.5.5, 8.6.5.6, 8.10.3.2.2(w), and 8.11.3.1.2(u).

ASME A17.3 — Section 4.5.

2.33.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.5; Section 304; and Rules 1004.2(b)(16), 1005.3b, 1203.6, and 1206.5b.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.11, 3.24, 8.11.3.1.2(p), 8.11.3.3.2, 8.7.3.29, 8.6.5.1, 8.6.5.2, 8.6.5.5, and 8.6.5.6.

ITEM 2.34
FLEXIBLE HYDRAULIC HOSES AND FITTING ASSEMBLIES

2.34.1 Periodic Inspections

2.34.1.2 Hydraulic Elevators. Visually examine flexible hydraulic hoses, fitting assemblies, and flexible couplings for evidence of leakage, slippage of hose fittings, and damage to outer hose covering sufficient to expose reinforcement or cause distortion or bulging of the hose body. Such damage will warrant further test. Check hose and fitting assemblies for proper identification and permanent marking and replacement date.

2.34.2 Periodic Test

2.34.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). From the machine room have the car inched up at slow speed until the stop ring is engaged. Then operate the system at rated speed to provide full relief valve bypass pressure for 30 s. While the hose is under pressure, observe the hose for any signs of leakage, slippage of hose fittings, damage to outer hose covering, bulging, or distortion of the hose body. Any of these signs requires replacement of the hose. Have a metal tag attached to the hose in a permanent manner indicating the date of the test and the name of the person or firm that performed the test.

2.34.3 Acceptance Test

2.34.3.2 Hydraulic Elevators. Check that the hose is not installed in the hoistway and does not project into or through any wall. Check for twists, kinks, or sharp bending radius. See Table 2.34.3-1.

2.34.4 References

2.34.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 303.3c, 1004.2(b)(17), and 1005.2d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.19.3.3, 8.6.5.6, 8.10.3.2.2(q), 8.11.3.1.2(q), and 8.11.3.2.4.

ASME A17.1-2007/CSA B44-07 — Requirements 3.19.3.3, 8.6.5.6, 8.10.3.2.2(x), 8.11.3.1.2(v), and 8.11.3.2.4.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.19.3.3, 8.6.5.6, 8.10.3.2.2(x), 8.11.3.1.2(v), and 8.6.5.14.4.

2.34.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.4, 303.3c, 1004.2(b)(17), and 1005.2d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.8, 3.19.3.3, 8.11.3.1.2(q), and 8.11.3.2.4.

ITEM 2.35
SUPPLY LINE AND SHUTOFF VALVE

2.35.1 Periodic Inspections

Inspect the supply line between the cylinder and the pumping unit for leaks, adequate support, vibration, or other evidence of damage. A careful examination of the piping and fittings will indicate if a replacement has been made that does not match the rest of the system. In such cases, the replacement part's pressure rating should be checked by examining the rating supplied by the manufacturer. Also, inspect the piping for support to prevent undue stress due to the weight of pipe or other equipment.

Check fittings for absence of corrosion, for leaks, and for evidence of excessive vibration. On grooved fittings, check that the housing segments are bolt pad to bolt pad, that coupling keys are in the pipe groove, that bolt heads are seated, and that nuts are tight.

Inspect the manual shutoff valve in the machine room for condition and leaks. Manual shutoff valves are required for elevators with unexposed cylinders installed under A17.1-1978 and later editions. A17.1-1996 and later editions require a manual shutoff valve for all elevators. Editions of the Code prior to A17.1-1993 required a material safety factor of 5 and elongation of not less than 10% for valves, fittings, and supply piping. Some valves and fittings are rated with a material safety factor of 3. In such a case, the manufacturer's published rating should be down-rated for elevator application. This can be done by multiplying the published rating by 3 and dividing by 5.

EXAMPLE: Manufacturer's rating 1,000 psi

1,000 × $^{3}/_{5}$ = 600 psi

If the material elongation for the material in this example is at least 10%, the valve or fitting could be used for working pressure up to 600 psi.

2.35.2 Periodic Test

2.35.3 Acceptance

Inspect the valves and fittings as indicated in 2.35.1. However, for new equipment, the factor of safety may vary inversely with the elongation of the material. This will allow a lower factor of safety if the elongation is increased. Likewise, if the elongation is decreased, the factor of safety must be increased. Therefore, it is recommended that the installer furnish documentation that the pressure rating complies with the requirements of ASME A17.1/CSA B44 for the applicable working pressure, with data from the valve, fitting, and pipe manufacturers. Review this to verify compliance with pressure rating requirements.

If the elevator supplier has obtained a type approval from the jurisdiction, verify that all installed components are included in the type approval.

Determine that pipe fittings have been installed in locations that permit disassembly and inspection of components.

2.35.4 References

2.35.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 303.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.19, 8.10.3.2.2(r), and 8.11.3.1.2(r).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.19, 8.10.3.2.2(y), and 8.11.3.1.2(w).

ASME A17.3 — Paragraph 4.4.4.

2.35.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.4, 303.3c, 1004.2(b)(17), and 1005.2d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.8, 3.19.3.3, 8.11.3.1.2(q), and 8.11.3.2.4.

ITEM 2.36
HYDRAULIC CYLINDERS

2.36.1 Periodic Inspections

2.36.2 Periodic Test

2.36.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). This test should be performed after the relief valve test in Item 2.31 and the flexible hose test in Item 2.34. Cylinders that cannot be inspected visually should be tested in the following manner with no load in the car. Mark the location of the car at any convenient position. Open the disconnect switch for 15 min. Note the position of the car platform with respect to the reference mark. A change in car position that cannot be accounted for by visible oil leakage, valve leakage, or temperature change of the oil indicates a leak of the cylinder or in the underground piping and a need for further inspection, tests, or repairs.

2.36.3 Acceptance

2.36.4 References

2.36.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 302.3, 1004.2(b)(19), and 1005.2b.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.18.3, 8.10.3.2.2(s), 8.11.3.1.2(s), and 8.11.3.2.2.

ASME A17.1-2007/CSA B44-07 — Requirements 3.18.3, 8.10.3.2.2(z), 8.11.3.1.2(x), and 8.11.3.2.2.

A17a-2008/CSA B44a-08 and later editions — Requirements 3.18.3, 8.10.3.2.2(z), 8.11.3.1.2(x), and 8.6.5.14.2.

2.36.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2, 302.3, 1004.2(b)(19), and 1005.2b.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.7, 3.18.3, 8.11.3.1.2(s), and 8.11.3.2.2.

ITEM 2.37
PRESSURE SWITCH

2.37.1 Periodic Inspections

2.37.1.2 Hydraulic Elevators. For elevators installed under A17.1-1981 and later editions, a pressure switch is required if the top of the cylinder is above the storage tank. This switch is to prevent operation of the valves if there is no pressure in the line between the down valve and cylinder. Visually inspect for condition and damage.

2.37.2 Periodic Test

2.37.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Test the pressure switch in the following manner:

(a) Place the car at any landing except the bottom landing.

(b) Remove one electrical lead from the pressure switch and try to run the car in the down direction. If the car will not run by normal means, open the mainline disconnect switch. Connect a circuit continuity tester, such as an ohmmeter, across the pressure switch and lower the car on the buffer with the manual lowering valve.

(c) The ohmmeter should indicate that the pressure switch is open when the car comes to rest on the buffer.

2.37.3 Acceptance

2.37.4 References

2.37.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 306.14, 1004.2(b)(20), and 1005.2e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.26.8, 8.10.3.2.2(t), 8.11.3.1.2(t), and 8.11.3.2.5.

ASME A17.1-2007/CSA B44-07 — Requirements 3.26.8, 8.10.3.2.2(aa), 8.11.3.1.2(y), and 8.11.3.2.5.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.26.8, 8.10.3.2.2(aa), 8.11.3.1.2(y), and 8.6.5.14.5.

2.37.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.7, 306.14, 1004.2(b)(20), and 1005.2e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.26.8, 5.2.2.13, 8.11.3.1.2(t), and 8.11.3.2.5.

ITEM 2.38
ROPED WATER HYDRAULIC ELEVATORS

2.38.1 Periodic Inspections

2.38.2 Periodic Test

2.38.2.2 Hydraulic Elevators. *3-yr Test (for A17.1d-2000 and Earlier Editions); Category 3 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions).* Check the condition of the rod at the thread end, which is where the bolt and nut are against the plunger. This should be done on the bottom and top ends. It is very common for the rod to break where the thread and nut end are against the plunger of packing thread.

2.38.3 Acceptance

2.38.4 References

A17.1d-2000 and earlier editions — Rule 1005.3(a).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirement 8.11.3.3.1.

ASME A17.1a-2008/CSA B44-08 and later editions — Requirement 8.6.5.15.1.

ITEM 2.39
LOW OIL PROTECTION

2.39.1 Periodic Inspections

2.39.2 Periodic Test

For elevators installed under A17.1-1993 and later editions, check that a means is provided to detect when the liquid level in the tank falls below the minimum required for the car to reach the topmost landing. Verify that when activated, the car will automatically travel to the lowest landing, cycle power-operated horizontally sliding passenger elevator doors that are equipped with reopening devices, and shut down. Also, verify that the in-car door open button (where provided) remains operative. Also, see ASME A17.1/CSA B44, requirement 2.11.3.

2.39.3 Acceptance

2.39.4 References

A17.1d-2000 and earlier editions — Rule 306.15.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 3.26.9 and 8.11.3.2.3(i).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.26.9 and 8.6.5.14.3(i).

2.39.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.7 and 306.15.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2.1, 5.2.1.26, 3.26.9, and 8.11.3.2.3(i).

ITEM 2.40
MAINTENANCE RECORDS

2.40.1 Periodic Inspections

Review the maintenance records and verify that they are available to elevator personnel and that they are legible and up to date. They should include the following:

(a) description of maintenance tasks performed and dates

(b) description and dates of examinations, tests, adjustments, repairs, and replacements

(c) description and dates of callbacks (trouble calls) or reports that are made to elevator personnel by any means, including corrective action taken

(d) written record of the findings on the firefighters' service operation monthly test

2.40.1.2 Hydraulic Elevators. Check the record of oil usage where required. Investigate any unaccountable fluid loss.

2.40.2 Periodic Test

2.40.3 Acceptance

2.40.4 References

2.40.4.1 Electric Elevators. ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.1.4 and 8.6.10.1.

A17.1a-2005 and later editions — Requirements 8.6.1.4 and 8.6.11.1.

2.40.4.2 Hydraulic Elevators. ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.1.4, 8.6.10.1, and 8.6.5.7.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirement 8.6.11.1.

(23) **2.40.4.3 Electric LU/LA Elevators.** ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.6.1.4 and 8.6.10.1.

(23) **2.40.4.4 Hydraulic LU/LA Elevators.** ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.6.1.4, 8.6.5.7, and 8.6.10.1.

ITEM 2.41
HYDRAULIC CONTROL

2.41.1 Periodic Inspections

2.41.2 Periodic Test

2.41.3 Acceptance

The person or firm installing or maintaining an elevator employing hydraulic control should demonstrate conformance with the Code as follows:

(a) If in the up direction the pump motor is the only control means, run the car and demonstrate that there are two devices provided to remove power independently from the pump motor. At least one device shall be an electromechanical contactor.

(b) If in the up direction the pump motor is one control means and there is a second control means (e.g., a valve), run the car and demonstrate that a device is provided to remove power independently from each control means. At least one device shall be an electromechanical contactor or relay.

(c) Prevent the electromechanical contactor or relay in (a) or (b) from being energized and register a call. Demonstrate, with the doors closed, that the car will not move.

(d) Demonstrate that the operation of the devices specified in (a) and (b) will remove power from each control means.

2.41.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 3.26.6.4.

ITEM 2.42
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

2.42.1 Periodic inspections

(a) Verify that all rope retainers or rope guards are in place.

(b) Verify that equipment in the machine room, control panels, machines, machine beams, support beams, and sheaves are properly fastened to the overhead beams and floor to prevent overturning, where required.

2.42.1.1 Electric Elevators

(a) If the seismic switch is used exclusively for control of the elevator, check to see that the switch is located in the machine room and on a vertical structural member or at the nearest accessible vertical load-bearing member.

(b) Verify that there is a momentary reset button or switch, for each elevator, located in each elevator's control panel.

2.42.1.2 Hydraulic Elevators

(a) Verify that a means to prevent the tank from overturning during seismic activity is still in place.

(b) Verify that all the pipe supports are still in place.

2.42.2 Periodic Test

2.42.3 Acceptance

Verify that rope retainers are continuous over not less than two-thirds of the arc of contact between the rope and its sheave or drum and located so not more than one-sixth of the arc of contact is exposed. For double wrap, the arc of contact is the length of arc that is uninterrupted by the entry/exit of the ropes leading to/from the car or counterweight. Rope restraints may be used in lieu of retainers and, if they are used, there must be one for each 30 deg or less of arc contact.

2.42.3.1 Electric Elevators

(a) Verify that the seismic switch operates properly. When the switch is tripped, the elevator in motion shall proceed to the nearest available floor, the doors

shall open, and the elevator shall shut down. If Phase II emergency in-car operation is in effect, the door operation shall conform to ASME A17.1/CSA B44, requirement 2.27.3.3.

(b) Check the operation of the displacement switch. When this switch is actuated, the elevator, if in motion, shall stop (emergency stop) and then proceed away from the counterweight at a speed not to exceed 150 ft/min (0.75 m/s) to the nearest available floor, open the doors, and shut down. If Phase II operation is in effect, door operation must conform to ASME A17.1/CSA B44, requirement 2.27.3.3.

(c) If a car with power-operated doors is just reaching a landing, the doors shall open and remain open. If an elevator is standing at a floor with its doors open, the elevator shall remain at that floor. If an elevator is standing at a floor with the doors to the elevator closed, the doors shall open. If Phase II operation is in effect, door operation shall conform to ASME A17.1/CSA B44, requirement 2.27.3.3. If an elevator is not in operation when an earthquake protective device is actuated, the elevator shall remain at the floor on which it is located.

(d) An elevator may be operated at a speed not exceeding 150 ft/min (0.75 m/s) as long as the displacement switch operated by the counterweight is the continuous monitoring type and is not actuated. If the displacement switch is actuated, then the car shall not operate except with the top-of-car inspection operating devices; operation of the car by Phase I, Phase II, hospital emergency keys, or any other similar type of operation shall be prevented. In a loss-of-power situation, the status of the earthquake protective device or slow-speed status of the elevator shall not be canceled when power is restored. The electric protective devices of ASME A17.1/CSA B44, requirement 2.26.2 shall not be rendered inoperative or bypassed by any earthquake devices.

2.42.3.2 Hydraulic Elevators

(a) If the building is designed with an expansion joint, the machine room and the hoistway shall be located on the same side of the expansion joint.

(b) Verify that the proper number of supports are used to support the hydraulic lines and that supports to resist transverse motion are provided near changes in direction and at valves and joints.

(c) Verify that a means is provided that will prevent the tank from overturning during seismic activity.

(d) Verify that all the pipe supports are in place.

2.42.4 References

2.42.4.1 Electric Elevators. A17.1-1993 through A17.1d-2000 — Rules 2401, 2400.1, 2408, and 2409.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2013/CSA B44-13 — Requirements 8.4.2, 8.4.3.1, 8.4.9, and 8.4.10.

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 8.6.4.19.17.

2.42.4.2 Hydraulic Elevators. A17.1-1993 through A17.1d-2000 — Rules 2401, 2400.1, 2410.1, and 2410.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2013/CSA B44-13 — Requirements 8.4.2, 8.4.3.1, 8.4.11.1, 8.4.11.3, and 8.4.11.6.

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 8.6.5.14.8.

2.42.4.3 Electric LU/LA Elevators. ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.2, 8.4.3.1, 8.4.9, and 8.4.10.

2.42.4.4 Hydraulic LU/LA Elevators. ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.2, 8.4.3.1, 8.4.11.1, 8.4.11.13, and 8.4.11.6.

ITEM 2.43
EMERGENCY BRAKE, ASCENDING CAR OVERSPEED, AND UNINTENDED CAR MOVEMENT PROTECTION

2.43.1 Periodic Inspections

2.43.1.1 Electric Elevators. Check the MCP for any unique methods or procedures to inspect and test the ascending car protection, the unintended car movement protection, or the emergency brake [see ASME A17.1/CSA B44, requirement 8.6.1.2.1(f)].

2.43.2 Periodic Test

2.43.2.1 Electric Elevators

(a) Category 1 Test. Examine all working parts of the ascending car overspeed protection and unintended car movement protection to determine they are in satisfactory operating condition.

(1) Ascending Car Overspeed Protection and Emergency Brake. For electric traction elevators installed to ASME A17.1-2000/CSA B44-00 and later editions, except those whose empty car weight exceeds the total weight of the counterweight and the suspension means, check the following:

(-a) When the detection means requires electrical power for its functioning

(-1) verify loss of power to the detection means will cause application of the emergency brake.

(-2) verify the detection means has to be manually reset. The means for manual reset may be in an inspection and test panel.

(-b) Starting at the bottom landing, operate the car at the lowest speed with an empty car in the up direction, with the machine brake held in the released position. Manually operate the overspeed means to simulate an overspeed condition. The emergency brake should apply and the car should stop.

(2) Unintended Car Movement Protection and Emergency Brake. For electric traction elevators installed to ASME A17.1-2000/CSA B44-00 and later editions

(-a) Simulate a door open condition with an empty car at a car position near the upper terminal landing that will allow for at least 48 in. (1 220 mm) of upward movement.

(-1) Release the machine brake.

(-2) The car must move in the up direction and stop with the emergency brake.

(-3) Measure the distance the car traveled.

(-4) Verify that the car does not move more than 48 in. (1 220 mm).

(-b) When the detection means requires electrical power for its functioning

(-1) verify that loss of power to the detection means will cause application of the emergency brake.

(-2) verify that the detection means has to be manually reset.

(3) Emergency Brake. When required for ascending car overspeed protection or unintended car movement protection

(-a) if servicing or field adjustments of the emergency brake are required and the emergency brake acts on the drive machine braking surface, ensure that the emergency brake is labeled "EMERGENCY BRAKE" for elevators installed to ASME A17.1-2004/CSA B44-04 and later editions.

(-b) verify that the emergency brake does not operate until the car has stopped.

(-c) for automatic operation, verify that the emergency brake does not apply until the car has stopped during normal operation.

(b) Category 5 Test

(1) Ascending Car Overspeed Protection and Emergency Brake. Verify the ascending overspeed detection means setting.

(2) Unintended Car Movement Protection and Emergency Brake. Simulate a door open condition with the car at a position near the bottom terminal landing that will allow for at least 48 in. (1 220 mm) of downward movement, with 125% of rated load in the car.

(-a) Release the machine brake.

(-b) The car must move in the down direction and stop with the emergency brake.

(-c) Measure the distance the car traveled.

(-d) Verify that the car does not move more than 48 in. (1 220 mm).

2.43.3 Acceptance

2.43.3.1 Electric Elevators. When an emergency brake requires electrical power for activation, stop the elevator at the top terminal landing, open the mainline disconnect, and verify that the emergency brake applies. Close the mainline disconnect and verify that the emergency brake automatically resets. See Table 2.43.3.1-1. Verify that if the design of the emergency brake is such that field adjustment or servicing is required, and the emergency brake acts on the brake drum or braking surface of the drive machine, the emergency brake has a sign visible from the service area stating "EMERGENCY BRAKE."

2.43.4 References

2.43.4.1 Electric Elevators. A17.1-2000 and later editions — Rules 2.19, 8.7.2.20, and 8.7.2.27.5 and Appendix F.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 and ASME A17.1-2005S/CSA B44-05S — Requirement 8.10.2.2.2(cc).

A17.1S-2005 and later editions — Requirement 2.19.3.2(k).

ASME A17.1-2007/CSA B44-07 — Requirement 8.11.2.2.11.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.10.2.2.2(jj), 8.10.2.2.2(mm), and 8.11.2.1.2(ii).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirement 8.6.4.19.11.

ITEM 2.44
AUXILIARY POWER LOWERING OPERATION

2.44.1 Periodic Inspections

2.44.2 Periodic Test

2.44.2.2 Hydraulic Elevators. Test the auxiliary power lowering operation with no load in the car to verify operational requirements as required by A17.1-2000 and later editions. When special or unique methods are required, refer to the on-site documentation; see ASME A17.1/CSA B44, requirement 8.6.1.2.2(b) for the appropriate procedure.

Demonstrate that an elevator provided with an auxiliary power lowering operation is in conformance with the Code requirements as follows:

(a) When the auxiliary lowering operation has been initiated, the car should descend directly to the lowest landing. The car is permitted to stop at intermediate landings, provided the auxiliary power supply is of sufficient capacity to open and close the doors at each intermediate stop.

(b) Verify that all operating and control devices, including door open and door close buttons, function as with the normal power supply, except the following devices are permitted to be bypassed or made inoperative:

(1) landing and car floor registration devices (or call buttons)

(2) devices enabling operation by a designated attendant (hospital service, attendant operation)

(3) devices initiating emergency recall operation to the recall level, unless otherwise specified

Table 2.43.3.1-1
Traction Elevator Brake Type, Function, and Performance

Brake Type	Location	Normal Operation Function	Emergency Operation Function	Normal Performance (Minimum)	Emergency Performance (Minimum)
Drive machine brake (see 1.3 and ASME A17.1, 2.24.8.3)	Electric drive machine (see 1.3 and 2.24.8.1)	Hold car stationary at floor [Note (1)] [see 2.24.8.3(a), 2.24.8.3(b), and 2.26.8]	Retard car during emergency stop [see 2.24.8.3(c), 2.26.8.3(c), and 2.26.8.3(d)]	Hold 125% of rated load [Note (2)] [see 2.24.8.3(a)]	Retard empty car in up direction [see 2.24.8.3(c)]
Braking system (see 1.3 and 2.24.8.2)	Not specified	[Note (1)] (see 2.26.8)	Retard car during emergency stop [see 2.24.8.2, 2.26.8.3(c), and 2.26.8.3 (d)]	[Note (1)]	Safely stop and hold car with 125% of rated load in down direction at any speed or empty car in the up direction from the speed at which the governor overspeed switch is set [Note (2)] (see 2.24.8.2 and 2.16.8)
Emergency brake (see 1.3 and 2.19.3)	Suspension or compensation means system, traction sheave, car, or counterweight (see 2.19.3.2)	Not permitted [see 2.19.3.2(c)]	Retard car during ascending car overspeed and unintended car movement, independent of the braking system [see 2.19.1.2(b) and 2.19.2.2(b)]	Not applicable [see 2.19.3.2(c)]	Retard car in up direction [see 2.19.3.2(a)], up to 110% of governor-tripping speed [see 2.19.1.2(a)]. Stop unintended motion with 125% of rated load in down direction or empty car in up direction [Note (2)] [see 2.19.2.2(b)]. Reduce the car and counterweight speed such that the rated buffer striking speed is not exceeded (rated load in down direction or empty car in up direction) (see 2.25.4.1.1)

GENERAL NOTE: The cross-references in this table are to ASME A17.1/CSA B44 requirements.

NOTES:
(1) It is permitted that the braking system or the drive machine brake function in normal retardation of the elevator car.
(2) For freight elevators not permitted to carry passengers, test with 100% of rated load (see ASME A17.1/CSA B44, requirement 2.16.8).

(4) "FIRE OPERATION" switch, unless otherwise specified

2.44.3 Acceptance

2.44.4 References

2.44.4.2 Hydraulic Elevators. ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.14, 3.26.10, 3.27, 8.6.5.14.3(j), 8.7.3.31.9, and 8.10.3.2.1(q).

ITEM 2.45
INSPECTION OPERATION WITH OPEN DOOR CIRCUITS AND INSPECTION OPERATION HIERARCHY

2.45.1 Periodic Inspections

2.45.2 Periodic Test

2.45.3 Acceptance

(a) Confirm that the car and hoistway door bypass switches are located outside of the hoistway by being placed in a machine room, control room, machinery space, control space, or inspection test panel.

(b) Confirm that the switches will prepare the control system so that only when top-of-car or in-car inspection operation is activated the car is permitted to be moved with open door contacts.

(c) If the device is SIL rated, confirm the rating as required by ASME A17.1/CSA B44, Table 2.26.4.3.2 and confirm that the SIL rating on labels and tags on assemblies matches the SIL rating on the wiring diagrams of the on-site documentation.

(d) Confirm that the bypass switches are clearly marked "BYPASS" and "OFF."

(e) If a set of switches is used to bypass individual or groups of door contacts, confirm that the switch is properly marked to identify the specific door contact being bypassed. Confirm that a warning sign is mounted adjacent to the bypass switches indicating "JUMPERS SHALL NOT BE USED TO BYPASS HOISTWAY OR CAR DOOR ELECTRIC CONTACTS."

(f) Confirm that the operation of the switches complies with Table 2.45.3-1.

2.45.4 References (23)

A17.1-1996 through A17.1-2000d — Rule 210.14.

A17.1-2000 and later editions — Requirements 2.26.1.5 {2.7.6.3.2}/{2.7.6.5.2(f)}/{2.12.2.3(c)}/{2.14.4.2.3(a)(3)}/{2.26.1.4.4(a)(5)}, 8.10.2.2.1(c)(3), and 8.10.3.2.1(c).

Table 2.45.3-1
Operation Hierarchy

Landing	Pit	Working Platform
Top of car	No operation	No operation
In car	No operation	No operation

Part 3
Elevator — Top of Car

NOTE: For LU/LA Elevator Safety Precautions — If the elevator has limited overhead, a warning sign must be visible in the hoistway, and there must be a nonremovable car top clearance device to provide an area above the car for maintenance and inspection. Check the means (ASME A17.1/CSA B44, requirement 5.2.1.4.4) for proper operation (where provided). See 3.3.1 and 3.4.1.

ITEM 3.1
TOP-OF-CAR STOP SWITCH

(23) ### 3.1.1 Periodic Inspections

A17.1d-2000 and earlier editions and ASME A17.3 require a top-of-car stop switch be provided on every car top. ASME A17.1-2000/CSA B44-00 and later editions require a stop switch be permanently located on the car top and readily accessible while standing at the hoistway entrance normally used for access to the car top.

Check the top-of-car stop switch in both directions to ensure it is functioning properly and in compliance with the Code before proceeding with the inspection.

3.1.2 Periodic Test

3.1.3 Acceptance

3.1.4 References

3.1.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 210.2(h) and 1001.2(c)(1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.2.8, 8.10.2.2.3(a), and 8.11.2.1.3(a).

ASME A17.3 — Paragraph 3.10.4(e).

3.1.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 306.4 and 1004.2(c)(1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.26.1(d), 3.26.4, 8.10.3.2.3(a), and 8.11.3.1.3(a).

ASME A17.3 — Paragraph 4.7.4(a)(2).

3.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.26.

3.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.2.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.13.

ITEM 3.2
CAR TOP LIGHT AND OUTLET

3.2.1 Periodic Inspections

For elevators installed under A17.1a-1979 and later editions, check that a light and outlet have been provided and that they are operational. The light must be guarded to prevent damage when accidentally hit by a person moving onto or around on the car top. For elevators installed under the 1993 edition of NFPA 70, verify that the outlet is GFCI protected. The 1996 edition of NFPA 70 required the receptacle be the GFCI type. Test GFCI operation with either the built-in test button or a GFCI tester.

NOTE: If the GFCI protection is not in the receptacle, the car top light will go out when it is tested.

For elevators installed under ASME A17.1-2007 and later editions, verify that the car top illumination is not less than 100 lx (10 fc). Measurements should be taken at any point on the equipment that requires maintenance or examination.

3.2.2 Periodic Test

3.2.3 Acceptance

Check the GFCI receptacle operation using the test button. Use a receptacle tester to check the receptacle for grounding and polarity. The inspector is not required to have the unit disassembled but should visually inspect the installation for evidence of nonlisted components. Also, see 2.11.3(c) for a car lighting disconnect located in the machine room.

3.2.4 References

3.2.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.7 and 1001.2(c)(2).

ASME A17.1-2000/CSA B44-00 through A17.1S-2005 — Requirements 2.14.7.1.4, 8.10.2.2.3(b), and 8.11.2.1.3(b).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.14.7.1.4, 8.10.2.2.3(b), and 8.11.2.1.3(b).

ASME A17.3 — Paragraph 3.4.5(e).

NFPA 70 or CSA C22.1, as applicable.

3.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 204.7 {301.7} and 1004.2(c)(2).

ASME A17.1-2000/CSA B44-00 through A17.1S-2005 — Requirements 2.14.7.1.4 {3.14}, 8.10.3.2.3(b), and 8.11.3.1.3(b).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.14.7.1.4 {3.14}, 8.10.2.2.3(b), and 8.11.2.1.3(b).

ASME A17.3 — Paragraph 3.4.5(e) {4.2.3}.

NFPA 70 or CSA C22.1, as applicable.

3.2.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.5.

ASME A17.1-2000/CSA B44-00 through A17.1S-2005 — Requirement 5.2.1.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 2.14.7.1.1 {5.2.1.4}.

3.2.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2 and 2501.5.

ASME A17.1-2000/CSA B44-00 through A17.1S-2005 — Requirements 5.2.2.4 and 5.2.1.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2 and 2.14.7.1.4 {5.2.1.14}.

ITEM 3.3
TOP-OF-CAR OPERATING DEVICE

(23) ### 3.3.1 Periodic Inspections: Routine Inspections (for A17.1d-2000 and Earlier Editions); Periodic Inspections (for A17.1-2000 and Later Editions)

Check the top-of-car operating device for proper operation and location. A17.1d-1970 to A17.1d-2000 and ASME A17.3 require that the means to transfer control be on top of the car between the crosshead and the access entrance. A17.1-2000 and later editions require the transfer switch to be located on the car top and readily accessible from the car top.

Check the top-of-car operating device for proper operation and accessibility. If the inspection operating device is of the portable type, verify that it is provided with an enable device and an additional stop switch, and that the flexible cord is permanently attached.

If separate additional means are provided for making power door or automatic car leveling devices operative, verify that operation is by constant-pressure means.

NOTE: For LU/LA elevators, where an alternate car top clearance device is allowed in conformance with ASME A17.1/CSA B44, requirement 5.2.1.4.4, check for proper operation to transfer control to the top-of-car operating device.

3.3.2 Periodic Test

3.3.3 Acceptance

Confirm that the top-of-car inspection operation has priority over the in-car inspection operation.

3.3.4 References

3.3.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.1g, 210.1d, and 1001.2(c)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.7, 2.26.1.4, 8.10.2.2.3(c), and 8.11.2.1.3(c).

ASME A17.3 — Paragraph 3.10.3.

3.3.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 306.2 and 1004.2(c)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.26.1(b), 3.26.2, 8.10.3.2.3(c), and 8.11.3.1.3(c).

ASME A17.3 — Paragraphs 3.10.3 and 4.7.2.

3.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5 and 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.14 and 5.2.1.26.

3.3.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.26.1.4, 5.2.2.14, and 3.26.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.1.4, 5.2.2.13, and 3.26.2.

ITEM 3.4
TOP-OF-CAR CLEARANCE, REFUGE SPACE, AND STANDARD RAILING

3.4.1 Periodic Inspections: Routine Inspections (for A17.1d-2000 and Earlier Editions); Periodic Inspections (for A17.1-2000 and Later Editions)

3.4.1.1 Electric Elevators. Check the refuge space for elevators installed under A17.1-1978 through ASME A17.1a-2008/CSA B44a-08. For elevators installed under ASME A17.1b-2009/CSA B44b-09 and later editions, ensure compliance with the requirements for top-of-car clearances.

Before making any inspections or tests, determine the available car top clearance. Where possible, determine this by placing the car with its floor level with the top terminal landing. Care must be exercised in measuring this clearance from the car top as, in many existing elevators, the top clearance may be insufficient to permit a person to stand when the car floor is level with the top terminal landing. Where the clearance appears to

be insufficient, stop the car at or below the top landing and determine the car top clearance as follows:

(a) Measure the distance from the top of the car crosshead to the nearest obstruction directly above it.

(b) Measure the projection of any sheaves or other equipment mounted in or on the car crosshead above the top of the crosshead.

(c) Measure the distance from the top of any equipment mounted on top of the car (not the car crosshead) to the nearest obstruction directly above it.

(d) For underslung car frames, measure the distance between the overhead car rope dead-end hitch or overhead car sheave and the portions of the car structure directly below them.

(e) Subtract the distance, if any, the car floor is below the top terminal landing from the distances measured in (a), (c), and (d). The question of whether the top car clearance, as measured, is adequate or conforms to Code requirements cannot be determined until the counterweight runby and counterweight buffer stroke have been measured. (See 5.2.3.)

(f) Where an oil buffer is used for the counterweight and no provision is made to prevent the jump of the car upon counterweight engagement, add one-half the gravity stopping distance.

NOTES:

(1) The projection of rope fastenings or guide shoes above the car structure should not be considered an encroachment on the car top clearance. However, excessive projection is not permitted if interference with sheaves or other equipment would be encountered on maximum overtravel.

(2) For LU/LA elevators, where an alternate car top clearance device is allowed in conformance with requirement 5.2.1.4.4, check for proper operation to transfer control to the top-of-car operating device.

Alternative to Car Top Clearance Requirements. In existing buildings where the car top clearance cannot be provided

(a) verify that a sign is provided warning that there is insufficient car top clearance

(b) verify that a nonremovable alternate car top clearance device, to mechanically and electrically prevent upward movement of the car, is provided, and that it can be activated without complete bodily entry into the hoistway by a force not more than 90 N (20 lbf)

(c) verify that the top-of-car operating device is inoperable until the alternate car top clearance device is actuated

(d) verify that the alternate car top clearance device will prevent upward movement of the car on actuation, both electrically and mechanically, providing a refuge space

(e) measure and verify the dimensions of the refuge space

(f) verify that no part of the car or any equipment (other than the components of the device) attached thereto will strike the overhead structure or any part of the equipment located in the hoistway with the alternate car top clearance device actuated

(g) check that the top-of-car operating device will allow the car to move downward after electrical actuation

3.4.1.2 Hydraulic Elevators. Check the refuge space for elevators installed under A17.1-1978 and later editions. For elevators installed under A17.1-1978 through A17.1b-1995, verify that the refuge space is at least 650 in.^{2} (0.419 m^2) and at least 16 in. (406 mm) on any side with minimum vertical clearance of at least 42 in. (1 067 mm). For elevators installed under A17.1-1996 through ASME A17.1b-1998, check that the refuge space is outlined with a contrasting color. For elevators installed under ASME A17.1b-2009/CSA B44b-09 and later editions, ensure compliance with the requirements for top-of-car clearances.

Before making any inspections or tests, determine the available car top clearance. Where possible, determine this by placing the car with its floor level with the top terminal landing.

Prior to A17.1-1978, neither the refuge space nor the 152 mm (6 in.) clearance shown in Figure 3.4.1.2-1 was required. A17.1-1955 through A17.1-1977 (located in the 1978 edition) required only that the car top clearance be equal to the sum of the car top runby plus 2 ft (609 mm), or the distance that any equipment projected above the crosshead or the car top if there is no crosshead provided.

For elevators installed under A17.1-1955 through A17.1a-1985, overhead beams or hoistway construction located vertically over the car must be located at least 2 ft (609 mm) horizontally from the crosshead. For elevators installed under A17.1-1987 and later editions, the measurement should be made from the lowest part of the obstruction or beam over the car.

Care must be exercised in measuring this clearance from the car top as, in many existing elevators, the top clearance may be insufficient to permit a person to stand when the car floor is level with the top terminal landing. Where the clearance appears to be insufficient, stop the car at or below the top landing and determine the car top clearance as follows:

(a) Measure the distance from the top of the car crosshead to the nearest obstruction directly above it.

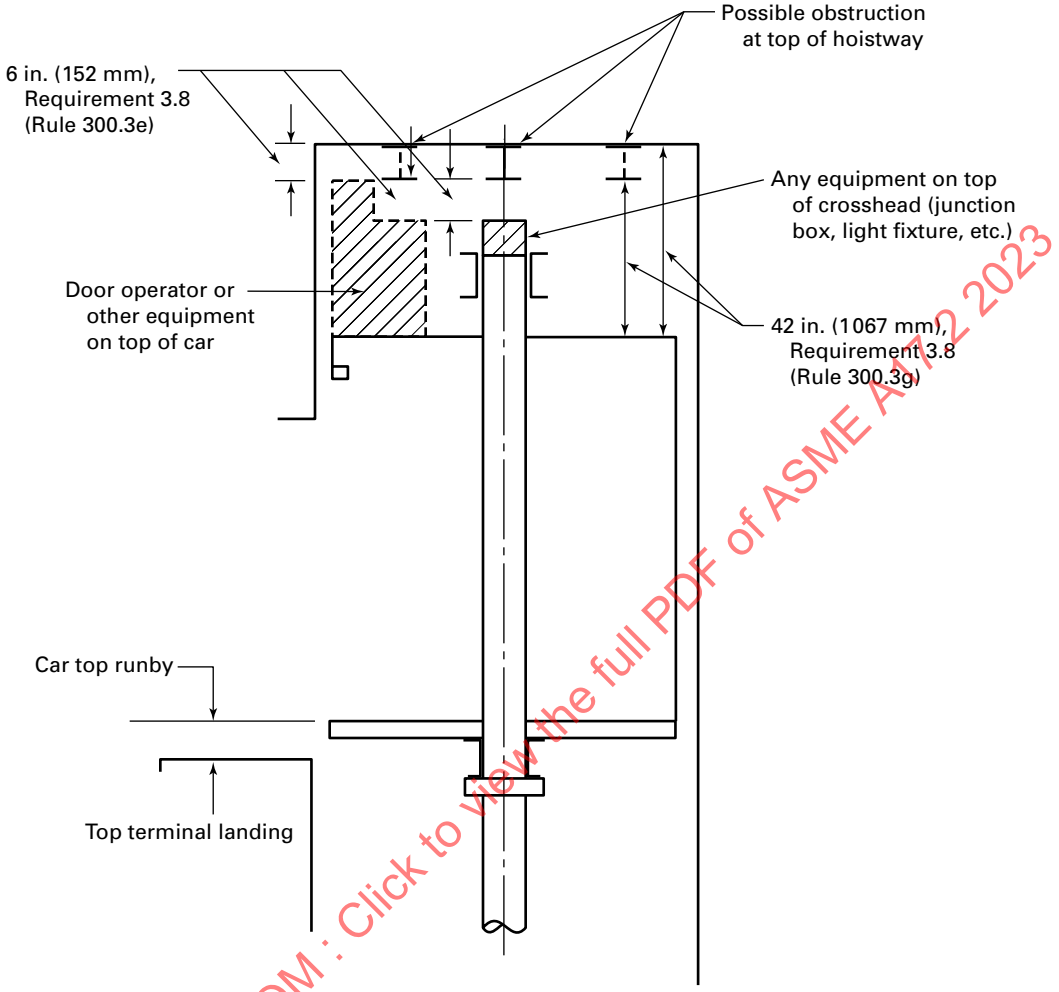
(b) Measure the projection of any sheaves or other equipment mounted in or on the car crosshead above the top of the crosshead.

(c) Measure the distance from the top of any equipment mounted on top of the car (not the car crosshead) to the nearest obstruction directly above it.

(d) For underslung car frames, measure the distance between the overhead car rope dead-end hitch or overhead car sheave and the portions of the car structure directly below them.

(e) Subtract the distance, if any, the car floor is below the top terminal landing from the distances measured in (a), (c), and (d).

Figure 3.4.1.2-1
Car Top Clearance and Runby (A17.1-1978 and Later Editions)



The question of whether the car top clearance, as measured, is adequate or conforms to Code requirements cannot be determined until the car top runby is determined.

NOTE: The projection of rope fastenings or guide shoes above the car structure should not be considered an encroachment on the car top clearance. However, excessive projections are not permitted if interference with sheaves or other equipment would be encountered on maximum overtravel.

3.4.2 Periodic Test

3.4.3 Acceptance

3.4.3.1 Electric Elevators

(a) Measure and record the car top and counterweight clearances.

(b) Check that a standard railing is provided where required.

3.4.3.2 Hydraulic Elevators

(a) Determine the car top runby and verify existence of a stop ring by inching the car against the stop ring, from outside the car (not from the car top) and then open the top hoistway door and measure the distance from the car platform to the top landing. Record the runby.

(b) The car top clearances should be measured and recorded.

(c) Check that a standard railing is provided where required.

3.4.4 References

3.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rule 1206.8 and Sections 107 and 1304.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 8.6.4.11, 2.4, 2.10.2, 2.14.1.7, 8.2.4, 8.10.2.2.3(d), and 8.11.2.1.3(d).

ASME A17.1b-2009/CSA B44-09 — Requirements 2.4, 2.14.1.5.1, and 2.14.1.6.2.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 8.6.4.11, 2.10, 8.2.4, 8.10.2.2.3(d), and 8.11.2.1.3(d).

ASME A17.3 — Paragraph 2.4.4.

3.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 300.8, 302.4, 1004.2(c)(4), 1006.2a, and 1006.2c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.4, 2.10.2, 2.14.1.7 {3.14}, 3.18.4, 8.11.3.1.3(d), and 8.10.3.2.3(d).

ASME A17.3 — Paragraph 2.4.4 {Section 4.1}.

3.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.4.

3.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1a and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.2.1, 5.2.1.4.2, 5.2.1.4.4, 5.2.1.20, 5.2.1.24.2, 5.2.1.24.3, 5.2.2.2, and 5.2.2.7.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.4.2, 5.2.1.4.4, 5.2.1.20, 5.2.1.24, 5.2.2, 5.2.2.1, and 5.2.2.5.

ITEM 3.5
NORMAL TERMINAL STOPPING DEVICES

3.5.1 Periodic Inspections

Observe caution if the car top clearance is limited. Run the car to the top of its travel at inspection speed to examine the normal terminal stopping device.

Normal terminal stopping devices must be driven by movement of the car. Note that the normal terminal stopping devices are not required to function on inspection operation.

Normal terminal stopping devices are usually located in the hoistway or on the car. Except for in winding drum machines, normal terminal stopping devices may be located in the machine room, machinery space, control room, or control space, but they must be mechanically attached to and driven by the car. If they are mechanically attached to the car, manually open the broken drive device switch with the car at rest (see Item 3.26). This should prevent the car from starting. When the normal terminal stopping devices are located in the hoistway, verify that stopping switches, vanes, magnets, rollers, cams, etc., as applicable, are in correct alignment and are securely fastened. The alignment of the bottom terminal stopping device can be checked by stopping the car near the bottom terminal and sighting the alignment of the car and switch roller (see Item 5.4). The switch roller should strike the bevel of the cam. Also, determine the condition of the limit switch rollers, as reduction of the effective roller diameter due to either wear or loss of rollers may interfere with or prevent proper operation. The combination of excessively worn car guide shoes and limit switch rollers may cause cars to overrun their terminals.

Where magnetic devices are used, verify that the magnet and its sensor(s) are in alignment as the car moves into the terminal zone. Where optical devices are used, verify that the sensor and its reflector and/or blocking mechanism are in alignment as the car moves into the terminal zone.

NOTE: For LU/LA elevators, emergency terminal speed-limiting devices are not required.

3.5.2 Periodic Test

See 2.28.2.

3.5.3 Acceptance

See 2.28.3.

3.5.4 References

3.5.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 207.4, 209.2, 210.2, 1001.2(c)(7), 1002.2e, 1003.2f, and 1003.3(k).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.25.1, 2.25.2, 8.11.2.1.3(g), 8.10.2.2.3(g), 8.11.2.2.5, 8.10.2.3.2(k), and 8.11.3.2.3(a). Also see Inquiry 08-34.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.25.1, 2.25.2, 8.6.5.14.3(a), 8.11.2.1.3(g), 8.10.2.2.2(ff)(1), 8.6.4.19.5, and 8.10.2.3.2(k).

ASME A17.3 — Paragraphs 3.9.1 and 3.10.4(q).

3.5.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 305.1a, 1002.2e {1005.2c}, 1003.3(k), and 1004.2(c)(5).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 3.25.1.1, 8.11.2.2.5 {8.11.3.2.3}, 8.10.2.3.2(k), 8.10.3.2.3(e), and 8.11.3.1.3(e).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.25.1.1, 8.6.4.19.5 {8.6.5.14.3(a)}, 8.10.2.3.2(k), 8.10.3.2.3(e), and 8.11.3.1.3(e).

ASME A17.3 — Paragraphs 3.9.1 {Section 4.6} and 3.10.4(q).

3.5.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.10 and 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.25 and 5.2.1.26.

3.5.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirement 5.2.2.12.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.2.13.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.12.

ITEM 3.6
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

3.6.1 Periodic Inspections

3.6.1.1 Electric Elevators. Observe caution if the car top clearance is limited. Run the car to the top of its travel at inspection speed and examine the final terminal stopping device.

(a) The upper final terminal stopping device must be located as close to the terminal landing as possible without interfering with the normal terminal stopping device, and it must actuate before the car strikes the overhead.

(b) Check the fastening and alignment of the switch and cam. The switch roller should strike the bevel surface of the cam. If properly located and adjusted, the roller will center laterally on the cam, assuring free motion of the roller arm and positive opening of the switch contact without damaging the switch.

3.6.1.2 Hydraulic Elevators. A17.1d-1970 and later editions require an emergency terminal speed-limiting device at the top terminal landing when the rated speed exceeds 100 ft/min (0.51 m/s) and at the bottom landing when reduced-stroke buffers are used. In A17.1-1955 through A17.1c-1969, an emergency terminal stopping device was required when a reduced-stroke buffer was used or the speed was over 100 ft/min (0.51 m/s). Verify that the emergency terminal stopping device functions independent of the normal stopping means and the normal terminal stopping device. Verify that the emergency terminal speed-limiting device functions independent of the normal terminal stopping device and that its car-speed-sensing device functions independent of the normal speed-control system.

Where mechanical or hydraulic emergency terminal speed-limiting devices are provided, refer to the manufacturer's recommended test procedures.

Inspect the device for condition and alignment. Slowly move the car up and verify that the device will be operated by movement of the car.

NOTE: For LU/LA elevators, emergency terminal speed-limiting devices are not required.

3.6.2 Periodic Test

3.6.2.1 Electric Elevators

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Before testing final terminal stopping devices from the top of the car, determine whether the potential switch on the controller is of the manually or electrically restored type. If it is the manually restored type, operation of the final terminal stopping device should not be tested from the car unless someone is in the machine room to reset the controller switch when instructed to do so by the inspector.

Run the car up the hoistway at inspection speed until the upper final terminal stopping device may be reached by hand. Use an insulated object to actuate this device, and try to move the car in each direction. The car should not move; if it does, the inspection should not be continued until this defect is corrected.

The operation of the final terminal stopping device (final limit) and its relation to the cam can be tested by jumping out the normal terminal stopping device and running the car past the terminal floor at inspection speed. The car should stop close to the floor. It may be necessary to jump out the final terminal stopping device to move the car back to floor level. After the final terminal stopping device has been tested, remove all jumpers.

(b) 5-yr Test of Emergency Terminal Stopping Means (for A17.1d-2000 and Earlier Editions); Category 5 Test of Emergency Terminal Stopping Means (for A17.1-2000 and Later Editions). For static control elevators, see 2.28.2.1(b) and for emergency terminal speed-limiting devices, see 5.3.2.

3.6.2.2 Hydraulic Elevators: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Block or tie the device in the functioning position and move the car down. Then attempt to run the car up at rated speed. The emergency terminal speed-limiting device should prevent the car from running in excess of 100 ft/min (0.51 m/s). The car should not run with the emergency terminal stopping device in the functioning position.

3.6.3 Acceptance

3.6.4 References

3.6.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 209.3, 1001.2(c)(8), 1002.2e, and 1003.3(k).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.25.3, 8.10.2.2.3 (h), 8.11.2.1.3(h), 8.11.2.2.5, and 8.10.2.3.2(k).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.25.3, 8.6.4.19.5, 8.10.2.2.3(h), 8.11.2.1.3 (h), and 8.10.2.3.2(k).

ASME A17.3 — Paragraph 3.9.2.

3.6.4.2 Hydraulic Elevators. A17.1-1955 — Rule 320.2.

A17.1d-2000 and earlier editions — Rules 305.2, 1004.2(c)(6), and 1005.2(c)(1).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 3.25.2, 8.10.3.2.3(f), 8.11.3.2.3(h), and 8.11.3.1.3(f).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 8.6.5.14.3(a) and 8.6.5.14.3(h).

ITEM 3.7
(23) CAR LEVELING AND ANTICREEP DEVICES

3.7.1 Periodic Inspections

Verify that stopping accuracy follows the standards applicable at time of installation or alteration. The elevator should stop as close to floor level as equipment adjustment will permit. Where the car stops above the landing, adjustments to leveling devices and/or the control valve may be needed. Verify compliance at several floors to account for overbalance on some equipment as it may differ. If Class C2: Industrial Truck Loading, verify compliance with the required loading condition. For elevators installed to ASME A17.1-2000/CSA B44-00 and later editions, check for conformance with 2.26.11.

NOTE: See also ICC A117.1, ADAAG, and CSA B44, where applicable. Some earlier equipment, such as single- and 2-speed AC controls, may not meet the accessibility requirements or achieve any consistent leveling accuracy due to their design limitation of stopping upon application of the brake, which can be affected by the load, humidity, brake drum temperature, and brake adjustment setting.

3.7.1.1 Electric Elevators. Examine fastenings and clearances of car leveling devices, including cams and vanes located in the hoistway.

3.7.1.2 Hydraulic Elevators. Examine fastenings and clearances of car leveling devices, including cams and vanes located in the hoistway. Ensure anticreep is functioning properly. With the car level with the floor, place a mark on the rail relative to a guide shoe or roller. Lower it slightly more than 1 in. (25 mm) using inspection operation. Turn the car back on normal operation and observe that it levels within 1 in. (25 mm) of the floor level for elevators installed under A17.1-1978 and later editions. For elevators installed prior to the A17.1-1978 edition and/or required to comply with ASME A17.3, observe that the car will level to within 3 in. (76 mm) of the floor. If a manual lowering valve is available in the machine room, required under A17.1-1984 and later editions, it is used as described in 2.32.1.2(b) for testing the anticreep device. Check that the anticreep device remains operative regardless of the position of the car and hoistway doors, emergency stop switch or in-car stop switch, hinged car-platform sill electric contacts, and broken rope, tape, or chain switch for normal stopping devices.

For maintained-pressure hydraulic elevators, operate the car in both directions.

3.7.2 Periodic Test

The elevator should be maintained to provide a stopping accuracy at the landings during normal operation as appropriate for the type of control, in accordance with the applicable Code requirements at the time of installation or alteration.

3.7.3 Acceptance

Where ICC A117.1, ADAAG, or ADA/ABAAG is applicable and where authorized by jurisdictional administrative procedures, each car should automatically stop and maintain position at floor landings with a tolerance of ±13 mm (0.5 in.) under rated loading to zero loading conditions.

In jurisdictions enforcing NBCC, each car should automatically stop and maintain position at floor landings within the guidelines of ASME A17.1/CSA B44, Nonmandatory Appendix E.

Where ICC A117.1, ADAAG, or ADA/ABAAG is not applicable, the vertical distance between the car platform sill and the hoistway door sill on passenger elevators should be in accordance with the following:

(a) The distance cannot exceed ±13 mm (0.5 in.) on initial stop at a landing.

(b) The car must relevel if the vertical distance exceeds 25 mm (1 in.) while loading or unloading.

3.7.4 References

3.7.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.2(b)(2), 210.1e, and 1001.2(c)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.1.6, 2.26.11, 8.10.2.2.3(j), 8.11.2.1.1(u), and 8.6.4.16.

ICC A117.1 (latest edition) — 407.4.4.

3.7.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.2(b)(2), 306.3, 306.4, and 1004.2(c)(7).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.11, 3.26.1, 3.26.3, 8.10.3.2.3(g), and 8.11.3.1.3(g).

ASME A17.3 — Paragraph 4.7.3.

ICC A117.1 (latest edition) — 407.4.4.

3.7.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.11 and 5.2.1.26.

ICC A117.1 (latest edition) — 408.4.4.

3.7.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2004/CSA B44b-04 — Requirement 5.2.2.13.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.2.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.26.11 and 5.2.2.13.

ICC A117.1 (latest edition) — 408.4.4.

ITEM 3.8
TOP EMERGENCY EXIT

3.8.1 Periodic Inspections: Routine Inspections (for A17.1d-2000 and Earlier Editions); Periodic Inspections (for A17.1d-2000 and Later Editions)

(a) For elevators installed under A17.1-1955 through A17.1-1960, check that the top emergency exit opens outward. Verify that the exit is hinged or otherwise attached to the car and can be opened from both inside and the top of the car without the use of special tools. For elevators installed under A17.1-1965 and later editions, and those elevators required to meet ASME A17.3, verify that the top emergency exit is locked and openable only from the top of the car without the use of special tools. For elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, check the emergency exit electric contact.

(b) For elevators in unenclosed hoistways, top emergency exits are prohibited for elevators installed under A17.1b-1989 through A17.1d-2000. On elevators in partially enclosed hoistways installed under ASME A17.1-2000/CSA B44-00 and later editions, check the means to facilitate emergency evacuation.

NOTE: For LU/LA elevators, if manual operation in compliance with ASME A17.1/CSA B44, requirement 5.2.1.28 is provided, no emergency exit is required. Where provided, verify that the top emergency exit is locked and openable from the car top without the use of special tools. Measure the top emergency exit size and clearance. For elevators in unenclosed hoistways, top emergency exits are prohibited.

3.8.2 Periodic Test

3.8.3 Acceptance

Measure the top emergency exit size and clearances.

3.8.4 References

3.8.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 204.1e and 1001.2(c)(12).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.5, 8.10.2.2.3(l), and 8.11.2.1.3(l).

ASME A17.3 — Paragraph 3.4.4.

3.8.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 204.1e {301.7} and 1004.2(c)(9).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.5 {3.14}, 8.10.3.2.3(i), and 8.11.3.1.3(i).

ASME A17.3 — Paragraph 3.4.4 {4.2.3}.

3.8.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5(b) and 2501.15.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.14(b) and 5.2.1.28.

3.8.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.5(b), 2501.15, and 2502.2d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.2, 5.2.1.14(b), and 5.2.1.28.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2, 5.2.1.14(b), and 5.2.1.28.

ITEM 3.9
FLOOR AND EMERGENCY IDENTIFICATION NUMBERING

3.9.1 Periodic Inspections

(a) For elevators installed under A17.1b-1973 and later editions, check that floor numbers have been provided in the hoistways, not less than 4 in. (102 mm) in height, placed on the walls and/or doors of the hoistway at intervals where a person on top of the car can determine the floor position. Check that floor numbers are provided and legible.

(b) For elevators installed under A17.1-1990 and later editions, where more than one elevator's machinery is in a hoistway or machine room, check that emergency identification numbers are provided on the crosshead or on the car frame where there is no crosshead.

3.9.2 Periodic Test

3.9.3 Acceptance

3.9.4 References

3.9.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.7, 211.9, and 1001.2(c)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.29.2, 2.29.1, 8.10.2.2.3(o), and 8.11.2.1.3(o).

3.9.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 100.7 {300.1}, 211.9 {306.11}, and 1004.2(c)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.29.2 {3.1}, 2.29 {3.29}, 8.10.3.2.3(j), and 8.11.3.1.3(j).

3.9.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.1 and 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — There is no reference path to get to 2.29 through Section 5.2.

3.9.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.1, 2501.12, and 2502.8.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — There is no reference path to get to 2.29 through Section 5.2.

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirement 5.2.1.31.

ITEM 3.10
HOISTWAY CONSTRUCTION

3.10.1 Periodic Inspections

Check the condition of the hoistway enclosure and remote counterweight hoistway; note any damage or loose materials.

For elevators installed under A17.1-2000 and later editions, projections greater than 4 in. (102 mm) are required to be beveled.

For elevators installed under A17.1d-2000 and earlier editions, projections greater than 2 in. (51 mm) are required to be beveled.

3.10.2 Periodic Test

3.10.3 Acceptance

Determine if the hoistway enclosure conforms to the building code requirements. Inspect the hoistway enclosure for substantially flush construction. Projections should be properly beveled or protected. For elevators with no top emergency exit installed in unenclosed hoistways, determine that all landings are provided with either hoistway entrances or emergency doors.

3.10.4 References

3.10.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 100 and Rule 1001.2(c)(16).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1, 8.10.2.2.3(p), and 8.11.2.1.3(p).

ASME A17.3 — Section 2.1.

3.10.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 300.1 and 1004.2(c)(11).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.1, 8.10.3.2.3(k), and 8.11.3.1.3(k).

ASME A17.3 — Section 2.1 {4.1}.

3.10.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.

3.10.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Section 2500 and Rule 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1, 5.2.2.1, and 5.2.2.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1, 5.2.2, and 5.2.2.1.

ITEM 3.11
HOISTWAY SMOKE CONTROL

3.11.1 Periodic Inspections

For elevators installed under A17.1-1955 through A17.1b-1980 that serve more than three floors, check that one-third of the required venting is permanently open or automatically opened by a damper. All venting should be to the outside. Portions of the required vents may be closed with glass. This should consist of plain glass, a maximum of $\frac{1}{8}$ in. (3.2 mm) thick. The vent area was required to be a minimum of 3.5% of the cross-sectional area of the hoistway (3 ft^2 min.) for each car.

Verify that elevators installed under A17.1-1981 and later editions are provided with an approved means to prevent the accumulation of smoke and hot gases in case of fire. Ensure that ventilation is in accordance with building code requirements and is in working order. Check that any required openings are in the open position and are not locked or blocked.

NOTE: IBC-2015 and later editions no longer require a vent located at the top of the hoistway.

3.11.2 Periodic Test

3.11.3 Acceptance (23)

Check that means to prevent the accumulation of smoke and hot gases in case of fire is in accordance with the requirements of the building code.

As of the ASME A17.1-2013/CSA B44-13 edition, smoke doors installed directly in front of elevator entrances are required to meet certain requirements. These doors cannot restrict egress from the elevator car once the elevator doors are open or restrict access to the elevator car by firefighters. Ensure that these doors comply with the building code. Also verify that the smoke doors are not mechanically fastened to the elevator entrance frames.

Verify that firefighters are able to visually inspect the elevator lobby when the elevator doors are not more than one-fourth open.

Additional doors or devices are permitted to be deployed only at those hoistway openings of elevators where fire alarm-initiating devices used to initiate Phase I Emergency Recall Operation associated with that elevator have been activated.

3.11.4 References

3.11.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.4 and 1001.2(c)(17).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 2.1.4, 8.10.2.2.3(q), and 8.11.2.1.3(q).

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 2.11.6.3.

3.11.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 100.4 {300.1} and 1004.2(c)(12).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 2.1.4 {3.1}, 8.10.3.2.3(l), and 8.11.3.1.3(l).

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 2.11.6.3 {3.11}.

3.11.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirement 5.2.1.

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 2.11.6.3 {5.2.1.11}.

3.11.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.1 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 through ASME A17.1-2010/CSA B44-10 — Requirements 5.2.1 and 5.2.2.

ASME A17.1-2013/CSA B44-13 and later editions — Requirement 3.1 {5.2.1.11}.

ITEM 3.12
PIPES, WIRING, AND DUCTS

3.12.1 Periodic Inspections

Only pipes, wiring, and ducts used in connection with the elevator may be installed in the hoistway. Check sprinkler piping for leakage. For elevators required to meet ASME A17.3, pipes conveying gases, vapors, or liquids not connected with the operation of the elevator must be guarded so that any discharge will not affect the operation of the elevator.

3.12.2 Periodic Test

3.12.3 Acceptance

Check that sprinkler risers and return piping have been located outside the hoistway. Check that shutoff valves have been provided for each branch line and are accessible outside the hoistway. Check to see that an automatic, nonresetting means is provided to disconnect the mainline power to effected elevators before water is discharged into the hoistway. The Code prohibits sprinkler activation or disconnection of mainline power by smoke detectors.

3.12.4 References

3.12.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 102 and Rule 1001.2(c)(18).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.8, 8.10.2.2.3(r), and 8.11.2.1.3(r).

ASME A17.3 — Paragraph 2.1.4.

3.12.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 102 {Rule 300.3} and Rule 1004.2(c)(13).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.8 {3.8}, 8.10.3.2.3(m), and 8.11.3.1.3(m).

ASME A17.3 — Paragraph 2.1.4 {Section 4.1}.

3.12.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.8.

3.12.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1 and 2500.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.8 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.8 and 5.2.2.

ITEM 3.13
WINDOWS, PROJECTIONS, RECESSES, AND SETBACKS

3.13.1 Periodic Inspections

(a) Hoistway Windows. Elevators installed under A17.1-1971 and later editions are not permitted to have windows in the hoistways.

Where windows are provided in hoistways of existing elevators, verify that they are guarded on the inside or outside as required by local regulations or the Code edition in effect at the time of installation.

For elevators required to meet ASME A17.3, check that every hoistway window ten stories or less above a thoroughfare, and every such window opening three stories or less above a roof of an adjacent building, are guarded. Also, check that every exterior hoistway window has been identified with 4 in. (102 mm) high letters marked "ELEVATOR."

(b) Projections, Recesses, and Setbacks. Determine that guards for recesses in the hoistway enclosure opposite car openings, other than landing entrances, are in place and secured. Check that landing sill guards, dust covers, and landing entrance toe guards are securely in place.

3.13.2 Periodic Test

3.13.3 Acceptance

3.13.4 References

3.13.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.5, 100.6, 110.10, and 1001.2(c)(19).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.5, 2.1.6, 8.10.2.2.3(s), and 8.11.2.1.3(s).

ASME A17.3 — Paragraphs 2.1.2 and 2.1.3.

3.13.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 100.5 and 100.6 {300.1}, 110.10 {300.11}, and 1004.2(c)(14).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.5, 2.11.10 {3.11}, 8.10.3.2.3(n), and 8.11.3.1.3(n).

ASME A17.3 — Paragraphs 2.1.2 and 2.1.3 {Section 4.1}.

3.13.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.1 and 2500.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.

3.13.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.1, and 2500.11.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1 and 5.2.2.

ITEM 3.14
HOISTWAY CLEARANCES

3.14.1 Periodic Inspections

3.14.1.1 Electric Elevators. Observe the clearances between car and hoistway enclosures, between car and counterweight or counterweight screen, between the counterweight and hoistway enclosure, and between adjacent cars.

3.14.1.2 Hydraulic Elevators: Car Horizontal Clearances. Observe the clearances between car and hoistway enclosures, and between adjacent cars.

3.14.2 Periodic Test

3.14.3 Acceptance

Measure and record horizontal hoistway dimensions and clearances. See Tables 3.14.3-1 and 3.14.3-2.

Table 3.14.3-1
Horizontal Clearances

Clearances Between	Horizontal Clearance, in. Maximum	Horizontal Clearance, in. Minimum	Rqmt. No.
Car platform and landing sill			
Side-post construction	1½	½	2.5.1.4
Corner-post construction	1½	¾	2.5.1.4
Car and hoistway enclosure (except sides used for loading and unloading)	...	¾	2.5.1.1
Car platform sill and hoistway enclosure for full width of hoistway opening			
Vertically sliding hoistway doors	7½	...	2.5.1.5
Other than vertically sliding hoistway doors	5	...	2.5.1.5
Car and counterweight	...	1	2.5.1.2
Two adjacent cars	...	2	2.5.1.3
Counterweight and counterweight screen	...	¾	2.5.1.2
Counterweight and hoistway enclosure	...	¾	2.5.1.2

GENERAL NOTES:
(a) Requirements (Rqmts.) are in ASME A17.1/CSA B44.
(b) 1 in. = 25.4 mm.

Table 3.14.3-2
Horizontal Distances

Type of Elevator or Door	Distance Between Horizontally Sliding or Swinging Hoistway Door and Edge of Landing Sill, in. Maximum	Distance Between Horizontally Sliding or Swinging Hoistway Door and Edge of Landing Sill, in. Minimum	Rqmt. No.
Elevators that can be opened from car only			
New installations	4	...	2.11.4
New or altered elevators in existing multiple hoistways			
Swinging doors	4	...	2.11.4
Sliding doors	5	...	2.11.4
Automatic or continuous-pressure operation			
Sliding hoistway doors	2¼	...	2.11.4
Swinging hoistway doors	¾	...	2.11.4
Swinging hoistway doors on freight elevators not accessible to the general public and located in industrial-type buildings	4	...	2.11.4

GENERAL NOTES:
(a) Requirements (Rqmts.) are in ASME A17.1/CSA B44.
(b) 1 in. = 25.4 mm.

3.14.4 References

3.14.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Sections 107 and 108 and Rule 1001.2(c)(20).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.4, 2.5, 8.10.2.2.3(t), and 8.11.2.1.3(t).

ASME A17.3 — Section 2.4.

3.14.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 108 {Rule 300.9} and 110 {Rule 300.11} and Rule 1004.2(c)(15).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5 {3.5}, 8.10.3.2.3(o), and 8.11.3.1.3(o).

ASME A17.3 — Section 2.4 {4.1}.

3.14.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.8 and 2500.9.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.4 and 5.2.1.5.

3.14.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.8, and 2500.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1, 5.2.2.1, and 5.2.2.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1, 5.2.2, and 5.2.2.1.

ITEM 3.15
MULTIPLE HOISTWAYS

3.15.1 Periodic Inspections

Observe the clearances between cars in a multiple hoistway. See Table 3.14.3-1.

3.15.2 Periodic Test

3.15.3 Acceptance

Verify that multiple hoistways are constructed in compliance with the building code. Measure the running clearances between cars including equipment attached to the car.

3.15.4 References

3.15.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.1d and 1001.2(c)(21).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.1.4, 8.10.2.2.3(u), and 8.11.2.1.3(u).

3.15.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 100.1d {300.1} and 1004.2(c)(16).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.1.4 {3.1}, 8.10.3.2.3(p), and 8.11.3.1.3 (p).

3.15.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.1(a).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.1.1.

3.15.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1 and 2500.1(a).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.1.1 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.1.1 and 5.2.2.

ITEM 3.16
TRAVELING CABLES AND JUNCTION BOXES

3.16.1 Periodic Inspections

(a) Junction Boxes and Traveling Cable Supporting Means. Hoistway and car junction boxes should be securely fastened with covers in place. Examine the supporting means of the cable at the connection points. Where a steel member is used to support the traveling cable, examine its attachment to the hoistway or car connection point and verify that it is securely fastened. The live load on steel supporting fillers should hang in the direction of tightening of the supporting bolt or other means of fastening and the dead end should be taped or clamped to the live end. Examine for any evidence of wear or breaks in the steel supporting fillers, which may damage the insulation of the conductors or cause the traveling cable to release, causing strain or breakage to the conductors at the terminal lugs.

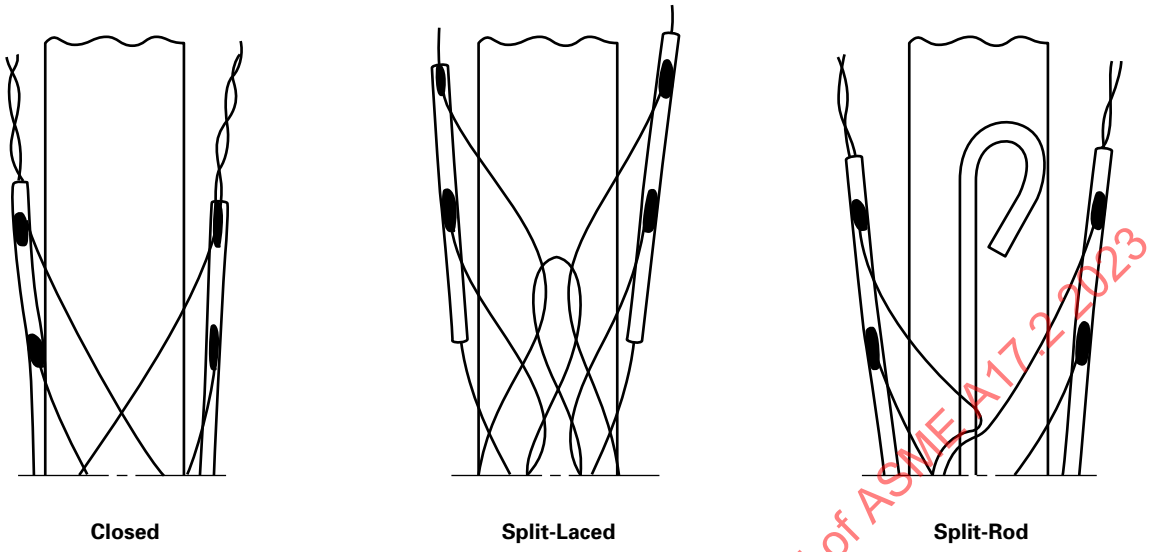
(b) Flexible Wire Mesh Automatic Tightening Devices. Where a flexible wire mesh automatic tightening device is used, examine the grip to be sure that it is securely fastened to its support at the hoistway or car connection point. Examine the eye of the grip attached to the supporting member. When a double-eye attachment is used, the eyes should be attached so they share the load equally and do not exceed 15 deg from the axis of the vertical cable.

There are basically three types of flexible wire mesh automatic tightening devices (see Figure 3.16.1-1)

(1) closed type
(2) split-laced type
(3) split-rod type

Examine the grip where the eye is attached to the wire mesh section for any visible signs of wear or breakage. This point is subject to damage because of flexing of the cable. It is recommended that the lower section of the grip be secured to the traveling cable to prevent triggering (total or partial relaxing of the grip) and culminate in milking of the grip (slight movement of grip on the outer section of the traveling cable). Examine for damage caused by the securing means. The triggering of the grip may cause the cable to release, thereby placing strain or breakage on the individual conductors. Milking of the grip may cause wear to the insulation of traveling cable.

Figure 3.16.1-1
Self-Tightening Grips



(c) Traveling Cables. Examine the traveling cables for
(1) excessive twists or kinks
(2) damage due to chafing
(3) intertwining of multiple cables
(4) clearance from hoistway equipment such as buffers, plungers, brackets, or beams

3.16.2 Periodic Test

3.16.3 Acceptance

Check that traveling cables are properly installed, supported, and protected against damage. Traveling cables should be supported by one of the following means:
(a) by an internal steel supporting member
(b) by looping the cables around supports for unsupported lengths of less than 100 ft (30.5 m)
(c) by suspending from the supports by a means that automatically tightens around the cable when tension is increased for unsupported lengths of up to 200 ft (61 m)

3.16.4 References

3.16.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 102.1 and 1001.2(c)(22).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.8.1, 8.10.2.2.3(v), and 8.11.2.1.3(v).

ASME A17.1S-2005 and later editions — Requirements 2.8.2, 8.10.2.2.3(v), and 8.11.2.1.3(v).

NFPA 70 or CSA C22.1, as applicable.

3.16.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 102.1 {300.3} and 1004.2(c)(17).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.8 {3.8}, 8.10.3.2.3(q), and 8.11.3.1.3(q).

NFPA 70 or CSA C22.1, as applicable.

3.16.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.8.

3.16.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1 and 2500.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.8 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.8 and 5.2.2.

ITEM 3.17
DOOR AND GATE EQUIPMENT

3.17.1 Periodic Inspections

(a) Car and Hoistway Door and Gate Operating Devices, Locking and Contact Devices, and Interlocking Retiring Cams

(1) Examine all hoistway and car door or gate operating motors and cams. Check locking and contact devices, switches, or other operating mechanisms located on top of the car or in the hoistway. Determine whether they are in proper working order, securely fastened in place, and properly lubricated. Check hydraulic door operators for any oil leakage.

(2) Examine any stationary or retiring cams, operating interlocks, interlock contacts, or door operators. Determine whether they are in correct alignment with

the roller arm of the interlock or door operating mechanism. Check whether their travel is sufficient to ensure proper operation of the interlocks or door operators.

(3) Examine relating chains, sprockets, and wire cables for proper tension and note any excessive wear.

(4) Test hoistway door operators actuated by magnetic controls to determine the car is within the landing zone, or within the limits of the leveling zone where an automatic leveling device is provided, before the control causes the door operator to open to the hoistway door. Check that the car is at rest or substantially level with the landing before the door is in the fully open position. Air-operated (pneumatic) doors must meet similar requirements, provided they are manually controlled. The car must be within the landing zone or within the leveling zone before the door operating device is in a position to engage the door operating cam.

(5) Examine the nameplates on hoistway door or gate interlocks, combination mechanical locks and electric contacts, and car door or gate electric contacts. Verify that they are of a type approved by the authority having jurisdiction. For elevators installed under A17.1-1987 and later editions, check that mercury tube switches have not been used for electric contacts.

(6) Combination mechanical locks and electric contacts of the hoistway unit system are permitted by A17.1-1955 and later editions on freight elevators under restricted conditions.

(-a) Inspect mechanical locks operated manually from the top of the car, where used, with hoistway door or gate electric contacts. With the door or gate in the fully closed position, pull on the door or gate, which should be held closed by the lock. Determine whether the locking member is in a position to lock the door when or before the contact is closed by the door or gate.

(-b) Where the locking members of such devices are operated by car cams, place the door or gate in the fully closed position and move the car a sufficient distance away from the floor to permit the locking member to lock the door or gate. With the car in this position, pull or push on the door, which should be held closed by the lock. Release the lock manually and open the door or gate. Then slowly close it to the position where the electric contact just closes and note whether the locking member is in a position to lock the door.

(b) Car and Hoistway Door, Gate Hangers, and Equipment

(1) Examine the condition of hoistway and car door or gate hangers, tracks, and guides to determine they are securely fastened in place, are engaged and not worn so that the doors will not come out of their guideway at any point in their travel, and are lubricated. If the guides are not made out of fire-resistive materials, check that tabs (this is not the hoistway door safety retainer) to retain the door in place during a fire are engaged in the guideway. Check that the door frames are securely fastened to the building structure. Hoistway door safety retainers are required on elevators installed under ASME A17.1-1993/CSA B44-1985 and later editions.

NOTE: The requirement that hoistway door panels and guides meet certain fire-resistive criteria was specifically stated in Part 1 for horizontally sliding doors until A17.1c-1986 and for vertically sliding doors until A17.1-1984. However, where required by requirement 2.1.1, the entire entrance assembly is still required to meet the fire-resistive criteria, but this is now specified in requirement 8.3.4.

(2) When multipanel entrances are provided, check that they are interconnected or equipped with interlocks on each driven panel for elevators installed under A17.1-1990 and later editions. A17.1b-1989 and earlier editions required the panels to be interconnected. Examine interconnections of the panels of multisection doors. Determine if they are in proper condition and are securely fastened to the door panels. Examine interconnections, whether in hanger chains, ropes, or other parts, or in the door closer arms and pins. Check for any wear, which might cause the panels to become disconnected from each other and permit the car to operate with one or more of the panels open. On two-speed entrances for elevators installed under A17.1-1990 and later editions, check that the slow and fast panels are provided with a secondary mechanical interconnecting means. On center-opening doors with a single interlock, check that the interlock is operated by the nondriven panel for elevators installed under A17.1-1990 and later editions.

(3) Horizontally sliding or single-section swinging doors of automatic elevators must be provided with door closers arranged to close an open door automatically if the car leaves the landing zone for any reason. Check the door closers by manually opening the doors to the fully open position, then release the doors. As they are returning to the closed position, manually stop and release the doors at approximately the halfway point and at approximately 2 in. (51 mm) from the strike jamb. Verify that the doors return to the fully closed and locked position.

(4) Examine hoistway and car door or gate counterweights to determine they are properly guided or boxed to retain the counterweight if the suspension means breaks.

(5) Examine car and hoistway door or gate suspension members together with their connections, pulleys, and pulley supports.

(c) Restricted Opening of Hoistway Doors and/or Car Doors on Passenger Elevators. For elevators required to comply with the restricted opening requirements (see Item 1.18), check that the car doors can be opened from the top of the car within specified zones, without the use of special tools.

(d) Landings Locked Out of Service. Determine that the following landings are not locked out of service:

(1) top and bottom landings

(2) for elevators installed under A17.1b-1989 and later editions, the designated and alternate landings for Phase I firefighters' service and all Phase II landings

Check that automatic fire doors can be opened manually from the hoistway side and that they do not lock any doors that lead to building exits.

(e) Hoistway Door Interlocks: Auxiliary Lock. A 4-in. (102-mm) locking range is permitted on elevators operated from inside the car only. An auxiliary lock is required; either it is incorporated in the door closing mechanism or it consists of a rack attached to the landing sill or top track and an engaging pawl on the door. When the doors are power closing, the auxiliary lock is usually placed on the closing mechanism to prevent damage.

3.17.2 Periodic Test

3.17.3 Acceptance

Check that entrance panel(s), frame hardware, and transoms are labeled by a certifying agency acceptable to the authority having jurisdiction, when they are installed in fire-resistive construction. A single label may be provided for the complete entrance assembly. Check that interlocks or combination mechanical locks and electric contacts and car door or gate electric contacts are labeled by a certifying agency acceptable to the authority having jurisdiction.

When gasketing material is applied to entrances with a fire-protection rating, check that it has been tested and labeled by a certifying agency acceptable to the authority having jurisdiction.

Check that center-opening doors are mechanically interconnected or that there is an interlock on each driven panel. On horizontally sliding doors provided with a single interlock, check that the door closer is attached to the leading panel that moves in the opposite direction. Check the secondary mechanical interconnecting means on multispeed doors.

3.17.4 References

3.17.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Sections 110 and 111 and Rules 210.1e and 1001.2(c)(23).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11, 2.12, 8.10.2.2.3(w), and 8.11.2.1.3(w).

ASME A17.1 — Inquiry 96-71.

ASME A17.3 — Sections 2.6 and 2.7.

3.17.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 110 {Rule 300.11} and 111 {Rule 300.12} and Rules 210.1e {306.3} and 1004.2(c)(18).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11 {3.11}, 2.12 {3.12}, 8.10.3.2.3(r), and 8.11.3.1.3(r).

ASME A17.1 — Inquiry 96-71.

ASME A17.3 — Sections 2.6 and 2.7 {4.1}.

3.17.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.11 and 2500.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.11, 5.2.1.12, and 5.2.1.26.

3.17.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2500.11, and 2500.12.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.1.11, 5.2.1.12, 5.2.2.1, and 5.2.2.13.

A17.1-2004 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.11, 5.2.1.12, 5.2.2.1, and 5.2.2.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.11, 5.2.1.12, 5.2.2, and 5.2.2.13.

ITEM 3.18
CAR FRAME AND STILES

3.18.1 Periodic Inspections

Failure of older car frame stiles (upright structural members) has occurred often enough for these members to receive special attention. Make a careful examination of the stiles at the lowest bolt of the car frame crosshead gusset plate. Note any evidence of cracks on the stiles, especially directly in line with the bottom gusset bolts. If any blistering of paint is noted, scrape to expose the metal and determine its condition. If a crack appears, it is probable that it will be found to have started from the outer edge of the stile flange. Check that welded repairs and required written certification are in compliance with the Code. Wood car frames are prohibited by A17.1-1955 and later editions.

3.18.2 Periodic Test

3.18.3 Acceptance

3.18.4 References

3.18.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Sections 203 and 213 and Rules 1001.2(c)(24), 1200.4, and 1202.4a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.15, 8.8, 8.10.2.2.3(x), 8.11.2.1.3(x), 8.6.2.1, 8.6.2.2, and 8.7.2.15.1.

3.18.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 213 {Rule 302.5} and Rules 301.6 and 1004.2(c)(19).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.8 {3.18.5}, 3.15, 8.10.3.2.3(s), and 8.11.3.1.3(s).

3.18.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.4 and 2501.14.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.15 and 5.2.1.30.

3.18.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.14 and 2502.2.

A17.1-2000 and later editions — Requirement 5.2.2.3.

ITEM 3.19
GUIDE RAILS, FASTENINGS, AND EQUIPMENT

3.19.1 Periodic Inspections

For car and counterweight guide rails, rail fastenings, car crossheads, and car guiding members, the following requirements shall be met:

(a) Examine the guide rails, paying particular attention to the condition of the surfaces and the correct alignment of the joints. Repeated operation of the car safety or improperly adjusted or loose car guide shoes that permit the safety jaws to run against the rail surfaces frequently cause serious wear or scoring of the rails and the safety jaws.

Where sliding-type guide shoes are used, determine that rails are free of lint and dirt and are adequately but not excessively lubricated and that the proper lubricant, as indicated on the crosshead data plate, has been used. Where roller guides are used, rails should be clean and dry without lubricant.

(b) Check the following fastenings to verify that they are sound and tight, and that there are no missing bolts or guide clips:

(1) rails to brackets
(2) brackets to building construction
(3) fishplate bolts
(4) crosshead connection bolts
(5) car guide shoe bolts

3.19.1.1 Electric Elevators: Alignment of Guide Rails. If any excessive or irregular motion of the car was noted during the in-the-car inspection, examine guide rail alignment. Examine the counterweight guide rails for distance between guides.

3.19.1.2 Hydraulic Elevators: Alignment of Guide Rails. If any excessive or irregular motion of the car was noted during the in-the-car inspection, examine guide rail alignment. Examine the sheave guide rails as outlined in 3.19.1 and for distance between guides. On roped hydraulic elevators, inspect the sheave guide rails as specified in 3.19.1.

3.19.2 Periodic Test

3.19.3 Acceptance

3.19.3.1 Electric Elevators. For elevators installed with guide shoes, check that a metal lubrication marking plate has been securely attached to the car crosshead, is readily visible, and is legibly and permanently marked.

3.19.3.2 Hydraulic Elevators. Verify that a metal lubrication marking plate has been securely attached to the car crosshead, is readily visible, and is legibly and permanently marked.

3.19.4 References

3.19.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 205.16, 1001.2(c)(25), and 1206.1d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.17.16, 8.10.2.2.3(y), 8.11.2.1.3(y), and 8.6.4.3.

ASME A17.3 — Paragraph 3.5.6.

3.19.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 200 {Rule 301.1b} and 308 and Rules 301.1, 301.6, and 1004.2(c)(20).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.23 {3.23.2}, 3.28, 3.23, 3.15.1.1.2, 8.10.3.2.3(t), and 8.11.3.1.3(t).

ASME A17.3 — Paragraph 4.9.8.

3.19.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.17 and 5.2.1.23.

3.19.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2a, 2501.1b, and 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 5.2.1.23.2, 5.2.2.3, 5.2.2.10, and 5.2.2.15.

A17.1-2004 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.23.2, 5.2.2.3, 5.2.2.11, and 5.2.2.16.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.23.2, 5.2.2.3, 5.2.2.10, and 5.2.2.15.

ITEM 3.20
GOVERNOR ROPE

3.20.1 Periodic Inspections

Inspect the governor rope for evidence of lubricant being added after installation as the additional lubricant may interfere with the ability of the governor to retard the governor rope and apply the safety. Check the governor-rope data tag and verify that the rope complies with the specification on the governor marking plate. Inspect the governor rope as outlined in Item 3.23 for suspension ropes.

3.20.2 Periodic Test

3.20.3 Acceptance

Verify that the governor rope that has been installed is the correct type, size, and construction as indicated on the speed-governor data plate. See Item 2.12. Check for installation of the required governor-rope data tag.

3.20.4 References

3.20.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 206.5, 1001.2(c)(26), 1202.7, and 1206.1c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.18.5, 8.10.2.2.3(z), 8.11.2.1.3(z), 8.7.2.19, and 8.6.4.2.

ASME A17.3 — Paragraph 3.6.2.

3.20.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 206.5, 301.8, 1001.2(c), 1004.2(c)(23), 1202.7, and 1206.1c.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.18.5, 3.17.1, 8.10.3.2.3(w), 8.11.3.1.3(w), 8.7.2.19, and 8.6.4.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.18.5, 3.17.1, 8.6.4.2, 8.7.2.19, 8.10.3.2.3 (w), and 8.11.3.1.3(u).

ASME A17.3 — Section 3.6 and para. 4.9.7.

3.20.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.7(c).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.18.

3.20.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2501.7(c), and 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.18, 5.2.2.1, and 5.2.2.3.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.18, 5.2.2, and 5.2.2.5.

ITEM 3.21
GOVERNOR RELEASING CARRIER

3.21.1 Periodic Inspections

3.21.1.1 Electric Elevators. Examine the governor-rope releasing carrier on top of the car. Note whether parts are rusted or caked with dirt and whether springs are broken.

3.21.1.2 Hydraulic Elevators. For roped hydraulic elevators installed under A17.1b-1989 and later editions, examine the governor-rope releasing carrier, if provided. Note whether parts are rusted or caked with dirt or paint and whether springs are broken.

3.21.2 Periodic Test: 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

Test the governor releasing carrier as outlined in 2.13.2.1(b).

3.21.3 Acceptance

3.21.4 References

3.21.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 205.15 and 1001.2(c)(27).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.17.15, 8.6.2.4, 8.10.2.2.3(aa), and 8.11.2.1.3(aa).

ASME A17.3 — Section 3.5.

3.21.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 205.15, 301.8, 1004.2(c)(22), and 1005.4.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.17.15, 3.17.1, 8.10.3.2.3(v), 8.11.3.1.3(v), and 8.11.3.4.1.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.17.15, 3.17.1, 8.6.4.20.1, 8.10.3.2.3(v), and 8.11.3.1.3(v).

ASME A17.3 — Paragraph 4.9.6.

3.21.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.17.

3.21.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1, 2501.6, and 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.17, 5.2.2.1, and 5.2.2.3.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.17, 5.2.2, and 5.2.2.5.

ITEM 3.22
WIRE ROPE FASTENING AND HITCH PLATE

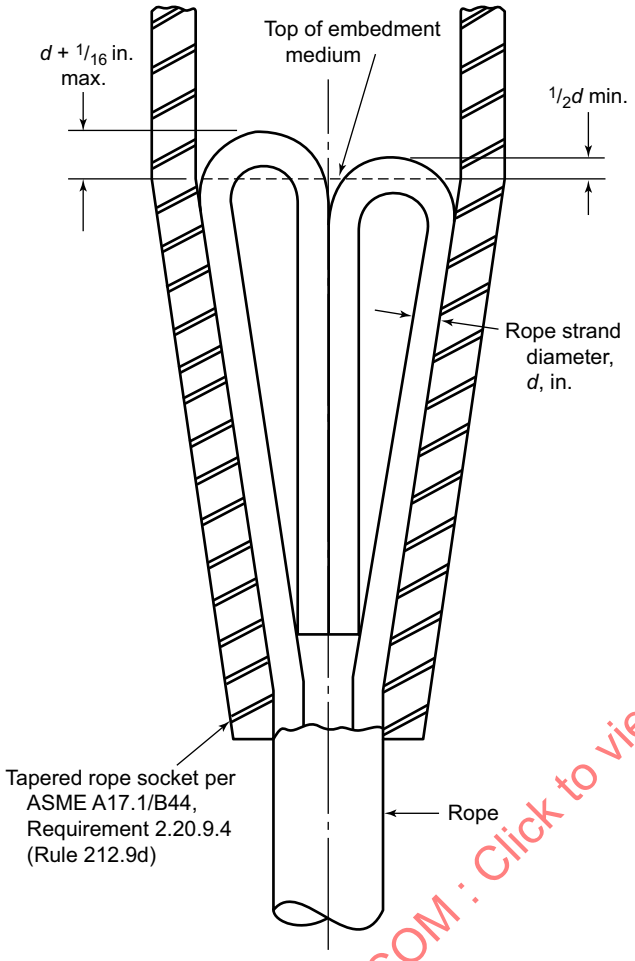
3.22.1 Periodic Inspections

3.22.1.1 Electric Elevators and Roped Hydraulic Elevators

(a) Wire Rope Fastenings and Sheaves. Check that ropes conform to the specifications on the crosshead data plate and rope data tag. Determine that rope fastenings at both the car and the counterweight or dead ends of the ropes have been properly made up.

(b) Auxiliary Rope-Fastening Devices. Where an auxiliary rope-fastening device is provided, determine that the auxiliary device is not carrying the load

Figure 3.22.1.1-1
Cross Section Through Tapered Rope Socket Showing Maximum and Minimum Projection of Loops Above Embedment Medium



GENERAL NOTE: 1 in. = 25.4 mm.

because of rope stretch or failure at the regular rope fastening. Check that an electric switch is provided to open motor and control circuits when the auxiliary rope-fastening device operates. Determine that it is properly adjusted and operational.

(c) Shackle Rods. Where the shackle rod and rope socket are separate pieces, determine that the fastening between the two parts is positive to prevent their separation.

(d) Tapered Rope Sockets. Determine whether there are any broken wires at the point where the rope enters the socket. This is especially important in the case of the car suspension ropes of drum machines. Such breaks usually occur at rope fastenings just inside the small end of the socket and can, in many cases, be detected by prying the individual wires in the strand with a sharp instrument, such as the blade of a knife. Also, determine that the rope, where it enters the socket, has not had wire or strand lays disturbed or changed and no strands bulge out.

(1) Where babbitted metal sockets are used, note any change in color of steel wires caused by overheating when the socket was made up.

(2) Where thermosetting resin composition is used, note the manufacturer's directions must be strictly followed in handling, mixing, pouring, and curing the resin material.

(3) When the embedment medium has cooled or cured and the seizing at the small end has been removed, make a visual inspection. See Figure 3.22.1.1-1 and Table 3.22.1.1-1. Check for retention of the rope lay where it leaves the small end of the socket, full penetration of filler material as evidenced by it being visible around the circumference of the small end of the socket, and correct seating of the strain loops in the filler material.

(e) Other Rope Fastenings. U-bolt-type rope clips (clamps) are prohibited for suspension ropes. Where nontapered rope fastenings are used and approved by the authority having jurisdiction, review the certification and verify that the socket used is marked and identical to the one on the certification. Also, verify that the socket is installed in accordance with the manufacturer's/supplier's instructions. Inspect the socket for secure seating of the wedge and damage to the rope.

(f) Roping Arrangement

(1) Where 1:1 roping is used, determine that any steel plates used to support the rope shackle rods are attached to the underside or to the webs of the car frame members in such a manner that the fastening bolts or rivets are not in tension. Where rope equalizing

Table 3.22.1.1-1
Projection of Rope Strands Above Embedment Medium for 6- and 8-Strand Ropes

	Projection Above Embedment, in.	
Rope Diameter, in.	Maximum	Minimum
$3/8$	0.17	0.06
$7/16$	0.20	0.07
$1/2$	0.21	0.08
$9/16$	0.23	0.09
$5/8$	0.25	0.09
$11/16$	0.27	0.10
$3/4$	0.29	0.11
$13/16$	0.31	0.12
$7/8$	0.32	0.13
$15/16$	0.34	0.14
1	0.36	0.15

GENERAL NOTE: 1 in. = 25.4 mm.

springs are used, determine that shackle rods are not worn at the point where they pass through the steel supporting plate. Note any collapsed springs.

(2) Where 2:1 roping is used, examine dead-end rope hitches. Determine that steel plates for supporting rope shackle rods are placed on top of the supporting beams or are located in such a manner that the bolts supporting the suspension plates are not in tension. Determine that suspension members are securely fastened and that no bending of the supporting members has occurred.

(g) Rope Equalizers. For elevators installed under A17.1-1955 through A17.1-1987, suspension rope equalizers, if provided, must be of the individual compression spring type. Other types of rope equalizers were permitted subject to the approval of the enforcing authority on the basis of adequate tensile and fatigue tests made by a qualified laboratory.

For elevators installed under A17.1a-1988 and later editions, single-bar-type equalizers may be used on winding drum machines subject to limitations. Other types of rope equalizers are required to be tested by an independent laboratory for Code compliance.

Examine rope equalizers and determine the range of their motion with the car in each of the following positions:

(1) midpoint of hoistway

(2) at top terminal landing

(3) at bottom terminal landing

If properly adjusted, the equalizer arms should be at the center of their range of motion at the midpoint of the hoistway and not be at either limit of their range of motion at the top or bottom terminal landing.

(h) Antirotation Device. For suspension ropes installed or replaced under A17.1-1993 through A17.1-1996, check the antirotation device for proper installation. The wire rope used should be a continuous loop through the eye of each shackle and connected with at least two wire rope clips. Verify that the loop is only hand-tight so that it does not restrict the lateral motion of the shackle rods. For elevators installed under A17.1a-1997, verify that there is a means provided to prevent rotation of suspension ropes without restricting their movement.

NOTE: *Electric Elevators.* On winding drum machines, hoisting ropes must be refastened every 12 months for machines located above the hoistway and every 24 months for machines located below or beside the hoistway. At least one turn of rope must remain on the drum when the car is resting on its fully compressed buffer.

3.22.2 Periodic Test

3.22.3 Acceptance

3.22.4 References

3.22.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 212 and Rules 105.3c, 203.13, 1001.2(c)(28), 1200.5, and 1206.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.20, 2.9.3.3, 2.15.13, 8.10.2.2.3(bb), 8.11.2.1.3(bb), 8.6.3, and 8.6.4.10.

ASME A17.3 — Paragraphs 3.12.5, 3.12.8, and 3.12.9.

3.22.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 212 and Rules 105.3c, 203.13, 302.1b, 1004.2(c)(24), and 1200.5.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.20, 2.9.3.3, 2.15.13, 3.18.1.2, 8.10.3.2.3(x), 8.11.3.1.3(x), and 8.6.3.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.20, 2.9.3.3, 2.15.13, 3.18.1.2, 8.6.3, 8.10.3.2.3(x), and 8.11.3.1.3(w).

ASME A17.3 — Paragraph 4.9.10.

3.22.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13, 2500.6, and 2501.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.20, 5.2.1.9, and 5.2.1.15.

3.22.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13, 2502.1, 2500.6, and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.9, 5.2.1.15, 5.2.1.20, 5.2.2.1, and 5.2.2.7.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.9, 5.2.1.15, 5.2.1.20, 5.2.2, and 5.2.2.5.

ITEM 3.23
SUSPENSION COMPENSATION AND GOVERNOR SYSTEMS

NOTE: In July 2010, ASME published ASME A17.6-2010, Standard for Elevator Suspension, Compensation, and Governor Systems. This is recognized in and cross-referenced by ASME A17.1-2010/CSA B44-10 and later editions, requirement 2.20.1. ASME A17.6-2010 is divided into three Parts. Part 1 addresses stranded carbon steel wire ropes for elevators, Part 2 addresses aramid fiber ropes for elevators, and Part 3 addresses noncircular elastomeric coated steel suspension members for elevators. Each of these Parts contains a section titled "Replacement Criteria." Since this data in ASME A17.6-2010 is pertinent to field inspection, inspectors are advised to use and apply this information.

It is important to note that replacement criteria are also addressed in ASME A17.1-2010/CSA B44-10 and later editions, in para. 8.6.3.2, Maintenance, Repair, Replacement, and Testing. For jurisdictions that have adopted ASME A17.1-2010/CSA B44-10 and later editions, replacement criteria in ASME A17.6-2010 apply to all equipment.

3.23.1 Periodic Inspections

(a) Wire Rope Inspection. Examine suspension ropes and note if they conform to Code requirements. Always place the stop switch in the "STOP" position while inspecting the rope.

(1) Internal breakage of wire ropes is difficult to detect and, consequently, may be a greater hazard than surface wear. The surface of the rope may show little or no wear, but if the rope is bent over a short radius, individual wires will snap and in extreme cases the rope may be broken by hand. Such failures are more likely to occur in governor and compensating ropes where the ropes are lightly loaded and the ratio of sheave diameter to rope diameter is smaller.

(2) When replacing suspension ropes, all ropes in a set must be replaced. The ropes in the set must all be from the same manufacturer and of the same material, grade, construction, and diameter.

(3) The lengths of all wire ropes in a set of suspension ropes, and consequently the rope tensions, should be substantially equal if maximum rope life and efficiency are to be obtained. If the tensions are not within tolerance, adjustment is recommended.

(4) If ropes are dirty or overlubricated, a proper inspection may not be possible unless the dirt or excess lubricant is removed.

(b) Wire Rope Inspection Procedure. Note that it is not possible to describe the inspection procedure for every type of wire rope installation nor to outline every detail of the inspection procedure. Select the location from which a proper examination of the rope can best be made. For example, the suspension ropes of an overhead drum machine cannot be examined from the top of the car. See 2.27.1.1.

(1) For suspension ropes on traction machines with 1:1 roping, examination of the ropes should preferably start with the car located at the top of the hoistway and be made from the top of the car, examining the ropes on the counterweight side.

(2) For traction machine ropes with 2:1 roping, examination of the ropes should preferably start with the car located at the top of the hoistway and be made from the top of the car. Examine both the dead-end side and the traveling-end side of the counterweight ropes, and the dead-end side of the car ropes. The remainder of the ropes can be examined at the traction sheave by moving the car up the hoistway.

(3) For overhead winding drum machines with 1:1 roping, the hoisting ropes must be examined from the overhead machinery space. Where the drive machine is located below, those portions of the ropes leading from the drive machine drum or sheave and from the counterweight to the overhead sheaves can be examined from the car top as the car descends, except for a small portion that must be examined from the pit.

(4) On all elevators, mark the ropes with chalk to indicate the location of the unexamined section of ropes and examine them later from the machine room or overhead machinery space, or from the pit.

(c) Wire Rope Inspection Criteria

(1) The following method based on field experience is recommended as a guide for the inspection and evaluation of wire ropes. Give particular attention to where the wire rope passes over sheaves with the car at terminal landings.

(-a) Move the car 2 ft (610 mm) or 3 ft (914 mm) at a time and examine each rope at each of these stops. Note when broken wires begin to appear. Thereafter check at more frequent intervals to determine the rate of increase in the number of broken wires. Any rapid increase in the number of broken wires is significant.

(-b) Count the number of broken crown wires in a rope lay (see Figures 3.23.1-1 and 3.23.1-2) measured along the length of a rope within which the spiral strands complete one turn about the axis. A lay may be considered as a section of rope approximately $6\frac{1}{2}$ times the diameter of the rope, i.e., $3\frac{1}{4}$ in. (83 mm) for $\frac{1}{2}$ in. (13 mm) rope and $4\frac{1}{16}$ in. (103 mm) for $\frac{5}{8}$ in. (16 mm) rope (applies only to 6- and 8-strand configurations).

(-c) Measure for minimum diameter at various points along each rope. The measurement shall be taken across the top of two opposing strands, not in the valleys.

In jurisdictions that have adopted ASME A17.1-2010/CSA B44-10 and later editions, refer to ASME A17.6, Tables 1.10.1.2-1 and 1.10.3-1. In jurisdictions enforcing ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09, refer to ASME A17.1/CSA B44, Tables 8.11.2.1.3(cc)(1) and 8.11.2.1.3 (cc)(3). For jurisdictions enforcing A17.1d-2000 and earlier editions, refer to ASME A17.1/CSA B44, Table 1001.2(c)(29)(c).

NOTE: For LU/LA elevators using aircraft cable, see the manufacturer's MCP for replacement criteria.

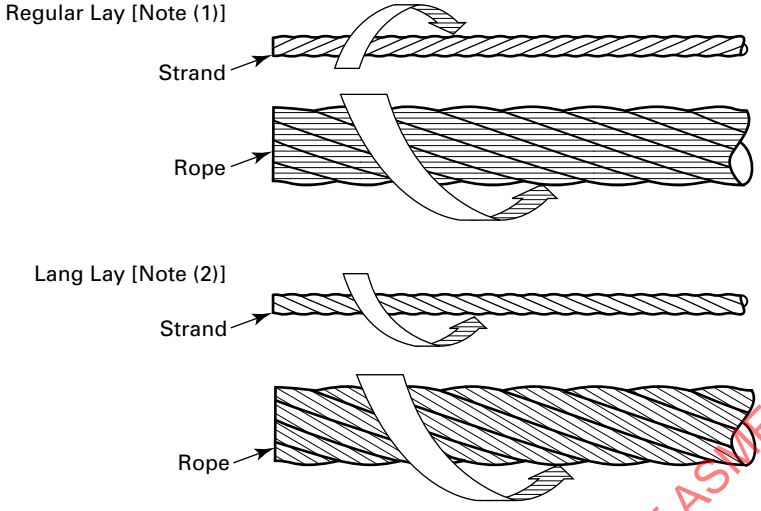
(2) Breaks in the valleys of the ropes, while infrequent, may be an indication of internal breaks. This is not to be confused with a broken outside wire when the original break occurred at a worn crown and a secondary fracture has occurred near the point where two adjacent strands make contact. In this case, a piece of wire has broken out and is missing, and generally both ends of the broken wire remaining are visible.

(3) Note that where preformed rope is used, greater care is required to detect broken wires that do not protrude from the surface of the rope.

(4) See Figure 3.23.1-3 for flowchart "Inspection and Replacement of Steel Wire Ropes" based on ASME A17.6-2010.

(d) Governor Ropes. Governor ropes should be inspected and replaced as outlined for suspension and compensating ropes of traction machines. Check governor rope and data tag. The Code also requires the governor-rope data to be shown on a metal plate attached to the speed governor.

Figure 3.23.1-1
Types of Lay



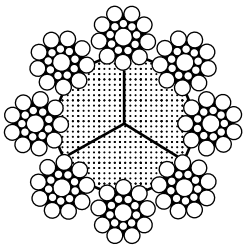
NOTES:

(1) Regular lay: stranded rope in which the direction of the lay of the wires in the outer strand is in the opposite direction from the lay of the outer strands in the rope. For example, the wires in the strand will be spiraled to the left and the strands will be spiraled around the core to the right (right regular lay shown).

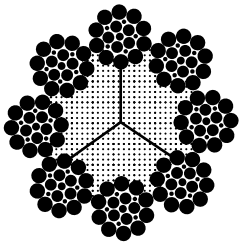
(2) Lang lay: stranded rope in which the direction of the lay of the wires in the outer strand is in the same direction as the lay of the outer strands in the rope. For example, the wires in the strand will be spiraled to the right and the strands will be spiraled around the core, also to the right (right lang lay shown).

Figure 3.23.1-2
Cross Sections of Typical Wire Ropes

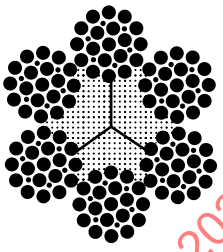
Standard Hoist Ropes



(a) 8 × 19 Seale
[Note (1)]

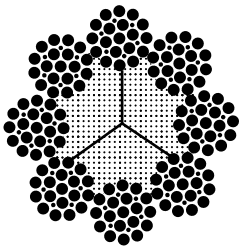


(b) 8 × 21 Filler Wire Type U



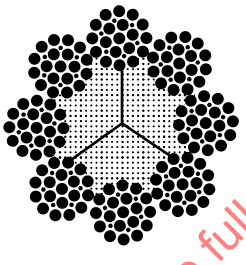
(c) 6 × 25 Filler Wire

Compensation Rope

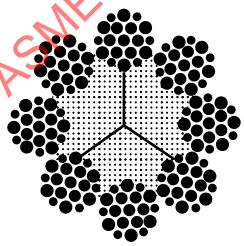


(d) 8 × 25 Filler Wire
[Note (2)]

Governor Ropes

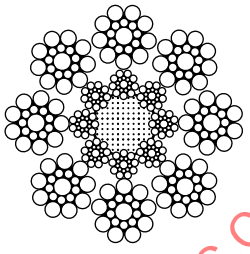


(e) 8 × 25 Filler Wire
[Note (2)]

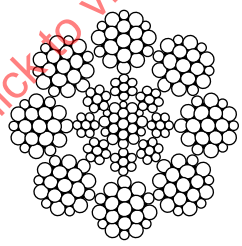


(f) 8 × 19 Warrington
[Note (2)]

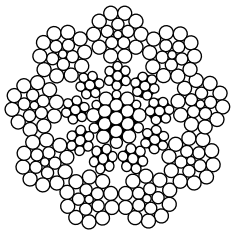
Sample Hoist Rope Designs Used in North America



(g) Dual-Strand Rope

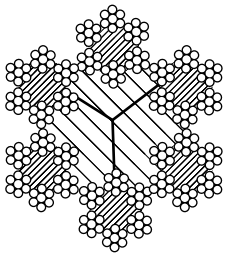


(h) 8-Strand Steel Core



(i) 9-Strand Steel Core

For Illustration Only



(j) Tiller-Rope Construction
[Note (3)]

GENERAL NOTE: Both traction and iron grade are used for compensation and governor ropes.

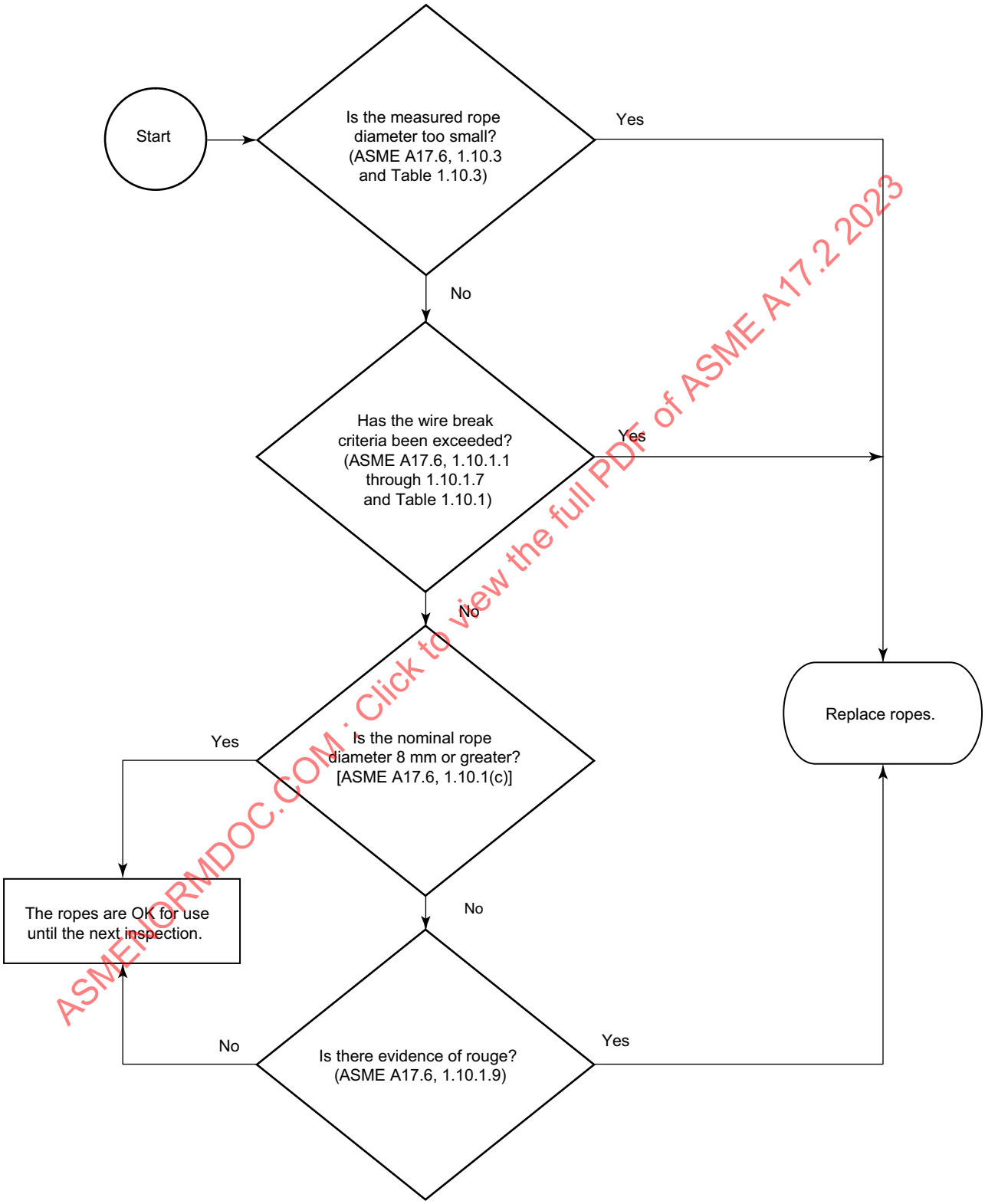
NOTES:
(1) These ropes can be compacted for high-fatigue usage.
(2) Use 8 × 19 Warrington for $^{3}/_{8}$ in. and $^{7}/_{16}$ in. diameter ropes. Use 8 × 25 filler wire for $^{1}/_{2}$ in. and larger ropes.

Figure 3.23.1-2
Cross Sections of Typical Wire Ropes (Cont'd)

NOTES (Cont'd)

(3) Typically phosphor bronze material; used for hand-operating ropes. Not permitted for suspension rope or governor rope, except for replacement on old elevators with governors designed for it. This type of rope is also prohibited to connect the safety to the governor rope (see ASME A17.1/CSA B44, requirement 2.17.12).

Figure 3.23.1-3
Inspection and Replacement of Steel Wire Ropes



(1) If a governor rope has been replaced since the last inspection, determine that the new rope is of the same material, diameter, and construction as that specified on the governor marking plate. If not, a test of the car safety and governor is required.

(2) Ensure wire ropes that have been previously installed have not been used.

(e) Equal Tensioning Among Suspension Members. Ensure that suspension system members have been checked for equal tensioning (ASME A17.1/CSA B44, requirement 8.6.4.1.3). If the range of tension readings exceeds 10%, have the tension adjusted. Examples of calculations are contained in Nonmandatory Appendix H. Check on-site documentation (ASME A17.1/CSA B44, requirement 8.6.1.2.2) for unique criteria to verify equal tensioning.

(f) Broken Suspension Member Detection Means, Residual-Strength Detection Means, and Traction-Loss Detection Means. When broken suspension member detection, traction-loss detection, and/or residual-strength detection is required, verify that test procedures are in the MCP and have sufficient detail to be accomplished by elevator personnel. Verify that the key required for traction-loss detection reset means is available for Group 1 security personnel.

3.23.2 Periodic Test

3.23.2.1 Electric Elevators Category 1 Test

(a) Broken Suspension Member Detection Test. Where required, have the broken suspension member test conducted in accordance with the procedures in the MCP. Verify that the elevator stops in a controlled manner at or before the next landing for which a demand was registered. While the detection means is activated, verify that the elevator will only operate by hoistway access or inspection operation. Verify that manual reset is required to change operation back to automatic.

(b) Suspension Member Residual-Strength Detection Test. Where required, have the suspension member residual-strength detection means test conducted in accordance with the procedures in the MCP. While the detection means is activated, verify that the elevator stops at the next available landing, and the doors open. While the detection means is activated, verify that the elevator will only operate by hoistway access or inspection operation. Verify that manual reset is required to change operation back to automatic.

(c) Traction-Loss Detection Test. Where required, have the protection against traction-loss test conducted in accordance with the procedures in the MCP. Use a stopwatch to determine the time it takes the traction-loss detection means to operate after traction loss occurs. Record this time and check for compliance with the maximum time allowed. While the detection means is activated, verify that the elevator will only operate by hoistway access or inspection operation. Have the mainline disconnect opened and closed, and verify that manual reset is required to change operation back to automatic.

3.23.2.2 Hydraulic Elevators. Where coated ropes are provided, they must be subjected to a magnetic flux test to ensure integrity.

3.23.3 Acceptance

3.23.4 References

3.23.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 212 and Rules 206.7, 1001.2(c)(29)(a), 1200.5, 1202.14, 1203.9, and 1004.2(c).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 2.20, 2.18.7, 8.10.2.2.3(cc), 8.11.2.1.3(cc), 8.6.3, 8.6.4.1.3, 8.7.2.21, 8.7.3.25 and 8.11.3.1.3(x).

ASME A17.1-2010/CSA B44-10 — Requirements 2.20.8.1 through 2.20.8.3, 8.6.1.2(g), 8.6.1.2.2, 8.6.4.1.3, 8.6.4.19.12, 8.6.4.19.13, 8.10.2.2.2(cc)(3)(c), and 8.10.2.2.2(ss) and Appendix U.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 8.6.1.2.1(f), 8.6.11.11, and 8.6.11.14 and Appendix X.

ASME A17.3 — Paragraph 3.12.

ASME A17.6-2010 — Section 1.10.

3.23.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 212 and 1307 and Rules 1001.2(c)(29), 1004.2(c)(25), 1200.4d, 1202.14, and 1203.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 2.20, 8.2.7, 8.11.2.1.3(cc), 8.11.3.1.3(y), 8.6.2.5, 8.7.2.21, and 8.7.3.25.

ASME A17.3 — Paragraphs 4.8 and 4.9.10.

ASME A17.6-2010 — Section 1.10.

3.23.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13 and 2501.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.20 and 5.2.1.18.

3.23.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13, 2501.7, and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.18, 5.2.1.20, and 5.2.2.7.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.18, 5.2.1.20, and 5.2.2.5.

ITEM 3.24
TOP COUNTERWEIGHT CLEARANCE

3.24.1 Periodic Inspections

3.24.1.1 Electric Elevators. With the car at the bottom terminal landing, check the top counterweight clearance.

In many cases the measurement is taken from the rope shackles to the deflection sheave since this would be the first obstruction. With the car located near the top of the hoistway, look at the counterweight rails and determine how high the guides have been running on the rails. From that point, place some calibration chalk or other identifying-type marks on either the rail or the adjacent wall level where the guides travel in order to measure the exact position of the counterweight with the car level at the lowest landing.

Run the car to the lowest landing.

If possible from an adjacent car, look at the marks relative to the position of the counterweights and determine from the marks placed on the wall or rail the exact position of the counterweights. In a single-car hoistway, exercise caution and open the hoistway doors only enough to shine a flashlight in the hoistway to look at the marks placed on the wall or rail to determine the exact position of the counterweights.

Add the car runby, buffer stroke, jump, and 6 in. (150 mm) together. This will determine the minimum required top counterweight clearance. Jump is based on 115% of rated speed where oil buffers are used and the actual governor-tripping speed where spring buffers are used.

NOTE: The projection of rope fastenings or guide shoes above the counterweight structure may not always be an encroachment on the top counterweight clearance. However, excessive projection should not be permitted if interference with sheaves or other equipment would be encountered upon maximum overtravel.

3.24.2 Periodic Test

3.24.3 Acceptance

3.24.3.1 Electric Elevators. Measure and record the top counterweight clearance.

3.24.4 References

3.24.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 107.1h and 1001.2(c)(5).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.4.9, 8.10.2.2.3(e), and 8.11.2.1.3(e).

3.24.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.4.

ITEM 3.25
CAR, OVERHEAD, AND DEFLECTOR SHEAVES

3.25.1 Periodic Inspections

3.25.1.1 Electric Elevators

(a) Car Sheaves. Inspect car sheave and sheave bearings for condition and adequacy of lubrication. Verify that sheave bearings are securely fastened to the frame members. Hammer test the rim and spokes of sheaves as outlined in Item 2.26. Verify that required sheave guards are in place.

(b) Overhead and Deflector Sheaves. Inspect overhead and deflector sheaves where inspection cannot be made from the overhead as outlined in Item 2.26.

3.25.2 Periodic Test

3.25.3 Acceptance

3.25.3.1 Electric Elevators. Record and check the diameter of drums, overhead sheaves, and deflector sheaves for compliance with drawings and specifications.

3.25.4 References

3.25.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 208.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.24, 8.10.2.2.3(f), and 8.11.2.1.3(f).

ASME A17.3 — Paragraph 3.8.1.

3.25.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.9.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.24.

ITEM 3.26
BROKEN ROPE, CHAIN, OR TAPE SWITCH

3.26.1 Periodic Inspections

(a) Check the device by manually opening the switch and attempting to move the car. The car should not move.

(b) Verify that the linkage attached to the switch permits free operation of the switch.

3.26.2 Periodic Test

3.26.3 Acceptance

3.26.4 References

3.26.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 209.2c(2), 210.2(f), 1001.2(c)(9), and 1002.2i.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.25.2.3.2, 2.26.2.6, 8.10.2.2.3(i), 8.11.2.1.3(i), and 8.11.2.2.9.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.25.2.3.2, 2.26.2.6, 8.10.2.2.3(i), 8.11.2.1.3(i), and 8.6.4.19.9.

ASME A17.3 — Paragraph 3.10.4(d).

3.26.4.2 Hydraulic Elevators. ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 8.6.4.19.9, 8.10.3.2.3(jj), and 8.11.3.1.3(hh).

ASME A17.3 — Paragraph 4.7.4(b)(2).

3.26.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.10 and 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.25 and 5.2.1.26.

ITEM 3.27
CROSSHEAD DATA PLATE AND ROPE DATA TAGS

3.27.1 Periodic Inspections

3.27.2 Periodic Test

3.27.3 Acceptance

3.27.3.1 Electric Elevators. Check and verify the information on the crosshead data plate.

(23) **3.27.3.2 Electric and Roped Hydraulic Elevators.** Check and verify the information on the hoist rope data tag and the governor-rope data tag.

Verify the percent counterweight overbalance shown on or adjacent to the crosshead data plate. This must be done, as appropriate for the installation, by either

(a) placing weight inside the car until it balances the counterweight (for 2:1 roping the car and counterweight sheaves need to be at the same vertical height), or

(b) weighing the counterweight and then weighing the car with the appropriate weight inside the car, or

(c) using the motor drive data information

3.27.4 References

(23) **3.27.4.1 Electric Elevators.** A17.1d-2000 and earlier editions — Rules 207.3, 212.2, 1001.2(c)(11), and 1202.14.

ASME A17.1-2000/B44-00 through ASME A17.1-2016/B44-16 — Requirements 2.16.3, 2.20.3, 8.10.2.2.3(k), 8.11.2.1.3(k), and 8.7.2.21.

ASME A17.1-2019/CSA B44-19 and later editions— Requirements 2.16.3, 2.20.2, 2.24.2.3.5, 8.10.2.2.3(k), 8.11.2.1.3(k), and 8.7.2.21.

ASME A17.3 — Paragraph 3.12.2.

3.27.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 207.3, 212.2, 1001.2(c)(11), and 1202.14.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.16.3, 2.20.2, 8.10.3.2.3(h), and 8.7.2.21.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.10.3.2.3(h) and 8.11.3.1.3(bb).

ASME A17.3 — Paragraph 3.12.2.

3.27.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.8 and 2501.13.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.16 and 5.2.1.20.

ITEM 3.28
COUNTERWEIGHT AND COUNTERWEIGHT BUFFER

3.28.1 Periodic Inspections

(a) Check that lock nuts and cotter pins at the top and bottom of the counterweight rods are in place and that filler weights (subweights) are securely held in place.

(b) Check that the counterweight guide shoes are securely fastened to the frame and that the guiding members are not worn excessively. Also, determine if swivel-type or roller-type guide shoes are free to move as intended.

(c) Where 2:1 roping is used, inspect the counterweight sheave and bearings for condition and adequacy of lubrication. Also, determine that the sheave bearings are securely fastened to the counterweight frame and whether required sheave guards are in place. Hammer test the sheave rim and spokes as outlined in Item 2.26.

(d) Check fastenings for compensating chains or ropes to determine that they are securely fastened to the counterweight. For elevators installed under A17.1-1960 and later editions, compensating chains are required to be fastened directly to steel counterweight frames or to a bracket, but not to tie-rods. Determine that compensating chains are suspended so that they will not catch on beams or other projections in the hoistway.

(e) Verify the top counterweight clearance and bottom counterweight runby.

(f) If a counterweight is provided and the space below the hoistway is not permanently secured against access, determine that a counterweight safety is provided.

(g) Verify that a counterweight guard is in place.

3.28.1.1 Electric Elevators. Where the counterweight buffer is attached to the counterweight, determine that the buffer fastening bolts are tight. Determine that the oil buffers are filled with oil to the proper level.

Refer to Item 5.9 for buffer inspection information.

3.28.1.2 Hydraulic Elevators. Verify that a counterweight buffer is not provided.

3.28.2 Periodic Test

3.28.3 Acceptance

3.28.3.1 Electric Elevators. Counterweights without either mechanical compensation or counterweight safeties may be located in a remote hoistway. See Item 4.11.

3.28.4 References

3.28.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Sections 201 and 202 and Rule 1001.2(c)(13).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.3, 2.4.9, 2.21, 2.22, 8.11.2.1.3(m), 8.11.2.1.5(c), 8.10.2.2.3(m), and 8.11.2.3.3.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.3, 2.4.9, 2.21, 2.22, 8.6.4.20.3, 8.10.2.2.3 (m), 8.11.2.1.3(m), and 8.11.2.1.5(c).

ASME A17.3 — Sections 2.1.5, 2.4.3, 3.1, and 3.2.

3.28.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 300.8f, 301.4, 301.9, and 1308.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.3, 3.4.6, 3.22.2, and 8.11.3.1.3(bb).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.3, 3.4.6, 3.22.2, and 8.11.3.1.3(aa).

ASME A17.3 — Paragraphs 4.9.2 and 4.9.6.

3.28.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.2 and 2501.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.21 and 5.2.1.22.

ITEM 3.29
COUNTERWEIGHT SAFETIES

3.29.1 Periodic Inspections

If a counterweight safety is provided, determine that all moving parts of the safety are lubricated, free from corrosion, and free to operate, and that under ordinary operating conditions the clearance between the guide rail and each rail-gripping face of the safety components is correct. Examine the car and counterweight guide shoes and their fastenings to determine that they are properly secured, aligned, and adjusted. Check the gibs or rollers for excessive wear. Check that the rope is free of corrosion and that rope fastenings are secure. Where provided, inspect the safety drum rope and its deflecting sheaves and their fastenings to determine that they are not worn excessively or corroded and that they are in operating condition. Safety rope must be made from a corrosion-resistant material (if it is not a continuation of the governor rope). Use of Tiller rope is prohibited.

Check the buffer portion of Type C safeties to determine that the oil level is within allowable limits. Also, test the buffer compression switch and the oil level device for proper functioning.

3.29.2 Periodic Test

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Check governor-operated counterweight safeties, if provided, as outlined in Item 2.29, and safeties that operate by breaking or slackening of the counterweight suspension means as outlined in 5.8.2.2.

(b) 5-yr Test (for A17.1d-2000 and Earlier Editions); Category 5 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Check governor-operated counterweight safeties, if provided, as outlined in Item 2.29, and safeties that operate by breaking or slackening of the counterweight suspension means as outlined in 5.8.2.2.

3.29.3 Acceptance

(a) Check that a metal marking plate has been securely attached to the safety plank, is readily visible, and is legibly and permanently marked. Check that the data is accurate and complies with the Code.

(b) If a counterweight is provided and the space below the hoistway is not permanently secured against access, verify that a counterweight safety is provided. A counterweight safety may be provided for ascending car overspeed protection.

(c) Test the counterweight safeties as outlined in Item 2.29 for governor-operated safeties or 5.8.2.2 for safeties that operate by breaking or slackening of the counterweight suspension means.

Counterweight safeties, if provided, must be operated by a slackening or breaking of the counterweight suspension means for hydraulic elevators irrespective of the rated speed, and may be operated by a slackening or breaking of the counterweight suspension means for electric elevators with rated speeds not over 150 ft/min (0.75 m/s). Counterweights are seldom used on hydraulic elevators, and counterweight safeties would be used even less frequently.

3.29.4 References

3.29.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 205 and Rules 206.5(e), 1001.2(b), 1001.2(c)(14), 1001.2(c), 1002.3(a), 1003.2, and 1002.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.17.4, 2.18.5.3, 8.10.2.2.3(n), 8.11.2.1.2(y), 8.11.2.1.3(z), 8.10.2.2.2(z), 8.11.2.1.3(n), and 8.11.2.3.1.

ASME A17.1-2007/CSA B44-07 — Requirements 2.17.4, 2.18.5.3, 8.10.2.2.3(n), 8.11.2.1.2(cc), 8.11.2.1.3 (z), 8.11.2.1.3(n), and 8.11.2.3.1.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.17.4, 2.18.5.3, 8.6.4.20.1, 8.10.2.2.3(n), 8.11.2.1.2(cc), 8.11.2.1.3(z), and 8.11.2.1.3(n).

ASME A17.3 — Paragraphs 3.5.2, 3.6.2, and 3.12.2.

3.29.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 301.9, 300.10, 1006.2, 1005.2(c), and 1005.4.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 3.17.2, 3.6.2, 8.11.3.2.3(d), and 8.11.3.4.1.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.17.2, 3.6.2, 8.6.5.16.3(d), and 8.11.3.2.3 (c).

3.29.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.6 and 2500.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.6 and 5.2.1.17.

ITEM 3.30
SPEED TEST

3.30.1 Periodic Inspections

3.30.2 Periodic Test

3.30.3 Acceptance

3.30.3.2 Hydraulic Elevators. Check and verify the information on the crosshead data plate. Have the rated load placed in the car and use a tachometer to verify the rated speed going up and the operating speed in the down direction. The following procedure is recommended:

(a) After the top-of-car refuge area, top-of-car runby, and operation of the top-of-car operating device have been verified, have the rated load placed in the car and run the car to the top with the top-of-car operating device while occupying the refuge area. Be sure to include the weight of the persons in and on top of the car in the load.

(b) Have an assistant inside the car place the car on independent service, if available, and place a call to the lowest landing.

(c) Hold a tachometer against the rail and determine the operating speed in the down direction.

(d) Have the person inside the car place a call to a midlevel landing.

(e) Hold the tachometer against the rail and determine the rated speed.

For roped hydraulic elevators, also verify the information on the hoist rope data tag, the governor-rope data tag, and the rail lubrication marking plate.

3.30.4 References

3.30.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 205.16, 300.8, 301, 1004.2(c)(8), and 1006.2g and Section 3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.4 (NR 301), 8.11.3.1.3(h), and 8.10.3.2.3(cc).

ASME A17.3 — Section 4.9.

3.30.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.8d and 2502.2e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.16.4 and 5.2.2.6.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.16.4 and 5.2.2.4.

ITEM 3.31
SLACK ROPE DEVICE — ROPED HYDRAULIC ELEVATORS INSTALLED UNDER A17.1b-1989 AND LATER EDITIONS

3.31.1 Periodic Inspections

3.31.1.2 Hydraulic Elevators. Visually inspect the slack rope device to verify that there is no damage or interference with its movement.

3.31.2 Periodic Test

Have the car lowered on the safety or supports in the pit to prevent the car from reaching the first floor. The device should cause power to be removed from the lowering valve. Then attempt to run the car up. The device should not allow power to the pump. Jump the device, and move the car up. Then remove the jumper and attempt to run the car by normal means. The car should not operate in either direction until the slack rope device is manually reset.

3.31.3 Acceptance

3.31.3.2 Hydraulic Elevators. Inspect the device and verify that it will operate if any one of the ropes becomes slack.

3.31.4 References

3.31.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 302.1b, 306.4, 1004.2(c)(26), (NR 8.6.5.14.7), and 1005.2f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.18.1.2, 3.26.4, 8.10.3.2.3(z), and 8.11.3.1.3(z).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 3.18.1.2, 3.26.4, 8.10.3.2.3(z), and 8.11.3.1.3(y).

ASME A17.3 — Paragraph 4.9.9.

3.31.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.3 and 2502.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.2.7 and 5.2.2.13.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.5 and 5.2.2.12.

ITEM 3.32
TRAVELING SHEAVE — ROPED HYDRAULIC ELEVATORS INSTALLED UNDER A17.1b-1989 AND LATER EDITIONS

3.32.1 Periodic Inspections

3.32.1.2 Hydraulic Elevators. Inspect the sheave for the following:

(a) secure tight fastening to the plunger or cylinder.

(b) the means to prevent slack ropes from leaving the sheave is securely in place.

(c) guide shoes are seated in the guide rails, and the condition of guides and rails.

(d) rope changes. Where the material, grade, number, or diameter of ropes has changed and the existing sheave has been retained, check for approval by a licensed professional engineer or the original equipment manufacturer.

3.32.2 Periodic Test

3.32.3 Acceptance

3.32.3.2 Hydraulic Elevators. Verify the following:

(a) sheaves exceed the minimum allowable pitch diameter

(b) sheaves are marked with the minimum permissible groove bottom diameter

(c) finished grooves or lining for ropes

(d) fillets are provided for points of changes in diameter

(e) the sheave is in the guide rails, and the condition of rails and guides

3.32.4 References

3.32.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 212 and Rules 208.2, 208.3, 208.5, 301.1b, 302.1b, 307, 1004.2(c)(27), and 1203.9.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.20, 2.24.2, 2.24.3, 2.24.5, 3.23.2, 3.18.1.2, 8.10.3.2.3(aa), 8.11.3.1.3(aa), and 8.7.3.25.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.20, 2.24.2, 2.24.3, 2.24.5, 3.23.2.2, 3.18.1.2.8, 8.7.3.25, 8.10.3.2.3(aa), and 8.11.3.1.3(z).

ASME A17.3 — Paragraph 4.9.8.

3.32.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.13, 2501.9, 2502.2, and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.1.20, 5.2.1.24, and 5.2.2.8.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.20, 5.2.1.24, and 5.2.2.6.

ITEM 3.33
COMPENSATING ROPES AND CHAINS

3.33.1 Periodic Inspections

3.33.1.1 Electric Elevators. Examine compensating chains and fastenings for excessive wear, damage, or deterioration. Sash cord wear is not an indication of chain damage. See Item 3.23 for inspection of compensating ropes.

3.33.2 Periodic Test

3.33.3 Acceptance

3.33.4 References

3.33.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 202.4, 1001.2(c)(30), and 1003.2g.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.21.4, 8.11.2.1.3(dd), 8.10.2.2.3(dd), and 8.10.2.2.5(h).

3.33.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1a and 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 5.2.2.2 and 5.2.2.3.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.1 and 5.2.2.8.

ITEM 3.34
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

3.34.1 Periodic Inspection

(a) Verify that the clearances between the car and the counterweight assembly, the counterweight assembly and the hoistway enclosure, and the counterweight assembly and the nearest obstruction, including the counterweight screens, comply with requirements. These clearances supersede those specified in A17.1a-2002, requirement 2.5.1.2.

(b) Verify that all beams and supports are properly anchored and that all fastening devices are in place.

(c) Verify that all rope retainer guards or rope restraints are in place.

(d) Verify that snag guards, where required, are in place.

(e) Verify that upper- and lower-position restraints are provided on the car or its guiding member.

(f) Measure the clearance between the counterweight frame and the face of the counterweights and verify that it complies with requirements.

(g) Verify that the upper- and lower-position restraints that are attached to the counterweight frame are in place. Verify that the clearance between the upper- and lower-position restraints and the guide rail complies with requirements.

(h) Verify that the car and counterweight guide rail system, including the bracket spacing, fastenings, supports, and joints, comply with requirements.

(i) Verify that the emergency exit can be opened from the top of the car without the use of a key.

3.34.2 Periodic Test

3.34.3 Acceptance

(a) Measure the horizontal car and counterweight clearances and verify that they comply with the requirements.

(b) Verify that rope retainers are continuous over not less than two-thirds of the arc of contact between the rope and its sheave or drum, and are located so not more than one-sixth of the arc of contact is exposed. Rope restraints may be used; if they are used, there must be one for each 30 deg or less of arc contact.

(c) Verify that snag guards are provided for snag points created by rail brackets, rail clip bolts, fishplates, vanes, and similar devices, where

(1) governor ropes are located 20 in. (500 mm) or less from a snag point

(2) the loop of traveling cables below the midpoint of the elevator travel is located 36 in. (915 mm) or less horizontally from a snag point

(d) Verify that the rail system is installed per design, including bracket spacing.

(e) Verify that snag points less than 12 in. (300 mm) from the suspension ropes are properly guarded.

3.34.3.1 Electric Elevators. Verify that snag guards are provided for snag points created by rail brackets, rail clip bolts, fishplates, vanes, and similar devices, where the counterweight end of compensating ropes or chains is located 30 in. (760 mm) or less from a counterweight rail bracket and the loop of compensating chains below the midpoint of the elevator travel is within 36 in. (915 mm) of a snag point.

3.34.3.2 Hydraulic Elevators. Refer to Item 5.16 and ASME A17.1/CSA B44, Table 8.4.11.13.

3.34.4 References

3.34.4.1 Electric Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400 through 2402, 2404 through 2407, and 2409.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.1 through 8.4.3 and 8.4.5 through 8.4.8.

3.34.4.2 Hydraulic Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400.1(a), 2400.1(b), 2400.1(d), 2400.2, and 2401 through 2405.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.1, 8.4.2, 8.4.3.1.1, 8.4.3.1.2, 8.4.3.1.4, 8.4.3.2, 8.4.5, 8.4.7, 8.4.8, and 8.4.11.

3.34.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.21.

Part 4
Elevator — Outside Hoistway

ITEM 4.1
CAR PLATFORM GUARD

4.1.1 Periodic Inspections

Place the car 2 ft (610 mm) or 3 ft (914 mm) above one of the landings with the hoistway door open and inspect the guard to determine that it is in place and securely fastened. In some cases, the guard can be inspected from the pit with the car at the bottom terminal landing.

On truck loading elevators with collapsible gates, check that a head guard, which extends the full width of the hoistway door, is provided when the vertical hoistway door opening is greater than the distance from the car platform to the car top.

4.1.2 Periodic Test

4.1.3 Acceptance

For all elevators where a car leveling or truck zoning device is provided, check that there is a smooth metal guard extending a distance below the platform floor equal to the depth of the leveling or truck zone plus 3 in. (76 mm), but not less than 21 in. (533 mm) on the entrance side of the platform. This apron must have a width equal to or greater than the widest hoistway door opening.

Elevators installed under A17.1-2000 and later editions that are required to comply with unintended car movement must be provided with a platform guard (apron) not less than 48 in. (1 220 mm) high.

4.1.4 References

4.1.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 203.9 and 1001.2(d)(1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.15.9, 8.10.2.2.4(a), and 8.11.2.1.4(a).

ASME A17.3 — Section 3.3.2.

4.1.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 301.6 and 1004.2(d)(1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.15, 8.10.3.2.4(a), and 8.11.3.1.4(a).

ASME A17.3 — Paragraph 3.3.2 {4.2.2}.

4.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 203 and 2501.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.15 and 5.2.1.15.

4.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500, 2502.1, and 2502.2c.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.1, 5.2.2.1, and 5.2.2.5.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.1.15.2 and 5.2.2.

ITEM 4.2
HOISTWAY DOORS

4.2.1 Periodic Inspections

(a) Manually Operated Hoistway Door. Open and close each manually operated hoistway door, and examine each, including any hand-operated latches. Note any broken glass panels in the doors or any structural defects in the frames. Try to open the door by pulling on it, and also by lifting it without touching the lock or latch. If it can be opened in this manner, the lock or latch is defective, or the door has sagged so that the lock or latch is not engaging properly. Check that pull straps are in good condition and are properly secured on the upper panel of vertical-slide biparting doors.

(b) Closed Position of Hoistway Door or Gate. With the car door or gate in the closed position and with the hoistway door or gate fully open, close the hoistway door or gate slowly from the landing side until the maximum clear opening is reached at which the actuation of the elevator operating device will cause the car to start. Measure the distance from the nearest face of the door jamb or gate sill to the nearest edge of the door or gate, or between the meeting edges of biparting doors. Verify that from this position the door cannot be reopened from the landing side.

The measured distance should not exceed the dimensions indicated in Table 4.2.1-1.

Check the condition of the leading edges of the entrance panels. Verify that horizontally sliding doors are in the closed position when the car is waiting at a landing.

(c) Hoistway Door Clearance and Integrity. Verify that door panels will not appreciably deflect, deform, or come out of the guides or tracks. For horizontally sliding doors installed under A17.1b-1992 and later editions, check that

Table 4.2.1-1
Maximum Allowable Opening for a Hoistway Door or Gate in the Closed Position

Door Type	Maximum Allowable Opening [Note (1)]
Horizontally sliding doors (excludes A17.1-1955 through A17.1-1990 installations listed below)	$^3/_8$ in. (10 mm)
Horizontally swinging doors	$^3/_8$ in. (10 mm)
Vertically sliding counterweighted doors or gates	$^3/_8$ in. (10 mm)
Horizontally sliding doors on elevators installed under A17.1-1955 through A17.1-1990 and meeting the following conditions: *(a)* The car is operated from the inside only. *(b)* The doors are power closing or equipped with a door closer that will normally close the doors to $^3/_8$ in. (10 mm) of the closed position and lock them.	4 in. (102 mm) if the hoistway doors are equipped with auxiliary locks 2 in. (51 mm) if the hoistway doors are equipped with mechanical locks and electric contacts
Vertically sliding biparting counterbalanced doors	The distance between the doors when the astragal is within $^3/_4$ in. (19 mm) of the lower panel [Note (2)]

NOTES:
(1) Refers to the distance between door jamb and door edge, gate sill and gate edge, or meeting edges of biparting doors, as measured per 4.2.1(b).
(2) For elevators installed under A17.1-1955 through A17.1a-1991, this distance is when the door is not more than $^3/_4$ in. (19 mm) from its stopped position when provided with interlocks or with mechanical locks and electric contacts within 2 in. (51 mm) of contact with each other. The Code prohibits overlapping rigid astragals and center latches.

safety retainers are provided at the top and bottom of the panels. Verify that the clearances between door panels with each other, their frames, and their sills have not become excessive. The required clearances became effective in the following editions:

Door Type	Maximum Clearance, in.	Code Edition
Horizontal slide	$^3/_8$	1955 and later
Vertical slide	1	1971 and later
Swing	$^3/_8$	1971 and later

GENERAL NOTE: 1 in. = 25.4 mm.

(d) Opening of Locked Hoistway Door Panel(s). On elevators installed under A17.1-1990 and later editions with horizontally sliding and vertically sliding hoistway doors in the closed and locked position, apply 30 lbf (133 N) using a door test scale to the leading edge of the door at the furthest point from the interlock. Measure the gap at the furthest point from the interlock. The difference shall not exceed 1 in. (25 mm) maximum per panel.

4.2.2 Periodic Test

4.2.3 Acceptance

Examine hoistway doors, interlocks, and mechanical locks and electric contacts (see Item 4.4). Determine whether doors meet the requirements for passenger elevators or for freight elevators. Measure the height and width of the entrance. Measure the distances between the hoistway face of horizontally sliding or swinging doors and the hoistway edge of the landing sill (see Table 3.14.3-2). Also, measure the distances between the hoistway face of the hoistway doors and the car door or gate (see 1.7.1). Check that the doors, door frame, and entrance hardware are labeled. See 3.17.3.

4.2.4 References

4.2.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 110 and Rules 111.7, 210.2, and 1001.2(d)(2).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11, 2.12.2.2, 2.12.3.2, 8.10.2.2.4(b), and 8.11.2.1.4(b).

ASME A17.3 — Paragraph 2.6.

4.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 110 {Rule 300.11}; Rules 111.2b and 111.3b {300.12}, 306.4, 1004.2(d)(2), and 1006.2h.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11 {3.11}, 2.12.2.2 and 2.12.3.2 {3.12.1}, 8.10.3.2.4(b), and 8.11.3.1.4(b).

ASME A17.3 — Paragraph 4.1.

4.2.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 110 and 2500.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11 and 5.2.1.11.

4.2.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 110, 2500, and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.11, 5.2.1, and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.11, 5.2.1.11 through 5.2.1.13, and 5.2.2.

ITEM 4.3
VISION PANELS

4.3.1 Periodic Inspections

Where vision panels are provided, note that clear wired glass is used and is secured in place. For elevators installed under A17.1-1990 and later editions, check that the required vision panel grille is in place.

4.3.2 Periodic Test

4.3.3 Acceptance

Check that elevators with automatic or continuous-pressure operation, with manually operated or self-closing hoistway doors of the vertically or horizontally sliding type, have a vision panel at all landings except at landings of automatic operating elevators where a hall position indicator is provided.

Check that all horizontally swinging doors have vision panels.

When a glass door is provided, check the type of glass, thickness, minimum surface area, and edging.

4.3.4 References

4.3.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 110.7 and 1001.2(d)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11.7.1, 8.10.2.2.4(c), and 8.11.2.1.4(c).

ASME A17.3 — Paragraph 2.6.3.

4.3.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 110.7 {300.11} and 1004.2(d)(3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11.7.1 {3.11}, 8.10.3.2.4(c), and 8.11.3.1.4(c).

ASME A17.3 — Paragraph 2.6.3 {Section 4.1}.

4.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 110 and 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11 and 5.2.1.11.

4.3.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 110 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.11 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.11, 5.2.1.11, and 5.2.2.

ITEM 4.4
HOISTWAY DOOR-LOCKING DEVICES

4.4.1 Periodic Inspections

On doors or gates equipped with interlocks, which are unlocked automatically by retiring cams or similar devices, when the car is in the unlocking zone place the car near each landing outside this zone above and below the landing so that the automatic unlocking device on the car cannot release the interlock. With the car away from the landing, try to manually open the hoistway door. It should not be possible to open the door. For sliding doors on elevators installed under A17.1a-1991 and later editions, check that a force of 30 lbf (133 N) applied at the farthest point from the interlock will not open the doors more than 1 in. (25 mm) per panel. Observe the door operation and note that on closing, the doors do not bounce open beyond the closed position.

On vertical sliding biparting doors with retiring cams, check the alignment of the cam and interlock rollers as follows: With the doors open and the car level with the landing, observe the alignment of the interlock roller with the retiring cam. Also note that the interlock roller is near the vertical center of the retiring cam so that the retiring cam cannot operate the interlock when the car is outside the landing zone.

4.4.2 Periodic Test

4.4.3 Acceptance

Determine whether interlocks or mechanical locks and electric contacts are provided [see 3.17.1(a)(6)]. Note that they are inaccessible from the landing side.

Verify that the interlocks, or the mechanical locks and electric contacts, are of a type that have been tested and approved and are marked for identification [see 3.17.1(a)(5)].

Check the retiring cam and note that it is permanently marked with its horizontal force and horizontal movement. Verify that the horizontal force and movement comply with minimum Code requirements. Where a modernization did not replace a retiring cam that was installed under A17.1-1960 or earlier editions, the marking would not be present. See also 3.17.3.

4.4.4 References

4.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 111 and Rule 1001.2(d)(4).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12, 8.10.2.2.4(d), and 8.11.2.1.4(d).

ASME A17.3 — Paragraph 2.7.1.

4.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 111 {Rule 300.12} and Rule 1004.2(d)(4).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12 {3.12}, 8.10.3.2.4(d), and 8.11.3.1.4(d).

ASME A17.3 — Paragraph 2.7.1 {Section 4.1}.

4.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 111 and 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12 and 5.2.1.12.

4.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 111 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.12 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.12, 5.2.1.12, and 5.2.2.

ITEM 4.5
ACCESS TO HOISTWAY

4.5.1 Periodic Inspections

(a) Unlocking Devices. Check any escutcheons on doors and verify that they are intact, securely fastened in place, and not deformed. The unlocking device key should be kept on the premises by a person responsible for the maintenance of the elevators and only accessible to qualified persons in case of emergency. For elevators installed under A17.1-1978 and later editions, the keyway should be located at a height not greater than 6 ft 11 in. (2.11 m) above the floor.

For elevators installed under A17.1a-1997 and later editions, check that there is a hoistway door-unlocking device at each landing where there is an entrance.

(b) Hoistway Access Switches. Hoistway access switches were required for all elevators installed under A17.1-1955. Hoistway access switches are required under certain conditions for elevators installed under A17.1-1960 and later editions. For elevators installed under A17.1b-1983 and later editions and ASME A17.3, the movement of the car by the upper access switch is limited in the down direction to the height of the crosshead above the platform and in the up direction to the length of the platform guard. Check for proper operation. Verify that the switch key is kept in a location where it is available only to authorized persons.

4.5.2 Periodic Test

4.5.3 Acceptance

4.5.4 References

4.5.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 111.6, 111.7, and 1001.2(d)(5).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12.6, 2.12.7, 8.10.2.2.4(e), and 8.11.2.1.4(e).

ASME A17.3 — Paragraph 2.7.4.

4.5.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 111.6, 111.7 {300.12}, and 1004.2(d)(5).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12.6 and 2.12.7 {3.12}, 8.10.3.2.4(e), and 8.11.3.1.4(e).

ASME A17.3 — Paragraph 2.7.4 {Section 4.1}.

4.5.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 111 and 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.12 and 5.2.1.12.

4.5.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 111 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.12 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.12, 5.2.1.12, and 5.2.2.

ITEM 4.6
POWER CLOSING OF HOISTWAY DOORS

4.6.1 Periodic Inspections

4.6.2 Periodic Test

4.6.3 Acceptance

Where both a hoistway door and a car door or gate are opened and/or closed by power, check that the hoistway door and the car door or gate are either

(a) both of the horizontally sliding type

(b) both of the vertically sliding type

4.6.4 References

4.6.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 112 and Rule 1001.2(d)(6).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3, 8.10.2.2.4(f), and 8.11.2.1.4(f).

ASME A17.3 — Paragraph 2.8.

4.6.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.3 through 112.6 {300.13} and 1004.2(d)(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.13.3 through 2.13.6 {3.13}, 8.10.3.2.4(f), 8.11.3.2.3(g), and 8.11.3.1.4(f).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.13.3 through 2.13.6 {3.13}, 8.6.5.14.3(g), 8.10.3.2.4(f), and 8.11.3.1.4(f).

ASME A17.3 — Section 2.8 {4.1}.

4.6.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 112 and 2501.13.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13 and 5.2.1.13.

4.6.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 112 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.13 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.13, 5.2.1.13, and 5.2.2.

ITEM 4.7
SEQUENCE OPERATION

4.7.1 Periodic Inspections

Check the door sequence operation on elevators with vertical biparting power-operated hoistway doors and power-operated car doors or gates.

(a) During the opening operation, the hoistway door should be opened two-thirds or more of its travel before the car door or gate starts to open.

(b) During the closing operation, the car door or gate should be closed two-thirds or more of its travel before the hoistway door starts to close.

4.7.2 Periodic Test

4.7.3 Acceptance

4.7.4 References

4.7.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.6, 112.3d, and 1001.2(d)(7).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.6, 2.13.3.4, 8.10.2.2.4(g), and 8.11.2.1.4(g).

4.7.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.6, 112.3d {300.13}, and 1004.2(d)(7).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.13.6, 2.13.3.4 {3.13}, 8.11.3.2.3(g), 8.10.3.2.4(g), and 8.11.3.1.4(g).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.13.6, 2.13.3.4 {3.13}, and 8.6.5.14.3(g).

ITEM 4.8
HOISTWAY ENCLOSURE

4.8.1 Periodic Inspections

(a) Hoistway Enclosures. Where openwork-type enclosures and doors are permitted and used, check enclosure panels at all floors and note whether they are securely fastened in place. Also, verify that wire netting or mesh required by applicable regulations is in place and securely fastened.

(b) Glass Hoistways (Curtain Walls). A17.1-1978 and later editions require laminated glass, where used for elevator hoistways in non-fire-resistant enclosures. A17.1b-1983 required the laminated glass to comply with ANSI Z97.1. A17.1-1993 recognized both ANSI Z97.1 and 16 CFR Part 1201 and required that each panel be marked as specified in ANSI Z97.1, and that the marking be visible after installation. ASME A17.1-2000/CSA B44-00 added the Canadian standard CAN CGSB-12.1, where applicable, and required marking as specified in the applicable standard be visible on each panel after installation.

4.8.2 Periodic Test

4.8.3 Acceptance

Determine whether the hoistway enclosure conforms to building code requirements for fire-resistive construction.

Verify that means to prevent accumulation of smoke and hot gases, such as venting or pressurization, are provided as required by the applicable building code. See Item 3.11.

4.8.4 References

4.8.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 100.1, 100.4, 100.5, and 1001.2(d)(8).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.1, 2.1.4, 2.1.5, 8.10.2.2.4(h), and 8.11.2.1.4(h).

ASME A17.3 — Paragraphs 2.1.1 and 2.1.2.

ANSI Z97.1 or 16 CFR Part 1201.

4.8.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 100.1, 100.4, 100.5 {300.1}, and 1004.2(d)(8).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.1, 2.1.4, and 2.1.5 {3.1}; 8.10.3.2.4(h), and 8.11.3.1.4(h).

ASME A17.3 — Paragraphs 2.1.1 and 2.1.2 {Section 4.1}.

4.8.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 100 and 2501.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1 and 5.2.1.1.

4.8.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 100 and 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 2.1 and 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.1, 5.2.1.1, and 5.2.2.

ITEM 4.9
ELEVATOR PARKING DEVICES

4.9.1 Periodic Inspections

Check operation of the parking (service key) device and verify that all parts of the device are free to operate and that the door cannot be opened unless the car is at the landing. For elevators installed under A17.1-1978 and later editions, the device should be located at a height not greater than 6 ft 11 in. (2.11 m) above the floor.

4.9.2 Periodic Test

4.9.3 Acceptance

See 4.4.3.

4.9.4 References

4.9.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rule 1001.2(d)(9).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.11.2.1.4(i).

ASME A17.3 — Paragraph 2.7.3.

4.9.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rule 1004.2(d)(9).

A17.1-2000 and later editions — Requirement 8.11.3.1.4(i).

ASME A17.3 — Paragraph 2.7.3 {Section 4.1}.

ITEM 4.10
EMERGENCY DOORS IN BLIND HOISTWAYS

4.10.1 Periodic Inspections

For elevators installed under A17.1-1955, check that emergency doors are closed, locked, and free from fixed obstructions. Check the operation of the door electric contact. For elevators installed under A17.1-1960 and later editions, check for the above and that the emergency doors are self-closing and self-locking. Verify that a cylinder-type lock with a minimum of five-pin or five-disc combination is provided, that the key is removable only in the locked position, and that the lock can be unlocked from the landing side only. Verify that the key for this lock is accessible only to elevator personnel. Check that a sign indicating "DANGER, ELEVATOR HOISTWAY" has been provided on the landing side of each emergency door.

4.10.2 Periodic Test

4.10.3 Acceptance

Check the operation of the self-closing device and the functioning of the self-locking device, and that a door electric contact is provided. Check that it can be unlocked from the landing side only through the use of the cylinder-type lock, with a key that will not unlock any other door or device in the building.

Check that the key is kept where it is available only to elevator personnel.

Verify that a cylinder-type lock with a minimum of either a five-pin or five-disc combination has been provided on the landing side of the door, that the key is removable only in the locked position, and that the door can only be unlocked from the landing side.

NOTE: Emergency doors in blind hoistways are required on hydraulic elevators only where car safeties are used.

4.10.4 References

4.10.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 110.1 and 1001.2(d)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11.1.1 through 2.11.1.3, 8.1, 8.10.2.2.4 (i), and 8.11.2.1.4(j).

4.10.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 110.1 and 1004.2(d)(10).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.11.1.1 through 2.11.1.3, 8.1, 8.10.3.2.4 (i), and 8.11.3.1.4(j).

ITEM 4.11
SEPARATE COUNTERWEIGHT HOISTWAY

4.11.1 Periodic Inspections

Where the counterweight runs within a separate enclosure outside the hoistway, each rope and its fastening should be inspected at the door in the enclosure nearest to the top of the hoistway. Determine that inspection doors in the counterweight enclosure meet the requirements of the Code. Instruct the operator to move the car a short distance at a time and inspect the ropes.

The Code prohibits the location of counterweights outside the elevator hoistway, except for elevators without mechanical compensation or counterweight safeties installed under A17.1f-1975 and later editions. A17.1f-1975 through A17.1b-1983 limited separate counterweight hoistways to observation-type elevators.

For elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, confirm that the enclosed stop switch, the permanent light switch, an outlet, and a light are provided in the hoistway immediately inside the entry door and that all function properly.

4.11.2 Periodic Test

4.11.3 Acceptance

4.11.4 References

4.11.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 103.1, 103.3, 110.1, and 1001.2(d)(11).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.3.1, 2.3.3, 2.11.1.1, 2.11.1.2, 2.26.2.27, 8.10.2.2.4(j), and 8.11.2.1.4(k).

ITEM 4.12
STANDBY POWER SELECTION SWITCH

4.12.1 Periodic Inspections

Check that the standby power selection key is kept in a location where it is available only to authorized persons.

4.12.2 Periodic Test: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

See 1.17.2.

4.12.3 Acceptance

4.12.4 References

4.12.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 211.2, 211.8, 1001.2(d)(13), and 1002.2g.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.27.2, 2.27.8, 8.10.2.2.4(k), 8.11.2.1.4(l), and 8.11.2.2.7.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.27.2, 2.27.8, 8.10.2.2.4(k), 8.11.2.1.4(l), and 8.6.4.19.7.

ASME A17.3 — Paragraph 3.11.2.

4.12.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 207.8 {301.10}, 211.2 and 211.8 {306.11}, 1002.2g, 1004.2(d)(11), and 1005.2c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.27.2 and 2.27.8 {3.27}, 8.10.3.2.4(j), 8.11.2.2.7, 8.11.3.1.4(k), and 8.11.3.2.3.

ASME A17.3 — Paragraph 3.11.2 {4.7.8}.

ITEM 4.13
EQUIPMENT IN PUBLIC LOCATIONS

4.13.1 Periodic Inspections

Check that access panels to elevator equipment are secured and of the appropriate Security Group. Electrical enclosures should be enclosed to protect against accidental contact. Ensure all required signage for equipment identification and use is present.

4.13.2 Periodic Test

4.13.3 Acceptance

4.13.4 References

4.13.4.1 Electric Elevators. ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.7.6.3.2, 8.1.2(e), and 8.6.11.15.

CSA B44.1-14/ASME A17.5-2014 and later editions — Clause 20.22.

NFPA 70 or CSA C22.1, as applicable.

4.13.4.2 Hydraulic Elevators. ASME A17.1-2016/CSA B44-16 and later editions — Requirements 3.7.1, 8.1.2(e), and 8.6.11.15.

CSA B44.1-14/ASME A17.5-2014 and later editions — Clause 20.22

NFPA 70 or CSA C22.1, as applicable.

Part 5
Elevator — Pit

ITEM 5.1
PIT ACCESS, LIGHTING, STOP SWITCH, AND CONDITION

5.1.1 Periodic Inspections

NOTE: For LU/LA elevators, verify that the elevator is installed in a single hoistway. If the LU/LA elevator is equipped with an alternate to bottom car clearance means and the means does not activate automatically, follow instructions displayed in the pit to operate the means. Note the condition of the alternate means prior to entering the pit, if applicable.

(a) Check that the means of access is safe, convenient, and accessible only to authorized persons.

(1) If a pit access door is provided, check that it is locked and is self-closing and can be opened from inside the pit without a key. ASME A17.3 also requires that this door be kept closed and locked.

(2) If access is through the lowest landing, check that the hoistway door-unlocking device or access switch operates properly.

(b) If access is through the lower landing and the pit floor is more than 4 ft (1 219 mm) below the access sill, check the required pit ladder for compliance and secure fastening to the wall. If the ladder is not secure, do not use it. A17.1-1978 and later editions require a pit ladder for pits extending more than 3 ft (914 mm) below the access sill. For elevators installed under ASME A17.1-2007/CSA B44-07 and later editions, verify that a retractable ladder, if provided, is capable of being extended and retracted from the access door. Ensure that the electrical device provided for the retractable ladder, when not in the fully retracted position, causes power to be removed from the drive machine motor and brake.

(c) Check that the stop switch can be reached from the access entrance and that it will prevent the car from operating by placing it in the "STOP" position and having a person in the car attempt to move the car. In addition to the other requirements in A17.1-1971 and later editions, the "STOP" and "RUN" positions must be marked on the switch. For elevators installed under A17.1-1978 through A17.1b-1992, two pit switches are required when the pit access is from the lowest landing and the pit depth is more than 6 ft 7 in. (2 007 mm). For elevators installed under A17.1-1993 and later editions, two pit switches are required when the depth exceeds 66 in. (1 676 mm). Verify that either switch will stop the car.

(d) The pit light switch must be accessible from the pit access door. Turn this switch on and verify that lighting meets Code requirements. A17.1a-1988 and later editions require the bulb to be guarded externally to reduce accidental breakage. These editions also require that a duplex receptacle be provided in the pit.

(e) From a safe position on the landing or pit access door, use a light to visually inspect the pit for the presence of water, accumulation of combustible materials, oil or other materials, or equipment not related to the elevator operation. Carefully note the location of all equipment in the pit and under the car, and identify a refuge area to use in case the car runs down unexpectedly. Note the location of cars and equipment in adjacent hoistways. Sump covers level with the pit floor are required by A17.1a-1985 and later editions. On entering the pit, examine for cleanliness, especially in trenches and depressions allowed for buffers, vertically sliding doors, or structural members.

Check the pit area for the installation of any pipes or ducts not related to operation of the elevator. For elevators installed under A17.1-1993 and later editions, a permanent means of preventing the accumulation of water is required.

(f) For elevators installed under A17.1a-1988 and later editions, check that a duplex receptacle has been provided in the pit. For elevators installed under NFPA 70-1993, check that the receptacle is provided with GFCI protection.

For elevators installed under NFPA 70-1996 and later editions, check that the receptacle is of the GFCI type. A single receptacle supplying a permanently installed sump pump does not require GFCI protection.

5.1.2 Periodic Test

5.1.3 Acceptance

Examine the pit construction for Code compliance, and note that the pit floor is approximately level. If the pit has a drain, verify that a positive means is provided to prevent water, gas, and odors from entering the hoistway. For elevators installed under ASME A17.1-2007/CSA B44-07 and later editions and provided with firefighters' emergency operation, verify the sump pump capacity, except in jurisdictions enforcing the NBCC. Inspect pit ladders for appropriate clearances/distances with regard to rungs,

cleats, or steps, and inspect side rail distances from their centerline to their nearest obstructions and the ladders' load-carrying capacity. For elevators installed under ASME A17.1-2007/CSA B44-07 and later editions, verify that a retractable ladder, if provided, is capable of being extended and retracted from the access door. Ensure that the electrical device provided for the retractable ladder, when not in the fully retracted position, causes power to be removed from the drive machine motor and brake.

5.1.4 References

5.1.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 102, 103.2, 106.1, 210.2(g), 1001.2(e)(1), and 1206.2a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.2.2.5, 2.8, 2.3.2, (NR 106.1), 2.26.2.7, 8.10.2.2.5(a), 8.11.2.1.5(a), and 8.6.4.7.

ASME A17.3 — Paragraphs 2.3.1, 2.3.2, and 2.7.3.

NFPA 70 or CSA C22.1, as applicable.

5.1.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 102 {Rule 300.3} and Rules 106.1 {300.7}, 300.10, 306.4, 1004.2(e)(1), and 1206.2a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.2.2.5, 2.8 {3.8}, (NR 106.1) {3.2}, 3.6, 3.26.4, 8.10.3.2.5(a), 8.11.3.1.5(a), and 8.6.4.7.

ASME A17.3 — Paragraphs 2.3.1, 2.3.2, 2.7.3 {Section 4.1}, and 3.10.4.

NFPA 70 or CSA C22.1, as applicable.

5.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.3, 2500.7, and 2501.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.2, 5.2.1.8, and 5.2.1.26.

NFPA 70 or CSA C22.1, as applicable.

5.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1 and 2502.7

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.2 and 5.2.2.12.

NFPA 70 or CSA C22.1, as applicable.

ITEM 5.2
BOTTOM CLEARANCE, RUNBY, AND MINIMUM REFUGE SPACE

5.2.1 Periodic Inspections

If there has been an obvious change, such as a new buffer, buffer mounting, or rope fastenings, check the car and counterweight bottom clearances and runbys (see 5.2.3).

5.2.1.1 Electric Elevators. The car and counterweight runby may be less than provided upon installation, provided the car and counterweight do not strike the buffer, the top car clearances have not been reduced below that required at the time of installation or alteration (see Item 3.4), and the final terminal stopping devices remain operational (see Items 2.26, 3.8, and 5.4). For spring-return-type oil buffers, where compression is permitted, check that any compression of the car and counterweight buffers does not exceed 25% of the buffer stroke.

Where required, examine the counterweight guard for secure fastening and placement. In some cases, removable blocking is furnished in connection with the counterweight buffer to provide adjustment following rope stretch in order to secure proper counterweight runby without shortening the ropes. If smooth metal plates are used for blocking, examine for evidence of the plates being coated with oil and picked up by the counterweight.

Check the available refuge space for elevators installed under A17.1b-1992 and later editions.

NOTE: For LU/LA elevators and where provided, examine chains attached to the bottom of the counterweight. Check chains for compliance with the requirements.

5.2.1.2 Hydraulic Elevators. Check the available refuge space for elevators installed under A17.1e-1987 and later editions.

If a counterweight is provided, the minimum counterweight runby must not be reduced below the sum of the distance the car can travel above the top terminal landing until the plunger strikes its mechanical stop plus 6 in. (150 mm).

5.2.2 Periodic Test

5.2.3 Acceptance

5.2.3.1 Electric Elevators. Check the bottom car and counterweight clearance and runby for compliance with Code requirements. Position the car above the lower landing to allow access to the pit. The clearance and runby may be determined as follows:

(a) Bottom Car Runby. See Figure 5.2.3.1-1.

(1) Measure the distance from the landing sill to the car floor sill, dimension *a*.

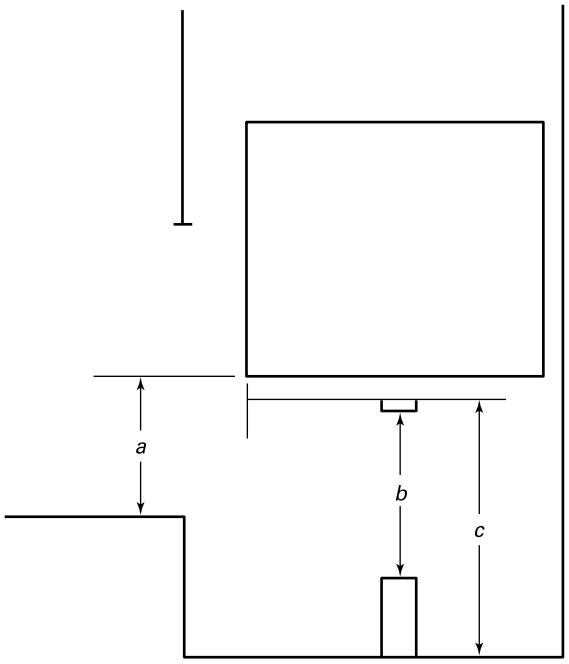
(2) Without moving the car, measure the distance from the buffer to the buffer strike plate on the bottom of the car, dimension *b*. Subtract *a* from *b*; this is the bottom car runby. Note that a negative number indicates that the car will strike the buffer when it is level with the bottom landing.

(3) For spring-return-type oil buffers, where compression is permitted, check that any compression of the car and counterweight buffers does not exceed 25% of the buffer stroke.

(b) Bottom Car Clearance. See Figure 5.2.3.1-1.

(1) Measure the distance (dimension *c*) from the lowest structure member beneath the car, ignoring roller guides, platform aprons, safety jaws, and other

Figure 5.2.3.1-1
Bottom Car Clearance for Electric and Hydraulic Elevators



Bottom car runby = $b - a$
Bottom car clearance = $c - (b +$ buffer stroke)

Example:
Buffer stroke = 10 in.
a = 24 in.
b = 30 in.
c = 66 in.

Bottom car runby = 30 in. − 24 in. = 6 in.
Bottom car clearance = 66 in. − (30 in. + 10 in.) = 26 in.

GENERAL NOTE: Minimum refuge space not less than (a) or (b) below.
(a) 24 in. by 48 in. by 24 in. high
(b) 18 in. by 36 in. by 42 in. high

equipment located within 12 in. (305 mm) horizontally of the hoistway wall.

(2) Measure the distance from the buffer to the buffer striking plate on the car and add the buffer stroke to this measurement *b* plus buffer stroke. Subtract *b* plus buffer stroke from *c* to obtain the bottom car clearance. Do not consider trenches, depressions, or foundation encroachments when making these measurements. Also, use these measurements to determine that no part of the car or equipment will touch the floor when the car rests on its fully compressed buffer.

(3) For LU/LA elevators, where an alternate to bottom car clearance means is provided, check the means for compliance with the requirements.

(c) Bottom Counterweight Runby. With the car level with the top terminal landing, visually check the distance between the bottom of the counterweight and the top of the counterweight buffer in the pit, or where a gravity-return counterweight buffer is used, between the buffer plunger and the striker block in the pit.

For spring-return-type oil buffers, where compression is permitted, check that any compression of the car and counterweight buffers does not exceed 25% of the buffer stroke.

Check the counterweight runby against the data plate shown in the pit.

5.2.3.2 Hydraulic Elevators. Check the bottom car clearance and runby for compliance with Code requirements. Position the car above the lower landing to allow access to the pit. The clearance and runby may be determined as follows:

(a) Bottom Car Runby. See Figure 5.2.3.1-1.

(1) Measure the distance from the landing sill to the car floor sill, dimension *a*.

(2) Without moving the car, measure the distance from the buffer to the buffer strike plate on the bottom of the car, dimension *b*. Subtract *a* from *b*; this is the bottom car runby. Note that a negative number indicates that the car will strike the buffer when it is level with the bottom landing.

(b) Bottom Car Clearance. See Figure 5.2.3.1-1.

(1) Measure the distance (dimension *c*) from the lowest structure member beneath the car, ignoring roller guides, platform aprons, and other equipment located within 12 in. (305 mm) horizontally of the hoistway walls.

(2) Measure the distance (dimension *b*) from the buffer to the buffer striking plate on the car and add the buffer stroke to this measurement. Subtract *b* plus buffer stroke from *c* to obtain the bottom car clearance. Do not consider trenches, depressions, or foundation encroachments when making these measurements.

Also, use these measurements to verify that no part of the car or equipment will touch the floor when the car rests on its fully compressed buffer.

(3) For LU/LA elevators, where an alternate to bottom car clearance means is provided, check the means for compliance with the requirements.

(c) Bottom Plunger Clearance. Verify that with the car on full compressed buffers, the plunger does not strike the bottom of the casing. To do this, lower the car by inspection or manual lowering and fully compress the buffers. On spring buffers that may not be compressed easily, measure the distance from the buffer strike plate to the buffer springs with the car level with the landing (runby). Add to this distance the full stroke of the buffer. With the buffer springs removed, the car must be lowered at least the sum of the two distances.

If a counterweight is provided, verify the bottom counterweight runby and that no counterweight buffers are provided.

Check the counterweight runby against the data plate shown in the pit.

5.2.4 References

5.2.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 103.2, 107.1a, 107.1b, 201.4h, 1001.2(e)(2), 1202.14b, and 1206.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.4.1 through 2.4.3, 2.22.4.8, 8.10.2.2.5 (b), 8.11.2.1.5(b) (NR 1202.14b), 8.6.4.11, and 8.6.5.10.

ASME A17.3 — Paragraphs 2.4.2 and 2.4.3.

5.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 300.8, 302.3c, 1004.2(e)(2), and 1006.2e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.4, 3.18.3.3, 8.11.3.1.5(b), and 8.10.3.2.5 (b).

ASME A17.3 — Section 4.1.

5.2.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 1206.8, 2500.4, 2500.8, and 2501.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.3, 5.2.1.4, and 5.2.1.22.

5.2.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.1a, 2502.2b, and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.2.2, 5.2.2.8, and 5.2.2.10.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.1, 5.2.2.6, and 5.2.2.9.

ITEM 5.3
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

5.3.1 Periodic Inspections

5.3.1.1 Electric Elevators. The lower final terminal stopping device should be located as close to the terminal landing as possible without interfering with the normal terminal stopping device.

Where spring buffers are used, the lower terminal stopping device must stop the car before the car strikes the buffer. With the car parked as near the device as possible and the stop button in the "STOP" position, use a light to check alignment of the device and the operating cam. The roller should be centered on the cam in such a position that the cam or roller will not be damaged when it operates. This must allow free motion of the roller arm and positive opening of the switch contact without damaging the switch. Have the car moved up and check that the device is securely fastened and not loose.

NOTES:
(1) For LU/LA elevators, emergency terminal stopping devices do not apply.
(2) For LU/LA elevators, if a winding drum machine is provided, verify that a slack rope switch is provided in addition to the final terminal stopping device.

5.3.2 Periodic Test

5.3.2.1 Electric Elevators

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Test the operation of the final terminal stopping device (final limit) and its relation to the cam by jumping out the normal terminal stopping device and running the car past the terminal floor at slow speed. The car should stop as close to the floor as practical.

The final terminal stopping device should not function when the car is stopped by the normal terminal stopping device. Where spring buffers are used, verify that the device will function before the buffer is engaged. Measure the length of the cam and, using the bottom car runby and buffer stroke, check that the device will continue to function until the car rests on its fully compressed buffer. After this test, it will be necessary to jump the final terminal stopping device to move the car off of it.

(b) 5-yr Test of Emergency Terminal Stopping Means (for ASME A17.1d-2000/CSA B44-00 and Earlier Editions); Category 5 Test of Emergency Terminal Stopping Means (for ASME A17.1-2000/CSA B44-00 and Later Editions). For static control elevators see 2.28.2.1(b), and for emergency terminal speed-limiting devices see Item 5.9.

5.3.3 Acceptance

5.3.4 References

5.3.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 209.3, 1001.2(e)(4), and 1003.2e.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.25.3, 8.11.2.1.5(d), and 8.10.2.2.5(d).

ASME A17.3 — Paragraph 3.9.2.

5.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.25.

ITEM 5.4
NORMAL TERMINAL STOPPING DEVICES

5.4.1 Periodic Inspections

If the normal terminal stopping device is located in the hoistway, check that it is securely fastened and that the roller is in good condition and aligned with the cam. The alignment with the cam may have to be checked from the top of the car as described in 3.5.1.

5.4.2 Periodic Test

See Items 2.28 and 3.5.

5.4.3 Acceptance

5.4.4 References

5.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 209 and 1002.2e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.25, 8.10.2.2.5(e), 8.11.2.1.5(e), and 8.11.2.2.5.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.25, 8.6.4.19.5, 8.10.2.2.5(e), and 8.11.2.1.5(e).

ASME A17.3 — Paragraph 3.9.1.

5.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 305.1, 1002.2e {1005.2c}, and 1004.2(e)(5).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.25.1, 8.11.2.2.5 {8.11.3.2.3}, 8.10.3.2.5 (e), and 8.11.3.1.5(e).

ASME A17.3 — Paragraph 3.9.1 {Section 4.6}.

5.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.25.

5.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirement 5.2.2.12.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirement 5.2.2.13.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.5.2.12.

ITEM 5.5
TRAVELING CABLES

5.5.1 Periodic Inspections

Examine the lower portion of the traveling cables and their connections to the car as outlined in Item 3.16. The cables should not touch the pit floor or rub against any other equipment. Examine the visible portion of cables for wear, twist, or damage.

5.5.2 Periodic Test

5.5.3 Acceptance

5.5.4 References

5.5.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rule 102.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.8.2, 8.11.2.1.5(f), and 8.10.2.2.5(f).

NFPA 70 or CSA C22.1, as applicable.

5.5.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 102.2 {300.3} and 1004.2(e)(6).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.8.2 {3.8}, 8.10.3.2.5(f), and 8.11.3.1.5(f).

NFPA 70 or CSA C22.1, as applicable.

5.5.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.1 and 2500.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.1 and 5.2.1.8.

5.5.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44-05 — Requirement 5.2.2.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.

ITEM 5.6
GOVERNOR-ROPE TENSION DEVICES

5.6.1 Periodic Inspections

Examine the governor-rope tension device and determine whether

(a) there is sufficient remaining travel of the sheave frame to maintain tension in the governor rope and that the frame is securely fastened to the hoistway

(b) the frame moves freely in its guides

(c) the operation of the sheave while the car is in motion reveals no excessive wear of the sheave, shaft, or bearings, and that all parts are lubricated

(d) there is excess lubricant or other contaminants that may get on the governor rope

(e) with the car operating, there is noise caused by rubbing or a bearing in failure mode

Lifting of the tension weights with the car at rest and the stop switch in the "STOP" position may also assist in detecting defects.

5.6.2 Periodic Test

5.6.3 Acceptance

5.6.3.1 Electric Elevators. See 2.28.3.

5.6.4 References

5.6.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 206.7, 1001.2(e)(7), and 1206.1a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.18.7, 8.10.2.2.5(g), 8.11.2.1.5(g), and 8.6.1.6.2.

ASME A17.3 — Paragraph 3.6.

5.6.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 206.7, 301.8, 1004.2(e)(11), and 1206.1a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.18.7, 8.10.3.2.5(k), 8.11.3.1.5(k), and 8.6.1.6.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.18.7, 8.6.1.6.2, 8.10.3.2.5(k), and 8.11.3.1.5(j).

ASME A17.3 — Paragraph 3.6 {4.9.7}.

5.6.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.18.

5.6.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirement 5.2.2.3.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.

ITEM 5.7
CAR FRAME AND PLATFORM

5.7.1 Periodic Inspections

Examine the car portion of the car frame accessible from the pit and determine whether all fastenings, including those between the car frame and the platform, are securely in place and that the frame is not distorted.

Examine the buffer strike plates to determine that they have not been deformed or removed.

Examine the frame and platform members and their fastenings. Distorted or straightened members, blistered paint, exuded rust from between members or around bolts or rivets, and oil bubbles on members may all be clues to a cracked or fractured member. Where examination reveals the possibility of a fracture, further investigation should be made as identified in Item 3.18.

Check any platform toe guards and aprons on entrance sides and determine whether they are securely fastened to the platform. Check platform balancing weights and determine whether they are securely fastened. Check the platform guard for secure fastening and length. If a truck zoning device is provided, the guard should meet Code requirements for this application.

If a wood car platform is provided, check the fire protection of the underside of the car platform for compliance. If a fire-retardant paint has been used, it should be in good condition. If the underside is clad with sheet metal, it must be in place. ASME A17.1-2000/CSA B44-00 and later editions require exposed platform materials to be metal or to meet flame spread and smoke generation requirements.

5.7.2 Periodic Test

5.7.3 Acceptance

If any platform materials exposed to the hoistway are not metal, provide a test report to verify compliance with flame spread and smoke generation requirements.

5.7.4 References

5.7.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 203.8, 203.6, 207.2b(3), and 1001.2(e)(9).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.15.8, 2.15.6, 2.16.2.2, 8.10.2.2.5(i), and 8.11.2.1.5(i).

ASME A17.3 — Section 3.3.

5.7.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 308 and Rules 301.6, 302.2c, and 1004.2(e)(7).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.28, 3.15, 3.18.2.3, 8.10.3.2.5(g), and 8.11.3.1.5(g).

ASME A17.3 — Section 3.3 {para. 4.2.2}.

5.7.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2500.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.15.

5.7.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2 and 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirements 5.2.2.3, 5.2.2.5, and 5.2.2.7.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.2.3, 5.2.2.5, and 5.2.2.8.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2 and 5.2.2.6.

ITEM 5.8
CAR AND COUNTERWEIGHT SAFETIES AND GUIDING MEMBERS — INCLUDING ROPED HYDRAULIC ELEVATORS INSTALLED UNDER A17.1b-1989 AND LATER EDITIONS

(23) ### 5.8.1 Periodic Inspections

See Item 3.29 for inspections done from the top of car.

5.8.1.1 Electric Elevators

(a) Steel Guide Rails. Examine the car and counterweight guiding members and their fastenings to determine that they are properly secured, aligned, and adjusted, and that they are not worn excessively.

Determine that all moving parts of the safety are clean, lubricated, not corroded, and free to operate, and that the clearance between the guide rail and each rail-gripping face of the safety parts is in compliance with the Code (see Note below).

Check that the rope used to connect the safety to the governor rope is securely fastened and snugly seated in the deflection sheaves without any kink or excess slack. The rope should not be corroded. On drum-operated safeties, check that the safety drum rope is correctly wound on the drum. Where the safety jaws are connected with tie-rods, such rods must be straight and secure.

If the safety switch is located here, inspect its condition, position, and fastening. Check to see that a metal marking plate is securely attached to the safety plank, readily visible, and legibly and permanently marked indicating the following:

(1) the maximum tripping speed, in feet per minute (meters per second), for which the safety may be used — A17.1-1955 and later editions

(2) the maximum weight, in pounds (kilograms), that the safety as installed is designed to stop and sustain — A17.1-1955 and later editions

(3) the type of safety — A17.1-1955 and later editions

(4) the name or logo/trademark of the manufacturer — ASME A17.1-2000/CSA B44-00 and later editions

(5) the force required to activate the safety or governor-rope releasing carrier — A17.1a-1997 and later editions

This marking plate has been required since A17.1-1955, but ASME A17.3 does not require this marking plate. Prior to A17.1-1955, the safety was required to be marked with load and speed data, but no marking method was specified.

NOTE: A running clearance of $^{3}/_{32}$ in. (2.4 mm) was permitted for safeties installed under A17.1-1937 and earlier editions. A clearance of $^{9}/_{64}$ in. (3.6 mm) is required for elevators installed under A17.1-1955 and later editions, with $^{1}/_{16}$ in. (1.6 mm) minimum between either side of the rail and the gripping face. This facilitates adjusting the governor-rope movement (required to operate the safety mechanism to the point where the safety jaws exert pressure on the rails) to within the maximum permitted by Rule 205.11. The closer running clearance, permitted for older safeties, may result in wear on the gripping surface of the jaws, which requires careful inspection to detect and may necessitate frequent readjustment. ASME A17.3 does not address safety jaw running clearance but does address the safety rope pullout that often affects the safety jaw clearance. If sliding guides have been replaced with roller guides, the safety jaws must not touch the guide rail when the roller guide is at its fullest extent of movement.

(b) Wood Guide Rails. In addition to examining the governor-rope system and guide rails, perform the following examinations:

(1) From the top of the car, examine all safety operating parts including levers and linkage to be sure that all keys and set screws are in place and tight. There should not be an excessive amount of lost motion in the transmittal of movement to the finger rods actuating the safety jaws.

(2) From the pit, with the elevator car platform at a convenient height, the safety jaws can be readily examined and applied against the guide rails by pulling the governor rope. The safety jaws should be brought in contact with both guide rails in such a manner that any downward motion of the car would cause the jaw teeth to dig into the rails.

(3) When a safety operating switch is provided, the motion of bringing the safety jaws in contact with the rails must be sufficient to operate the switch.

(4) The distance between the rail-gripping surfaces should not be less than the thickness of the rail plus $^{1}/_{4}$ in. (6.4 mm).

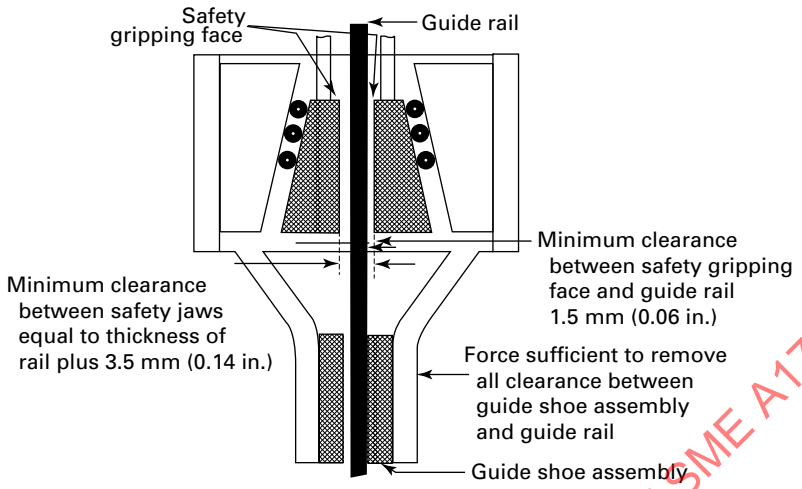
See Figure 5.8.1.1-1.

5.8.2 Periodic Test

See Item 2.29.

5.8.2.2 Hydraulic Elevators. Test counterweight safeties that are operated by breaking or slackening of the counterweight suspension means by placing an extended jack and blocking under the counterweight. Then slowly move the car up, allowing the counterweight to contact the blocking. Then lower the jack, to obtain slack rope, to operate the safety and verify that the counterweight safety will stop and hold the counterweight. It will be necessary to jump the slack rope device when conducting this test to prevent it from operating before sufficient slack

Figure 5.8.1.1-1
Safety Gripping Face and Guide Rail Minimum Clearance



GENERAL NOTE: See ASME A17.1/CSA B44, requirement 2.17.10.

rope is obtained to operate the safety. After this test, the elevator should not operate until both the safety switch and the slack rope device are manually reset.

For roped hydraulic elevators, the car safeties may, in addition to being activated by the governor, be activated by the slackening or breaking of the suspension means. Test as outlined above for counterweight safeties, except that the jack should be placed under the car.

5.8.3 Acceptance

Examine the data on the safety marking plate.

5.8.4 References

5.8.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 203 and Rules 205.11, 1001.2(e)(10), 1001.2b(2)(c), 1002.3a, 1206.1g, and 1202.4a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.15.2, 2.17, 8.2.6, 8.10.2.2.5(j), 8.11.2.1.5(j), 8.11.2.3.1, 8.6.4.5, 8.7.2.15.1, and 8.11.3.2.3(c).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.15.2, 2.17, 8.2.6, 8.6.4.5, 8.6.4.20.1, 8.7.2.15.1, 8.10.2.2.5(j), 8.11.2.1.5(j), and 8.6.5.14.3(c).

ASME A17.3 — Section 3.5.

5.8.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Sections 205 and 1306 and Rules 301.8, 301.9, 1004.2(e)(10), 1005.2c, and 1005.4.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 2.17, 8.2.6, 3.17.1, 3.17.2, 8.10.3.2.5(j), 8.11.3.1.5(j), 8.11.3.2.3(c), and 8.11.3.4.1.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 2.17, 8.2.6, 8.6.5.14.3(c), 8.6.5.16.1, 3.17.1, 3.17.2, 8.10.3.2.5(j), and 8.11.3.1.5(h).

ASME A17.3 — Paragraph 4.9.6.

5.8.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2501.1, 2501.4, and 2501.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.2.1.15, 5.2.1.17, 5.2.1.23, and 5.2.1.29.

5.8.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirements 5.2.2.3, 5.2.2.10, and 5.2.2.15.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.2.3, 5.2.2.11, and 5.2.2.16.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2, 5.2.2.10, and 5.2.2.15.

ITEM 5.9
CAR AND COUNTERWEIGHT BUFFERS AND EMERGENCY TERMINAL SPEED-LIMITING DEVICES

5.9.1 Periodic Inspections

5.9.1.1 Electric Elevators

(a) Oil Buffers. Make the following examinations:

(1) Check the bolts holding the buffers and mounting to verify that they are tight.

(2) Check the buffer oil level by the means provided to determine that it is within the maximum and minimum allowable limits.

(3) Test the plunger for excessive side play.

(4) Verify that the plunger is free of dirt and rust.

(5) Check the buffer marking plate. A17.1-1987 and later editions require the stroke to be shown on the buffer marking plate. Check that the maximum and minimum loads, the maximum striking speed, the oil viscosity, index number, and pour point are provided. ASME A17.1-2000/CSA B44-00 and later editions also require name, trademark, or file number for identification of the manufacturer and the certification markings on the buffer data plate.

(b) *Spring Buffers.* Check car and counterweight spring buffers to verify that

(1) they and their supports are securely fastened in place.

(2) they are vertical and in alignment with striker plates on the car or counterweight.

(3) springs are properly seated in the cup or other mounting provided.

(4) springs have not been deformed, obviously weakened, or damaged.

(5) the buffer marking plate is in place and contains all of the required information. A17.1d-1986 and later editions require the number of springs to be indicated on the buffer marking plate in addition to the other data.

(6) removable springs are identified and that the marking plate indicates the identification.

(c) *Solid Bumpers.* Prior to A17.1-1978, solid bumpers were allowed on passenger elevators with rated speed not exceeding 50 ft/min (0.25 m/s) and on freight elevators with rated speed not exceeding 75 ft/min (0.38 m/s). A17.1-1978 and later editions do not allow the use of solid bumpers (except with Type C safeties). Check car and, when they are used, counterweight solid bumpers to verify that

(1) they and their supports are securely fastened in place

(2) no damage or deterioration exists

(3) they are vertical and in alignment with the striker plates of the car or counterweight

(d) *Elastomeric Buffers.* ASME A17.1-2016/CSA B44-16 and later editions allow elastomeric buffers capable of absorbing the energy of a fully loaded car. Inspect as outlined in (c) and verify that the replacement criteria have not been met (see ASME A17.1/CSA B44, requirement 8.6.4.4.2). A written checkout procedure must be part of the on-site documentation [see ASME A17.1/CSA B44, requirement 8.6.1.2.2(c)(1)].

5.9.1.2 Hydraulic Elevators

(a) *Oil Buffers.* When they are used, refer to 5.9.1.1(a).

(b) *Spring Buffers.* Refer to 5.9.1.1(b).

(c) *Solid Bumpers.* A17.1-1982 and later editions allow solid bumpers on hydraulic elevators that have an operating speed in the down direction of less than 50 ft/min (0.25 m/s). Inspect as outlined in 5.9.1.1(c). In addition, verify that removable springs are identified and that the marking plate indicates the identification in addition to the other data.

(d) *Elastomeric Buffers.* ASME A17.1-2016/CSA B44-16 and later editions allow elastomeric buffers capable of absorbing the energy of a fully loaded car. Inspect as outlined in 5.9.1.1(c) and 5.9.1.1(d).

5.9.1.3 Electric LU/LA Elevators. A17.1b-1995 and later editions allow elastomeric bumpers capable of absorbing the energy of a fully loaded car. Inspect as outlined in 5.9.1.1(c) and 5.9.1.1(d). Emergency terminal speed-limiting devices do not apply.

5.9.1.4 Hydraulic LU/LA Elevators. A17.1b-1995 and later editions allow elastomeric bumpers capable of absorbing the energy of a fully loaded car. Inspect as outlined in 5.9.1.3. Emergency terminal speed-limiting devices do not apply.

5.9.2 Periodic Test

5.9.2.1 Electric Elevators

(a) *Yearly Test of Oil Buffers (for A17.1d-2000 and Earlier Editions); Category 1 Test of Oil Buffers (for ASME A17.1-2000/CSA B44-00 and Later Editions).* Test the gravity and spring-return-type oil buffers by fully compressing the plunger and verifying that it will return to a full extended position in 90 s. If the buffer cannot be manually depressed, it will be necessary to place blocking between the car and counterweight and operate downward at slow speed. This can be done by suspending a 4 × 4 beneath the car or counterweight in alignment with the buffer. It is usually best to operate the car at slow speed from the car top operator for this test. If the 4 × 4 cannot be suspended, it may be held in place with a 1 × 4 attached to it. This will allow the person holding it to position themselves in a safe position in case the 4 × 4 slips off of the buffer and/or the car continues to move. If possible, the person should be positioned outside the hoistway or in an adjacent pit with the adjacent pit's car out of service. Test buffers on Type C safeties in the same manner.

Then place a 50-lb (23-kg) weight on the spring-return-type oil buffer and depress it 2 in. (51 mm). This can be done using a small hydraulic jack between the car and buffer. Release the buffer and verify that it will return to its fully extended position within 30 s.

Test the compression switch on gas spring-return-type buffers by compressing the buffer $\frac{1}{2}$ in. (13 mm) and using an ohmmeter to determine that the switch opens. Then move the car up, take one lead off of the switch, and verify that the car cannot operate with the switch open.

Test the buffer compression switch on Type C safety buffers by having the buffer compressed 10% of its stroke and use an ohmmeter to verify that the switch opens. Then move the car, allowing the buffer to return to its fully extended position. Remove one of the leads from the switch and attempt to operate the car. The car must not operate with the lead removed. Restore the lead and remove one lead from the oil level switch. Again attempt to operate the car. This should also prevent operation of the car.

(b) 5-yr Test of Oil Buffers (for A17.1d-2000 and Earlier Editions); Category 5 Test of Oil Buffers (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(1) For car buffers, if the elevator is equipped with counterweight safeties, tie down the counterweight safety lift lever with four wraps of No. 16 gage copper wire or equivalent. This will avoid an accidental setting of the counterweight safety by inertia. Do not block the counterweight safety; it must remain workable. Reverse the procedure for testing the counterweight buffer. Place the rated load in the car. Jump out the terminal slowdowns and directional switches. The final terminal stopping device must remain operative but be temporarily relocated to permit full compression of the buffer. Take the cars in adjacent hoistways out of service.

(-a) Full-Stroke Buffer. Move the car up enough to obtain rated speed and run the car into the buffer.

(-b) Reduced-Stroke Buffer. Temporarily reduce the speed of the car to the speed on the buffer marking plate. Then run the car into the buffer at this speed.

(-c) Emergency Terminal Speed-Limiting Device. Where such a device is provided, determine that it is operational. Then run the car into the terminal at rated speed. The device should slow the car down so that the stop is no more severe than that produced by running the car into the buffer at the buffer design speed.

(2) After the test

(-a) remove any jumpers that were installed

(-b) examine the buffer for damage or excess oil loss and determine that the plunger returns to its full extended position in 90 s

(-c) examine the car (including car interior) for damage

(-d) restore the final terminal stopping device to the proper position and test it as outlined in Item 5.4

(-e) remove any tie-down that was wrapped on the car or counterweight lift lever

(-f) have the required test tags installed

(3) For counterweight buffers, remove the rated load from the car and test the counterweight buffer as outlined for car buffers.

NOTE: This test is not required where Type C safeties are used. However, where Type C safeties are applied, check the buffer portion of Type C safeties to determine that the oil level is within allowable limits. Also, test the buffer compression switch and the oil level device for proper functioning.

5.9.2.2 Hydraulic Elevators. Refer to 5.9.2.1(a).

5.9.3 Acceptance

5.9.3.1 Electric Elevators. Compare the data on the buffer marking plate with the data on the elevator layout drawings and the actual installed conditions of the elevator and verify that it meets Code requirements, especially for load rating, stroke, and speed, or number of springs. For elastomeric buffers, a written checkout procedure must be part of the on-site documentation [see ASME A17.1/CSA B44, requirement 8.6.1.2.2(c)(1)].

5.9.4 References

5.9.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Section 201 and Rules 109.1, 210.2(w), 1002.3f, 1003.2e, 1206.1f, and 1308.2.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.22, 2.6, 2.26.2.22, 8.11.2.3.6, 8.10.2.2.5(c), 8.2.3, 8.3.1.3, and 8.11.2.2.1.

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2013/CSA B44-13 — Requirements 2.22, 2.6, 2.26.2.22, 8.2.3, 8.3.1.3, 8.6.4.19.1, 8.6.4.20.3, 8.6.4.20.6, and 8.10.2.2.5(c).

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 2.6, 2.22, 2.26.2.22, 8.2.3, 8.3.1.3, 8.6.4.4.2, 8.6.4.19.1, 8.6.4.20.3, 8.6.4.20.6, 8.10.2.2.5(c), and 8.10.4.20.6.

ASME A17.3 — Section 3.1 and para. 3.10.4(m).

5.9.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 301.3, 306.4, 1004.2(e)(4), 1206.1(e), and 1308.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.22.1, 3.26.4, 8.2.3.2, 8.6.4.4, and 8.11.3.1.5(d).

ASME A17.3 — Paragraph 4.2.1.

5.9.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2500.10, 2501.2, and 2501.11.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2013/CSA B44-13 — Requirements 5.2.1.6, 5.2.1.22, and 5.2.1.26.

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 5.2.1.6, 5.2.1.22, 5.2.1.26, and 8.6.1.2.2(c)(1).

5.9.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rules 2502.2b and 2502.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirements 5.2.2, 5.2.2.9, and 5.2.2.13.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.2.10 and 5.2.2.14.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.9 and 5.2.2.13.

ITEM 5.10
COMPENSATING CHAINS, ROPES, AND SHEAVES

NOTE: Item 5.10 applies to electric elevators only.

5.10.1 Periodic Inspections

5.10.1.1 Electric Elevators. Where compensating ropes or chains are used, determine that

(a) there is sufficient remaining travel of the sheave frame to maintain tension in the compensating ropes and to operate the compensating sheave switch. Ropes should have sufficient tension to remain within the sheave grooves.

(b) the sheave frame moves freely in the guides while the car is in motion.

(c) there is no evidence of excessive wear of the sheave, shaft, or bearings, and all parts are lubricated.

(d) the car stops when the switch or switches operated by the compensating sheave frame are opened. Manually open these switches while the car is in motion at the lowest operating speed.

(e) the ropes or chains are properly hung and securely fastened to the underside of the car and counterweight (see Items 3.22, 3.23, 3.28, and 3.34).

(f) Inspect the portion of the compensating chains or ropes and their fastenings that could not be inspected from the car top. Where chains are used, examine for wear at mating links.

(g) If a tie-down is provided for holding the compensating-rope sheave during the operation of the safety or buffer, it should be visually examined for condition and damage.

(h) Check the compensating sheave switch. Check the compensating-rope tie-down, which was required for speeds exceeding 800 ft/min (4.06 m/s) in A17.1d-1970 and is required for speeds exceeding 700 ft/min (3.56 m/s) in A17.1-1971 and later editions.

NOTE: For LU/LA elevators, compensating chains, ropes, and sheaves do not apply.

5.10.2 Periodic Test

5.10.3 Acceptance

5.10.3.1 Electric Elevators. Check the compensating-rope tie-down if the rated speed is greater than 700 ft/min (3.56 m/s).

5.10.4 References

5.10.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 202.4, 205.17, 210.2c, and 1001.2(e)(8).

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2009/CSA B44b-09 — Requirements 2.21.4, 2.17.17, 2.26.2.3, 8.10.2.2.5(h), and 8.11.2.1.5(h).

For ASME A17.1-2010/CSA B44-10, refer to ASME A17.6-2010, Section 1.10. See also Item 3.23.

NOTE: Items 5.11 through 5.15 apply to hydraulic elevators only.

ITEM 5.11
PLUNGER AND CYLINDER

5.11.1 Periodic Inspections

5.11.1.2 Hydraulic Elevators. Examine the plunger for pitting, scoring, or corrosion that may cause excess leakage and create a safety hazard. Check that the means to collect leakage is in compliance with the Code and is properly maintained.

Examine the plunger fastening to the car frame to verify that it is secure and adequately fastened to the car.

5.11.2 Periodic Test

5.11.3 Acceptance

5.11.4 References

5.11.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 302 and Rules 1004.2(e)(3) and 1206.5b.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 3.18, 8.10.3.2.5(c), 8.11.3.1.5(c), 8.11.3.2.5, 8.6.5.1, 8.6.5.2, 8.6.5.5, and 8.6.5.6.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 3.18, 8.10.3.2.5(c), 8.11.3.1.5(c), 8.6.5.15.1, 8.6.5.1, 8.6.5.2, 8.6.5.5, and 8.6.5.6.

ASME A17.3 — Paragraphs 4.3.1 and 4.3.2.

5.11.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.3.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirement 5.2.2.7.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirement 5.2.2.8.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.6.

ITEM 5.12
(RESERVED)

ITEM 5.13
GUIDING MEMBERS

5.13.1 Periodic Inspections

5.13.1.2 Hydraulic Elevators. Examine the car guiding members and their fastenings to verify that they are properly secured, aligned, and adjusted, and that they are not worn excessively. Examine for wear and proper lubrication. See also Item 3.18.

5.13.2 Periodic Test

5.13.3 Acceptance

5.13.4 References

5.13.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 308 and Rules 301.1, 1004.2(e)(8), and 1206.1d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 3.28, 3.23, 8.10.3.2.5(h), 8.11.3.1.5(h), and 8.6.4.3.

5.13.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.2a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirements 5.2.2.10 and 5.2.2.15.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirements 5.2.2.11 and 5.2.2.16.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.10 and 5.2.2.15.

ITEM 5.14
SUPPLY PIPING

5.14.1 Periodic Inspections

5.14.1.2 Hydraulic Elevators. Inspect supply piping as described in Item 2.35, giving special attention to fitting and condition of piping. Piping supports are very important in pits since the pipe is subject to being stepped on. This can cause leaks and damage to connections. If a shutoff valve is in the pit, verify that it is in good condition and has an adequate pressure rating since failure of a pit valve could create a very hazardous condition.

5.14.2 Periodic Test

5.14.3 Acceptance

5.14.3.2 Hydraulic Elevators. Inspect as outlined in Item 2.35.

5.14.4 References

5.14.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Section 208 and Rules 1004.2(e)(9) and 1006.2f.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.24, 8.10.3.2.5(i), 8.11.3.1.5(i), and 8.10.3.2.2(r).

ASME A17.3 — Paragraph 4.4.4.

5.14.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.4.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirement 5.2.2.8.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirement 5.2.2.9.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.7.

ITEM 5.15
OVERSPEED VALVE

5.15.1 Periodic Inspections

5.15.2 Periodic Test

5.15.2.2 Hydraulic Elevators: Category 5 Test for A17.1-2000 and Later Editions. Demonstrate that the overspeed valve, when supplied, will stop the car with rated load running in the down direction in accordance with the written procedure provided by the valve manufacturer or the person or firm maintaining the equipment. Verify that the valve is sealed.

5.15.3 Acceptance

5.15.3.2 Hydraulic Elevators

(a) Verify that the overspeed valve, if provided, is properly marked. Witness the testing of the overspeed valve to ensure proper operation. For single-jack arrangements, verify that the valve is located in the pressure piping within 12 in. (300 mm) of the hydraulic jack. If multiple valves are used, verify that they are located so as to minimize the distance from the valves to the hydraulic jack. For multiple-jack arrangements, verify that one of the following installations is used:

(1) An overspeed valve is located in the pressure piping on the hydraulic machine side of, and immediately before, the tee junction, wye junction, or branch junction that connects the branch pressure pipes to the jacks.

(2) The total length of branch pressure pipe between the tee or wye junction and the jacks does not exceed the distance between the jacks, measured horizontally, plus 39 in. (1 m). In these multiple-jack systems, the length of the branch pressure piping shall be minimized.

If the elevator is equipped with a plunger gripper, review its marking plate and verify suitability for the application.

(b) Verify that pipe supports are provided near changes in pipe direction and particularly near valves and joints. Verify that horizontal spans are supported at intervals per ASME A17.1/CSA B44, Table 8.4.11.13.

5.15.4 References

5.15.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 303.3c(1)(d) (line rupture valve) and 2410.6 (safety valve), and (NR 3.19.4.7.2), (NR 3.19.4.7.3), [NR 3.19.4.7.5(a)], (NR 3.19.4.7.6), [NR 8.10.3.2.5(i)], and (NR 8.11.3.4.4).

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 3.19.3.3, 8.4.11.2, 3.19.4.7.2, 3.19.4.7.3, 3.19.4.7.5(a), 3.19.4.7.6, and 8.10.3.2.5(i).

ASME A17.1-2007/CSA B44-07 — Requirements 3.19.3.3, 8.4.11.2, 3.19.4.7.2, 3.19.4.7.3, 3.19.4.7.5(a), 3.19.4.7.6, 8.10.3.2.5(i), and 8.11.3.4.5.

ASME A17.1a-2008/CSA B44a-08 — Requirements 3.19.3.3, 8.4.11.2, 3.19.4.7.2, 3.19.4.7.3, 3.19.4.7.5(a), 3.19.4.7.6, 8.10.3.2.5(i), and 8.6.5.16.5.

5.15.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.4.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44-03 — Requirement 5.2.2.8.

ASME A17.1-2004/CSA B44-04 through ASME A17.1a-2005/CSA B44-05 — Requirement 5.2.2.9.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.2.2.7 and 8.10.3.2.5(o).

ITEM 5.16
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

5.16.1 Periodic Inspections

(a) Verify that rope retainers or rope restraints are in place on governor tension sheaves located in the pit.

(b) Verify that, where required, the snag guards that cannot be observed from the top of the car are in place.

(c) Observe the part of the car and counterweight rail system that cannot be seen from the top of the car.

5.16.1.1 Electric Elevators

(a) Verify that all rope retainer guards or rope restraints are in place on compensating sheaves.

(b) Verify that a means to prevent the tension sheave assembly, used with compensating ropes, from being dislocated from its normal operation position is provided.

5.16.1.2 Hydraulic Elevators

(a) For elevators not equipped with car safeties, verify that the elevator is equipped with either an overspeed valve or a plunger gripper and that they have been tested and sealed.

(b) Verify that the pipe supports are in place.

5.16.2 Periodic Test

For seismic risk zones, test the overspeed valve (see ASME A17.1/CSA B44, requirement 8.11.3.4.5).

5.16.3 Acceptance

(a) Verify that rope retainers on governor tension sheaves located in the pit are continuous over not less than two-thirds of the arc of contact between the rope and its sheave or drum and located so that not more than one-sixth of the arc of contact is exposed. Rope restraints may be used, and if they are used, there must be one for each 30 deg or less of arc contact.

(b) Verify that snag guards are provided for snag points created by rail brackets, rail clip bolts, fishplates, vanes, and similar devices, where

(1) governor ropes are located 20 in. (500 mm) or less from a snag point

(2) the loop of traveling cables below the midpoint of the elevator travel is located 36 in. (915 mm) or less horizontally from a snag point

(c) Verify that the rail system that cannot be observed from the top of the car is installed per design, and record the bracket spacing.

(d) Verify that the proper information is contained on the elevator layout drawings.

5.16.3.1 Electric Elevators

(a) Verify that rope retainers on compensating sheaves are continuous over not less than two-thirds of the arc of contact between the rope and its sheave or drum and located so that not more than one-sixth of the arc of contact is exposed. Rope restraints may be used, and if they are used, there must be one for each 30 deg or less of arc contact.

(b) Verify that snag guards are provided for snag points created by rail brackets, rail clip bolts, fishplates, vanes, and similar devices, where the loop of compensating chains below the midpoint of the elevator travel is within 36 in. (915 mm) of a snag point.

5.16.4 References

5.16.4.1 Electric Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400, 2407, and 2403.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.3, 8.4.6, and 8.4.8.

5.16.4.2 Hydraulic Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400, 2410.6, 2410.5, 2410.2, and 2410.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.3, 8.4.11.2 through 8.4.11.5, and 8.4.11.7.

5.16.4.3 Electric LU/LA Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400, 2407, and 2403.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.3, 8.4.6, and 8.4.8.

5.16.4.4 Hydraulic LU/LA Elevators. A17.1-1993 through A17.1d-2000 — Rules 2400, 2410.6, 2410.5, 2410.2, and 2410.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.4.3, 8.4.11.2 through 8.4.11.5, and 8.4.11.7.

ITEM 5.17
PLUNGER GRIPPER

5.17.1 Periodic Inspections

Plunger grippers are permitted for direct-acting hydraulic elevators using hydraulic jacks equipped with plungers. Examine all working parts of the plunger gripper to determine that the plunger gripper, where provided, is in satisfactory operating condition and that it conforms to the applicable requirements. Observe the surface of the plunger for visual indication of previous plunger gripper actuation to ensure that any residual marks do not affect the results of the tests to be performed. Observe that the plunger gripper in the normally retracted position has sufficient clearance such that any contact does not cause premature degradation of the plunger or gripping surface. Verify that the testing instructions are provided in the on-site documentation.

Visually inspect the condition of the hydraulic or electrical means to actuate the plunger gripper. Verify the presence and accuracy of the plunger gripper marking plate.

5.17.2 Periodic Test

5.17.2.2 Hydraulic Elevators

(a) Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions). Verify and review applicable procedures are in the on-site documentation. After determining electrical and/or hydraulic test means are provided, have all means tested for proper operation.

(1) The test is conducted with no load on the car in the down direction, at the slowest possible speed.

(2) Have the car placed out of service and run up to the second landing with the doors disabled.

(3) Have the car moved down and the plunger gripper actuated while running down.

(4) Observe that power is removed from the hydraulic machine before or at the time of application of the plunger gripper.

(5) Note the location of the stopped position of the car. Check the plunger for any gouges or deformation.

(6) After the test, mark the date on the periodic test record.

(b) 5-yr Test (for A17.1a-2000 and Earlier Editions); Category 5 Test (for ASME A17.1a-2002/CSA B44-00 and Later Editions). After determining electrical and/or hydraulic test means are provided, have all means tested for proper operation. (See ASME A17.1/CSA B44, requirement 8.6.5.16.4.)

(1) The test is conducted with rated load on the car, at not less than the operating speed in the down direction or by overspeeding the car in the down direction.

(2) Follow the manufacturer's instructions for use of an acceleration-measuring device if one is used to determine the point at which actuation occurs and the deceleration rate.

(3) Have the car placed out of service, the weights loaded, and the car run up to the second landing with the doors disabled.

(4) Have the car run down and the plunger gripper actuated while running down.

(5) Observe that power is removed from the hydraulic machine before or at the time of application of the plunger gripper.

(6) Note the location of the stopped position of the car. Have the car moved to observe the residual marks on the plunger. Check the plunger for any gouges or deformation that would damage the packing gland. Measure the length of the residual marks and subtract the height of the gripping surface; the difference is the slide distance.

(7) After the test, mark the date on the plunger gripper marking plate and periodic test record. [See ASME A17.1/CSA B44, requirements 3.17.3.8, 8.10.3.2.5 (n), and 8.10.1.1.4.]

5.17.3 Acceptance

5.17.3.2 Hydraulic Elevators

(a) Follow the procedures in 5.17.1 and 5.17.2.2(b) for acceptance inspection and testing. Performing a test as described in 5.17.2.2.(a) may be warranted prior to testing at higher speeds with rated load.

(1) Observe that the plunger gripper actuates either hydraulically or electrically.

(2) Observe that power is removed from the hydraulic machine before or at the time of application of the plunger gripper.

(3) After the plunger gripper actuates and it is holding the car in place, have the manual lowering valve closed.

(4) Have the persons performing the test provide a demand to move the car in the up direction and verify that the car does not restart until at least no-load static pressure is established.

(b) Have the persons performing the test demonstrate Code compliance with rated load. This test is conducted with rated load on the car, at operating speed in the down

Table 5.17.3.2-1
Plunger Gripper Stopping Distances With Rated Load in the Car

Operating Speed in the Down Direction, ft/min (m/s)	Maximum Tripping Speed, ft/min (m/s)	Stopping Distance	
		Minimum, in. (mm)	Maximum, in. (mm)
0–125 (0–0.63)	175 (0.90)	1 (25)	16 (406)
150 (0.75)	210 (1.05)	2 (50)	23 (584)
175 (0.87)	250 (1.25)	3 (75)	33 (838)
200 (1.00)	280 (1.40)	4 (100)	41 (1 041)
225 (1.12)	308 (1.55)	5 (125)	50 (1 270)
250 (1.25)	337 (1.70)	6 (150)	60 (1 524)
300 (1.50)	395 (2.00)	8 (200)	83 (2 108)

GENERAL NOTE: Maximum distance is calculated using A17.1a-2002 and later editions, requirement 8.2.6 and substituting 0.1*g* for deceleration in lieu of 0.35*g*.

direction or by overspeeding (see Table 5.17.3.2-1) the car in the down direction.

(1) Follow the manufacturer's instructions for use of an acceleration-measuring device to determine the point at which actuation occurs and the deceleration rate.

(2) Have the car placed out of service, the weights loaded, and the car run up to the second landing with the doors disabled.

(3) Have the car run down and ensure the plunger gripper actuates.

(4) Observe that power is removed from the hydraulic machine before or at the time of application of the plunger gripper.

(5) Note the location of the stopped position of the car. Have the car moved to observe the residual marks on the plunger. Check the plunger for any gouges or deformation that would damage the packing gland. Measure the length of the residual marks and subtract the height of the gripping surface; the difference is the slide distance.

(6) Verify that the plunger gripper deceleration rate is within the proper limits.

(7) After the test, verify that the plunger gripper marking plate is securely attached to each plunger gripper and the appropriate information is provided on it. Ensure that all plunger gripper tests are recorded in the acceptance test records and mark the date on the plunger gripper marking plate.

5.17.4 References

5.17.4.2 Hydraulic Elevators. A17.1a-2002 through A17.1a-2005 — Section 1.3 and requirements 3.1.1(b), 3.17.3, 8.2.8.6, and 8.7.3.23.7.

A17.1-2004 through A17.1a-2005 — Nonmandatory Appendix P.

A17.1a-2005 — Requirements 8.6.5.8(b), 8.10.3.2.5(n), and 8.11.3.4.4.

A17.1S-2005 — Requirements 3.1.1(b) and 3.17.3.

ASME A17.1-2007/CSA B44-07 — Section 1.3; requirements 3.1.1(b), 3.17.3, 5.2.2.5, 8.1.3.4.4, 8.2.8.6, 8.4.11.2, 8.6.5.8(b), 8.7.3.23.7, and 8.10.3.2.5(n); and Nonmandatory Appendix P.

ASME A17.1a-2008 and ASME A17.1-2010/CSA B44-10 — Section 1.3; requirements 3.1.1(b), 3.17.3, 5.2.2.5, 8.2.8.6, 8.4.11.12, 8.6.5.8(b), 8.6.5.16.4, 8.7.3.23.7, and 8.10.3.2.5(n); and Nonmandatory Appendix P.

ASME A17.1b-2009/CSA B44-09 — Requirements 5.2.2.5, 8.4.11.12, 8.6.5.16.4, and 8.10.3.2.5(n).

ASME A17.1-2013/CSA B44-13 and later editions — Section 1.3; requirements 3.1.1(b), 3.17.3, 3.19.2.8(c), 5.2.2.5, 8.2.8.6, 8.4.11.12, 8.6.5.8(b), 8.6.5.16.4, 8.6.5.17, 8.7.3.23.7, 8.10.1.1.4, and 8.10.3.2.5(n); and Nonmandatory Appendices P and X.

ASME A17.1 — Inquiry 08–35.

5.17.4.4 Hydraulic LU/LA Elevators. ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.2.2.5.

Part 6
Elevator — Firefighters' Service

A17.1b-1973 and later editions and ASME A17.3 require elevators to be provided with firefighters' service. This service was referred to previously as "operation of elevators under fire or other emergency conditions."

ITEM 6.1
OPERATION OF ELEVATORS UNDER FIRE AND OTHER EMERGENCY CONDITIONS (A17.1b-1973 THROUGH A17.1b-1980)

6.1.1 Periodic Inspections

On all elevators provided with firefighters' service, check that the monthly operation log is maintained.

6.1.2 Periodic Test: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(a) General

(1) All automatic operating elevators serving three or more landings or having a travel of 25 ft (7.62 m) or more are required to return to the main floor, which is the floor providing egress from the building; elevators without a landing at the main floor are required to return to the landing closest to the main floor or other approved landing. This is commonly referred to as "Phase I emergency recall operation."

(2) All automatic operating elevators having a travel of 70 ft (21.33 m) or more above the lowest grade elevation surrounding the building are required to have provisions to allow firefighters or other authorized personnel to operate the elevator using emergency in-car operation. This is commonly referred to as "Phase II emergency in-car operation."

(b) Phase I Emergency Recall Operation: Automatic Elevators

(1) A three-position ("ON," "OFF," and "BYPASS") key-operated switch must be provided at the main floor. When the main floor three-position key-operated switch is turned to the "ON" position, all cars must return to the main floor and park with the doors open. Elevators without a landing at the main floor must return to the landing closest to the main floor or other approved landing.

(2) The key is only permitted to be removable in the "ON" or "OFF" position.

NOTE: To cause as little inconvenience as possible with multiple-elevator systems, it is suggested that the elevators be put back in service immediately, and one elevator at a time be isolated for individual testing.

(3) With the main floor key-operated switch in the "OFF" position and the car at the main floor, register several calls. With the inspector in the car, allow the car to run. As the car leaves the floor, have the main floor key switch turned to the "ON" position. The car must stop and reverse at or below the next available floor without opening the door(s) and return to the main floor, where it is required to park with the door(s) open. As the car descends, operate the emergency stop switch to see that it has been rendered inoperative. Check that the car buttons have been rendered inoperative and that the car will not respond to any car calls. Also, determine that all call-registered lights and lanterns are extinguished and remain inoperative.

(4) With the main floor key-operated switch in the "OFF" position, run the car to any floor. Then with the doors open, have the main floor key-operated switch turned to the "ON" position. Check to see that the door-reopening devices for power-operated doors, which are sensitive to smoke, heat, or flame, are rendered inoperative. Check to see that the mechanical safety edge is still operative. With the doors open, actuate the emergency stop switch to see that it is operative. The doors may or may not close but the car must not move.

(5) Return the emergency stop switch to the "RUN" position. The automatic power-operated doors should close without delay and the car should proceed to the main floor and park with the doors open.

(6) Check all call buttons to see that they are inoperative and call-registered lights and directional lanterns are extinguished when the main floor key-operated switch is in the "ON" position.

(7) Check to see that no stop switches other than those inside the car (pit, car top, etc.) and no safety circuits other than the door reopening devices, which are sensitive to smoke, heat, or flame, as previously mentioned, are rendered inoperative when the main floor key-operated switch is in the "ON" position.

(8) With the main floor key-operated switch in the "OFF" position, activate the sensing device. A sensing device is required to be located in every elevator lobby except the main floor lobby; when the sensing device is activated, it will perform the same functions as previously described when the main floor key-operated switch is in the "ON" position. Sensing devices must be of the manually resetting type.

NOTES:
(1) If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.
(2) Sensing devices can be activated by using a test button if supplied, or by simulating smoke or heat and smoke conditions. The manufacturer's recommended test procedures should be followed. Use of chemical smoke may oversensitize smoke detectors.

(9) With the smoke sensor activated, turn the main floor key-operated switch to the "BYPASS" position. The elevator must return to normal service.

(c) Phase I Emergency Recall Operation: Attendant-Operated Elevators. Elevators operable only by a designated attendant in the car must be provided with both visual and audible signals.

(d) Phase I and Phase II Automatic Operating Elevators With Dual Operation. Elevators arranged for dual operation must, when on automatic operation, conform to (b) and (e), and when on attendant operation, conform to (c).

(e) Phase II Emergency In-Car Operation. Where Phase II operation is required, a three-position key-operated switch must be provided in or adjacent to the operating panel in each car. A17.1b-1973 through A17.1f-1975 required a three-position ("OFF," "ON," and "BYPASS") key-operated switch, the third position being used to bypass the interlocks. A17.1g-1976 removed the requirement for the "BYPASS" position. The key must be removable only in the "OFF" position. With Phase I service activated, turn the in-car key-operated switch to the "ON" position.

NOTE: The inspector is cautioned to check the position of the various key switches relative to the installation date of the elevator to be tested.

(1) Check that the elevator is operable only by the car buttons and it does not respond to corridor calls.

(2) Check that the doors will not open automatically at any floor except the main floor.

(3) Check that the opening of the door is controlled by a continuous-pressure button or switch and that when the button or switch is released prior to the door reaching its fully open position, the door will automatically reclose.

(4) Check that fully opened doors can be closed only by registering a car call or by the use of an in-car door close button or switch.

(5) Check to see that, once activated, Phase II operation cannot be deactivated until the car has returned to the main floor. To do this, with the main floor key-operated switch in the "ON" position, take the car to any floor. Then turn the main floor key-operated switch to the "OFF" position, or if a smoke detector is activated, to the "BYPASS" position, and make sure Phase II operation is maintained until the car is returned to the main floor.

(6) Turn the main floor key-operated switch to the "OFF" position or, if a smoke detector is activated, to the "BYPASS" position. Take the elevator to a floor above the main floor and turn the in-car key-operated switch to the "ON" position. Check to see that Phase II operation does not operate unless the main floor key-operated switch is in the "ON" position or a smoke detector has been activated.

(f) Multideck Elevators. Multideck elevators should be inspected as outlined in (b) through (e) as well as the following:

(1) The main floor key-operated switch for Phase I operation may be at either of the main floors.

(2) The in-car key-operated switch for Phase II operation must be located in the top deck. Check the operation of the in-car key-operated switch. The lower deck must be rendered out of service before Phase II can be effective. Means for placing the lower deck out of service must be located in that deck or adjacent to the entrance in the corridor.

(g) Operating Instructions and Keys

(1) Operating instructions for Phase I and Phase II service must be posted adjacent to the main floor key-operated switch. Instructions must be in letters not less than $\frac{1}{4}$ in. (6.4 mm) in height, be permanently installed, and be protected against removal and defacement.

(2) All switches must be keyed alike for Phase I and Phase II operation and not be a part of the building master key system. Keys must be kept on premises for the main floor switch, and a key for each in-car key-operated switch must be kept in a location readily accessible to authorized persons but not readily available to the public.

6.1.3 Acceptance

6.1.4 References

6.1.4.1 Electric Elevators. A17.1b-1973 through A17.1b-1980 — Rule 211.3.

A17.1-1981 through A17.1d-2000 — Rules 112.3d, 112.5, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

6.1.4.2 Hydraulic Elevators. A17.1b-1973 through A17.1b-1980 — Rule 211.3.

A17.1-1981 through A17.1-2000 — Rules 112.3d and 112.5 {306.11}, 1001.2(d)(12), 1002.2f, 1004.2(d)(12), and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4 and 2.13.5 {3.27}, 8.11.2.1.4(l), 8.11.2.2.6, [NR 1004.2(d)(12)], and 8.6.10.1.

6.1.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.27.

6.1.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.2.14.

ITEM 6.2
OPERATION OF ELEVATORS UNDER FIRE AND OTHER EMERGENCY CONDITIONS (A17.1-1981 THROUGH A17.1b-1983)

6.2.1 Periodic Inspections

On all elevators provided with firefighters' service, check that the monthly operation log is maintained.

6.2.2 Periodic Test: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(a) General

(1) All automatic operating elevators serving three or more landings or having a travel of 25 ft (7.62 m) or more will return to the main floor, which is the floor providing egress from the building; elevators without a landing at the main floor must return to the landing closest to the main floor or other approved landing. This is commonly referred to as "Phase I emergency recall operation."

(2) All automatic operating elevators having Phase I operation must have provisions to allow firefighters or other authorized personnel to operate the elevator on emergency in-car operation. This is commonly referred to as "Phase II emergency in-car operation."

(b) Phase I Emergency Recall Operation: Automatic Elevators

(1) A three-position ("ON," "OFF," and "BYPASS") key-operated switch must be provided at the designated level. When the designated level three-position key-operated switch is turned to the "ON" position, all cars are required to return nonstop to the designated level and park with doors open.

(2) The keys are only permitted to be removable in the "ON" and "OFF" positions.

NOTE: In order to cause as little inconvenience as possible with multiple-elevator systems, it is suggested that the elevators be put back in service immediately and one elevator at a time be isolated for individual testing.

(3) With the designated level key-operated switch in the "OFF" position and the car at the main floor, register several calls. With the inspector in the car, allow the car to run. As the car leaves the floor, have the designated level key-operated switch turned to the "ON" position. The car should stop and reverse at or below the next available floor without opening the door(s) and return to the designated level and park with the door(s) open. As the car descends, operate the emergency stop switch to see that it has been rendered inoperative. Check that the car buttons have been rendered inoperative and that the car will not respond to any car calls. Also, determine that all call-registered lights and in-car lanterns are extinguished and remain inoperative.

(4) With the main floor key-operated switch in the "OFF" position, run the car to any floor. Then with the doors open, have the main floor key-operated switch turned to the "ON" position. Check to see that the door reopening devices for power-operated doors that are sensitive to smoke, heat, or flame are rendered inoperative. Check to see that the mechanical safety edge and door operating buttons are still operative. With the doors open, actuate the emergency stop switch to see that it is operative. The doors may or may not close but the car must not move.

(5) Return the emergency stop switch to the "RUN" position. The automatic power-operated doors must close without delay and the car must proceed to the main floor and park with the doors open. If the elevator is equipped with vertically sliding doors with automatic or momentary pressure closing, the closing sequence should initiate and the car should proceed to the designated level. If the elevator is equipped with manual doors or power-operated continuous-pressure closing, the visual and audible signals should operate and when the doors close, the car should return to the designated level.

(6) Check all call buttons to see that they are inoperative and call-registered lights and directional lanterns are extinguished when the designated level key-operated switch is in the "ON" position.

(7) Check to see that no stop switches other than those inside the car (pit, car top, etc.) and no safety circuits other than the door reopening devices that are sensitive to smoke, heat, or flame, as previously mentioned, are rendered inoperative when the main floor key-operated switch is in the "ON" position.

(8) Check that the visual and audible signal devices are activated.

(9) With the main floor key-operated switch in the "OFF" position, activate the smoke detector. A smoke detector is required to be located in every elevator lobby, including the designated level, and every associated machine room. When activated, the smoke detector performs the same functions as previously described when the designated level key-operated switch is in the "ON" position. If the smoke detector at the designated level is activated, the elevators must return to an alternate

level designated by the enforcing authority. Smoke detectors must not be self-resetting.

NOTES:
(1) If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.
(2) Smoke detectors can be activated by using a test button if supplied, or by simulating smoke conditions. The manufacturer's recommended test procedures should be followed. Use of chemical smoke may oversensitize smoke detectors.

(10) With the smoke sensor activated, turn the designated level key-operated switch to the "BYPASS" position. The elevator must return to normal service.

(11) Check to see that there are no devices other than the Phase I switch(es) or smoke detectors in the elevator lobbies, machine room, or hoistway that could initiate Phase I operation.

(c) Phase I Emergency Recall Operation: Attendant-Operated Elevators. Elevators operable only by a designated attendant in the car must be provided with both visual and audible signals.

(d) Phase I and Phase II Automatic Operating Elevators With Dual Operation. Elevators arranged for dual operation must, when on automatic operation, conform to (b) and (e), and when on attendant operation, conform to (c).

(e) Phase II Emergency In-Car Operation. Phase II operation requires that a two-position ("OFF" and "ON") key-operated switch be provided in or adjacent to the operating panel in each car. The key must be removable only in the "OFF" position. With Phase I service activated, after the car has returned to the designated or alternate level, turn the in-car key-operated switch to the "ON" position.

(1) Check that the elevator is operable only by the car buttons and does not respond to corridor calls.

(2) Check that all corridor call buttons and directional lanterns are inoperative.

(3) Check that the opening of the door is controlled by a continuous-pressure button or switch and that when the button or switch is released prior to the door reaching its fully open position, the door will automatically reclose.

(4) Check that fully opened doors can be closed only by registering a car call or by the use of an in-car door close button or switch.

(5) Check to see that door reopening devices sensitive to smoke or flame are inoperative.

(6) Check to see that means provided to cancel car calls is operative by registering calls and canceling them.

(7) Check to see that once activated, Phase II operation cannot be deactivated until the car has returned to the designated or alternate level. To do this, with the designated level key-operated switch in the "ON" position and the in-car key-operated switch in the "ON" position, take the car to any floor except the designated floor. Then turn the designated level key-operated switch to the "OFF" position, or if a smoke detector is activated, to the "BYPASS" position, and make sure Phase II operation is maintained until the car is returned to the designated or alternate level.

(8) Turn the designated level key-operated switch to the "OFF" position or, if a smoke detector is activated, to the "BYPASS" position. Take the elevator to a floor other than the designated level and turn the in-car key-operated switch to the "ON" position. Check to see that Phase II operation does not operate even if the designated key-operated switch is turned to the "ON" position or a smoke detector has been activated.

(f) Multideck Elevators. Multideck elevators should be inspected as outlined in (b) through (e) as well as the following:

(1) The designated level key-operated switch for Phase I operation must be at the designated level served by the upper compartment.

(2) The in-car key-operated switch for Phase II operation must be located in the upper compartment. Check the operation of the in-car key-operated switch in accordance with (e).

(3) Check to see that means is provided for locking the lower deck out of service.

(g) Operating Instructions and Keys

(1) Operating instructions for Phase I service must be posted adjacent to the designated level key-operated switch. Instructions should be in letters not less than $\frac{1}{8}$ in. (3.2 mm) in height, be permanently installed, and be protected against removal and defacement.

(2) All switches must be keyed alike for Phase I and Phase II operation and shall not be a part of the building master key system. Keys should be kept on premises for the main floor switch, and a key for each in-car key-operated switch must be kept in a location readily accessible to authorized persons but not readily available to the public.

(h) Inspection Operation. Place the car on inspection operation and operate from the top of the car. Check that an audible signal sounds and that the elevator remains under the control of the top-of-car operating device when the Phase I key switch is in the "ON" position or a smoke detector is actuated.

(i) Firefighters' Service When on Standby (Emergency) Power. Elevators installed under A17.1b-1983 and later editions are required to have a manual selection switch to override an automatic sequencing of standby power. With the elevator at an upper floor, switch the power to the elevators to standby power and place the Phase I key-operated switch in the "ON" position. Activate the manual selection switch to select a car other than that selected by the automatic sequencing. If the manual selection switch is key operated, it must use the same key as the firefighters' service key.

6.2.3 Acceptance

6.2.4 References

6.2.4.1 Electric Elevators. A17.1-1981 through A17.1b-1983 — Rule 211.3.

A17.1–1984 through A17.1d-2000 — Rules 112.3d, 112.5, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

6.2.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.3d, 112.5, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

ITEM 6.3
FIREFIGHTERS' SERVICE
(A17.1-1984 THROUGH A17.1a-1988 and ASME A17.3)

6.3.1 Periodic Inspections

On all elevators provided with firefighters' service, check that the monthly operation log is maintained.

6.3.2 Periodic Test: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

Elevators required to comply with ASME A17.3 must comply with A17.1-1987 or later editions.

(a) General. All elevators that have a travel of 25 ft (7.62 m) or more above or below the designated level (see definition in ASME A17.1/CSA B44) are required to conform to Rules 211.3 through 211.8.

(b) Phase I Emergency Recall Operation: Automatic Elevators

(1) A three-position ("ON," "OFF," and "BYPASS") key-operated switch must be provided at the designated level. When the designated level key-operated switch is turned to the "ON" position, all cars must return to the designated level and park with doors open.

(2) The keys are only permitted to be removable in the "ON" or "OFF" position.

NOTE: In order to cause as little inconvenience as possible with multiple-elevator systems, it is suggested that the elevators be put back in service immediately, and one elevator at a time be isolated for individual testing.

(3) With the designated level key-operated switch in the "OFF" position and the car at the designated level, register several calls. With the inspector in the car, allow the car to run. As the car leaves the floor, have someone turn the designated level key-operated switch to the "ON" position. The car should stop and reverse at or below the next available floor without opening the door(s) and return to the designated level, where it should park with the door(s) open. As the car descends, operate the emergency stop switch to see that it has been rendered inoperative. Check that the car buttons have been rendered inoperative and that the car will not respond to any car calls. Also, determine that all call-registered lights and in-car lanterns are extinguished and remain inoperative.

(4) With the designated level key-operated switch in the "OFF" position, run the car to any floor. Then with the doors open, have the designated level key-operated switch turned to the "ON" position. Check to see that the door reopening devices for power-operated doors, which are sensitive to smoke or flame, are rendered inoperative. Check to see that the mechanical safety edge and door open buttons are still operative and that door closing conforms to Rule 112.5. With the doors open, actuate the emergency stop switch to see that it is operative. The doors may or may not close, but the car must not move.

(5) Return the emergency stop switch to the "RUN" position. The automatic power-operated doors should close without delay and the car should proceed to the designated level and park with the doors open. If the elevator is equipped with vertically sliding doors with automatic or momentary pressure closing, the closing sequence should initiate and the car should proceed to the designated level. If the elevator is equipped with manual doors or power-operated continuous-pressure closing, the visual and audible signals required by Rule 211.3a(7) must operate, and when the doors are closed, the car should return to the designated level.

(6) Check all call buttons to see that they are inoperative and call-registered lights and directional lanterns are extinguished when the designated level key-operated switch is in the "ON" position.

(7) Check to see that no stop switches other than the emergency stop switch inside the car (pit, car top, etc.) and no safety circuits other than the door reopening devices, which are sensitive to smoke or flame as previously mentioned, are rendered inoperative when the designated level key-operated switch is in the "ON" position.

(8) Check that the visual and audible signal devices are activated.

(9) With the designated level key-operated switch in the "OFF" position, activate the smoke detector. A smoke detector must be located in every elevator lobby, including the designated level, and every associated machine room. When activated, the smoke detector performs the same functions as previously described when the designated level key-operated switch is in the "ON" position. If the smoke detector at the designated level is activated, the elevator should return to an alternate level designated

by the enforcing authorities unless the Phase I switch is activated. Smoke detectors must not be self-resetting.

NOTES:
(1) If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.
(2) See Rule 211.3b for locations where sensing devices are not required. Smoke detectors can be activated using a test button if supplied, or by simulating smoke conditions. The manufacturer's recommended test procedures should be followed. Use of chemical smoke may oversensitize smoke detectors.

(10) With the smoke detector activated, turn the designated level key-operated switch to the "BYPASS" position. The elevator must return to normal service.

(c) Phase I Emergency Recall Operation: Attendant-Operated Elevators. Elevators operable only by a designated attendant in the car must be provided with both visual and audible signals.

(d) Phase I and Phase II Automatic Operating Elevators With Dual Operation. Elevators arranged for dual operation, except hospital service, must, when on automatic operation, conform to (b) and (e), and when on attendant operation, conform to (c). The elevator must revert to automatic operation not less than 15 s or more than 60 s after Phase I activation.

(e) Phase II Emergency In-Car Operation: Automatic Elevators. Phase II operation requires that a three-position key-operated switch be provided in or adjacent to the operating panel in each car. The key must be removable in the "OFF," "HOLD," or "ON" position. With Phase I service activated and after the car has returned to the designated or alternate level, turn the in-car operated switch to the "ON" position.

(1) Check that the elevator is operable only by the car buttons and does not respond to corridor calls.

(2) Check that all corridor call buttons and directional lanterns are inoperative.

(3) Check that the opening of the door is controlled by a continuous-pressure button or switch and that when the button or switch is released prior to the door reaching its fully open position, the door will automatically reclose.

(4) Check that fully opened doors can be closed only by continuous pressure on a door close button.

(5) Check to see that the door reopening devices sensitive to smoke or flame are inoperative.

(6) Check that the means provided to cancel car calls is operative by registering calls and canceling them. All elevators installed under A17.1a-1985 and later editions require a separate "CALL CANCEL" button.

(7) Check to see that once activated, Phase II operation cannot be deactivated until the car has returned to the designated or alternate level. To do this, with the designated level key-operated switch in the "ON" position and the in-car key-operated switch in the "ON" position, take the car to any floor except the designated floor. Then turn the designated level key-operated switch to the "OFF" position, or if a smoke detector is activated, to the "BYPASS" position, and make sure Phase II operation is maintained until the car is returned to the designated or alternate level.

(8) Turn the designated level key-operated switch to the "OFF" position or, if a smoke detector is activated, to the "BYPASS" position. Take the elevator to a floor other than the designated level and turn the in-car key-operated switch to the "ON" position. Check to see that Phase II operation does not operate even if the designated level key-operated switch is turned to the "ON" position or a smoke detector has been activated.

(9) Take the car to an upper floor, and with the door closed, turn the in-car key-operated switch to the "OFF" or "HOLD" position. It should have no effect on Phase II operation.

(10) Take the car to an upper floor, and with the doors open, place the in-car key-operated switch in the "HOLD" position. The car should remain at the floor and the door close button should be inoperative. Take the car to an upper floor, and with the doors open, place the in-car key-operated switch in the "OFF" position. The car should respond as specified in (7) and return nonstop to the designated level.

(f) Multideck Elevators. Multideck elevators should be inspected as outlined in (b) through (e) in addition to the following:

(1) The designated level key-operated switch for Phase I operation should be at the designated level served by the upper compartment.

(2) The in-car key-operated switch for Phase II operation must be located in the upper compartment. Check the operation of the in-car key-operated switch in accordance with (e).

(3) Check to see that means is provided for locking the lower deck out of service.

(g) Operating Instructions and Keys

(1) Operating instructions for Phase I service should be posted adjacent to the designated level key-operated switch. Instructions for operating under Phase II operation should be incorporated with or adjacent to the in-car key-operated switch. Instructions should be in letters not less than $\frac{1}{8}$ in. (3.2 mm) in height, be permanently installed, and be protected against removal and defacement.

(2) All switches should be keyed alike for Phase I and Phase II operation and not be part of the building master key system. Keys should be kept on premises for the designated level switch, and a key for each in-car key-operated switch must be kept in a location readily accessible to authorized persons but not readily available to the public.

(h) Inspection Operation. Place the car on inspection operation and operate from the top of the car. Check that an audible signal sounds and that the elevator remains under the control of the top-of-car operating device when the Phase I key switch is in the "ON" position or a smoke detector is actuated.

(i) Firefighters' Service When on Standby (Emergency) Power. Elevators are required to have a manual selection switch to override an automatic sequencing of standby power. With the elevator at an upper floor, switch the power to the elevators to standby power and place the Phase I key-operated switch in the "ON" position. Activate the manual selection switch to select a car other than that selected by the automatic sequencing. If the manual selection switch is key operated, it must use the same key as the firefighters' service key.

6.3.3 Acceptance

6.3.4 References

6.3.4.1 Electric Elevators. A17.1-1984 through A17.1a-1988 — Rules 211.3 through 211.8.

A17.1b-1989 through A17.1d-2000 — Rules 112.3d, 112.5, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

ASME A17.3 — Paragraph 3.11.3.

6.3.4.2 Hydraulic Elevators. A17.1-1984 through A17.1a-1988 — Rules 211.3 through 211.8.

A17.1b-1989 through A17.1d-2000 — Rules 112.3d, 112.5, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

ASME A17.3 — Paragraph 3.11.3.

6.3.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.27.

6.3.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.2.14.

ITEM 6.4
FIREFIGHTERS' SERVICE
(A17.1b-1989 THROUGH A17.1d-2000)

6.4.1 Periodic Inspections

Check that the monthly operation log is maintained.

6.4.2 Periodic Test: Yearly Test (for A17.1d-2000 and Earlier Editions); Category 1 Test (for ASME A17.1-2000/CSA B44-00 and Later Editions)

(a) General. All elevators that have a travel of 25 ft (7.62 m) or more are required to conform to Rules 211.3 through 211.8.

(b) Phase I Emergency Recall Operation: Automatic Elevators. A three-position ("ON," "OFF," and "BYPASS") key-operated switch should be located in the elevator lobby in sight of the elevator. It should not be behind a locked door or cover. An additional two-position ("OFF" and "ON") key-operated switch may be provided at any location.

(1) When the designated level three-position key-operated switch is turned to the "ON" position, all cars should return to the designated level and park with doors open. For elevators with two entrances at the designated level, installed under A17.1-1993 and later editions, verify that the entrance to the lobby with the Phase I key switch opens.

(2) The key is only permitted to be removable in the "ON" or "OFF" position.

NOTE: In order to cause as little inconvenience as possible with multiple-elevator systems, it is suggested that the elevators be put back in service immediately and one elevator at a time be isolated for individual testing.

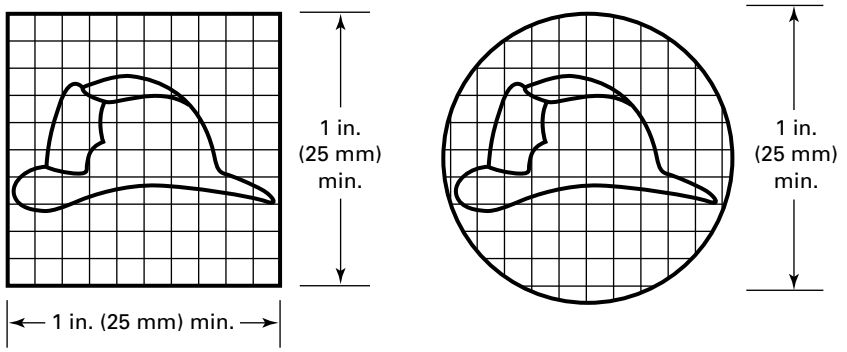
(3) With the designated level key-operated switch in the "OFF" position and the car at the designated level, register several calls. With the inspector in the car, allow the car to run. As the car leaves the floor, turn the designated level key-operated switch to the "ON" position. The car should stop and reverse at or below the next available floor without opening the door(s) and return to the designated level, where it should park with the door(s) open. As the car descends, operate the in-car stop switch or emergency stop switch to see that it has been rendered inoperative. Check that the car buttons have been rendered inoperative and that the car will not respond to any car calls. Also, determine that all call-registered lights and in-car lanterns are extinguished and remain inoperative.

(4) With the designated level key-operated switch in the "OFF" position, run the car to any floor. Then, with the doors open, have the designated level key-operated switch turned to the "ON" position.

Check to see that the door reopening devices for power-operated doors, which are sensitive to smoke or flame, are rendered inoperative. Check to see that the mechanical safety edge and door open buttons are still operative and that door closing conforms to Rule 112.5. With the doors open, actuate the emergency stop switch to see that it is operative. The doors may or may not close, but the car must not move.

(5) Return the emergency stop switch to the "RUN" position. The automatic power-operated doors must close without delay, and the car should proceed to the designated level and park with the doors open. If the elevator is equipped with vertically sliding doors with automatic or momentary pressure closing, the closing sequence should initiate and the car should proceed to the designated level. If the elevator is equipped with manual doors or power-operated continuous-pressure closing, the visual and

Figure 6.4.2-1
Visual Signal



audible signals required by Rule 211.3a(4)(c) should operate, and when the doors are closed, the car should return to the designated level.

(6) Check all call buttons to see that they are inoperative and that call-registered lights and directional lanterns are extinguished when the designated level key-operated switch is in the "ON" position. Position indicators, where provided, must remain in service.

(7) Check to see that no emergency stop switches other than those inside the car (pit, car top, etc.) and no safety circuits other than the door reopening devices, which are sensitive to smoke or flame as previously mentioned, are rendered inoperative when the designated level key-operated switch is in the "ON" position.

(8) Check installations with vertical slide doors that corridor door open and door close buttons remain operative.

(9) Check that the visual and audible signal devices are activated. For elevators installed under A17.1-1990, verify that the visual signal graphic is as shown in Figure 6.4.2-1.

(10) With the designated level key-operated switch in the "OFF" position, activate the smoke detector. A smoke detector should be located in every elevator lobby, including the designated level, and every associated machine room. When activated, the smoke detector performs the same functions as previously described when the designated level key-operated switch is in the "ON" position. If the smoke detector at the designated level is activated, the elevator should return to an alternate level designated by the enforcing authorities. Smoke detectors may be installed in any hoistway and must be installed in hoistways that are sprinklered. For elevators installed under A17.1-1993 and later editions, activate any smoke detectors in the hoistway at or below the lowest landing of recall. Check that the elevator returns to the upper recall level. No smoke detectors, other than those referenced, or other devices are permitted to activate automatic Phase I recall. Smoke detectors must not be self-resetting.

NOTES:
(1) If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.
(2) See Rule 211.3b for locations where sensing devices are not required. Smoke detectors can be activated by using a test button if supplied, or by simulating smoke conditions. The manufacturer's recommended test procedures should be followed. Use of chemical smoke may oversensitize smoke detectors.

(11) With the smoke detector activated, turn the designated level key-operated switch to the "BYPASS" position. The elevator must return to normal service. With the designated level smoke detector activated and the designated level key-operated switch in the "OFF" position, turn the additional Phase I switch, if provided, to the "ON" position. The car must remain at the alternate level.

(12) If the car is provided with an in-car door open button, take the car to an upper floor. With the door open, have the designated level key-operated switch turned to the "ON" position. The in-car door open button should remain operative until the car moves away from the landing.

(13) Turn the additional two-position Phase I switch, if provided, to the "ON" position; turn the three-position Phase I switch to the "BYPASS" position. The elevator must remain on Phase I operation and not return to normal service.

(c) Phase I Emergency Recall Operation: Attendant-Operated Elevators. Elevators operable only by a designated attendant in the car must be provided with both visual and audible signals.

(d) Phase I and Phase II Automatic Operating Elevators With Dual Operation. Elevators arranged for dual operation must, when on automatic operation, conform to (b) and (e), and, when on attendant operation, conform to (c). The elevator must revert to automatic operation not less than 15 s nor more than 60 s after Phase I activation.

(e) Phase II Emergency In-Car Operation: Automatic Elevators. Phase II operation requires that a three-position key-operated switch ("OFF," "HOLD," and "ON," in that order) be provided in the operating panel in each car. The key should be removable in the "OFF," "HOLD," or "ON" position. With Phase I service activated and after the car has returned to the designated or alternate level, turn the in-car key-operated switch to the "ON" position.

(1) Check that the elevator is operable only by the car buttons and does not respond to corridor calls.

(2) Check that all corridor call buttons and directional lanterns are inoperative.

(3) Check that the opening of the door is controlled by a continuous-pressure button and that when the button is released prior to the door reaching its fully open position, the door will automatically reclose. On cars with two entrances, if both entrances can be opened at the same landing, separate door open and door close buttons must be provided for each entrance.

(4) Check that automatic car doors or gates, opposite manual hoistway doors, operate as specified in (3).

(5) Check to see that the door reopening devices are inoperative.

(6) Check that corridor door open and door close buttons, if provided, are inoperative.

(7) Check that the means provided in the car operating panel to cancel car calls is operative by registering calls and canceling them. A traveling car should stop at or before the next available landing.

(8) Check that floor selection buttons are provided in the car to permit travel to all landings serviced by the car. These buttons must be operational, bypassing all security during Phase II operation.

(9) With the car on Phase II operation, register two or more car calls and proceed to close the door. The car should proceed to the next available landing for the registered call. Once the car stops at that landing, all registered calls must be canceled.

(10) Check to see that once activated, Phase II operation cannot be deactivated until the car has returned to the designated or alternate level. To do this, with the designated level key-operated switch in the "ON" position and the in-car key-operated switch in the "ON" position, take the car to any floor except the designated floor. Then turn the designated level key-operated switch to the "OFF" position, or if a smoke detector is activated, to the "BYPASS" position, and make sure Phase II operation is maintained until the car is returned to the designated level.

(11) Turn the designated level key-operated switch to the "OFF" position or, if a smoke detector is activated, to the "BYPASS" position. Take the elevator to a floor other than the designated level and turn the in-car key-operated switch to the "ON" position. Check to see that Phase II operation does not operate even if the designated level key-operated switch is turned to the "ON" position or a smoke detector has been activated.

(12) Take the car to an upper floor, and with the door closed, turn the in-car key-operated switch to the "OFF" and "HOLD" positions. It should have no effect on Phase II operation.

(13) With the Phase I key-operated switch in the "ON" position, take the car to an upper floor and, with the doors open, place the in-car key-operated switch in the "HOLD" position. The car should remain at the floor.

(14) Take the car to an upper floor, and, with the doors open, place the in-car key-operated switch in the "OFF" position. Upon completion of the door closing the car should revert to Phase I operation and return nonstop to the designated or alternate level. For elevators installed under A17.1-1993 and later editions, check the following:

(-a) that the door reopening device is inoperative.

(-b) that in-car door open and door close buttons remain operative regardless of the type of doors. For vertically sliding doors, the corridor door open and door close buttons are operative.

(-c) that the door reopens when the in-car key-operated switch is placed in the "ON" or "HOLD" position before the door closes completely.

(f) Multideck Elevators. Multideck elevators should be inspected as outlined in (b) through (e) in addition to the following:

(1) The designated level key-operated switch for Phase I operation should be at the designated level served by the upper compartment.

(2) The in-car key-operated switch for Phase II operation must be located in the upper compartment. Check the operation of the in-car key-operated switch in accordance with (e).

(3) Check to see that means is provided for locking the lower deck out of service.

(g) Operating Instructions and Keys. Operating instructions for Phase I service should be posted adjacent to the designated level key-operated switch. Instructions for operating under Phase II operation should be incorporated with or adjacent to the in-car key-operated switch. Instructions should be in letters not less than $\frac{1}{8}$ in. (3.2 mm) in height, permanently installed, and protected against removal and defacement. The instructions must be exactly as shown in Figure 6.4.2-2 and either Figure 6.4.2-3 or Figure 6.4.2-4.

All switches must be keyed alike for Phase I and Phase II operation and must not be part of the building master key system. For elevators installed under A17.1b-1992 and later editions, check that all elevators in the building are keyed alike. Keys should be kept on premises for the designated level key-operated switch, and a key for each in-car key-operated switch must be kept in a location readily accessible to authorized persons but not readily available to the public.

Figure 6.4.2-2
Phase I Instructions

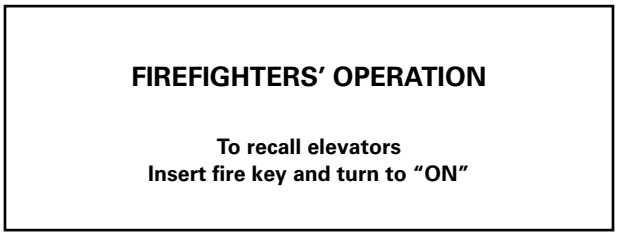


Figure 6.4.2-3
Phase II Instructions (A17.1b-1989 Through A17.1b-1995)

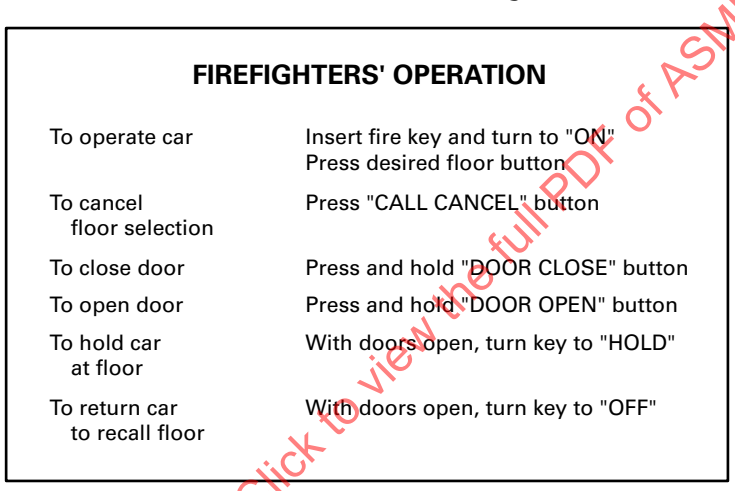
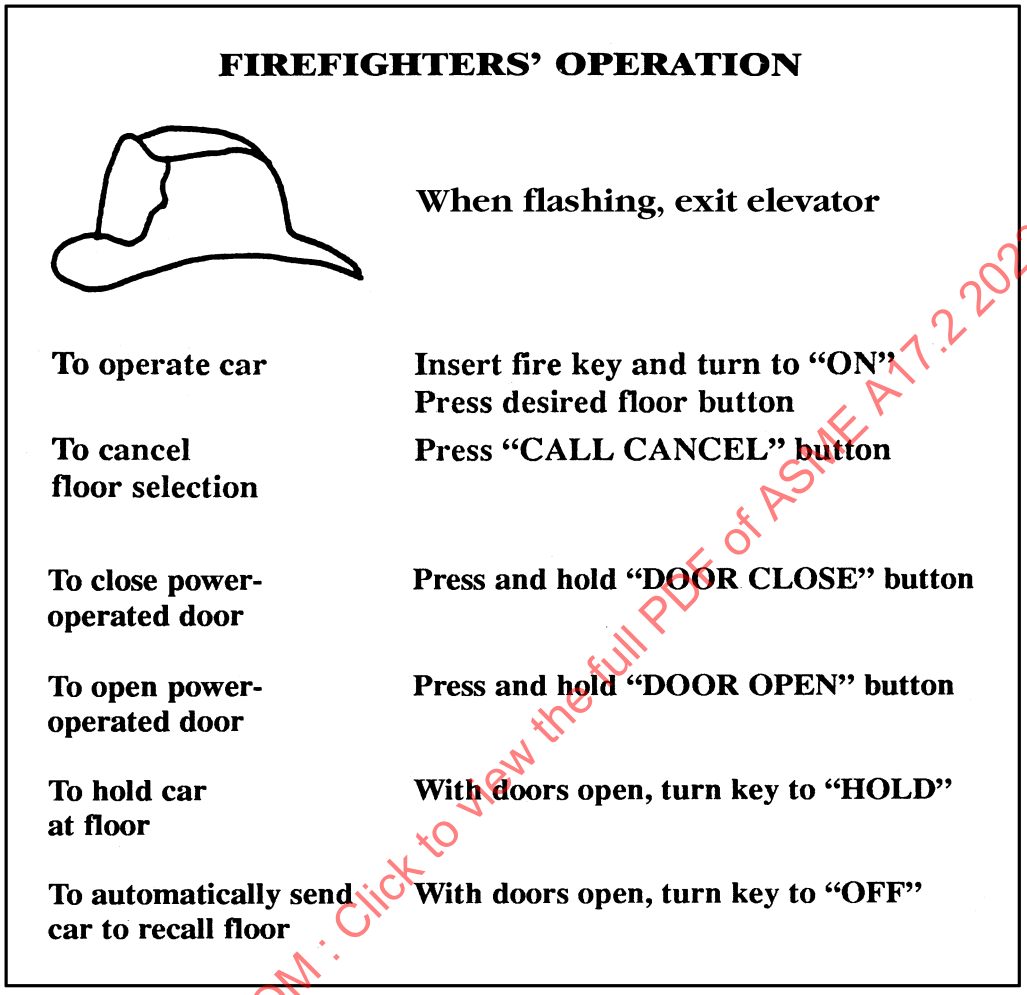


Figure 6.4.2-4
Phase II Instructions (A17.1-1996 Through A17.1d-2000)



(h) Inspection Operation. Place the car on inspection operation and operate from the top of the car. Check that an audible signal sounds and that the elevator remains under the control of the top-of-car operating device when the Phase I key-operated switch is in the "ON" position or a smoke detector is actuated.

(i) Interruption of Power. Place the car on Phase II operation and go to a floor other than the designated or alternate level. Open the mainline switch, then close the mainline switch. The elevator should remain on Phase II operation.

(j) Firefighters' Service When on Standby (Emergency) Power. Elevators are required to have a manual selection switch to override an automatic sequencing of standby power. With the elevator at an upper floor, switch the power to the elevators to standby power and place the Phase I key-operated switch in the "ON" position. Activate the manual selection switch to select a car other than that selected by the automatic sequencing. Check that power is transferred to the manually selected car only after the automatically selected car has stopped, normally after Phase I recall has been completed. If the manual selection switch is key operated, it must use the same key as the firefighters' service key.

6.4.3 Acceptance

6.4.4 References

6.4.4.1 Electric Elevators. A17.1d-2000 and earlier editions — Rules 112.3d, 112.5, 211.2 through 211.8, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 2.27.2 through 2.27.8, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

6.4.4.2 Hydraulic Elevators. A17.1d-2000 and earlier editions — Rules 112.3d, 112.5, 211.2 through 211.8 {306.11}, 1001.2(d)(12), 1002.2f, and 1206.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.3.4, 2.13.5, 2.27.2 through 2.27.8 {3.27}, 8.11.2.1.4(l), 8.11.2.2.6, and 8.6.10.1.

6.4.4.3 Electric LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2501.12.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.1.27.

6.4.4.4 Hydraulic LU/LA Elevators. A17.1d-2000 and earlier editions — Rule 2502.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.2.2.14.

NOTES:

(1) For electric LU/LA elevators installed under ASME A17.1-2007/CSA B44-07 and earlier editions, firefighters' emergency operation is not required; however, if provided, it should comply with ASME A17.1/CSA B44, requirements 2.27.3 through 2.27.8.

(2) For electric LU/LA elevators installed under ASME A17.1a-2008/CSA B44a-08 and later editions, Phase I firefighters' emergency operation is required. Phase II is prohibited.

(3) For hydraulic LU/LA elevators installed under ASME A17.1b-2009/CSA B44b-09 and earlier editions, firefighters' emergency operation is not required; however, if provided, it should comply with requirements 2.27.3 through 2.27.8.

(4) For hydraulic LU/LA elevators installed under ASME A17.1-2010/CSA B44-10 and later editions, Phase I firefighters' emergency operation is required. Phase II is prohibited.

ITEM 6.5
ACCEPTANCE CHECKLIST FOR FIREFIGHTERS' SERVICE (ASME A17.1-2000/CSA B44-00): AUTOMATIC ELEVATORS

NOTE: The acceptance checklist is more detailed than the "routine inspection" checklist. The routine inspection will confirm that the operation has been maintained in working order. See Nonmandatory Appendix B for the acceptance checklist.

6.5.1 Emergency Signaling Devices

6.5.1.1 "ALARM" must sound and illuminate when pressed. If the rise is over 100 ft (30 m), a second device is required.

6.5.1.2 The in-car emergency stop button (if present) must sound the alarm.

6.5.1.3 If the rise is more than 60 ft (18 m), check for two-way communication between the cab and a point outside the hoistway.

6.5.1.4 Ensure that audible alarms and communications are functional with loss of normal power.

6.5.1.5 Check for means to communicate with the machine room when required by ASME A17.1/CSA B44, requirement 2.26.1.5.10(c).

6.5.2 Phase I Key Switch and Instructions

6.5.2.1 Operating instructions.

6.5.2.2 Group 3 security keys.

6.5.2.3 Labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order.

6.5.2.4 Located on the designated level for the group.

6.5.2.5 Located in the lobby, visible and readily accessible.

6.5.2.6 The key cannot be removed in the "RESET" position, but it can be removed in the other positions.

6.5.2.7 The second switch, if present, must be at a central alarm and control facility labeled "FIRE RECALL" and must be a two-position switch marked "OFF" and "ON," in that order.

6.5.3 Phase II In-Car Switch and Instructions

6.5.3.1 Ensure that there is a key for each Phase I, each Phase II, and each standby power selection switch in the building.

6.5.3.2 The same key is used for Phase I, Phase II, and standby power for all elevators in the building.

6.5.3.3 Keys are available only to authorized emergency and firefighting personnel.

6.5.3.4 The key can only be removed in the "OFF" or "HOLD" position.

6.5.3.5 The keys shall be Group 3 security (see ASME A17.1/CSA B44, Section 8.1).

6.5.3.6 Labeled "FIRE OPERATION" and marked "OFF," "HOLD," and "ON," in that order.

6.5.4 Monthly Test

6.5.4.1 The monthly test log is completed.

6.5.5 Phase I Operation While Running

Place several floor calls in the car. While going up, have the person at the designated level place the Phase I switch in the "ON" position. Where a duplicate switch is provided, verify that Phase I is initiated by placing the switch in the "ON" position. Determine the following:

(a) The car stops and reverses without opening the doors.

(b) The in-car stop switch or emergency stop switch is inoperative.

(c) Call-registered lights and directional lanterns are extinguished and inoperative.

(d) Position indicators, where provided, are inoperative, except in the car, on the designated level, and in the central control station.

(e) The in-car door open button is rendered inoperative as soon as the car moves away from the landing.

(f) Car call buttons and corridor call buttons are inoperative.

(g) The car returns to the designated level and parks with power-operated doors open. If there is more than one entrance at the designated landing, only the doors serving the lobby with the fire recall switch open.

(h) The visual and audible signals operate and stay on until the car is at the designated level.

6.5.6 Phase I Operation With Doors Open

Place the Phase I switch in the "OFF" position and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position and check the following:

(a) Door reopening devices sensitive to smoke or flame are inoperative immediately.

(b) If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to $2\frac{1}{2}$ ft-lb (3.5 J).

(c) The emergency stop switch or in-car stop switch is rendered inoperative as soon as the car moves away from the landing.

(d) The in-car door open button is rendered inoperative as soon as the car moves away from the landing.

6.5.7 Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing

Place the Phase I switch in the "OFF" position and run the car to any floor. Activate the emergency stop switch or the in-car stop switch. With the doors open, have the Phase I switch turned to the "ON" position. Return the emergency stop switch or in-car stop switch to the "RUN" position.

6.5.7.1 Verify that the automatic power-operated horizontal sliding doors close promptly, and that other types of doors can be closed, and that, once the doors are closed, the car moves to the designated level.

6.5.8 Stop Switches and Door Buttons

While on Phase I operation, verify that

(a) stop switches other than those inside the car remain operative

(b) for vertical sliding doors, the corridor door open and door close buttons remain operative

6.5.9 Fire-Alarm-Initiating Device and Operation

6.5.9.1 Verify that there is a fire-alarm-initiating device in each elevator lobby, the elevator machine room, and sprinklered hoistways.

In jurisdictions enforcing the NBCC, verify that there is a fire-alarm-initiating device in each elevator lobby, at the designated level if not sprinklered throughout, and in the machine room if sprinklered.

6.5.9.2 With the car(s) on normal operation, have the input for main return activated and verify that the elevator commences Phase I operation and all cars return to the designated level.

6.5.9.3 To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily and then to "OFF."

6.5.9.4 With the car(s) on normal operation, have the input for alternate level return activated and verify that the elevator commences Phase I operation and all cars return to the alternate level.

6.5.9.5 Car(s) should only respond to the first fire alarm input.

6.5.9.6 Activate the machine room fire-alarm-initiating device input and verify Phase I operation and that all cars return to the designated level.

6.5.9.7 Activate the designated level machine room fire-alarm-initiating device and verify Phase I operation and that all cars return to the alternate floor.

6.5.9.8 With the car(s) on normal operation, have the input for machine room or hoistway return activated and verify that the visual signal in the car illuminates intermittently. (23)

6.5.9.9 In jurisdictions not enforcing the NBCC, where a fire-alarm-initiating device is required in the hoistway, activate the input and verify that all cars return to the designated landing, except that fire-alarm-initiating devices installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.

6.5.10 Fire-Alarm-Initiating Device and Phase I Switch

6.5.10.1 Activate the alternate landing return input and observe that the elevator returns to the alternate landing.

6.5.10.2 If a two-position key switch is provided, place it in the "ON" position and verify that the elevator remains at the alternate landing.

6.5.10.3 Turn both the Phase I switch and the additional Phase I switch (when provided) to the "ON" position and verify that the car returns to the designated level.

6.5.11 Phase II Key Switch and Sign

With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car and check the following:

(a) The elevator can be operated only from the car buttons and will not respond to corridor calls.

(b) All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. All landing position indicators, except at the designated landing and central alarm and control facility, are inoperative. Car position indicators are operative.

(c) Power-operated doors can only be opened by continuous pressure on the door open button; if the button is released before the doors are in the normal open position, the doors will close without delay.

(d) Open power-operated doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen and vertical sliding doors will stop, or stop and reopen.

(e) If two entrances can be opened and closed at the same landing, separate door open and door close buttons should be provided for each entrance.

(f) All door reopening devices are inoperative (except the door open button). Full-speed closing is permitted.

(g) The "CALL CANCEL" button is labeled, and when activated, will cancel all calls and cause the car to stop at or before the next available landing.

(h) Floor selection buttons are provided and functional for all landings without restrictions.

(i) A moving car will stop at the next landing with a car call registered, and remaining car calls will be canceled.

6.5.12 Phase II Switch in the "HOLD" Position

6.5.12.1 Place the Phase II switch in the "HOLD" position and remove the key. Verify that the car remains at the landing and the door close button is inoperative.

6.5.12.2 Verify that the car call buttons are inoperative.

6.5.13 Phase II Switch in the "OFF" Position and Doors Closing: Power-Operated Horizontally and Vertically Sliding Doors

With the elevator away from the designated level and Phase I operation in effect, place the Phase II switch in the "OFF" position and verify that

(a) horizontally sliding doors close automatically and continuous pressure on the door close button will close vertically sliding doors

(b) the car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing

(c) the door reopening device is inoperative and full-speed closing is permitted

(d) the door open button is operative

(e) if the Phase II switch is turned to "ON" or "HOLD" before the door is closed, the door will reopen

6.5.14 Removal From Phase II Operation

Verify that the elevator can be removed from Phase II operation only when

(a) the Phase II switch is in the "OFF" position at the designated level and the doors are open

(b) the Phase II switch is in the "OFF" position and Phase I operation is in effect

6.5.15 Power Disconnects Open

6.5.15.1 With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation.

6.5.15.2 With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.

6.5.15.3 The car is allowed to move to a position in the hoistway to reestablish position once movement is attempted.

6.5.16 Top-of-Car Operating Device

While operating from the top of the car, have the Phase I key switch placed in the "ON" position and verify that

(a) an audible signal sounds

(b) the elevator remains under the control of the top-of-car operating device

(c) the elevator remains under the control of the hoistway access switch

6.5.17 Automatic Elevators With Attendant Operation

With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify that

(a) the audible and visual signals operate and that a parked elevator will automatically go on Phase I operation after a time delay between 10 s and 30 s.

(b) a moving car on attendant operation will commence Phase I operation without delay.

(c) if the car is on hospital emergency service, it will remain on that operation until removed by the operator, when it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately and remain activated until the car is returned to the designated landing. With the car on firefighters' emergency operation, the elevator cannot be placed on hospital service.

6.5.18 Elevators on Phase I and Phase II Operation, Prevention of Operation and Disabling Not Allowed

With the elevator on normal operation, verify the following:

(a) Activate means other than those specified in this Code to remove elevators from normal operation, and verify that the Phase I emergency recall operation is not prevented.

(b) Activate input for devices that measure loads and verify that the elevator is not prevented from operating at or below the capacity that is required.

(c) Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.

Part 7
Escalator — External

ITEM 7.1
GENERAL FIRE PROTECTION

7.1.1 Periodic Inspections

Examine the sides and undersides of the escalator trusses and machinery spaces enclosure for damage to fire-resistive materials. A17.1a-1994 and later editions permit the use of noncombustible and limited-combustible materials as defined by the building code or ANSI/NFPA 101.

Check that guards are in place for openings provided for ventilation of the drive machine and control equipment spaces. Enclosure in a fire-resistive ceiling does not constitute adequate fire protection.

Verify that provisions to protect floor openings from the passage of flame, heat, and/or smoke that are required by the building code have not been damaged, removed, or defeated. Escalators installed under A17.1-1981 and later editions require protection in compliance with ANSI/NFPA 101 or local codes. Editions prior to A17.1-1981 gave requirements for protection of floor openings for escalators that were not accredited as a means of egress. However, since escalators are no longer accredited as a means of egress, the inspector must refer to the local code or ANSI/NFPA 101 for the protection requirement at each location.

7.1.2 Periodic Test

7.1.3 Acceptance

Verify that floor openings are protected against the passage of flame, heat, and/or smoke in accordance with the requirements of the building code.

7.1.4 References

ASME A17.1d-2000/CSA B44-00 and earlier editions — Sections 800 and 801 and Rule 1009.2a.

A17.1-2000 and later editions — Requirements 6.1.1, 6.1.2, and 8.10.4.1.1(a) and 8.11.4.1(a).

ASME A17.3 — Paragraph 5.3.8.

ITEM 7.2
GEOMETRY

7.2.1 Periodic Inspections

Inspect for evidence of change to the geometry of the balustrades, and if change has been made, inspect as outlined in 7.2.3.

If an escalator is relocated or a new escalator is installed in existing trusses, it must comply with the current Code requirements. See Figures 7.2.1-1 through 7.2.1-3 for dimension requirements of existing escalators.

Verify that the overhead clearance is in compliance with local codes.

7.2.2 Periodic Test

The width of the balustrades must be the width of the step tread to the next whole inch and should not decrease in the direction of travel. For escalators installed under A17.1-1955 through A17.1-1981, the width should not change abruptly or more than 8% of the greatest width, and the maximum angle of change should not be more than 15% in the line of travel.

7.2.3 Acceptance

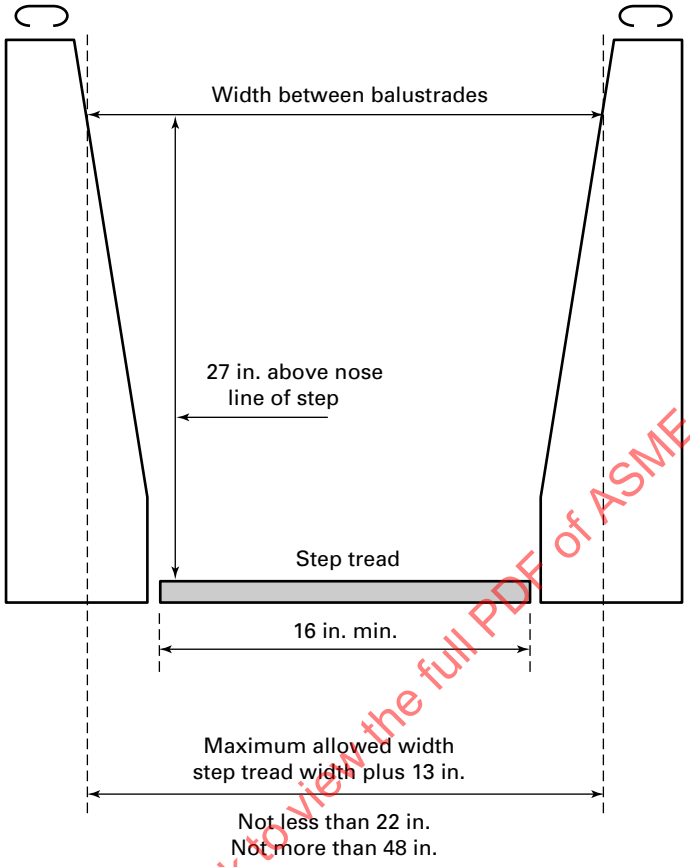
(a) Verify that the angle of inclination does not exceed 31 deg. If in doubt, a 30 deg/60 deg triangle, a level, and a straight edge may be used to check the incline. The straight edge may be placed on the front of several steps as shown in Figure 7.2.3-1. The bubble on the level should be in the center or slightly to the left when placed as shown in the figure. If the bubble is to the right, a protractor or angle finder will be needed to verify that the incline does not exceed 31 deg.

(b) Measure the width of the step at a right angle transverse to the direction of travel.

(c) Measure and mark the centerline of each handrail and use a plumb line to find the distance from the handrail centerline to the width of the escalator or step edge.

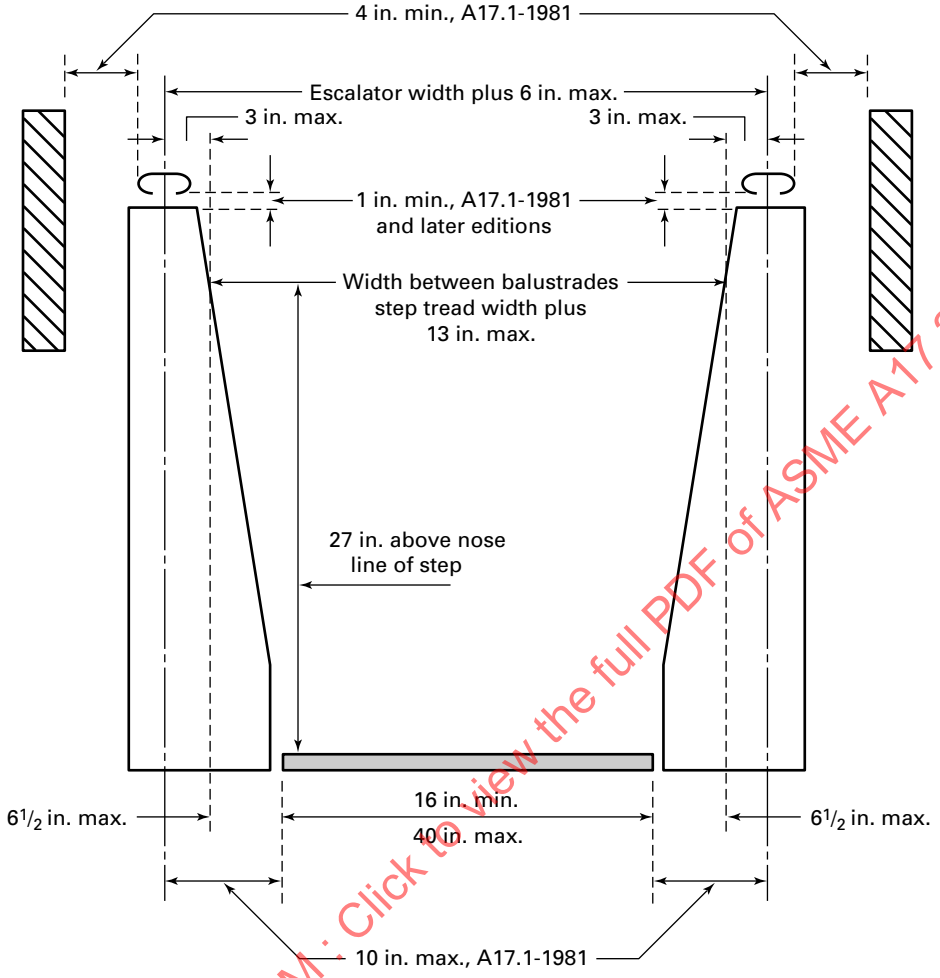
(d) For an interior low-deck escalator, measure the distance from the vertical face of the interior panels to the vertical face of the skirt panels using a machinist level and ruler (see Figure 7.2.1-3). Measure the slope of the deck perpendicular to the line of travel using a machinist level and protractor.

Figure 7.2.1-1
Dimensions for Existing Escalators (for Escalators Installed Under A17.1-1955 and A17.1-1960 Editions)



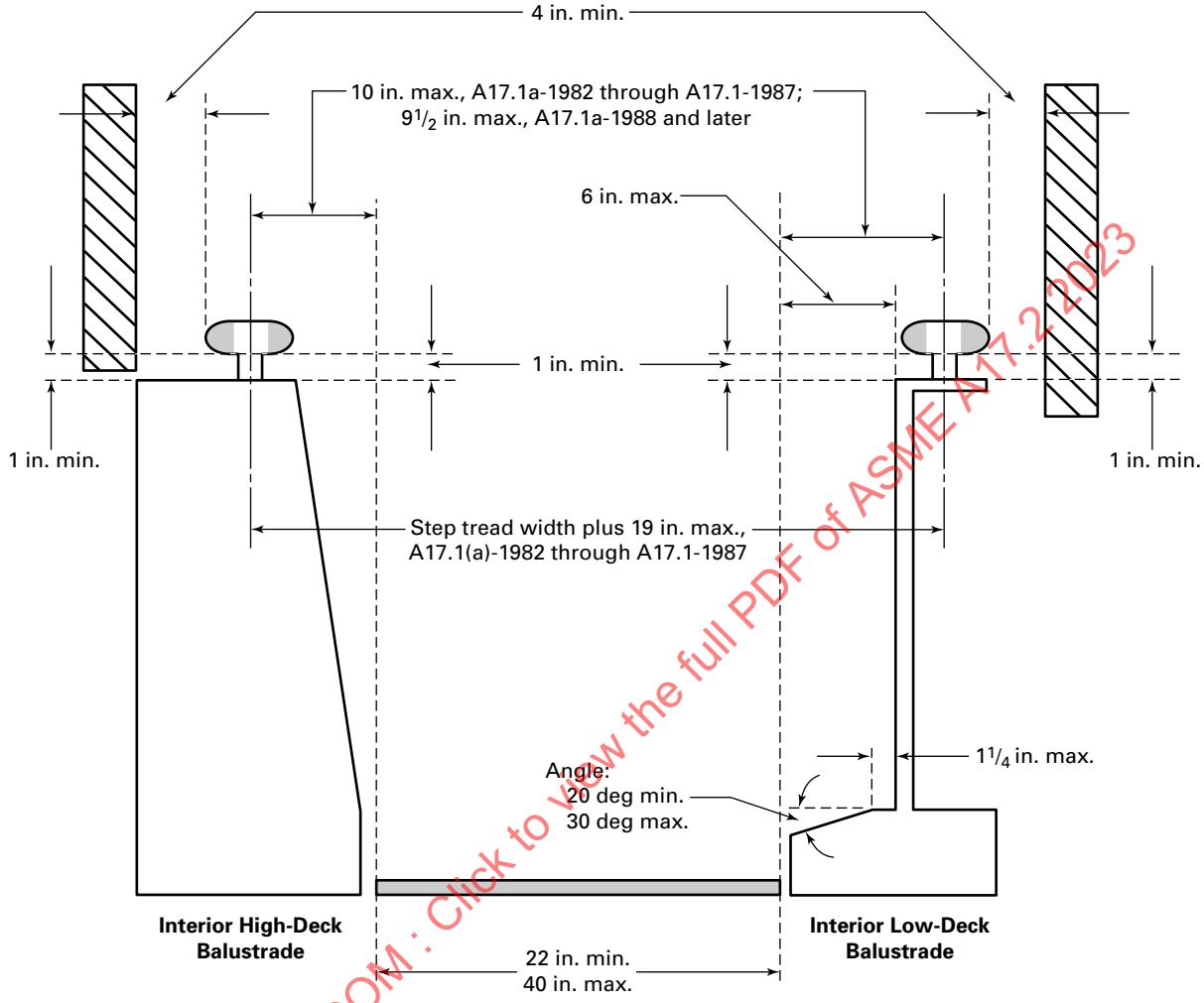
GENERAL NOTE: 1 in. = 25.4 mm.

Figure 7.2.1-2
Dimensions for Existing Escalators (for Escalators Installed Under A17.1-1965 Through A17.1-1981)



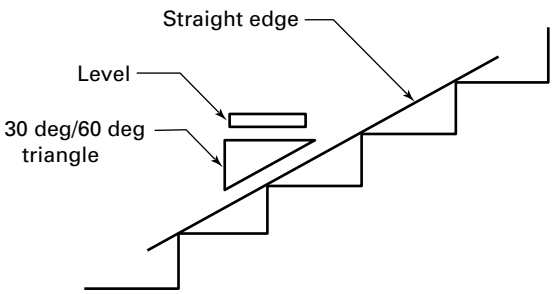
GENERAL NOTE: 1 in. = 25.4 mm.

Figure 7.2.1-3
Relationship of Escalator Parts (for Escalators Installed Under A17.1a-1982 and Later Editions)



GENERAL NOTE: 1 in. = 25.4 mm.

Figure 7.2.3-1
Checking Incline



(e) Drop a plumb line to the edges of the steps and measure the distance between the centerline of the handrails and the edge of the steps.

7.2.4 References

A17.1d-2000 and earlier editions — Rules 802.1, 802.2, 802.3d, 1009.2b, 1009.2g, and 1207.5 and Appendix D.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.3.1, 6.1.3.2, 6.1.3.3.4, 8.10.4.1.1(b), 8.10.4.2.2(a), 8.11.4.1(b), and 8.7.6.1.5 and Appendix I.

ITEM 7.3
HANDRAILS

7.3.1 Periodic Inspections

(a) Mark one location on each handrail with chalk, then operate the unit and inspect each handrail through a complete revolution. The handrails, including splices and joints, should be free of any cuts, cracks, gouges, pinch points, or any other condition that would be a hazard to passengers. Any rust or rubber filings present on the balustrade deck indicate that an internal inspection of the handrail system may be warranted.

(b) Verify that the hand or finger guards are present at the newel base. Check that the guards are in good condition and properly sized to prevent fingers or hands from being drawn into the newel. Finger guards are required under A17.1-1965 and later editions and ASME A17.3. A17.1-1955 required that the balustrade be designed or guarded to prevent fingers and hands from being drawn into the balustrade where the handrail enters. There are several types of guards in use, including resilient boots, brushes, and trap doors. Each may function differently to provide the protection. Trap doors do allow entry but prevent entrapment.

(c) Ride the escalator holding the handrails through the entire travel. The handrails should move smoothly without jerking, at substantially the same speed as the steps. The need to change grip on the handrail more than once during a single level rise would indicate a need for adjustment. At several points in the ride, firmly grip the handrail and verify that it does not stall under moderate force.

(d) During this ride, observe any unusual noise that may indicate the need for further inspection. Listen for noise that may indicate wear of the turn-around rollers or other parts.

(e) Check the horizontal clearance between both lips of the handrail and the handrail stand (guide).

7.3.2 Periodic Test

For escalators installed under A17.1-2000 and later editions, the person or firm maintaining the equipment must provide a written checkout procedure and demonstrate that the handrail speed does not change when a retarding force, up to the maximum required by Code, is applied opposite to the direction of travel. Note that it may be easier to retard the handrail motion when the handrail is traveling in the down direction (i.e., the retarding force will oppose the handrail drive system).

7.3.3 Acceptance

Check whether each handrail extends at normal height not less than 12 in. (305 mm) beyond the escalator combplates, and verify that required clearances are present.

Check the vertical height from the step nose line to the top of the handrail.

7.3.4 References

ASME A17.1d-2000/CSA B44-00 and earlier editions — Rules 802.2, 802.4, and 1009.2c and Appendix D.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004 — Requirements 6.1.3.2, 6.1.3.4, 8.11.4.2.13, 8.11.4.1(c), 8.6.8.1, 8.6.8.12, 8.10.4.2.2(b), and 8.10.4.1 and Appendix I.

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.3.2, 6.1.3.4, 8.11.4.2.13, 8.11.4.1(c), 8.6.8.1, 8.6.8.11, 8.10.4.2.2(b), and 8.10.4.1 and Appendix I.

ASME A17.1a-2008/CSA B44-08 and later editions — Requirements 6.1.3.2, 6.1.3.4, 8.11.4.1(c), 8.6.8.1, 8.6.8.11, 8.6.8.15.13, 8.10.4.2.2(b), and 8.10.4.1 and Appendix I.

ASME A17.3 — Paragraphs 5.1.5 and 5.1.6.

ITEM 7.4
ENTRANCE AND EGRESS ENDS

7.4.1 Periodic Inspections

(a) The floor surfaces adjacent to the landing plates must be continuous with the top of the landing plate, with no abrupt changes in elevation of more than $\frac{1}{4}$ in. (6.4 mm). Access to an egress from the escalator should be free of obstacles and tripping hazards. Check that the pit covers are present and in good condition.

(b) For escalators installed under A17.1a-1988 and later editions and ASME A17.3, a safety zone should be maintained free of obstacles (see Figure 7.4.1-1). These Code dimensions are minimums; traffic patterns may require larger distances.

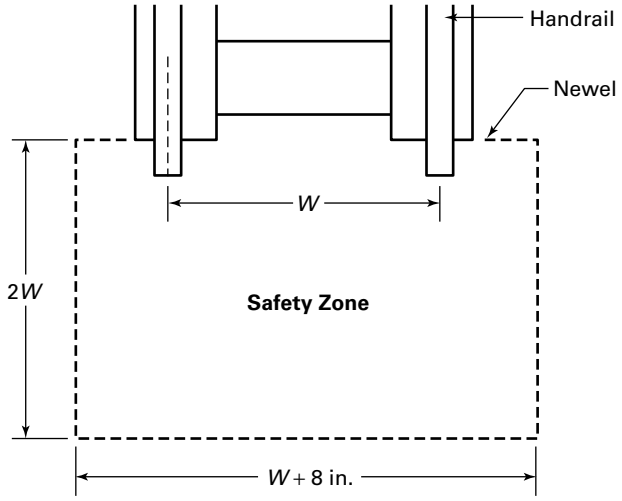
(c) While standing on the unit, verify that the landing and combplates provide a secure foothold. Outdoor units should provide a secure foothold when wet.

7.4.2 Periodic Test

7.4.3 Acceptance

Verify that vertical headroom clearance of 7 ft (2.13 m) is provided and that the required safety zone is present.

Figure 7.4.1-1
Safety Zone



Check that floor openings adjacent to the entire length of the wellway are protected in accordance with the applicable building code.

7.4.4 References

A17.1d-2000 and earlier editions — Rules 802.6 and 802.12.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-00 — Requirements 6.1.3.6, 8.6.8.15, 6.1.3.12, 8.10.4.1.1(d), and 8.11.4.1(d).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.1.3.6, 8.6.8.14, 6.1.3.12, 8.10.4.1.1(d), and 8.11.4.1(d).

ASME A17.3 — Paragraphs 5.5.3 and 5.5.4.

ITEM 7.5
LIGHTING

7.5.1 Periodic Inspections

Check whether the lighting at the landing plates and steps is in compliance with the applicable code by using a lightmeter while the escalator is operating. Take care not to cast a body shadow on the meter. Note any lamps that are not operating and their effect on the escalator lighting.

For escalators installed under A17.1-1955 through A17.1-1971, the minimum intensity was 2 fc (22 lx). A17.1a-1979 required step tread lighting to be uniform throughout the run and the lighting intensity to be in accordance with local codes and ordinances for stairways. For escalators installed under A17.1-1987 and later editions and ASME A17.3, a minimum intensity of 5 fc (54 lx) is required, and the lighting must be of uniform intensity and must not contrast materially with the surrounding area.

For escalators installed under A17.1-1978 through A17.1a-2005, verify that green demarcation lights are present below the steps at both landings and are on when the escalator is in operation. Any type of light source, except incandescent sources, is permitted.

7.5.2 Periodic Test

7.5.3 Acceptance

7.5.4 References

A17.1d-2000 and earlier editions — Rules 806.2, 805.7, and 1009.2d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 6.1.7.2, 6.1.6.7, 8.11.4.1(e), and 8.10.4.1.1(e).

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 6.1.7.2, 8.10.4.1.1(e), and 8.11.4.1(e).

ASME A17.3 — Paragraphs 2.2.3 and 5.4.

ITEM 7.6
CAUTION SIGNS

7.6.1 Periodic Inspections

For escalators installed under A17.1-1981 and later editions and escalators that are required to comply with ASME A17.3, verify that the required caution signs are located at both landings and are readily visible to boarding passengers.

For escalators installed under A17.1-1993 and later editions, verify that any additional signs are located at least 10 ft (3.05 m) horizontally from the end of the newels and that they do not impede traffic or otherwise cause persons to stop.

7.6.2 Periodic Test

7.6.3 Acceptance

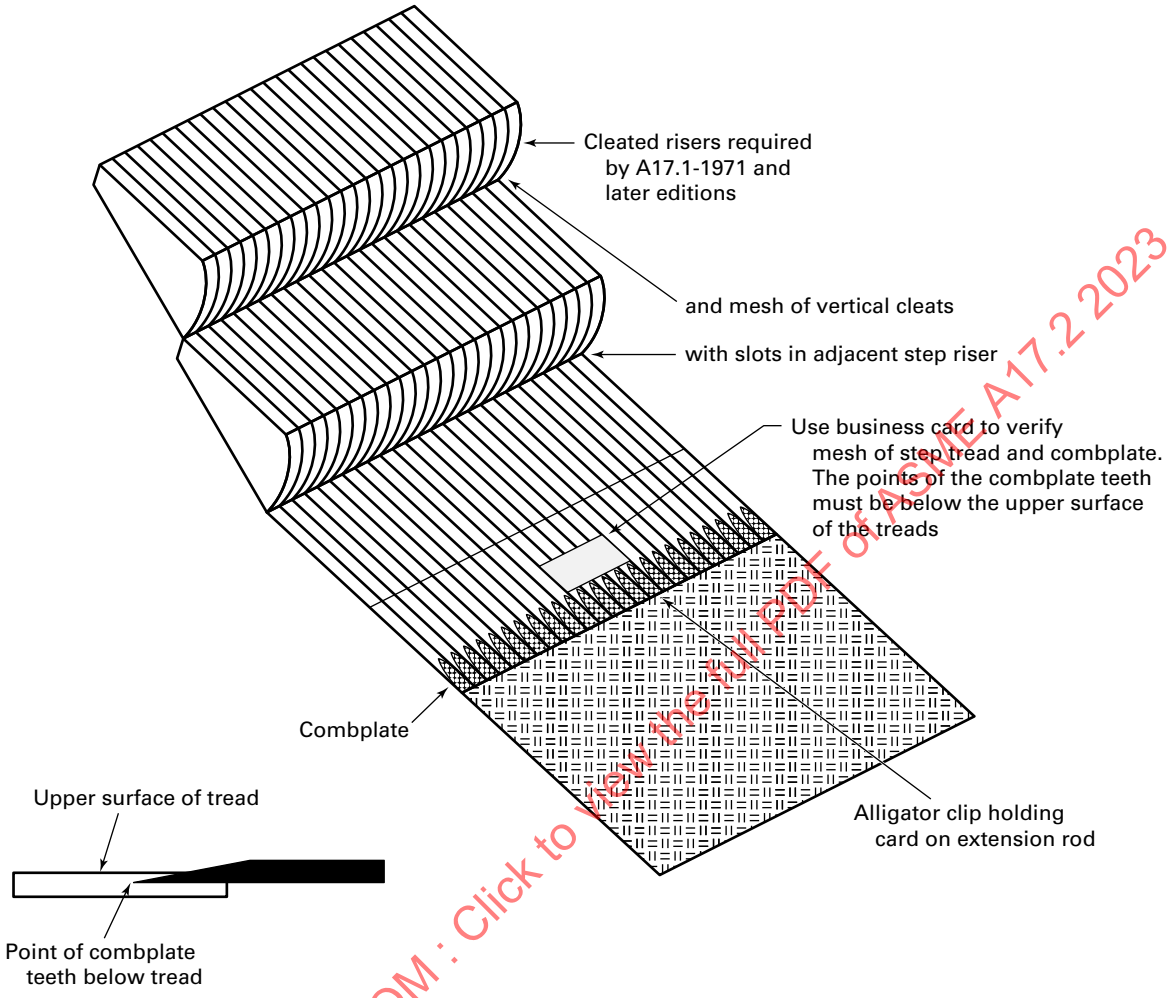
7.6.4 References

A17.1d-2000 and earlier editions — Rule 805.9 and Figure 805.9a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.6.9, 8.10.4.1.1(f), and 8.11.4.1(f) and Figure 6.1.6.9.1.

ASME A17.3 — Paragraph 5.3.11.

Figure 7.7.1-1
Checking Step/Combplate Mesh



ITEM 7.7
COMBPLATE AND COMB STEP IMPACT DEVICE

7.7.1 Periodic Inspections

Inspect the comb for missing teeth and proper mesh with each step tread (see Figure 7.7.1-1). Verify proper mesh with each step tread by holding a sheet of stiff paper or a business card where the teeth mesh with the step tread, while standing well back from the plate to prevent forcing the plate down. Use of an extension with an alligator clip to hold the card is recommended.

NOTE: Telescoping pointers with alligator clips that are used to ignite water heater pilot lights are available in hardware/plumbing supply stores.

The comb teeth should mesh with and set into the tread surface so that the teeth are always below the upper surface of the treads. Any section with one or more missing or broken teeth should be replaced. For escalators installed under A17.1c-1986 and later editions, the comb surfaces must contrast visibly by color, pattern, or texture.

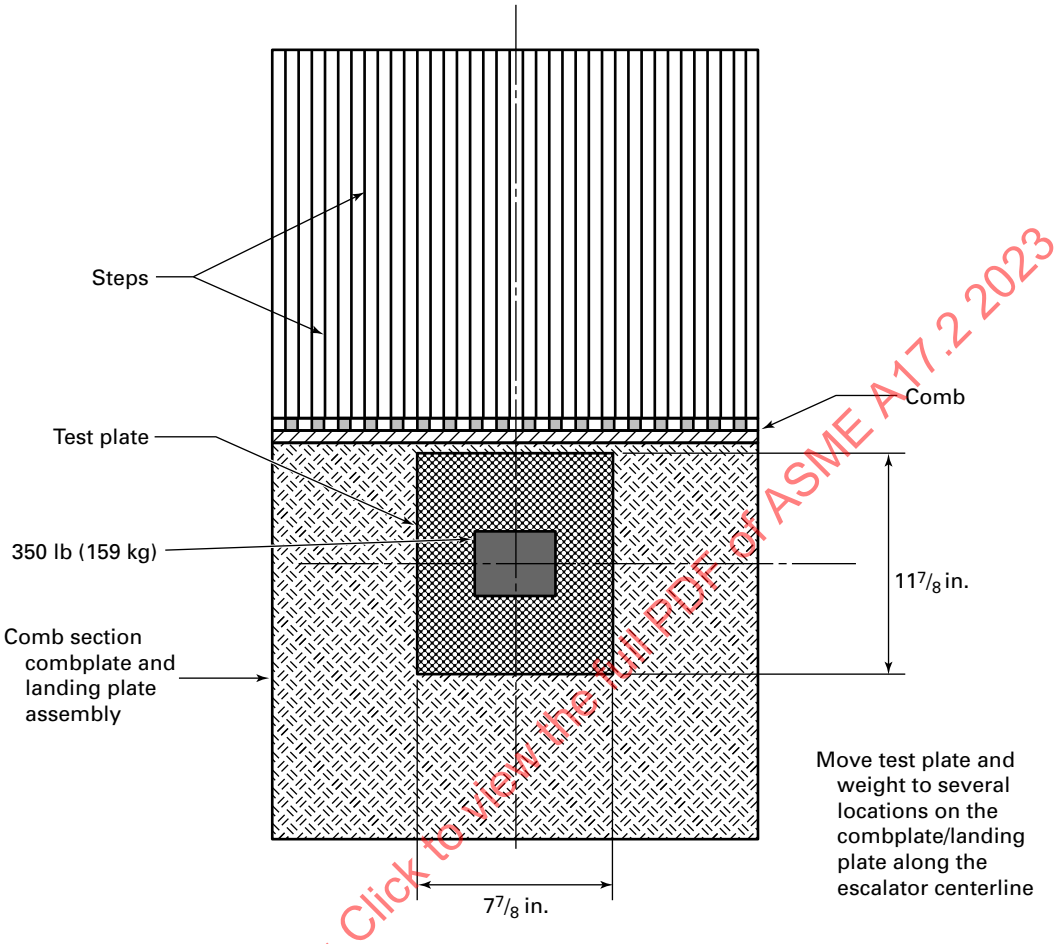
7.7.2 Periodic Test

For units installed under A17.1b-1992 and later editions, have the operation of combplate impact devices tested as follows:

(a) Have a vertical force applied to the center front edge of the combplate until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset.

(b) Have a force applied in the direction of travel at the front center of the combplate, increasing the force until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset.

Figure 7.7.3-1
Test of Combplate/Landing Plate Assembly



GENERAL NOTE: 1 in. = 25.4 mm.

(c) Have a force applied in the direction of travel on one side of the front of the combplate, increasing the force until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset. Repeat this test for the opposite side.

Note that while the required maximum horizontal forces were 112 lbf (500 N) at each side and 225 lbf (1 000 N) at the center of the combplate for escalators installed to A17.1b-1992 through A17.1-1996, it is permitted to have the maximum horizontal forces at the higher values permitted by A17.1a-1997 and later editions.

7.7.3 Acceptance

(a) Visually verify that the combplates are vertically adjustable and that the sections forming the comb teeth are replaceable.

(b) Place weight on the combplate and landing plate assembly to verify that the combplate and landing plate will not contact the step (see Figure 7.7.3-1).

7.7.4 References

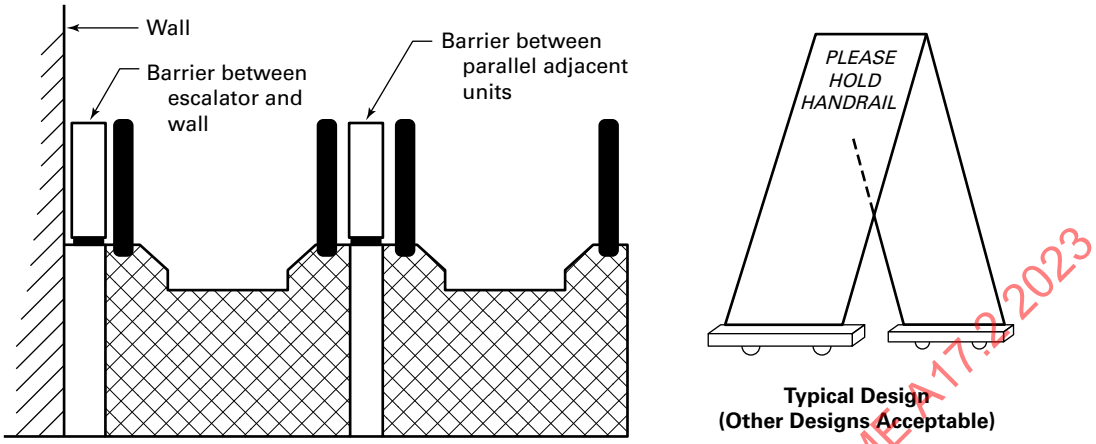
A17.1d-2000 and earlier editions — Rules 802.6, 805.3n, 807.3, 1206.6, (NR 8.6.9.2.3), 1008.2r, and 1009.2e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.3.6.1, 6.1.6.3.13, 6.1.8.3, 8.6.8.4, 8.10.4.1.1(g), 8.10.4.1.2(q), 8.10.4.2.2(h), and 8.11.4.1(g).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.3.6.1, 6.6.3.13, 6.1.8.3, 8.6.8.4, 8.6.8.15.8, 8.10.4.1.1(g), 8.10.4.1.2(q), 8.10.4.2.2(h), and 8.11.4.1(g).

ASME A17.3 — Paragraph 5.1.9.

Figure 7.8.1-1
Deck Barricade



ITEM 7.8
DECK BARRICADES AND ANTISLIDE DEVICES

7.8.1 Periodic Inspections

For low-deck escalators installed under A17.1c-1986 and later editions, check to see that the deck barricades are firmly in place and in good condition at each end when the outer deck width exceeds 5 in. (127 mm). The barrier must extend to 4 in. (102 mm) below the handrail top. See Figure 7.8.1-1. If the escalator is not located at the edge of a floor surface, check that the barricade or barricades are in place, are properly located, and are firmly secured on the outer deck for escalators installed to A17.1b-1995 and later editions.

On high-deck escalators installed under A17.1-1981 and later editions and ASME A17.3, check that antislide devices, where required, are in place and secure. See Figure 7.8.1-2.

7.8.2 Periodic Test

For escalators installed under A17.1a-1988 and later editions, verify that glass and plastic replacement panels meet the requirements of ANSI Z97.1 or 16 CFR Part 1201.

7.8.3 Acceptance

All glass or plastic (glazing material) must be legibly and permanently marked "16 CFR Part 1201," "American National Standard Z97.1" or "ANSI Z97.1" and shall be marked also with the manufacturer's distinctive mark or designation.

Check that all exposed fastener heads are the tamper-resistant type.

7.8.4 References

A17.1d-2000 and earlier editions — Rules 802.3i and 1009.2f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44b-03 — Requirements 6.1.3.3.10, 6.1.3.3.11, 8.6.8.11, 8.11.4.1(h), and 8.10.4.1.1(h).

ASME A17.1-2004/CSA B44-04 — Requirements 6.1.3.3.11, 6.1.3.3.12, 8.6.8.11, 8.10.4.1.1(h), and 8.11.4.1(h).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.1.3.3.11, 6.1.3.3.12, 8.6.8.10, 8.10.4.1.1 (h), and 8.11.4.1(h).

ASME A17.3 — Paragraphs 5.1.4 and 5.1.10.

ITEM 7.9
STEPS AND UPTHRUST DEVICE

7.9.1 Periodic Inspections

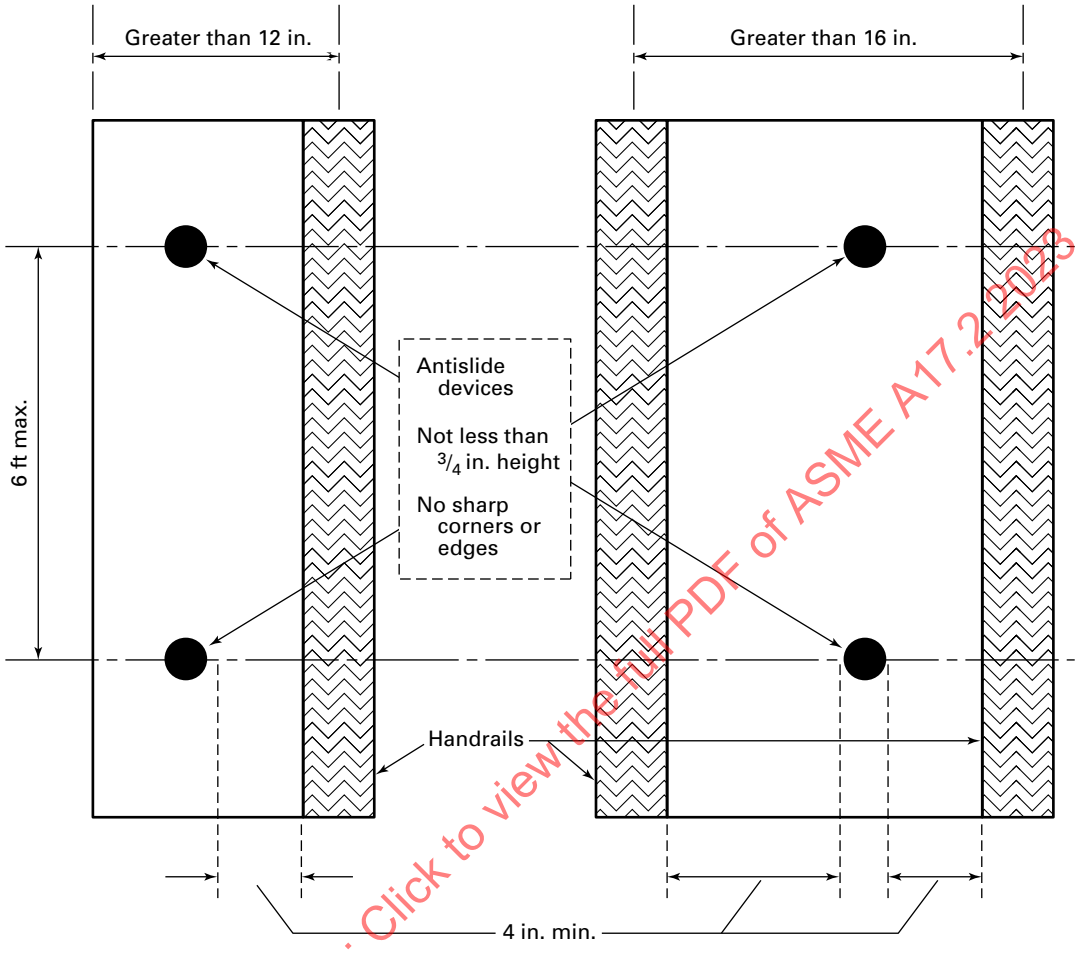
(a) Mark one of the steps with chalk, then run the escalator through one complete revolution. Check that each step is present, clean, and free of debris, and that the step treads and risers are in good condition.

(b) Check at least every tenth step, by riding on it, to verify that the following requirements are met:

(1) There is no excessive movement or play in the direction of travel, at right angles to the direction of travel and vertically. While standing on the step, a lateral shift of weight should not cause the step to strike the skirt panels.

(2) For escalators installed prior to A17.1-1971, verify that the clearance between step treads on the horizontal run (between the step and riser) is not more than $^{5}/_{32}$ in. (4 mm). A thickness gage or a rule may be used for this purpose. With the escalator moving in the up direction, lay the rule on the step and read the clearance. Check

Figure 7.8.1-2
High-Deck Balustrade Antislide Devices



at least every tenth step. Cleated step risers are required for all escalators installed under A17.1-1971 and later editions, and they must mesh with the slots of adjacent step treads. Mesh can be verified by trying to fit a thin piece of stiff paper, such as a business card, between the steps and the riser while the escalator is moving in the up direction. The check should be made across the entire width. (See Figures 7.9.1-1 and 7.9.1-2.)

For escalators installed under ASME A17.1-2000/CSA B44-00 and later editions, check that the clearance between the steps on the horizontal run does not exceed 0.25 in. (6 mm). (See Figure 7.9.1-3.)

(3) Use a level to check if the steps are horizontal.

(4) The tread surface should be slotted in the direction parallel to travel so that it meshes with the combplate teeth. Verify that a cleat is formed adjacent to the skirt panel on each side of the step (see Figure 7.9.1-4).

(5) Check risers, cleats, and step tread surfaces. Special consideration should be given to excessive clearance and sharp edges. While standing on the step tread, verify that it provides a secure foothold.

(6) A jerking motion on the steps and excessive noise in the machinery space indicate that the drive and support system should be examined to discover the source or cause.

7.9.2 Periodic Test

For escalators installed under A17.1b-1980 and later editions and those required to comply with ASME A17.3, test the operation of the step upthrust device as follows:

(a) With the escalator running down, apply an upthrust force to a step to resist leveling as it enters the lower curve. This should stop the escalator.

(b) If this will not operate the upthrust device, the upthrust device should be checked more closely during the internal inspection described in 8.9.2, and a meter should be used to verify that the safety circuit is opened when the upthrust device operates.

For escalators that have smooth risers and that are required to comply with ASME A17.3, test the operation of the upthrust device at both the upper and lower curves. Test the lower curve with the escalator running down and the upper curve with the escalator running up. This may require two pairs of pliers gripping on both sides at the front of the step tread.

7.9.3 Acceptance

Review fatigue test and certification for Code compliance.

Verify that there are at least two and no more than four flat steps at each end of the escalator. Refer to Figure 7.9.3-1 for flat step configuration identification.

Check that the materials for step frames, treads, and risers, including any attachments or inserts, meet Code requirements.

Check that all steps have yellow demarcation lines on each side and along the back. Check the step dimensions for Code compliance.

7.9.4 References

A17.1d-2000 and earlier editions — Section 3 and Rules 802.5, 802.6e, 802.9d, 805.3i, 1008.2i, and 1105.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.3.5, 6.1.3.6.5, 6.1.3.9.4, 6.1.6.3.9, 8.11.4.2.9, 8.6.8.6, 8.3.11.1, 8.10.4.1.1(i)(1), 8.10.4.2.2(c), 8.10.4.2.2(e), and 8.11.4.1(i) and Figure I-8.

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.3.5, 6.1.3.6.5, 6.1.3.9.4, 6.1.6.3.9, 8.11.4.2.9, 8.6.8.6, 8.3.11.1, 8.10.4.1.1(i)(1), 8.10.4.2.2(c), 8.10.4.2.2(e), and 8.11.4.1(i) and Figure I-8.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.3.5, 6.1.3.6.5, 6.1.3.9.4, 6.1.6.3.9, 8.6.8.15.9, 8.6.8.6, 8.3.11.1, 8.10.4.1.1(i)(1), 8.10.4.2.2(c), 8.10.4.2.2(e), and 8.11.4.1(i) and Figure I-8.

ASME A17.3 — Paragraphs 5.1.7 and 5.1.8.

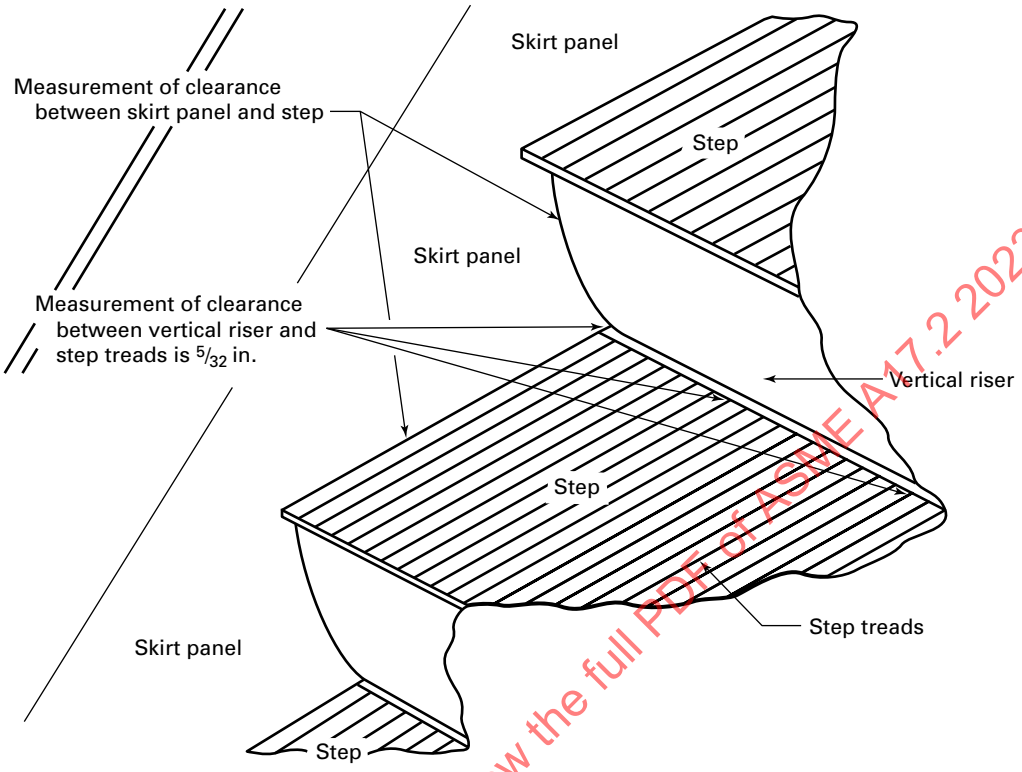
ITEM 7.10
OPERATING AND SAFETY DEVICES

7.10.1 Periodic Inspections

(a) Start Switches. Verify that a record of personnel that were trained in the proper procedure to start up the escalator is available on site. Verify that a key-operated switch, located so that the steps are within sight, is the only means of starting the escalator. Verify that the key is only accessible to authorized personnel. A17.1-1937 and later editions require the use of a key to start an escalator. However, A17.1a-1988 and later editions and ASME A17.3 specifically prohibit starting by automatic means. Start the escalator using the key-operated switch. When operating the switch, verify that the escalator steps are within sight and that no one is on the steps. Where the escalator can be operated in both directions, check the switch operation in both directions. Where there is more than one key-operated start switch, the function and location of all switches shall be checked.

For units installed under A17.1-1996 and later editions, verify that the start switch operating positions are properly marked. Check that the key is only removable in the "RUN" position. Turn the switch from "RUN" to either "UP" or "DOWN" and quickly let go of the key. The switch must return to the "RUN" position. Repeat for the other direction of travel. Next turn the switch to either the "UP" or "DOWN" position. Stop the unit with the emergency stop button and keep the switch in the "UP" or "DOWN" position. The unit must not restart. Repeat for the other direction of travel.

Figure 7.9.1-1
Smooth Riser



Escalators Installed Prior to A17.1-1971

Figure 7.9.1-2
Cleated Riser

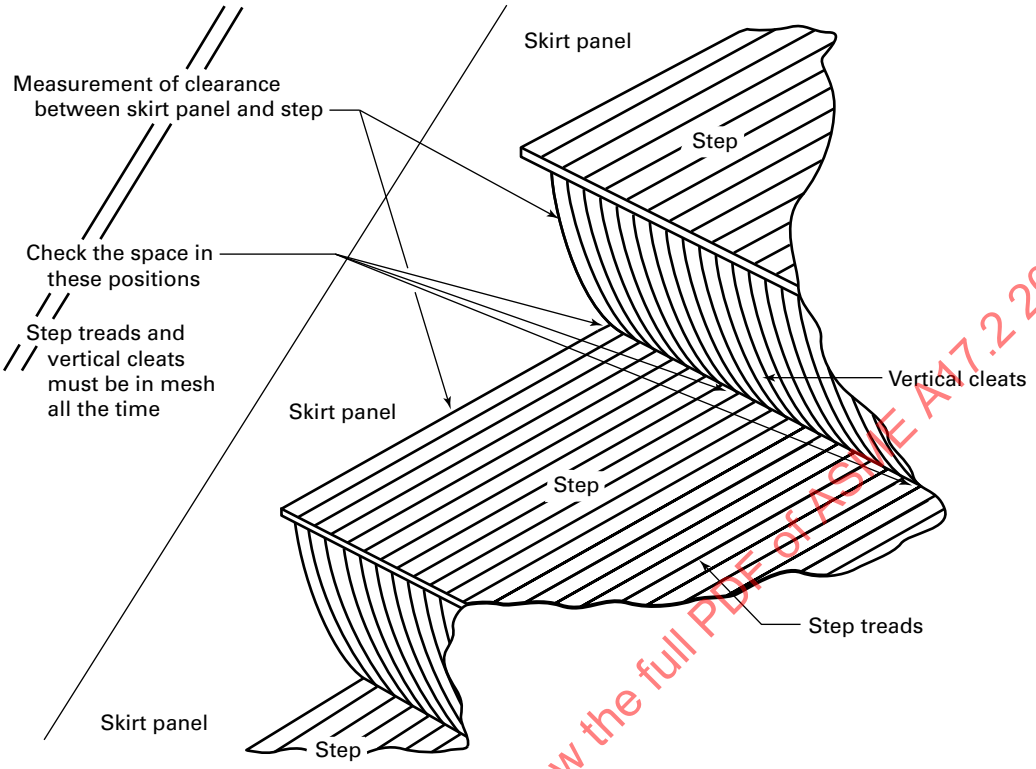


Figure 7.9.1-3
Escalator Step Riser

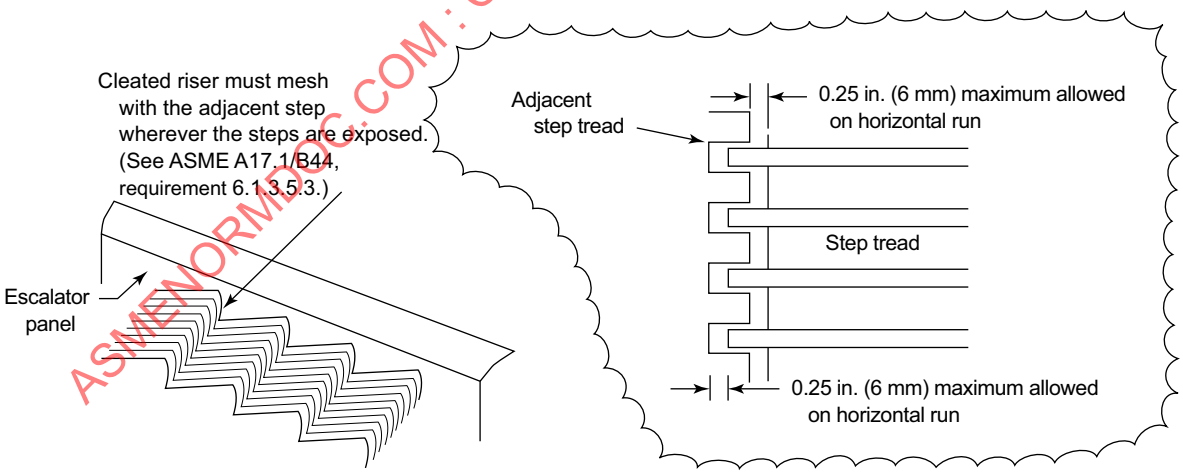
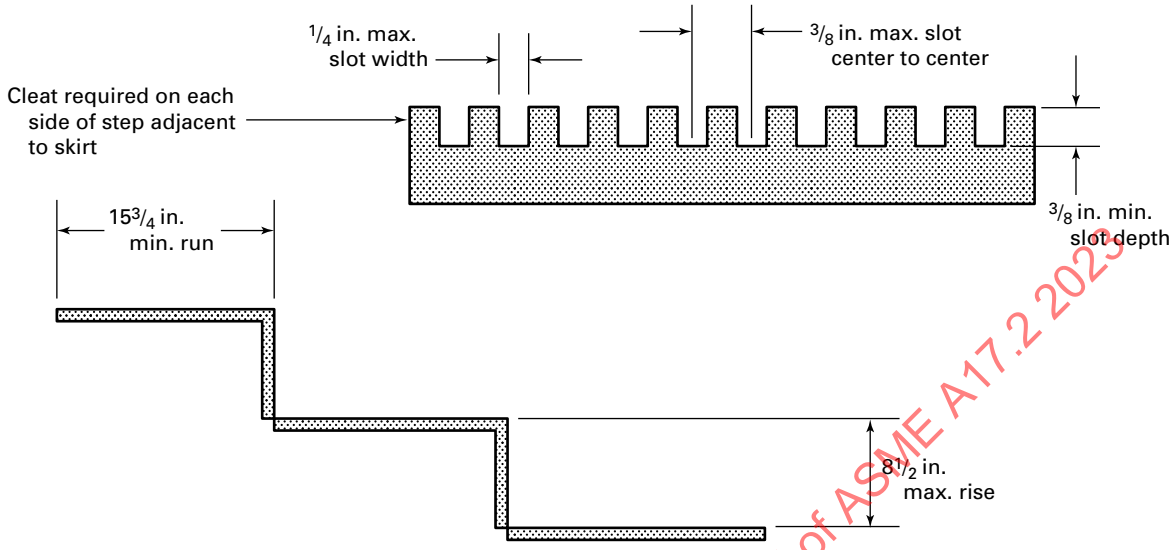
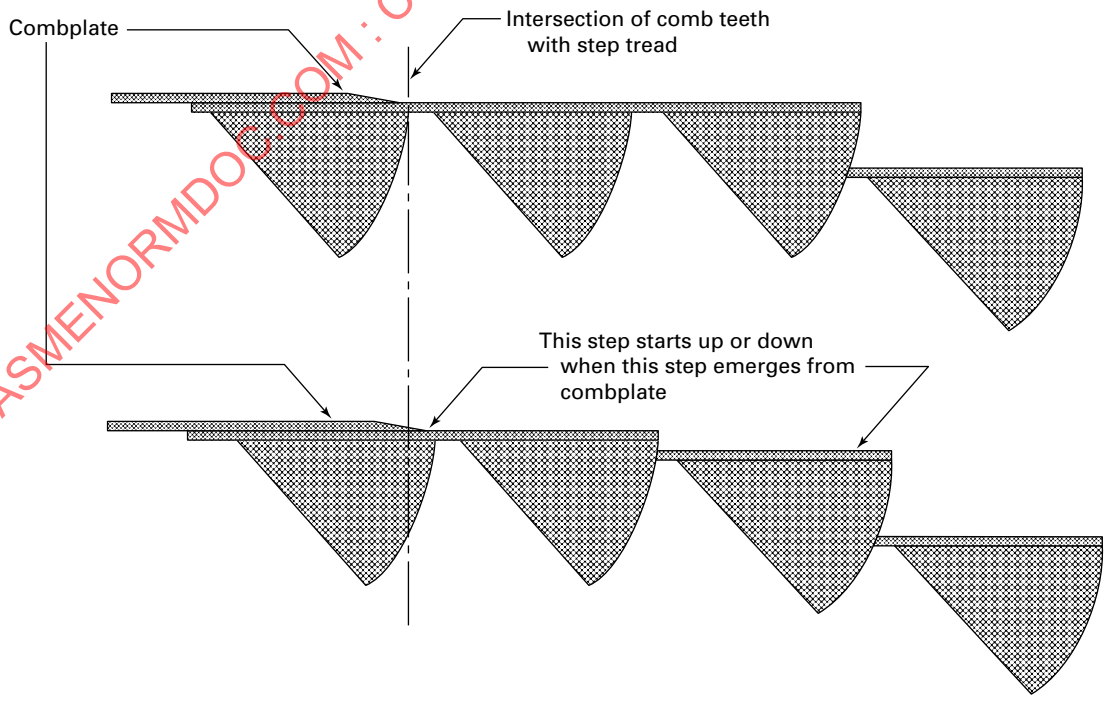


Figure 7.9.1-4
Escalator Step Tread [A17.1-1955 Through A17.1-1990, Rule 802.5 (Requirement 6.1.3.5)]



GENERAL NOTE: 1 in. = 25.4 mm.

Figure 7.9.3-1
Example of Two Flat Steps



(b) Emergency Stop Switches. Operate the emergency stop switches/buttons and verify that the escalator stops. Also, verify that the stop switch cannot start the escalator. If automatic starting devices are provided (pre-A17.1a-1988), check that they will not function after the stop switch is operated. Verify proper labeling and signals where required. The requirements for emergency stop switches in prior editions of the Code are as follows:

(1) A17.1-1955: An emergency stop button or other type of manually operated switch, marked "STOP BUTTON" or "STOP SWITCH" shall be conspicuously and accessibly located at or near the top and bottom landings of each escalator and shall be protected from accidental contact.

(2) A17.1-1960: An emergency stop button or other type of manually operated switch with a red button or handle shall be accessibly located at or near the top and bottom landings of each escalator and shall be protected from accidental operation.

(23) *(3)* A17.1-1965: An escalator stop button with an unlocked cover over it that can be readily lifted or pushed aside shall be considered accessible.

(4) A17.1a-1979 required that the stop button be located in the right-hand newel base facing the escalator at both landings. Handles were no longer allowed.

(5) A17.1b-1983 and later editions require a readily movable self-closing transparent cover and an 80 dBA signal when the cover is moved. The cover should be marked "EMERGENCY STOP." The button should be in the upper-right quadrant when facing the escalator for high-deck balustrades; for low-deck balustrades, it must be below the handrail height. Remote stop switches are prohibited under A17.1b-1983 and later editions.

(6) ASME A17.3: An accessible red stop button marked "EMERGENCY STOP" must be on the right-hand side of each entrance. Remote stop switches are prohibited.

(c) Tandem Operation. For escalators under A17.1-1981 and later editions and ASME A17.3, operated in tandem, where a common landing is shared by two units, verify that the units are electrically interlocked. The interlocks must stop the unit carrying passengers into the common intermediate landing, where bunching will occur, when the unit carrying passengers away from the landing stops. Also, verify that the interlocks ensure that the units run in the same direction.

7.10.2 Periodic Test

7.10.3 Acceptance

Check that the start switches are within reach of an emergency stop button. Start the unit and hold the start switch in the "UP" position, then actuate the emergency stop button. The unit must not restart until the start switch is placed in the "RUN" position and the starting sequence is repeated. Repeat this for the down direction and for the other start switch.

For low-deck escalators, check the clearances between the handrail and the stop switch enclosure and the distance from the button to the handrail.

7.10.4 References (23)

A17.1d-2000 and earlier editions — Rules 805.2, 805.3a, 805.6, and (NR 8.6.10.5).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.6.2.1, 6.1.6.3.1, 6.1.6.6, 8.6.10.2, 8.6.10.5, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1a-2008/CSA B44a-08 — Requirements 6.1.6.2.1, 6.1.6.3.1, 6.1.6.6, 8.6.11.2, 8.6.11.5, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 6.1.6.2.1, 6.1.6.3.1, 6.1.6.6, 8.6.11.3, 8.6.11.6, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.3 — Paragraphs 5.3.1, 5.3.2, and 5.3.10.

ITEM 7.11
SKIRT-OBSTRUCTION DEVICE

7.11.1 Periodic Inspections

7.11.2 Periodic Test

Determine the location of all the devices.

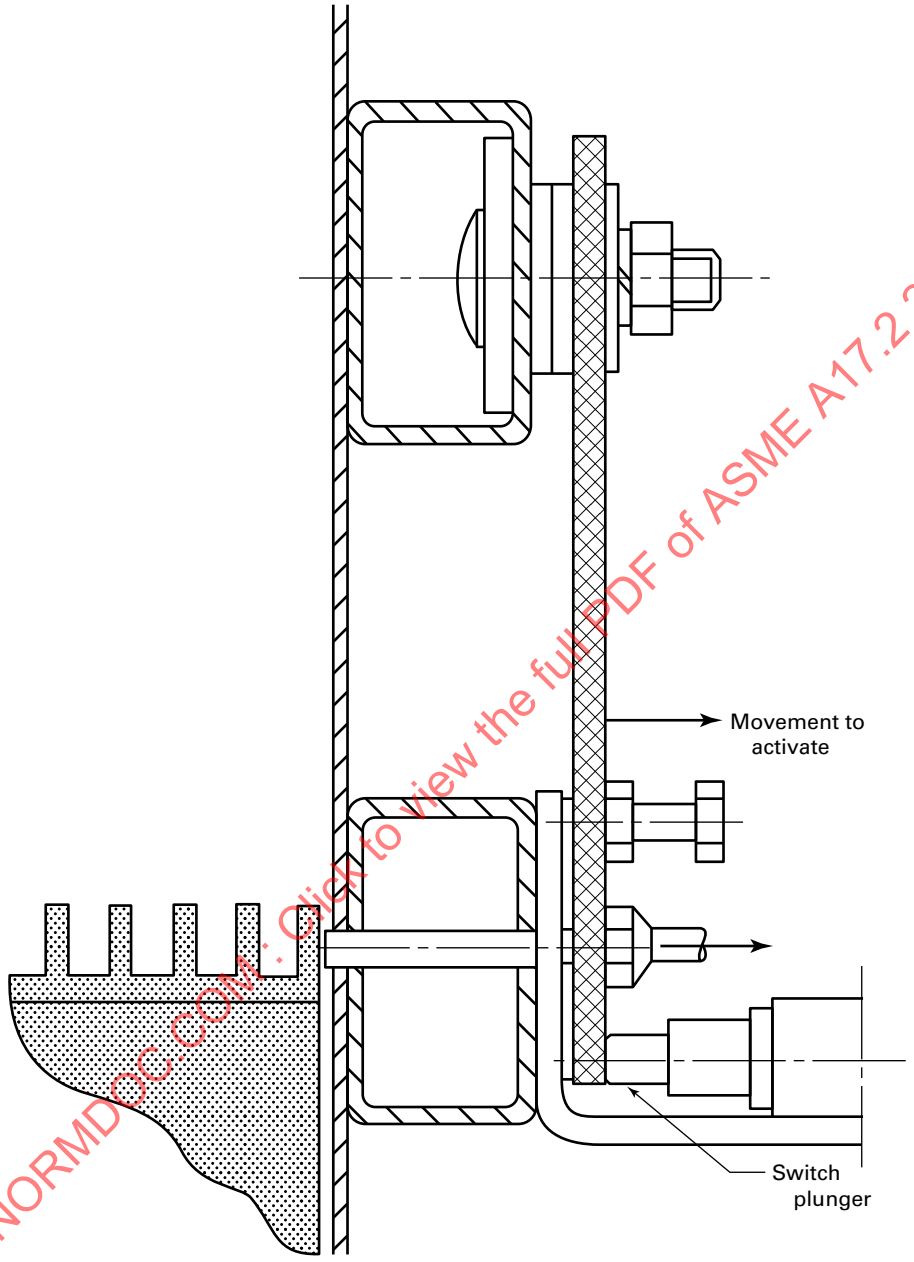
Escalators installed under A17.1-1971 through A17.1-1978 required skirt-obstruction devices only at the lower landing. Prior to A17.1-1971, skirt-obstruction devices were not required but were sometimes installed. If they are installed, they should be tested. ASME A17.3 requires skirt-obstruction devices at both landings. All installed devices should be tested (see Figure 7.11.2-1).

Test the skirt-obstruction device for escalators installed under A17.1-1971 and later editions and ASME A17.3 by having the person performing the test manually trip the skirt-obstruction device switches on each side of the steps at each landing while the escalator is stationary.

CAUTION: Kicking the panel does not verify proper operation of the skirt-obstruction device and may cause a compliant device to no longer be compliant.

If the device actuation relies on an opening in the skirt panel, use an object (in order to keep hands/fingers away from the skirt panel) to activate the switch with the unit stationary. If the switch activation requires displacement of the skirt panel, then with the unit stationary, manually trip the device by pressing against the skirt panel with one's foot. *Do not kick or bang the skirt panel.* If pressing with one's foot does not actuate the switch, then simulate an object caught between the step and the skirt panel. Care should be taken so as not to damage the skirt panel or step. Use of a screwdriver or similar tool is not recommended,

Figure 7.11.2-1
Typical Skirt-Obstruction Device



since it can damage the step treads or skirt panel. Determine that the switch is tripped using the fault finder, if provided, and use the inspection control, if provided, to see if the unit can run.

For escalators installed under A17.1b-1983 and later editions, the maximum stopping distance must not exceed the distance from the location of the device to the combplate for any load up to the rated load. This information is required to be indicated on the brake nameplate for A17.1-2000 and later editions. Verify that the device is located more than the maximum stopping distance indicated on the brake data plate from the combplate. If the brake data plate does not contain this information, check the stopping distance using the emergency stop switch.

7.11.3 Acceptance

7.11.4 References

A17.1d-2000 and earlier editions — Rule 805.3f.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.5.3.1(d)(5), 6.1.6.3.6, 8.10.4.2.2(h), and 8.11.4.1(k).

ASME A17.3 — Paragraph 5.3.7.

ITEM 7.12
(RESERVED)

ITEM 7.13
EGRESS RESTRICTION (ROLLING SHUTTER) DEVICE

7.13.1 Periodic Inspections

Where rolling shutters are provided to protect floor openings, check that when the shutters begin to close power is removed from the drive machine and brake, and that it remains off until the shutter is fully retracted. If the shutter is power operated, the building code may require a pressure-sensitive leading edge to reverse direction and/or stop it when it strikes an object.

7.13.2 Periodic Test

7.13.3 Acceptance

7.13.4 References

A17.1d-2000 and earlier editions — Rule 805.3g.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.6.3.7, 8.10.4.1.1(l), 8.10.4.2.2(h), and 8.11.4.1(m).

ASME A17.3 — Paragraph 5.3.8.

ITEM 7.14
SPEED

7.14.1 Periodic Inspections

For escalators with DC motors or variable-frequency-drive motor controls, perform a speed test. The maximum permitted speed was 125 ft/min (0.64 m/s) for escalators installed under A17.1d-2000 and earlier editions, and it is 100 ft/min (0.5 m/s) for escalators installed under ASME A17.1-2000/CSA B44-00 and later editions.

7.14.2 Periodic Test

7.14.3 Acceptance

Verify that the speed of the escalator cannot be changed without first stopping it.

Verify that the no-load speed of the escalator does not exceed the maximum permitted speed as follows:

(a) Run a tachometer wheel along the deck, skirt, or other stationary flat object when riding the escalator.

(b) Use a stopwatch to time the travel from one landing to the other. Divide the travel in feet (meters) by the time in minutes (seconds) to obtain the speed in feet per minute (meters per second).

7.14.4 References

A17.1d-2000 and earlier editions — Rules 803.1, 805.3b, 1008.2o, and 1009.2o.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.4.1, 6.1.6.3.2, (NR 1008.2o), 8.10.4.1.1(m), 8.10.4.2.2(f), 8.10.4.2.2(g), 8.10.4.1.2(e), and 8.11.4.1(n).

ASME A17.3 — Paragraph 5.3.3.

ITEM 7.15
BALUSTRADES

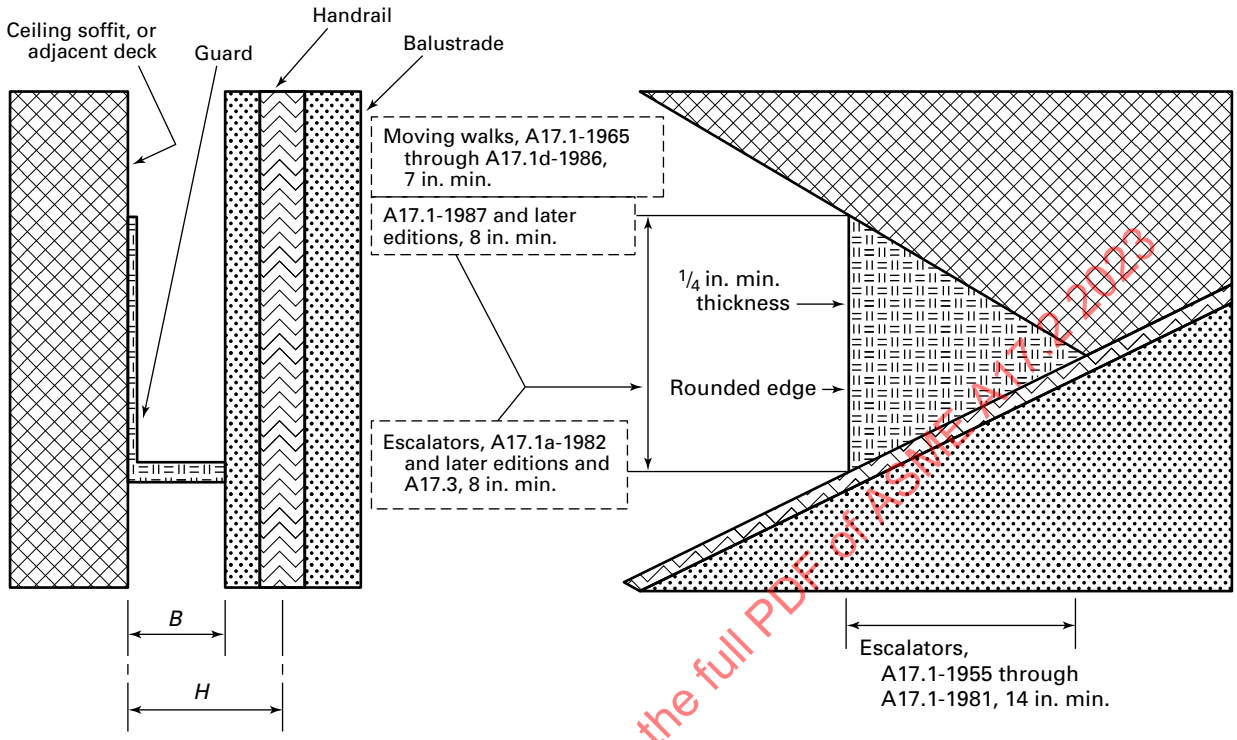
7.15.1 Periodic Inspections

Inspect the balustrades and note any cracked or broken panels. Panels and fasteners should be smooth and free of burrs and snag points. Interior panels or molding must not be raised or depressed by more than $\frac{1}{4}$ in. (6.4 mm). Check that the balustrades are totally enclosed along both exterior and interior lengths, except where the handrail enters the newel base. For escalators installed under A17.1a-1982 and later editions and ASME A17.3, if gaps exist between interior panels, they should not be wider than $\frac{3}{16}$ in. (4.8 mm), and the edges should be beveled or rounded.

7.15.2 Periodic Test

Check that glass replacement panels are tempered for escalators installed under A17.1-1955, or tempered or shatterproof for escalators installed under A17.1-1965,

Figure 7.16.1-1
Ceiling or Soffit Guard [Requirements 6.1.3.3.9 and 6.2.3.3.7 (Rules 802.3g and 902.3g)]



and that glass or plastic replacement panels meet the requirements of ANSI Z97.1 or 16 CFR Part 1201 for escalators installed under A17.1-1971 and later editions.

7.15.3 Acceptance

Verify that the balustrades are adequately supported and meet the material, strength, and dimensional requirements.

Glass or plastic (except plastic bonded to basic support panels), if used, must meet the requirements of ANSI Z97.1 or 16 CFR Part 1201 and be properly marked.

Check that components not used directly in connection with the operation of the escalator are not installed on, in, or through the escalator.

Check that the width between the balustrade interior panels does not change in the direction of travel.

7.15.4 References

A17.1d-2000 and earlier editions — Rules 802.3 and 1009.2g and Appendix D.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.3.3, 6.1.3.14, 8.10.4.2.2(a), 8.10.4.1.1(n), and 8.11.4.1(o) and Appendix I.

ASME A17.3 — Paragraph 5.1.1.

ITEM 7.16
CEILING INTERSECTION GUARDS

7.16.1 Periodic Inspections

Escalators installed under A17.1-1978 and later editions, where the clearance of the exterior deck and the ceiling or soffit is 12 in. (305 mm) or less or where the projected intersection of the exterior deck and ceiling or soffit is 24 in. (610 mm) or less from the adjacent handrail centerline, require ceiling intersection guards. This requirement is restricted to high decks for escalators installed under A17.1a-1982 and later editions and ASME A17.3 (see Figure 7.16.1-1).

On low decks for escalators installed under A17.1a-1982 and later editions and ASME A17.3, where the centerline of the handrail is 14 in. (356 mm) or less from the ceiling or soffit, guards are also required.

Inspect the guards for damage and secure attachment.

7.16.2 Periodic Test

7.16.3 Acceptance

Verify that ceiling and soffit guards are the correct size, are in place, and are secure. Check that glass or plastic guards are marked ANSI Z97.1 or 16 CFR Part 1201 or

CAN/CGSB 12.1, CAN/CGSB 12.11, or CAN/CGSB 12.12, as applicable.

7.16.4 References

A17.1d-2000 and earlier editions — Rule 802.3g and Appendix D.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44a-05 — Requirements 6.1.3.3.9, 8.10.4.1.1(o), and 8.11.4.1(p) and Appendix I.

ASME A17.1-2004/CSA B44a-05 and later editions — Requirements 6.1.3.3.11, 8.10.4.1.1(o), and 8.11.4.1(p) and Appendix I.

ASME A17.3 — Paragraph 5.1.3.

ITEM 7.17
STEP/SKIRT CLEARANCES, PANELS, AND PERFORMANCE INDEX

7.17.1 Periodic Inspections

Verify that the skirt panels are smooth for escalators installed under A17.1-1971 and later editions.

Check the clearance between the skirt panel and the step using a thickness gage or by laying a small rule on the edge of the step to read the distance. Several steps should be checked through their entire travel. The allowable clearances are as follows (see Figure 7.17.1-1):

(a) A17.1-1955 through A17.1d-1970: not more than $^{3}/_{16}$ in. (4.8 mm) with a total of both sides not more than $^{1}/_{4}$ in. (6.4 mm), except where skirt-obstruction devices are installed at the lower entrance for escalators installed under A17.1-1965 through A17.1d-1970.

(b) A17.1-1971 through A17.1a-1979: not more than $^{3}/_{8}$ in. (9.5 mm) on each side.

(c) A17.1b-1980 through A17.1c-1999 and ASME A17.3: not more than $^{3}/_{16}$ in. (4.8 mm) on each side.

(d) A17.1d-2000 and later editions: not more than 0.2 in. (5 mm) when 25 lbf (110 N) is laterally applied from the step to the adjacent skirt panel. Each side shall be independently tested.

For escalators installed under A17.1a-1982 through A17.1c-1999, inspect the exposed surface of the skirt panel to check whether it is either made from a low-friction material or treated with a friction-reducing material. The skirt panels of escalators installed prior to A17.1a-1982 should also be treated with a friction-reducing material. The panel should be tested at several places during the run, especially near the transition entrance and exit. If examination of the panels raises a question about the friction of the skirt panels, the manufacturer's recommendation should be requested and compared to the treatment schedule if available. If skirts are treated, examine the steps to verify that friction-reducing treatment has not been applied on them.

Skirt deflectors, when provided, shall be checked to ensure that all fasteners are flush and tamper resistant, that rigid elements are smooth, that exposed surfaces have their low-friction material treatment intact, and that the dimensional, strength, and deflection requirements are met.

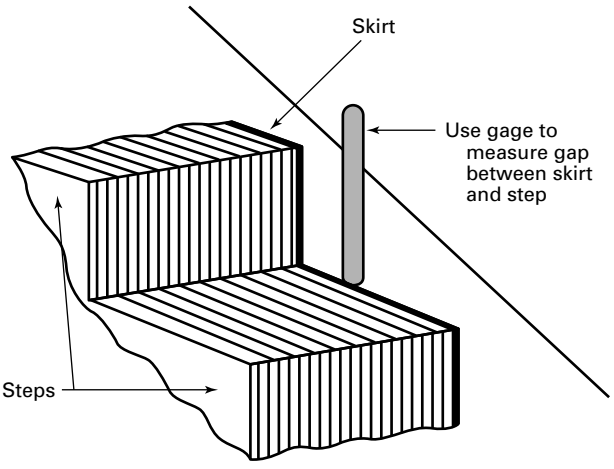
Verification of conformance with applicable skirt deflection requirements for units installed under ASME A17.1-2019/CSA B44-19 and later editions or that have skirt panels or their supporting components that are altered to ASME A17.1-2019/CSA B44-19 and later editions must be documented in the on-site maintenance records.

7.17.2 Periodic Test

Visually inspect the condition of the step/skirt panel gap while the escalator is stationary. Mark a step and operate the escalator to bring other steps into view as required until every step on the escalator has been examined. Document any outstanding conditions, such as step/skirt gaps, damaged steps, damaged step treads, damaged skirt panels, mismatched skirt panel joints, or sharp edges on the edge of the step or skirt panel. Pay particular attention to the gaps between the riser portion of the step and the skirt panel.

Run the escalator in its normal direction of travel for at least two cycles of steps. If the escalator is operated in both directions, run the escalator for at least two cycles of steps in both the up and down directions. Visually examine the step/skirt gaps along the entire length of the escalator. Pay particular attention to the gaps at the transitions. Note any abnormal operation of the escalator such as jumping steps, irregular step movement, step/skirt panel interference, or skirt panel misalignments.

Figure 7.17.1-1
Measuring Gap Between Step and Skirt



(a) Step/Skirt Performance Index Test (Moving Step). Select two steps to conduct this test. One step should be selected as a representative step. It should appear similar to the majority of the other steps on the escalator. A second step should be chosen to represent any unusual step or group of steps. Steps that appear to have been replaced, exhibit wear, show signs of damage, or move in irregular ways are candidates for the second test step. If all the steps appear similar, then the steps should be randomly selected. In any case, the test steps should be separated by at least eight steps.

If the escalator is a down escalator, or the escalator is operated in both directions, the test step should be moved to the top of the escalator before the curved skirt panels prior to each test run, and run down during the test. If the escalator is normally operated as an up escalator, then the test step should be moved to the bottom of the escalator just before the curved skirt panels prior to each test run, and run up during the test.

(1) Install the test apparatus on the step to be tested. Install a polycarbonate test specimen on the test apparatus.

(2) Orient a frictional force transducer to match the angle of the skirt panel as shown in Figure 7.17.2-1.

(3) Using the test apparatus, apply a 25 lbf (110 N) load between the step and skirt. The load should be maintained throughout the test.

(4) Start a new test and begin acquiring data as soon as the escalator is operating at rated speed. Data obtained prior to the escalator operating at rated speed should be discarded. A coefficient of friction and a loaded gap measurement should be recorded every 6 in. (150 mm) at a minimum.

(5) Run the escalator continuously until the test step and apparatus reach the curved skirt panel at the opposite end of the escalator. Stop collecting data.

(6) Process the collected data.

(7) Repeat the steps in (1) through (6) for both sides of both test steps. Use a new polycarbonate test specimen for each run. The index values obtained should not exceed the values specified by ASME A17.1/CSA B44 and/or ASME A17.3.

(b) Loaded Gap Test (Stationary Step). This test will be conducted in the curved portions of the escalator where moving step testing was not conducted. The steps selected for this test can be the same as those used for the coefficient of friction and loaded gap moving step tests. The escalator should be stationary while these measurements are taken.

(1) Move the step to be tested to the flat portion at the bottom of the escalator. The edge of the combplate should be approximately 6 in. (150 mm) from the edge of the test step.

(2) Install the test apparatus on the step to be tested. Install a polycarbonate test specimen on the portion of the apparatus that touches the skirt panel.

(3) Using the test apparatus, apply a 25 lbf (110 N) load between the step and the skirt.

(4) Measure and record the loaded gap.

(5) Remove the 25 lbf (110 N) load and advance the device or escalator so that the device moves approximately 12 in. (300 mm) further away from the combplate.

(6) Repeat the steps in (3) through (5) until the test apparatus has reached the point where the coefficient of friction and loaded gap moving step test began.

(7) Repeat the steps in (1) through (6) for the opposite skirt panel.

(8) Repeat the steps in (1) through (7), but this time start at the top of the escalator and gradually move the escalator down until the apparatus has reached the area where moving step measurements were made.

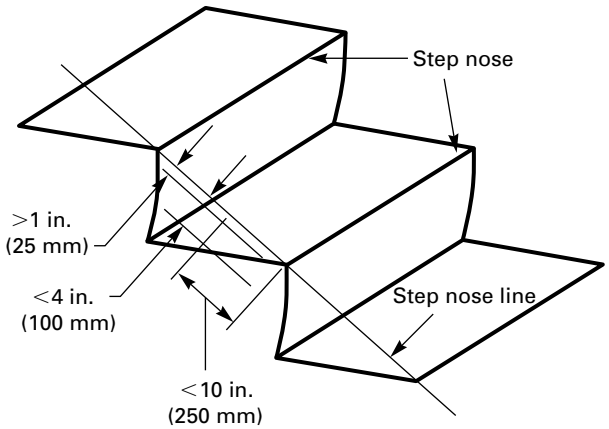
The recorded loaded gap measurements should not exceed the values specified by ASME A17.1/CSA B44 and/or ASME A17.3.

7.17.3 Acceptance

Check that the skirt panels extend to a height of at least 1 in. (25 mm) vertically above the step tread nose line and that they meet Code deflection requirements. Inspect the exposed surfaces and the joints of the skirt panels adjacent to the steps for smoothness.

The person or firm installing the equipment must provide engineering test documentation in the on-site documentation to verify that each skirt panel design does not deflect more than 0.0625 in. (1.6 mm) under a force of 150 lb (667 N). Where skirt panels or their supports have been altered, skirt panel deflection must be verified as specified in ASME A17.1/CSA B44, requirement 8.10.4.1.1(p)(3).

Figure 7.17.2-1
Angle of Skirt Panel



7.17.4 References

A17.1d-2000 and earlier editions — Rules 802.3e, 802.3f, 802.3k, 1008.2s, 1008.2t, 1206.6b, and 1206.6c.

ASME A17.1d-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirement 8.11.4.2.19.

ASME A17.1-2000/CSA B44-00 through ASME A17.1b-2003/CSA B44a-05 — Requirements 6.1.3.3.5 through 6.1.3.3.7, 8.6.8.2, 8.6.8.3, 8.6.8.5, 8.10.4.1.1(p), and 8.11.4.1(q).

ASME A17.1-2004/CSA B44a-05 through ASME A17.1a-2008/CSA B44a-08 — Requirements 6.1.3.3.5, 6.1.3.3.6, 6.1.3.3.9, 8.6.8.2, 8.6.8.3, 8.6.8.5, 8.10.4.1.1(p), and 8.11.4.1(q).

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2016/CSA B44-16 — Requirements 6.1.3.3.5, 6.1.3.3.6, 6.1.3.3.9, 8.6.8.2, 8.6.8.3, 8.6.8.5, 8.10.4.1.1(p), 8.11.4.1(q), and 8.6.8.15.9.

ASME A17.1-2019/CSA B44-19 and later editions — Requirements 6.1.3.3.6, 8.3.15, 8.6.1.2.2(e), 8.6.1.4.1(d), 8.6.8.5, 8.7.6.1.19, 8.10.4.1.1(p), and 8.10.4.2.2.

ITEM 7.18
OUTDOOR PROTECTION

7.18.1 Periodic Inspections

For escalators installed under A17.1a-1988 and later editions, check that the required cover over the horizontal projection of the unit is present and in good condition. Verify that there is no accumulation of snow or freezing rain on the steps or landing plates.

7.18.2 Periodic Test

Heaters are required for escalators installed under A17.1a-1988 and later editions only if the steps are subject to snow or freezing rain. Check that heaters are operational. Heaters may be located inside the unit (see 8.3.2).

7.18.3 Acceptance

Check that the cover extends outward from the centerline of the handrail such that a line from the edge of the cover to the handrail centerline is not less than 15 deg from the vertical. Two methods for checking this are shown in Figure 7.18.3-1.

Check that the landing plates and combplates have provisions to provide a secure foothold when they are wet.

Check that all electrical components are weatherproof, that all wiring is identified for use in wet locations, and that all wiring and electrical components are properly installed (gaskets, seals, etc.).

7.18.4 References

A17.1d-2000 and earlier editions — Section 807 and Rules 1008.2p and 1009.2i.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.8, 8.11.4.1(r), 8.11.4.2.14, and 8.10.4.1.1(q).

ITEM 7.19
MAINTENANCE RECORDS (23)

7.19.1 Periodic Inspections

Review the maintenance records (see ASME A17.1/CSA B44, requirement 8.6.1.4) and verify that they are available to elevator personnel and that they are legible and up to date. They should include the following:

(a) description of maintenance task(s) performed and dates

(b) description and dates of examinations, tests, adjustments, repairs, and replacements

(c) description and dates of callbacks (trouble calls) or reports that are made to elevator personnel by any means, including corrective action taken (see ASME A17.1/CSA B44, requirement 8.6.1.4.2)

(d) verification that a start-up procedure is available to authorized personnel (see ASME A17.1/CSA B44, requirement 8.6.11.6.1)

Electronic format of maintenance records is acceptable.

7.19.2 Periodic Test

7.19.3 Acceptance

7.19.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.6.1.4.

A17.1-2000 through A17.1-2004 – Requirement – 8.6.10.5.

A17.1a-2005 through ASME A17.1a-2008 – Requirement 8.6.11.5.

CSA B44-00 through CSA B44-04 – Requirement – 8.6.10.5.

CSA B44-07 through CSA B44a-08 – Requirement – 8.6.11.5.

ASME A17.1b-2009/CSA B44b-09 and later editions – Requirement 8.6.11.6.

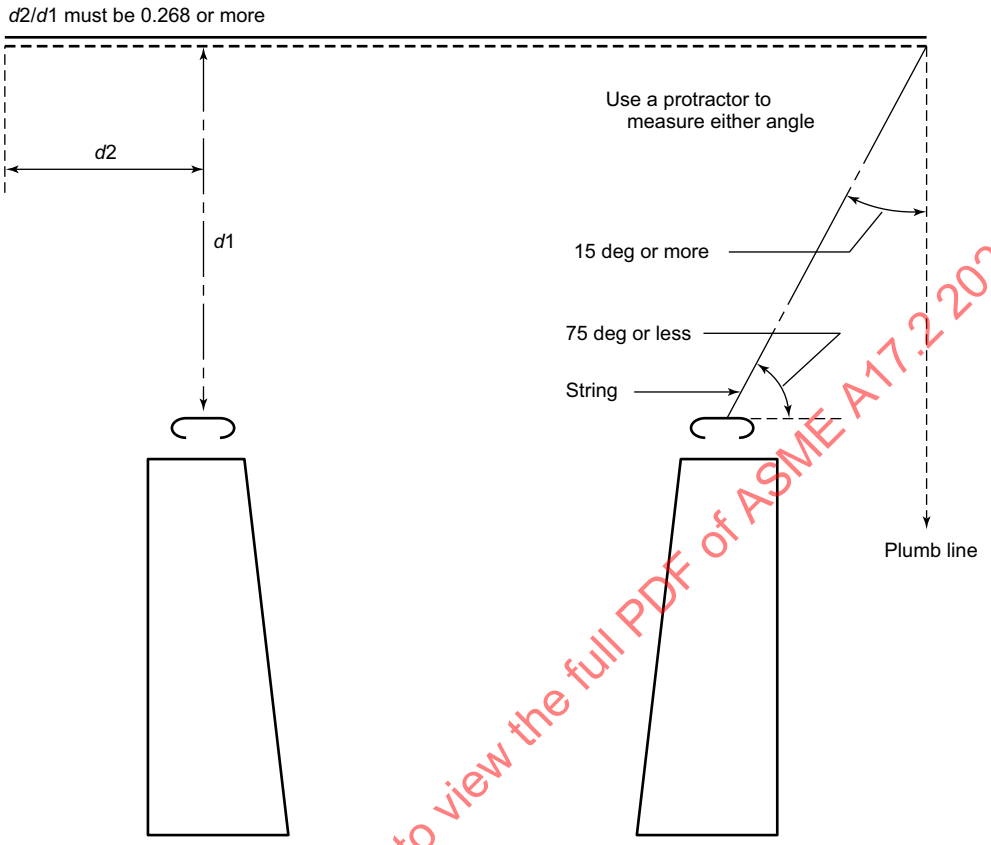
ITEM 7.20
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

7.20.1 Periodic Inspections

7.20.2 Periodic Test

Check the operation of the seismic switch where provided.

Figure 7.18.3-1
Escalator Cover Overlap



Two Methods for Checking Compliance With ASME A17.1/B44, Requirement 6.1.8.2 (Rule 807.2) Cover Requirement

7.20.3 Acceptance

(a) Verify that the balustrades are installed and fastened according to the manufacturer's drawings.

(b) Verify that a seismic switch is installed, and if it is used exclusively to control the escalator, that the switch is located in a machine room or machinery space and, where possible, that it is mounted adjacent to a vertical load-bearing member. If there is no vertical load-bearing member in close proximity, the switch may be located at the nearest accessible vertical load-bearing member at approximately the same horizontal level as the upper machinery space or machine room.

(c) Verify that the seismic switch, when actuated, causes power to be removed from the escalator drive machine and brake.

7.20.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.5.1 and 8.5.4.

Part 8
Escalator — Internal

ITEM 8.1
MACHINERY SPACE ACCESS, LIGHTING, RECEPTACLE, AND CONDITION

8.1.1 Periodic Inspections

For remote machine rooms, see 8.1.2.

8.1.2 Periodic Test

Determine that the means of access is securely fastened in place. ASME A17.3b-1995 required that access plates be fastened in place when no more than 30 lbf (311 N) effort is required to open them. If a door is used, verify that it is kept locked and the key is available only to authorized personnel. Check the lighting and test the receptacle. In a remote machinery space, check that lighting at floor level is at least 10 fc (108 lx) for escalators installed under A17.1-1981 and later editions.

Verify that the space is clean of dirt and rubbish and free of oil and combustibles. Items unrelated to escalator maintenance or operation shall not be stored in the machinery space. No lubricant or solvent with a flashpoint less than 110°F (43°C) shall be stored in the space. Water should not have accumulated on the floor of the space. Verify that jumpers are not stored in the machinery space, hoistway, or pit. For escalators installed under A17.1-1978 through A17.1a-2005, verify that the two fluorescent demarcation lamps are clean, green, and in good condition at each landing.

Verify that no penetrations exist through the sides and undersides of the machinery space and truss that would compromise their fire resistance or allow physical contact with moving parts.

For escalators installed under ASME A17.1-2000/CSA B44-00 and later editions, check that a fixed guard is in place to protect against accidental contact with the moving steps.

8.1.3 Acceptance

Check whether a reasonable means of access to the interior is provided. Where access plates are used, they should comply with the Code weight restrictions. Removal of the floor plates over the landing pit constitutes reasonable access if the uncovered opening affords ample space for the entry of one person. When an access door is provided on the side of the enclosure, verify the proper functioning of the door key and lock and that the key is only removable in the locked position.

If fire shutters are required by the local building code, verify that they are present at ventilation openings and that they operate correctly. Verify that demarcation lights are located within 16 in. (406 mm) of the combplate and are properly installed (see 7.5.1).

Verify that at least one 15 A, 120 V duplex receptacle is properly located in machine rooms, under access plates and machine areas in the incline, that they are functional, and that the light control for remote machine rooms is within easy reach of the access and can be operated without reaching or passing over any machinery components.

Check that components not used directly in connection with the operation of the escalator are not installed on, in, or through the escalator.

8.1.4 References (23)

A17.1d-2000 and earlier editions — Section 806 and Rules 801.1, 805.7, 1008.2a, 1009.2j, and 1206.6a.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.7, 6.1.2.1, 6.1.6.7, 6.1.3.14, 8.11.4.2.1, 8.10.4.1.2(a), 8.1, 8.6.1.6.3, and 8.6.8.13 through 8.6.8.15.

ASME A17.1a-2005/CSA B44a-05 — Requirements 6.1.7, 6.1.2.1, 6.1.6.7, 6.1.3.14, 8.11.4.2.1, 8.10.4.1.2(a), 8.1, and 8.6.8.13.

ASME A17.1-2007/CSA B44-07 — Requirements 6.1.7, 6.1.2.1, 6.1.3.14, 8.11.4.2.1, 8.10.4.1.2(a), 8.1, and 8.6.8.13.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.7, 6.1.2.1, 6.1.3.14, 8.6.8.15.1, 8.10.4.1.2 (a), 8.1, 8.6.1.6.3, 8.6.8.15, and 8.6.8.13.

ASME A17.3 — Paragraph 5.5.5.

ITEM 8.2
MACHINERY SPACE STOP SWITCHES AND INSPECTION CONTROL

8.2.1 Periodic Inspections

For remote machine rooms, see 8.2.2.

8.2.2 Periodic Test

Test the operation of machinery space stop switches by placing them in the "STOP" position. Then, make sure that everyone is clear and attempt to start the escalator with the key switch.

For escalators installed under ASME A17.1-2000/CSA B44-00 and later editions, check the operation of the inspection control device from each end. The device only permits movement by a constant-pressure means, and it clearly indicates the direction of travel.

If a plug-in control station is used, verify that it is stored in the upper landing machinery space.

Have the unit operated with the inspection control device. Check that the device only permits movement by a constant-pressure means and that it clearly indicates the direction of travel.

8.2.3 Acceptance

Check that stop switches are properly installed, are correctly labeled, and operate correctly in all machinery spaces or other spaces where access to the interior is provided. Where the mainline disconnect switch is located, a separate stop switch is not required.

8.2.4 References

A17.1d-2000 and earlier editions — Rules 210.2, 805.3e, (NR 6.1.6.2.2), 1008.2b, and 1009.2k.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.5, 6.1.6.2.2, 8.10.4.1.2(b), 8.10.4.1.2(s), 8.10.4.2.2(h), and 8.11.4.2.2.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.5, 8.6.8.15.2, 8.10.4.1.2(b), 8.10.4.1.2(s), 8.10.4.2.2(h), and 8.6.8.16.2.

ITEM 8.3
CONTROLLER AND WIRING

8.3.1 Periodic Inspections

For remote machine rooms, inspect as outlined in 8.3.2.

8.3.2 Periodic Test

Examine the controller visually to verify that it is clean and that the switches, contactors, and relays and their electrical connections are in good condition. Check that the fuses are in place, are the proper type and rating, and have not been jumped or otherwise tampered with. Check for jumper wires or other changes that may indicate that safety devices have been defeated or altered. Visually examine wiring for damage and all components for evidence of overheating. Operate the mainline circuit breakers or disconnect switch to verify that all power is removed from the drive machine.

Verify that all electrical components are enclosed to prevent accidental contact. If heaters are present (see 7.18.2), verify that they are operational. For escalators installed under A17.1-1965 through A17.1a-1985, verify that the circuit breakers will not be automatically opened by the fire alarm.

8.3.3 Acceptance

Check for proper voltage, correct wiring, and arrangement of wiring, controller, and other components.

Check numbering of drive machines and disconnects where multiple drive machines are in a machine room. Verify that disconnects are in sight of the machines they operate. Inspect all wiring enclosure raceways conduit, electrical metallic tubing, metal wireways, and junction boxes for condition, workmanship, and fastening.

Visually inspect the condition of the weatherproof electrical enclosure where required on outdoor units. Verify that use of flexible conduit, armored cable, and flexible leads complies with the applicable code requirements.

The person or firm installing the escalator must provide a manufacturer's written procedure and demonstrate compliance with ASME A17.1/CSA B44, requirement 6.1.6.10 or requirement 6.2.6.9. Where there are no test or check requirements, the written checklist must state "No test or check required." The documentation must state the reason no test or check is required. This procedure may also be part of the maintenance control program (MCP) as required by ASME A17.1/CSA B44, requirement 8.6.1.2.1.

The following shall be documented or demonstrated:

(a) completion or maintenance of circuit (requirement 6.1.6.13)

(b) redundancy and its checking (requirements 6.1.6.10.1 and 6.1.6.10.2)

(c) static control (requirement 6.1.6.10.3)

(d) electrically powered safety devices (EPDs) (requirement 6.2.6.10)

(e) installation of devices to make EPDs ineffective (requirement 6.2.6.11)

(f) contactors and relays for use in critical operating circuits (requirement 6.1.6.14)

Also include documentation when required by requirements 2.10.1 and 2.10.2 of ASME A17.7-2007/B44.7-07 and later editions.

8.3.4 References

A17.1d-2000 and earlier editions — Sections 806, 807.2, 805.10b, 805.12, 1101, 1206.1, 1008.2c, 1009.2l, 1009.2, and (NR 10.3.3).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.1.7, 6.1.8.2, 8.6.1.6.3, 8.11.4.2.3, and 8.10.4.1.2(c).

ASME A17.1a-2008 — Requirement 8.11.4.2 (redesignated as 8.6.8.15).

ITEM 8.4
DRIVE MACHINE AND BRAKE

8.4.1 Periodic Inspections

8.4.2 Periodic Test

Verify that the drive machine is properly secured, lubricated, clean, and in good condition. Visually check the drive machine fastenings and bearing caps to verify that they are tight.

Verify that the drive machine is connected to the main drive shaft by toothed gearing, a mechanical coupling, or a chain and that it is in good condition. Look for evidence of any excessive backlash in the driving gears or chains. If a chain is used to connect the drive machine to a sprocket on the main drive shaft, visually examine the chain and sprockets for wear, excessive slack, and proper lubrication. Lack of lubrication for a chain may be indicated by rouge (red rust deposits) on the side plates of the links.

For escalators installed under A17.1a-1988 and later editions, verify that cast iron links are not used. If the links appear to be cast iron, have a small hole drilled (in a low-stress area) and observe the drill cuttings. If the cuttings are a fine powder, cast iron is indicated. If the cuttings are shavings, then the links are not cast iron.

Inspect any drive belts and sheaves for damage and wear. Check for proper belt tension and reasonable equality of tension in a set of belts.

Visually examine the components for signs of overheating. Verify that an electrically released brake is present and automatically applied when power is interrupted. The brake is to be located on the drive machine for units installed under A17.1-1955 through A17.1a-1957 and A17.1c-1986 and later editions. Other editions allowed the brake to be on the main drive shaft.

For escalators installed under A17.1b-1983 and later editions, verify that the drive machine brake is located on the gear reducer of the main drive shaft if means other than a continuous shaft mechanical coupling or toothed gearing is used to connect the motor to the gear reducer.

For escalators installed under A17.1b-1983 and later editions and ASME A17.3, the brake may be magnetically applied using a ceramic permanent magnet. Prior to this, a mechanically applied brake was required. Visually inspect the condition of the brake pads, drums, and discs.

For escalators installed to A17.1b-1983 and later editions, this brake must stop a down-running escalator with a retardation not exceeding 3 ft/s^2 (0.91 m/s^2). For escalators installed to A17.1b-1983 through A17.1-2000, this was a maximum rate. For escalators installed to A17.1a-2002 and later editions, it is an average rate, but there is an additional restriction on the peak horizontal retardation, which is not intended to be field verified.

It is not required to measure the actual retardation. Instead, the brake torque will provide verification that those requirements are met in addition to other brake requirements (e.g., stopping and holding the rated load).

Visually inspect all mechanisms for condition and operation.

Verify that escalators installed under A17.1b-1983 and later editions have a nameplate or data plate that specifies the required brake torque. Escalators installed under A17.1a-1988 and later editions require that the nameplate or data plate torque be specified as breakaway, the maximum torque required to cause the brake to begin moving, or dynamic, the torque required to keep the shaft moving very slowly at a steady rate. The location where the torque is to be measured is required to be clearly indicated.

For escalators installed under A17.1a-1991 and later editions, the nameplate or data plate is required to specify the range of brake torque. For escalators installed to A17.1-2000 and later editions, it must also indicate the minimum distance from the skirt-obstruction device to the combplate.

For escalators installed to A17.1-2004 and later editions, the nameplate or data plate must also indicate the type of brake (fixed or variable). While the range of brake torque is still required to be indicated for fixed-torque brakes, for variable-torque brakes, the minimum brake torque for a loaded escalator and the minimum stopping distance for an unloaded escalator must be indicated.

Test the torque to verify that the torque complies and check the minimum stopping distance for variable-torque brakes. Note that temperature can affect the brake torque.

The torque wrench should have a current calibration certificate traceable to the National Bureau of Standards and a range at least 25% higher than the required torque.

If the drive machine brake is separated from the main drive shaft by a chain, check for the presence of a second brake that is required on the main drive shaft. The requirements for this additional brake on the main drive shaft are as follows:

(a) A17.1-1960 through A17.1a-1982 required that it be electrically released if an electrically released brake was not provided on the drive machine.

(b) A17.1-1955 through A17.1a-1982 required that it be mechanically applied, while A17.1b-1983 and later editions require that it be either mechanically or magneticaly (ceramic permanent magnet) applied.

(c) A17.1b-1983 through A17.1d-2000 required that it stop a down-running escalator with rated load at a rate not to exceed 3 ft/s^2 (0.91 m/s^2).

(d) ASME A17.3 requires the brake to be mechanically or magnetically (permanent magnet) applied and capable of stopping a down-running escalator with rated load.

8.4.3 Acceptance

Check the certification for the drive machine brake.

Check the stopping distance with no load. Compare it with the minimum stopping distance and compare the minimum distance from the skirt-obstruction devices to the combplate against the information on the data plate.

Check the brake certification.

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

8.4.4 References

A17.1d-2000 and earlier editions — Section 804 and Rule 1008.2d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.5, 8.10.4.1.2(d), 8.10.4.2.2(g), and 8.11.4.2.4.

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2013/CSA B44-13 — Requirements 6.1.5, 8.6.8.15.4, 8.10.4.1.2(d), and 8.10.4.2.2(g).

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 6.1.5, 6.1.6.7, 8.6.8.15.4, 8.10.4.1.2(d), and 8.10.4.2.2(g).

ASME A17.3 — Section 5.2.

ITEM 8.5
SPEED GOVERNOR

8.5.1 Periodic Inspections

8.5.2 Periodic Test

When a speed governor is required, test it to verify that it is functioning. Manually operate the switch or use any testing mechanisms (such as flywheel weights) that may be provided. The flyballs and all operating mechanisms must be present and in good operating condition. When the switch is opened, it should interrupt power to the drive machine. For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

8.5.3 Acceptance

When an overspeed governor is required, verify that it activates at the proper speed, which cannot be more than 40% above the rated speed. This can be done using a rubber drive wheel driven by a variable-speed drill and a tachometer. Other methods approved by the manufacturer for field testing may be used.

8.5.4 References

A17.1d-2000 and earlier editions — Rules 805.3b, 1008.2e, and 1009.2m.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.2, 8.11.4.2.5, 8.10.4.2.2(h), and 8.10.4.1.2(e).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.2, 8.6.8.15.5, 8.10.4.2.2(h), and 8.10.4.1.2(e).

ASME A17.3 — Paragraphs 5.3.3 and 5.3.5.

ITEM 8.6
BROKEN DRIVE CHAIN DEVICE AND DISCONNECTED MOTOR SAFETY DEVICE

8.6.1 Periodic Inspections

8.6.2 Periodic Test

(a) If the drive machine is connected to the main drive shaft by a chain, check the broken drive chain device to verify that it will apply the main shaft brake and stop the drive machine if the drive chain breaks. All parts of the device should be in good condition and show freedom to move. Have the switch manually operated and verify that it will open the drive motor circuit. Common devices include a block that is held in tension by the drive chain that activates the switch when tension is lost, or a plate that depresses a switch when the drive chain strikes it. For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(b) If the drive motor is attached to a gear reducer by means other than a continuous shaft, coupling, or toothed gearing, check that the device provided will apply the brake if the motor becomes disconnected from the gear reducer. Have the switch manually operated and verify that all operating mechanisms are present, clean, lubricated, and in good condition. For escalators installed under A17.1-1990 and later editions, verify that the

escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

8.6.3 Acceptance

8.6.4 References

A17.1d-2000 and earlier editions — Rules 804.3b, 805.3d, 805.3j, and 1008.2f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.5.3.2, 6.1.6.3.4, 6.1.6.3.10, 8.10.4.1.2(f), 8.10.4.2.2(g), and 8.11.4.2.6.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.5.3.2, 6.1.6.3.4, 6.1.6.3.10, 8.6.8.15.6, 8.10.4.1.2(f), and 8.10.4.2.2(g).

ASME A17.3 — Paragraphs 5.3.5 and 5.3.6.

ITEM 8.7
REVERSAL STOP SWITCH

8.7.1 Periodic Inspections

8.7.2 Periodic Test

Manually operate the device and verify that all operating mechanisms are present and in good condition and that the device will open the circuits to the drive machine motor and brake to stop an ascending escalator from reversing its direction of travel. For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

There are several different types of devices that are used (friction reversal devices, speed monitoring, etc.). Therefore, the type of device will dictate the testing procedure. If the device cannot be manually operated, a written procedure must be provided by the person or firm performing the tests.

8.7.3 Acceptance

8.7.4 References

A17.1d-2000 and earlier editions — Rules 805.3h and 1008.2g.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.8, 8.10.4.1.2(g), 8.10.4.2.2(h), and 8.11.4.2.7.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.8, 8.6.8.15.7, 8.10.4.1.2(g), and 8.10.4.2.2(h).

ASME A17.3 — Paragraphs 5.3.5 and 5.3.9.

ITEM 8.8
BROKEN STEP CHAIN DEVICE

8.8.1 Periodic Inspections

8.8.2 Periodic Test

Manually operate the broken step chain devices to verify that each will interrupt power to the drive machine and brake. Visually inspect each device to verify that they are in position to operate and will activate when either step chain breaks, and (where automatic tensioning is not provided) when excessive sag occurs in either step chain. For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

8.8.3 Acceptance

8.8.4 References

A17.1d-2000 and earlier editions — Rules 805.3c and 1008.2h.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.3, 8.10.4.1.2(h), 8.10.4.2.2(h), and 8.11.4.2.8.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.3, 8.6.8.15.8, 8.10.4.1.2(h), and 8.10.4.2.2(h).

ASME A17.3 — Paragraphs 5.3.4 and 5.3.5.

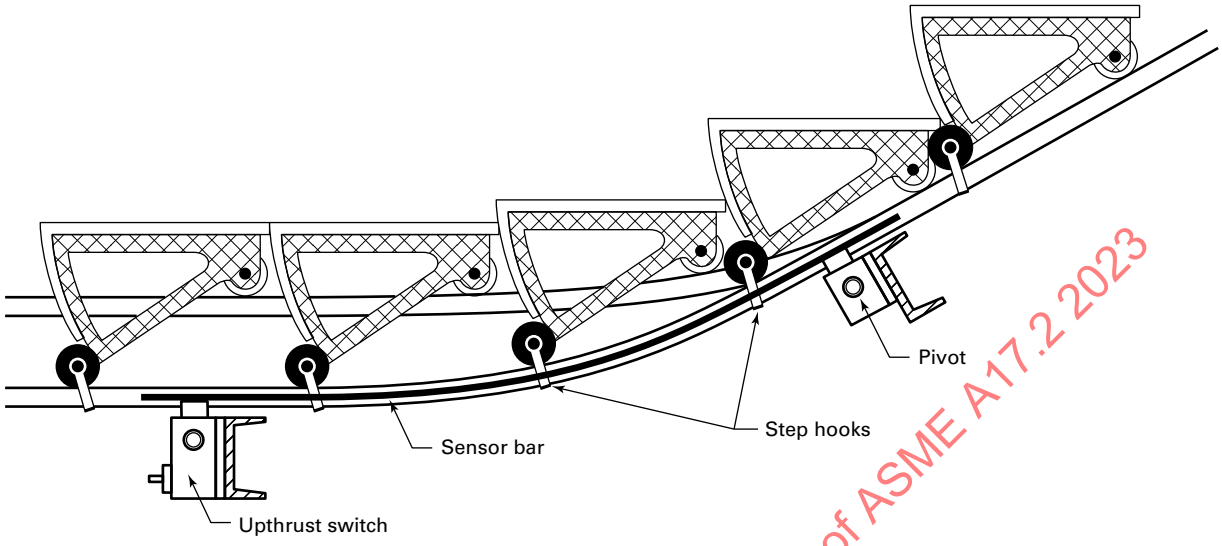
ITEM 8.9
STEP UPTHRUST DEVICE

8.9.1 Periodic Inspections

8.9.2 Periodic Test

The operation of the upthrust device is tested during the external inspection and test in 7.9.2. While the steps are removed (see 8.12.2), manually move the mechanism and visually inspect the components of the upthrust device.

Figure 8.9.2-1
Typical Step Upthrust Device



Visually examine the upthrust tabs on each step for damage, alignment, and attachment (see Figure 8.9.2-1).

8.9.3 Acceptance

8.9.4 References

A17.1d-2000 and earlier editions — Rules 805.3i and 1008.2i.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.9, 8.10.4.1.2(i), 8.10.4.2.2(h), and 8.11.4.2.9.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.9, 8.6.8.15.9, 8.10.4.1.2(i), and 8.10.4.2.2(h).

ASME A17.3 — Paragraph 5.1.7.

ITEM 8.10
MISSING STEP DEVICE

8.10.1 Periodic Inspections

8.10.2 Periodic Test

For escalators installed under A17.1b-1989 and later editions, test the missing step device by running the escalator with a step missing on the underside of the escalator. The device must stop the escalator before the gap resulting from the missing step emerges from the combplate.

For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

8.10.3 Acceptance

8.10.4 References

A17.1d-2000 and earlier editions — Rules 805.5 and 1008.2j.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.5, 8.10.4.1.2(j), 8.10.4.2.2(h), and 8.11.4.2.10.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.5, 8.6.8.15.10, 8.10.4.1.2(j), and 8.10.4.2.2(h).

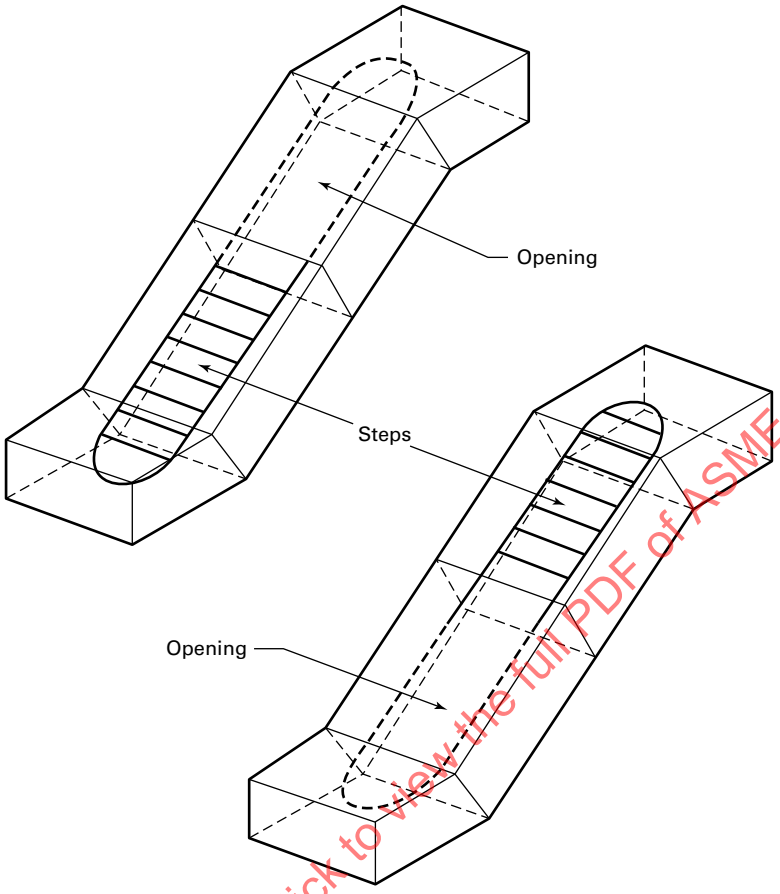
ITEM 8.11
STEP LEVEL DEVICE

8.11.1 Periodic Inspections

8.11.2 Periodic Test

For escalators installed under A17.1-1990 and later editions, visually inspect the step level devices at each end and on both sides to verify that they are in place and able to function. Have the switch manually operated to verify that it will open the safety circuit and stop the escalator.

Figure 8.12.2-1
Positioning of Steps for Inspection of Truss



For escalators installed under A17.1-1990 and later editions, verify that the escalator cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

8.11.3 Acceptance

Have the devices tested (at both ends and on each side) by mechanically lowering a step $\frac{1}{8}$ in. (3.2 mm) and operating the escalator. A smaller roller or adjustment may be used to lower the step.

8.11.4 References

A17.1d-2000 and earlier editions — Rules 805.3k, 1008.2k, and 1009.2n.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.11, 8.11.4.2.11, 8.10.4.1.2(k), and 8.10.4.2.2(h).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.11, 8.6.8.15.11, 8.11.4.2.11, 8.10.4.1.2(k), and 8.10.4.2.2(h).

ITEM 8.12
STEPS, STEP CHAINS, AND TRUSSES

8.12.1 Periodic Inspections

8.12.2 Periodic Test

Have at least half of the steps removed, and then move the remaining steps to the upper half of the escalator (see Figure 8.12.2-1). Some escalators use the steps as the side guide means and require every sixth step to be left in to prevent the chain from falling off. Using a good light, visually inspect the drip pans, undersides of steps, trusses, roller tracks, chains, handrails, and the interiors of balustrades, skirts, and newels. Verify that they are

present, in good condition, clean of dirt and rubbish, and free of oil and combustibles. Visually inspect for any damage to the fire-resistive material on the escalator enclosure (see Item 8.1).

Visually inspect the chains for lubrication and buildup of dirt and grease. Lack of lubrication may be indicated by rouge (red rust deposits) on the side plates of the links.

Verify that cast iron links are not used on escalators installed under A17.1-1978 and later editions. See 8.4.2 for a method of identifying cast iron.

Check the operation of any escalator step-chain tension devices. If they are of the automatically operated "tension-weight" type, verify that the truss is provided with a positive means to retain the weights in the truss if the weights are released.

Move the remaining steps to the lower half of the escalator and inspect the upper half in the same manner (see Figure 8.12.2-1).

Inspect each step for evidence of structural damage, condition of the step rollers and upthrust tabs, and condition of the material. Verify that the step tread material is noncombustible or that the undersides are properly covered with fire-resistive materials. Escalators installed under A17.1-1955 through A17.1-1993 required that step frames be made of noncombustible materials. A17.1a-1994 and later editions specifically require that step frames, treads, and risers, excluding any attachments or inserts, be made of metal (except magnesium alloys) or meet certain flammability requirements.

8.12.3 Acceptance

Verify that if the tracking system fails, the running gear is retained in its guides and the step wheel tracks will prevent displacement of the steps and running gear if the chain breaks.

Verify that foreign material such as stone or concrete is not in the truss interior.

If the step rollers are not located directly under the step (i.e., they are located past the edges of the sides of the steps), then check that provisions (e.g., unistrut, c-channel) are made to prevent the step from falling into the truss/step band upon the loss of the step roller assemblies.

Check that components not used directly in connection with the operation of the escalator are not installed on, in, or through the escalator.

8.12.4 References

A17.1d-2000 and earlier editions — Rules 801.1, 802.7, 802.8, 802.11, 806.3, 1008.2l, 1009.2o, and 1206.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.2.1, 6.1.3.5.8, 6.1.3.7, 6.1.3.8, 6.1.3.11, 6.1.3.14, 6.1.7.3, 8.6.8.6, 8.6.8.7, 8.6.8.14, 8.10.4.2.2(c), 8.10.4.2.2(d), 8.11.4.2.12, and 8.10.4.1.2(l).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.2.1, 6.1.3.5.8, 6.1.3.7, 6.1.3.8, 6.1.3.11, 6.1.3.14, 6.1.7.3, 8.6.8.6, 8.6.8.7, 8.6.8.13, 8.10.4.2.2(c), 8.10.4.2.2(d), 8.10.4.1.2(l), and 8.11.4.2.12.

ASME A17.1a-2008/CSA B44-08 and later editions — Requirements 6.1.2.1, 6.1.3.5.8, 6.1.3.7, 6.1.3.8, 6.1.3.11, 6.1.3.14, 6.1.7.3, 8.6.8.6, 8.6.8.7, 8.6.8.13, 8.6.8.15.12, 8.10.4.2.2(c), 8.10.4.2.2(d), 8.11.4.2.12, and 8.10.4.1.2(l).

ITEM 8.13
HANDRAIL SYSTEMS AND SAFETY DEVICES

8.13.1 Periodic Inspections

8.13.2 Periodic Test

Examine the handrail drive systems to ensure that all chains, pulleys, gears, rollers, and belts are present and in good condition. Their operation should be free of excessive noise and slack, which indicate wear.

(a) For escalators installed under A17.1a-1988 through A17.1b-1992, test the operation of the stopped handrail device. Have the handrail motion sensor mechanically disconnected while the unit is off and then run the unit, or grab the handrail and stall it while the escalator is running. Verify that the alarm sounds immediately and the escalator stops within 15 s.

(b) For escalators installed under A17.1-1993 and later editions, check the operation of the handrail speed-monitoring device. An alarm must sound immediately if the speed of either handrail deviates from the step speed by 15% or more, and the unit must shut down if the speed deviation is continuous for 2 s to 6 s. If holding the moving handrail cannot activate the device, then it will be necessary to activate the device by another means (disconnecting the speed sensor, changing dip switch settings on the controller, etc.). Verify that the unit cannot be started until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(c) For escalators installed under A17.1b-1992 and later editions, test the operation of the handrail entry device by having a soft object that will not damage the unit inserted between the handrail and hand guard. After the unit stops, verify that it cannot be restarted with the key switch until the device has been manually reset. The device only needs to operate in the direction of handrail travel, except for units installed under A17.1-1996 and later editions, under which the device must operate, regardless of the direction of travel of the

handrail where an opening is created in the balustrade to prevent entrapment.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(23) **8.13.3 Acceptance**

The person or firm installing the equipment must provide a written checkout procedure and demonstrate that the handrail speed monitor device (see ASME A17.1, requirement 6.1.6.4) will activate an alarm without any intentional delay and the device will shut down the unit when a speed deviation of 15% or more is continuous within a 2 s to 6 s range.

Verify that the handrail speed-monitoring device requires a manual reset, or the person or firm installing the equipment shall provide a written checkout procedure and demonstrate that it automatically resets not more than once in 24 hr of operation and then requires a manual reset.

8.13.4 References

A17.1d-2000 and earlier editions — Rules 802.4, 802.11, 805.4, 805.3m, (NR 8.6.8.1), 1008.2m, 1008.2q, and 1009.2c.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.3.4, 6.1.3.11, 6.1.6.4, 6.1.6.3.12, 8.6.8.1, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), 8.10.4.2.2(h), and 8.11.4.2.13.

ASME A17.1a-2008/CSA B44a-08 — Requirements 6.1.3.4, 6.1.3.13, 6.1.6.4, 6.1.6.3.12, 8.6.8.15.13, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), and 8.10.4.2.2(h).

ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 6.1.3.4, 6.1.3.13, 6.1.6.4, 6.1.6.3.12, 8.6.8.15.13, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), and 8.10.4.2.2(h).

ITEM 8.14
CODE DATA PLATE

8.14.1 Periodic Inspections

Check that the Code data plate is installed. This is the Code that is to be used for the inspection and test.

8.14.2 Periodic Test

8.14.3 Acceptance

8.14.4 References

A17.1d-2000 and earlier editions — Rules 808, 908, and 1200.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 8.9, 8.7.1.8, 8.10.4.1.2(p), and 8.11.4.1(v).

ASME A17.1-2007/CSA B44-07 — Requirements 8.9, 8.7.1.8, and 8.11.4.1(t).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 8.9, 8.7.1.8, and 8.11.4.1(v).

ITEM 8.15
RESPONSE TO SMOKE DETECTORS

8.15.1 Periodic Inspections

8.15.2 Periodic Test

For units installed under A17.1a-1994 and later editions, when smoke detectors are provided that will shut down a running unit, verify that the emergency stop button alarm will sound and the unit does not shut down for at least 15 s. The unit may be tested by activating the smoke detector or by other means.

CAUTION: If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.

8.15.3 Acceptance

8.15.4 References

A17.1d-2000 and earlier editions — Rule 805.8.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirement 6.1.6.8.

ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.8, 8.10.4.1.2(v), and 8.11.4.2.17.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.8, 8.10.4.1.2(v), and 8.6.8.15.17.

ITEM 8.16
STEP LATERAL DISPLACEMENT DEVICE

8.16.1 Periodic Inspections

8.16.2 Periodic Test

For curved escalators, manually actuate the device on the stopped escalator. Verify that the start switch cannot start the escalator until the device is manually reset.

8.16.3 Acceptance

8.16.4 References

A17.1d-2000 and earlier editions — Rules 805.3p and 1003.2b(20).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.1.6.3.14 and 8.10.4.1.2(r).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.1.6.3.14, 8.10.4.1.2 (r), and 8.11.4.2.22.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.1.6.3.14, 8.6.8.15.22, and 8.10.4.1.2(r).

ITEM 8.17
INSPECTION CONTROL

8.17.1 Periodic Inspections

8.17.2 Periodic Test

If provided, check the operation of the inspection control device. Check that the device only permits movement by a constant-pressure means and clearly indicates the direction of travel. If a plug-in control station is used, verify that it is stored in the upper pit.

8.17.3 Acceptance

Verify that when the transfer switches located at each landing are enabled, only the inspection control device can operate the equipment. Verify that the switches are properly located, manually operated, protected against accidental contact, and properly labeled. Verify that if both switches are activated, then all inspection control devices are inoperative.

If a portable control station is used, verify that the cord does not exceed the maximum allowed length. If a plug-in portable control station is used, check that either a transfer switch is provided or that when the portable control station is plugged in, the control of the equipment is automatically transferred to the control station.

8.17.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2002/CSA B44a-05 — Requirement 6.1.6.2.2.

ASME A17.1b-2003/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.2.2, 8.10.4.1.2 (u), and 8.11.4.2.21.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.2.2, 8.6.8.15.21, and 8.10.4.1.2(u).

ITEM 8.18
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

8.18.1 Periodic Inspections

8.18.2 Periodic Test

8.18.3 Acceptance

(a) Verify that the connections between the truss and the building are installed according to the manufacturer's drawings.

(b) Verify that restraints are installed and allow movement as required.

8.18.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.5.2 and 8.5.3.

Part 9
Moving Walk — External

ITEM 9.1
GENERAL FIRE PROTECTION

9.1.1 Periodic Inspections

Examine the sides and undersides of the moving walk trusses and machinery space enclosures for damage to fire-resistive materials. A17.1a-1994 and later editions permit the use of noncombustible and limited-combustible materials as defined by the building code or ANSI/NFPA 101.

Check that guards are in place for openings provided for ventilation of the drive machine and control equipment spaces. Enclosure in a fire-resistive ceiling does not constitute adequate fire protection.

Verify that provisions to protect floor openings from the passage of flame, heat, and/or smoke that are required by the building code have not been damaged, removed, or defeated.

Moving walks installed under A17.1-1981 and later editions require protection in compliance with ANSI/NFPA 101 or local codes. Prior to A17.1-1981, ASME A17.1 gave requirements for protection of floor openings for moving walks that were not accredited as a means of egress. However, since moving walks are no longer accredited as a means of egress, the inspector must refer to the local code or ANSI/NFPA 101 for the protection requirement at each location.

9.1.2 Periodic Test

9.1.3 Acceptance

Verify that floor openings are protected against the passage of flame, heat, and/or smoke in accordance with the requirements of the building code.

9.1.4 References

A17.1d-2000 and earlier editions — Sections 900 and 901 and Rule 1009.2a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.1, 6.2.2, 8.10.4.1.1(a), and 8.11.4.1(a).

ASME A17.3 — Paragraphs 9.1.1 and 9.2.2.

ITEM 9.2
GEOMETRY

9.2.1 Periodic Inspections

Inspect for evidence of change to the geometry of the balustrades, and if changes have been made, inspect as outlined in 9.2.3.

If a moving walk is relocated or a new moving walk is installed in existing trusses, it must comply with the current Code requirements. See Figures 9.2.1-1 and 9.2.1-2 for dimension requirements of existing moving walks.

Verify that the overhead clearance is in compliance with local codes.

9.2.2 Periodic Test

9.2.3 Acceptance

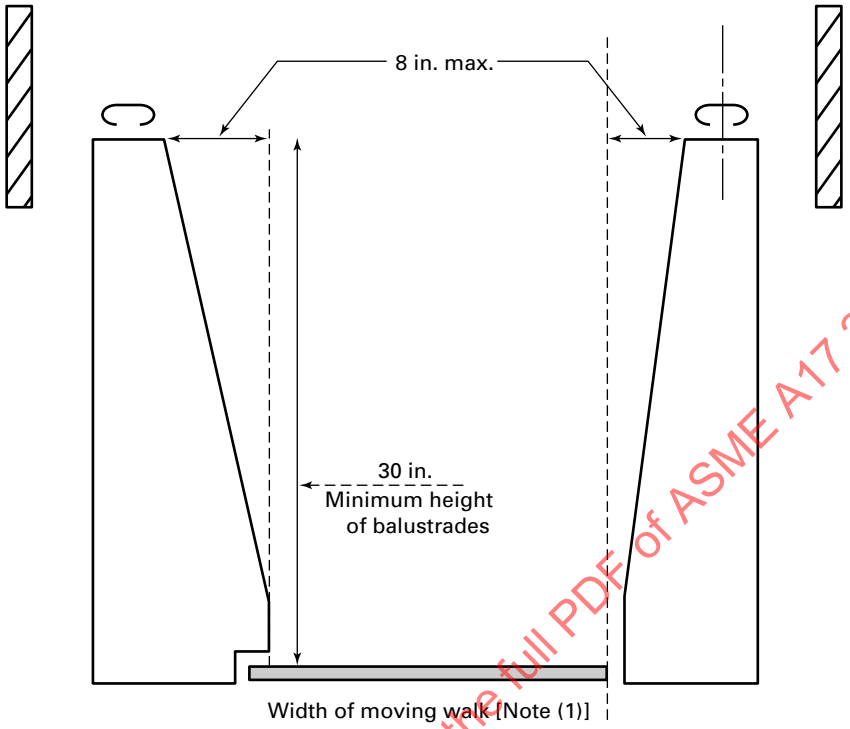
(a) Measure the slope of the treadway at the centerline using a level and protractor or an angle finder at each incline (if any). See Figure 9.2.3-1.

(b) Measure the width of the treadway at a right angle transverse to the direction of travel. See Tables 9.2.3-1 through 9.2.3-3 for existing moving walks installed prior to 1971. For moving walks installed under A17.1-1971 and later editions, refer to A17.1a-1991.

(c) Measure and mark the centerline of each handrail and use a plumb line to find the horizontal distance from the handrail centerline to the vertical plane through the exposed treadway edge. Measure the height from the top of the handrail to the treadway at several points.

(d) For an interior low-deck moving walk, measure the distance from the vertical face of the interior panels to the vertical face of the skirt panels using a machinist level and ruler (see Figure 9.2.1-2). Measure the slope of the deck perpendicular to the line of travel using a machinist level and protractor.

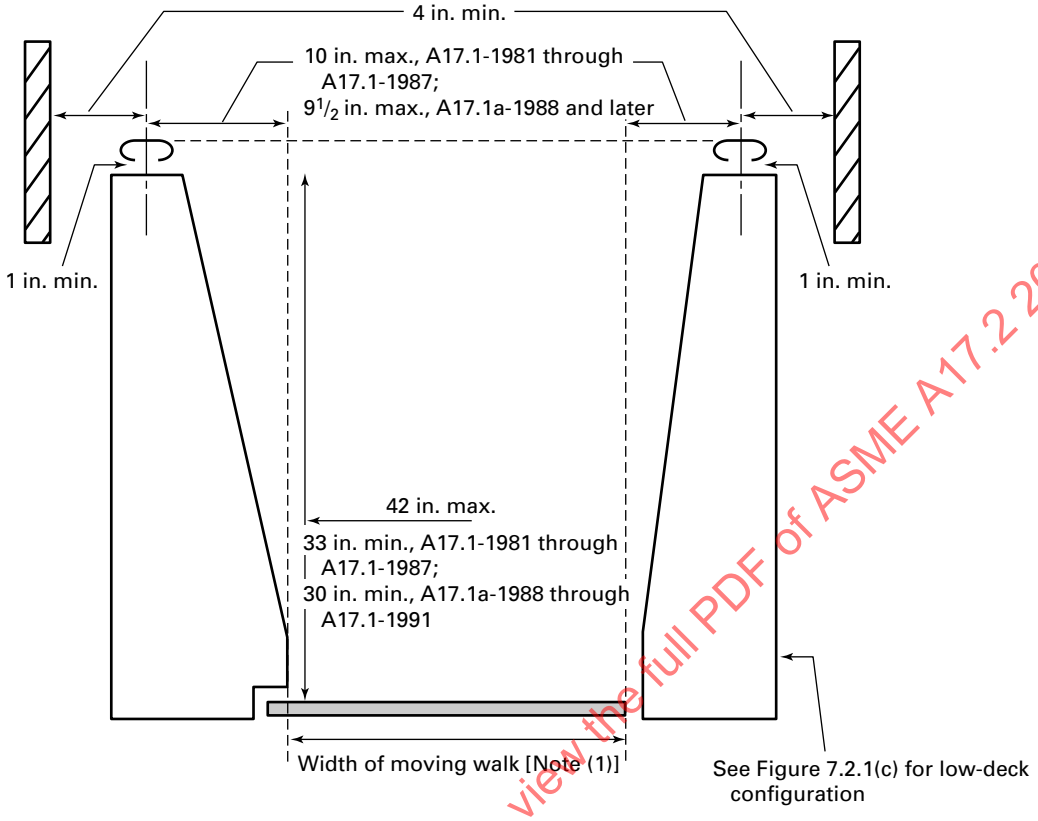
Figure 9.2.1-1
Moving Walk Geometry (for Moving Walks Installed Under A17.1-1965 Through A17.1b-1980)



GENERAL NOTE: 1 in. = 25.4 mm.

NOTE: (1) Width of moving walk is exposed width of treadway. See Tables 9.2.3-1 through 9.2.3-3.

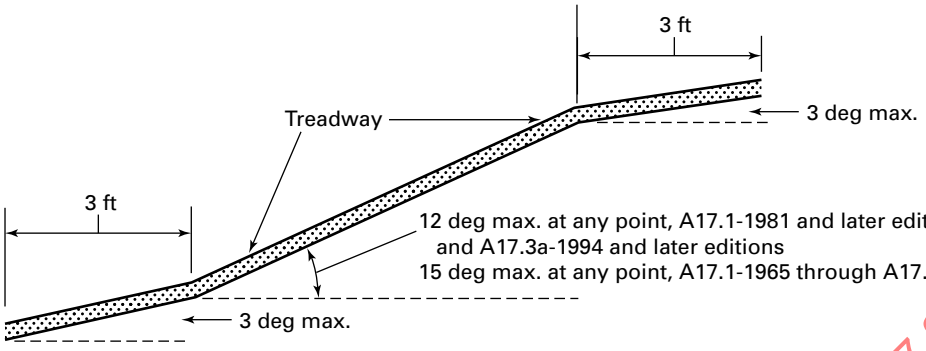
Figure 9.2.1-2
Moving Walk Geometry (for Moving Walks Installed Under A17.1-1981 Through A17.1a-1991)



GENERAL NOTE: 1 in. = 25.4 mm.

NOTE: (1) Width of moving walk is exposed width of treadway.

Figure 9.2.3-1
Maximum Treadway Angle



GENERAL NOTE: 1 in. = 25.4 mm.

Table 9.2.3-1
Treadway Width
(A17.1-1965 Through A17.1d-1970)

Maximum Treadway Slope at Any Point on Treadway, deg	Maximum Moving Walk Treadway Width, in.	
	Treadway Speed, Maximum 140 ft/min	Treadway Speed, >140 ft/min to 180 ft/min
0 to 3	Unlimited	40
>3 to 5	110	40
>5 to 8	78	40
>8 to 12	40	...
>12 to 15	40	...

GENERAL NOTES:
(a) 1 deg = 1.75 E–02 rad.
(b) 1 in. = 25.4 mm.

Table 9.2.3-2
Treadway Width
(A17.1-1971 and Later Editions)

Maximum Treadway Slope at Any Point on Treadway, deg	Maximum Moving Walk Treadway Width, in.		
	Up to 90 ft/min	90.1 ft/min to 140 ft/min	140.1 ft/min to 180 ft/min
0 to 4 [Note (1)]	Unrestricted	60	40
4 to 8 [Note (1)]	40	40	40
8 to 12 [Note (2)]	40	40	Not permitted

GENERAL NOTES:
(a) 1 deg = 1.75 E–02 rad.
(b) 1 in. = 25.4 mm.

NOTES:
(1) 5 deg for units installed under A17.1-1971 through A17.1-1978.
(2) 15 deg for units installed prior to A17.1-1981.

Table 9.2.3-3
Minimum Treadway Width

Reference	Minimum Treadway Width, in.
A17.1a-1980 and earlier editions	16
A17.1-1981 and later editions and ASME A17.3a-1994	22

GENERAL NOTE: 1 in. = 25.4 mm.

9.2.4 References

A17.1d-2000 and earlier editions — Rules 902.1, 902.2, 902.3d, (NR 8.6.8.12), 1009.2b, 1009.2g, and 1208.5 and Appendix D.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.3.1, 6.2.3.2, 6.2.3.3.4, 8.10.4.1.1(b), 8.10.4.2.2(a), 8.11.4.1(b), and 8.7.6.2.5 and Appendix I.

ASME A17.3 — Paragraphs 9.3.1 through 9.3.3 and 9.3.6.

ITEM 9.3
HANDRAILS

9.3.1 Periodic Inspections

(a) Mark one location on each handrail with chalk, then operate the unit and inspect each handrail through a complete revolution. The handrails, including splices and joints, should be free of any cuts, cracks, gouges, pinch points, or any other condition that would be a hazard to passengers. The undersides of the handrails should be close enough to the handrail stand to prevent fingers from getting between the handrail and the handrail stand. Any rust or rubber filings present on the balustrade deck indicate that an internal inspection of the handrail system may be warranted.

(b) Verify that hand or finger guards are present at the newel base. Check that the guards are in good condition and properly sized to prevent fingers or hands from being drawn into the newel. Finger guards are required under A17.1-1965 and later editions.

(c) Ride the moving walk holding the handrails through the entire travel. The handrails should move smoothly without jerking, at substantially the same speed as the treadways. The need to frequently change grip on the handrail indicates a need for adjustment. During this ride, observe any unusual noise that may indicate the need for further inspection. At several points in the ride, firmly grip the handrail and attempt to see if it stalls under moderate force. On many units the handrails will normally stall if it is firmly gripped and held.

(d) Listen for noise that may indicate wear of the turnaround rollers or other parts.

(e) Moving walks installed under A17.1-1981 through A17.1a-1987 required only one moving handrail if the slope was 3 deg or less, the width was 24 in. (610 mm) or less, and the speed was 70 ft/min (0.35 m/s) or less. Moving walks installed under A17.1-1965 through A17.1a-1979 did not require a moving handrail if the slope was 3 deg or less and the speed was 70 ft/min (0.35 m/s) or less. Only one handrail was required (regardless of speed or incline) if the width was less than 21 in. (533 mm). A balustrade with no moving handrail should not have any surface that can be gripped.

(f) Check the horizontal clearance between both lips of the handrail and the handrail stand (guide).

9.3.2 Periodic Test

For moving walks installed to A17.1-2000 and later editions, the person or firm maintaining the equipment must provide a written checkout procedure and demonstrate that the handrail speed does not change when a retarding force, up to the maximum required by Code, is applied opposite to the direction of travel. Note that it may be easier to retard the handrail motion when the handrail is traveling in the down direction (i.e, the retarding force will oppose the handrail drive system).

9.3.3 Acceptance

Check whether each handrail extends at normal height not less than 12 in. (305 mm) beyond the moving walk combplates, and verify that required clearances are present (see Figure 9.3.3-1).

9.3.4 References

A17.1d-2000 and earlier editions — Rules 902.2, 902.4, 1008.2m, and 1009.2c and Appendix D.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.3.2.3, 6.2.3.4, 8.6.9.1, 8.11.4.1(c), 8.11.4.2.13, 8.10.4.2.2(b), and 8.10.4.1.1(c) and Appendix I.

ASME A17.1a-08/CSA B44a-08 and later editions — Requirements 6.2.3.2.3, 6.2.3.4, 8.6.8.15.13, 8.6.9.1, 8.11.4.1(c), 8.10.4.2.2(b), and 8.10.4.1.1(c) and Appendix I.

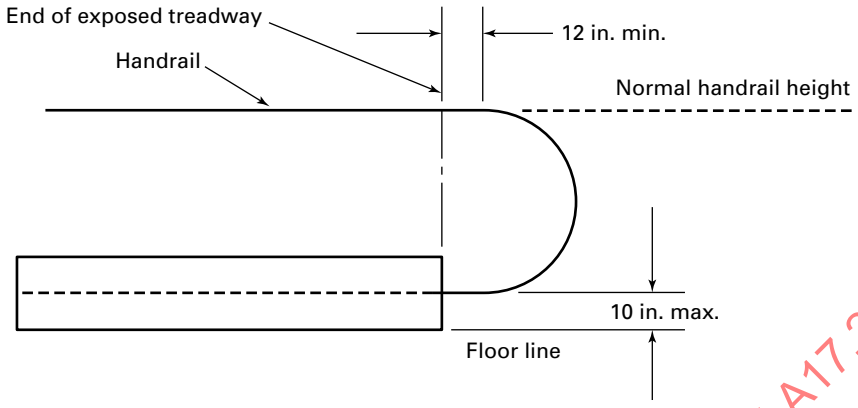
ASME A17.3 — Paragraph 9.3.4.

ITEM 9.4
ENTRANCE AND EGRESS ENDS

9.4.1 Periodic Inspections

(a) The floor surfaces adjacent to the landing plates must be continuous with the top of the landing plate, with no abrupt changes in elevation of more than $\frac{1}{4}$ in. (6.4 mm). Access to and egress from the moving walk should be free of obstacles and tripping hazards. Check that the pit covers are present and in good condition. For moving walks installed under A17.1-1965

Figure 9.3.3-1
Moving Walk Handrail Extension (A17.1-1971 and Later Editions)



GENERAL NOTE: 1 in. = 25.4 mm.

through A17.1b-1989, the landing plate should be smooth from the line of intersection of the teeth and the treadway surface for a distance not to exceed 4 in. (102 mm) and not less than 1 in. (25 mm).

(b) For moving walks installed under A17.1b-1989 and later editions, a safety zone should be maintained that is free of obstacles (see Figure 7.4.1-1). These Code dimensions are minimums; traffic patterns may require larger distances.

(c) While standing on the unit, verify that the landing and combplates provide a secure foothold and that outdoor units provide a secure foothold when they are wet.

9.4.2 Periodic Test

9.4.3 Acceptance

Verify that vertical headroom clearance of 7 ft (2.13 m) is provided and that the required safety zone is present.

Check that floor openings adjacent to the entire length of the wellway are protected in accordance with the applicable building code.

9.4.4 References

A17.1d-2000 and earlier editions — Rules 902.8, 907.3, and 902.16.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.3.8, 6.2.8.3, 6.2.3.16, 8.6.8.15, 8.10.4.1.1(d), and 8.11.4.1(d).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.2.3.8, 6.2.8.3, 6.2.3.16, 8.6.9.12, 8.10.4.1.1 (d), and 8.11.4.1(d).

ASME A17.3 — Paragraph 9.4.3.

ITEM 9.5
LIGHTING

9.5.1 Periodic Inspections

Check whether the lighting at the landing plates and treadway is in compliance with the applicable code by using a lightmeter while the moving walk is operating. Take care not to cast a body shadow on the meter. Note any lamps that are not operating and their effect on the moving walk lighting. For moving walks installed under A17.1-1965 and later editions, lighting must be a minimum of 5 fc (54 lx), must be of uniform intensity, and must not materially contrast with the surrounding area.

9.5.2 Periodic Test

9.5.3 Acceptance

9.5.4 References

A17.1d-2000 and earlier editions — Rules 906.2 and 1009.2d.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.7.2, 8.11.4.1(e), and 8.10.4.1.1(e).

ASME A17.3 — Paragraph 9.7.1.

ITEM 9.6
CAUTION SIGNS

9.6.1 Periodic Inspections

For moving walks installed under A17.1-1981 and later editions and moving walks required to conform to ASME A17.3a-1994, verify that the required caution signs are located at both entrances and are readily visible to boarding passengers. For moving walks installed under A17.1-1996 through A17.1d-2000, verify that any

additional signs are located at least 10 ft (3.05 m) horizontally from the end of the newels and that they do not impede traffic or otherwise cause persons to stop.

9.6.2 Periodic Test

9.6.3 Acceptance

9.6.4 References

A17.1d-2000 and earlier editions — Rule 905.8 and Figure 805.9a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.6.8.1, 8.10.4.1.1(f), and 8.11.4.1(f) and Figure 6.1.6.9.1.

ASME A17.3 — Paragraph 9.6.11.

ITEM 9.7
COMBPLATE AND COMB STEP IMPACT DEVICE

9.7.1 Periodic Inspections

Inspect the comb for missing teeth and proper mesh with each treadway tread (see Figure 7.7.1-1). Verify proper mesh with each treadway tread by holding a sheet of stiff paper such as a business card where the teeth mesh with the treadway tread while standing well back from the plate to prevent forcing the plate down. Use of an extension with an alligator clip to hold the card is recommended.

NOTE: Telescoping pointers with alligator clips that are used to ignite water heater pilot lights are available in hardware/plumbing supply stores.

The comb teeth should mesh with and set into the tread surface so that the teeth are always below the upper surface of the treads. Any section with one or more missing or broken teeth should be replaced. For moving walks installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994, the comb surfaces must contrast visibly by color, pattern, or texture.

9.7.2 Periodic Test

For units installed under A17.1b-1992 and later editions, test the combplate impact devices as follows:

(a) Apply a vertical force to the center front edge of the combplate until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset.

(b) Apply a force in the direction of travel at the front center of the combplate, increasing the force until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset.

(c) Apply a force in the direction of travel on one side of the front of the combplate, increasing the force until the device trips. Record the force required to trip the device and verify that the unit will not start until it is manually reset. Repeat this test for the opposite side.

Note that while the required maximum horizontal forces were 112 lbf (500 N) at each side and 225 lbf (1 000 N) at the center of the combplate for moving walks installed to A17.1b-1992 through A17.1-1996, it is permitted to have maximum horizontal forces at the higher values permitted by A17.1a-1997 and later editions.

9.7.3 Acceptance

(a) Visually verify that the combplates are vertically adjustable and that the sections forming the comb teeth are replaceable.

(b) Place the required weight on the combplate and landing plate assembly to verify that the combplate and landing plate will not contact the treadway (see Figure 7.7.3-1).

9.7.4 References

A17.1d-2000 and earlier editions — Rules 902.8, 905.3k, 907.3, 1206.6, 1008.2r, and 1009.2e.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.3.8.1, 6.2.3.8.2, 6.2.6.3.11, 6.2.8.3, 8.6.8.4, 8.10.4.1.1(g), 8.10.4.1.2(q), 8.10.4.2.2(e), and 8.11.4.1(g).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.3.8.1, 6.2.3.8.2, 6.2.6.3.11, 6.2.8.3, 8.6.9.2, 8.10.4.1.1(g), 8.10.4.1.2(q), 8.10.4.2.2(e), and 8.11.4.1(g).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.3.8.1, 6.2.3.8.2, 6.2.6.3.11, 6.2.8.3, 8.6.8.15.8, 8.10.4.1.1(g), 8.10.4.1.2(q), 8.10.4.2.2(e), and 8.11.4.1(g).

ASME A17.3 — Paragraphs 9.4.1 and 9.4.2.

ITEM 9.8
DECK BARRICADES

9.8.1 Periodic Inspections

For low-deck moving walks installed under A17.1a-1988 and later editions and moving walks required to comply with ASME A17.3a-1994, check to see that deck barricades, when required, are firmly in place and in good condition when the outer deck exceeds 5 in. (125 mm) and the deck is more than 36 in. (915 mm) above any part of the floor. The barrier must extend to 4 in. (102 mm) below the handrail top.

9.8.2 Periodic Test

For moving walks installed under A17.1b-1989 and later editions, verify that glass or plastic replacement panels meet the requirements of ANSI Z97.1 or 16 CFR Part 1201.

9.8.3 Acceptance

All glass or plastic (glazing material) must be legibly and permanently marked "16 CFR Part 1201," "American National Standard Z97.1," or "ANSI Z97.1" and also shall be marked with the manufacturer's distinctive mark or designation.

Check that all exposed fastener heads are the tamper-resistant type.

9.8.4 References

A17.1d-2000 and earlier editions — Rules 902.3h and 1009.2f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.3.3.8, 8.11.4.1(h), and 8.10.4.1.1(h).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.2.3.3.8, 8.6.9.8, 8.11.4.1(h), and 8.10.4.1.1(h).

ASME A17.3 — Paragraph 9.3.3.6.

ITEM 9.9
TREADWAYS

9.9.1 Periodic Inspections

(a) Mark treadways with chalk, then run the moving walk through one complete revolution. Check that each treadway is continuous, unbroken, clean, and free of debris, and that the treads are in good condition.

(b) Check at least every tenth pallet or a distance of approximately one-tenth of the entire length, by riding on it, to verify that the following requirements are met:

(1) There is no excessive movement or play in the direction of travel, at right angles to the direction of travel, or vertically. While standing on the treadway, a shift of weight should not cause the treadway to strike the skirt panels.

(-a) Belt Type. The treadway consists of an integral belt of uniform width and thickness, made or spliced in one continuous piece forming a loop.

(-b) Pallet Type. The treadway consists of closely coupled meshing pallets, or small platforms. This is similar to an escalator step without a riser.

(-c) Belt-Pallet Type. For moving walks installed under A17.1-1987 and earlier editions, this type was permitted. The treadway consists of a continuous integral belt supported on coupled pallets. The pallets may not ordinarily be visible when standing on the treadway.

(2) Alternate cleats on adjacent pallets should mesh so that no continuous transverse gap exists between pallets. Mesh can be verified by trying to fit a thin piece of stiff paper such as a business card between treadways while the moving walk is moving in the up direction. The check should be made across the entire width (see Figure 7.7.1-1).

(3) The tread surface should be slotted in the direction parallel to travel so that treads mesh with the comb-plate teeth. Verify that a cleat is formed adjacent to the skirt panel on each side of the treadway (see Figure 9.9.1-1).

(4) The cleats in the treadway tread surfaces should not be damaged, broken, or worn. Special consideration should be given to excessive clearance and sharp edges. While standing on the treadway tread, verify that it provides a secure foothold.

(5) A jerking motion on the treadways and excessive noise in the machinery space indicate that the drive and support system should be examined to discover the source or cause.

(6) Use a straight edge to verify that adjacent pallets do not vary more than $^{1}/_{16}$ in. (1.6 mm) in elevation (vertical displacement). On belt-pallet-type treadways, verify that the fasteners that attach the belt to the pallets do not project above the exposed treadway surfaces. Inspect the splices in belt-type treadways to verify that they produce a continuous unbroken treadway.

(7) For moving walks required to conform to ASME A17.3a-1994, check that the splices of belt-type treadways are continuous and unbroken.

9.9.2 Periodic Test

9.9.3 Acceptance

Review fatigue test and certification for Code compliance.

Check that the material for pallet frames and treadways, including any attachments or inserts, meets Code requirements.

9.9.4 References

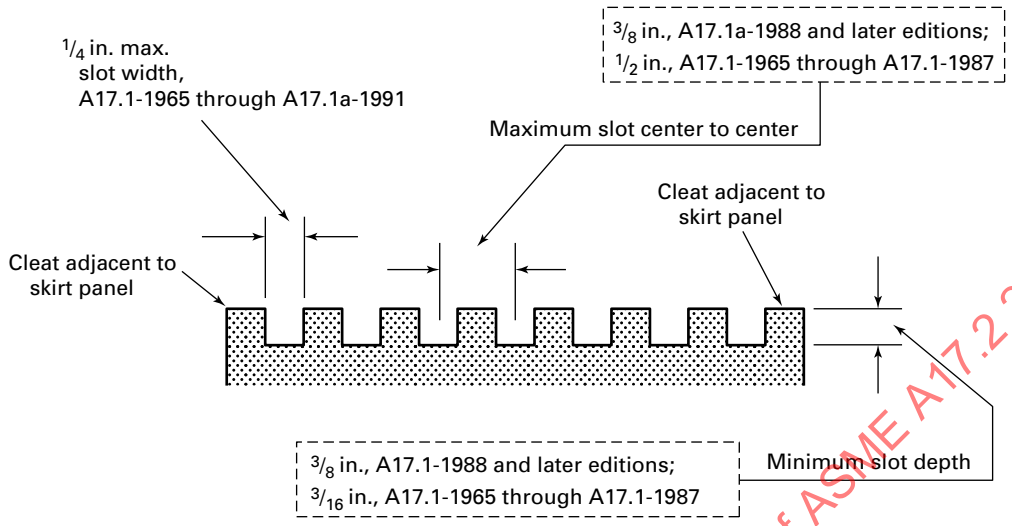
A17.1d-2000 and earlier editions — Rules 902.5, 902.6, 902.9, 902.11, and 1105.1.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.3.5, 6.2.3.6, 6.2.3.9, 6.2.3.11, 8.6.8.6, 8.3.11, 8.10.4.1.1(i)(2), 8.10.4.2.2(e), and 8.11.4.1(i).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.2.3.5, 6.2.3.6, 6.2.3.9, 6.2.3.11, 8.6.9.3, 8.6.9.5, 8.3.11, 8.10.4.1.1(i)(2), 8.10.4.2.2(e), and 8.11.4.1(i).

ASME A17.3 — Paragraphs 9.3.5 and 9.3.6.

Figure 9.9.1-1
Moving Walk Treadway Slots



GENERAL NOTE: 1 in. = 25.4 mm.

ITEM 9.10
OPERATING AND SAFETY DEVICES

9.10.1 Periodic Inspections

(a) Start Switches. Verify that a record of personnel that were trained in the proper procedure to start up the moving walk is available on site. Operate the moving walk in both directions using the key-operated start switch. When operating the switch, the exposed treadways should be within sight. Check the operation and location of this switch. A17.1b-1989 and later editions specifically prohibit automatic starting by any means. Verify that the key is only accessible to authorized personnel.

For units installed under A17.1-1996 and later editions, verify that the start switch operating positions are properly marked. Check that the key is only removable in the "RUN" position. Turn the switch from "RUN" to either "UP" or "DOWN" and quickly let go of the key. The switch must return to the "RUN" position. Repeat for the other direction of travel. Next turn the switch to either the "UP" or "DOWN" position. Stop the unit with the emergency stop button and keep the switch in the "UP" or "DOWN" position. The unit must not restart. Repeat for the other direction of travel.

(b) Emergency Stop Switches. Operate the emergency stop switches/buttons and observe that the moving walk stops. Verify that this stop switch will not start the moving walk. If automatic starting devices are provided (A17.1a-1988), verify that they will not function after the stop switch is operated. Verify proper labeling and signal where required. The requirements for emergency stop switches in prior editions of the Code are as follows:

(1) A17.1-1965: Emergency stop button or other type of manually operated switches having a red button or handle shall be accessible, located at or near the top and bottom landings of each moving walk, and protected against operation by accident.

(2) A17.1a-1988 and later editions require a readily movable self-closing transparent cover and an 80 dBA signal when the cover is moved. The cover should be marked "EMERGENCY STOP." The button should be in the upper-right quadrant when facing the moving walk at each end for high-deck balustrades, and it must be below the handrail height for low-deck balustrades. Remote stop switches are prohibited and handles are not allowed.

(c) Tandem Operation. For moving walks installed under A17.1a-1988 and later editions that are operated in tandem, where traffic flow is such that bunching will occur if the moving walk carrying passengers away stops, verify that the units are electrically interlocked. The interlocks must stop the unit carrying passengers into the common intermediate landing if the unit carrying passengers away from the landing should stop. Also, verify that the interlocks ensure that the units run in the same direction.

9.10.2 Periodic Test

9.10.3 Acceptance

Check that the start switches are within reach of an emergency stop button. Start the unit and hold the start switch in the "UP" direction, then actuate the emergency stop button. The unit must not restart until the start switch is placed in the "RUN" position and the starting sequence is repeated. Repeat this for the "DOWN" direction and for the other start switch.

For low-deck moving walks, check the clearances between the handrail and the stop switch enclosure and the distance from the button to the handrail. In jurisdictions enforcing the NBCC, check that the auxiliary emergency stop switch, if provided, is within view of the moving walk.

9.10.4 References

A17.1d-2000 and earlier editions — Rules 905.1, 905.2, 905.3a, 905.6, and (NR 8.6.10.5).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.6.1, 8.6.10.2, 8.6.10.5, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1a-2008/CSA B44a-08 — Requirements 6.2.6.1, 8.6.10.2, 8.6.11.2, 8.6.11.5, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 8.6.11.3, 8.6.11.6, 6.2.6.1, 8.6.10.2, 8.10.4.1.1(j), 8.10.4.2.2(h), and 8.11.4.1(j).

ASME A17.3 — Paragraph 9.6.

ITEM 9.11
(RESERVED)

ITEM 9.12
(RESERVED)

ITEM 9.13
EGRESS RESTRICTION (ROLLING SHUTTER) DEVICE

9.13.1 Periodic Inspections

Where rolling shutters are provided to protect floor openings, check that when the shutters begin to close, the power is removed from the drive machine and brake, and that it remains off until the shutter is fully retracted. If the shutter is power operated, the building code may require a pressure-sensitive leading edge to reverse direction and/or stop it when it strikes an object.

9.13.2 Periodic Test

9.13.3 Acceptance

9.13.4 References

A17.1d-2000 and earlier editions — Rule 905.3f.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.6.3.6, 8.10.4.1.1(l), 8.10.4.2.2(h), and 8.11.4.1(m).

ASME A17.3 — Paragraph 9.6.7.

ITEM 9.14
SPEED

9.14.1 Periodic Inspections

For moving walks with DC motors, perform a speed test.

Refer to Tables 9.14.1-1 through 9.14.1-3 for allowable speeds of existing equipment.

9.14.2 Periodic Test

9.14.3 Acceptance

Determine the no-load speed of the moving walk in both directions as follows:

(a) Run a tachometer wheel along the deck, skirt, or other stationary flat object when riding the moving walk.

(b) Use a stopwatch to time the travel from one landing to the other. Divide the travel in feet (meters) by the time in minutes (seconds) to obtain the speed in feet per minute (meters per second).

Verify that the speed of the moving walk cannot be changed without first stopping the walk.

9.14.4 References

A17.1d-2000 and earlier editions — Rules 903.1, 905.3b, 1008.2o, and 1009.2o.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.4, 6.2.6.3.2 (NR 1008.2o), 8.10.4.1.1 (m), 8.10.4.2.2(f), 8.10.4.1.2(e), and 8.11.4.1(n).

ASME A17.3 — Paragraph 9.6.4.

Table 9.14.1-1
Treadway Speed
(A17.1-1981 and Later Editions)

Maximum Treadway Slope at Any Point on Treadway, deg	Maximum Treadway Speed, ft/min
0 to 8	180
>8 to 12	140

GENERAL NOTES:
(a) 1 deg = 1.75 E−02 rad.
(b) 1 ft/min = 5.08 E−03 m/s.

Table 9.14.1-2
Treadway Speed at
Point of Entrance or Exit
(A17.1-1965 Through A17.1b-1980)

Maximum Treadway Slope at Point of Entrance or Exit, deg	Maximum Treadway Speed, ft/min
0 to 3	180
>3 to 5	160
>5 to 8	140
>8 to 12	130
>12 to 15	125

GENERAL NOTES:
(a) 1 deg = 1.75 E−02 rad.
(b) 1 ft/min = 5.08 E−03 m/s.

Table 9.14.1-3
Treadway Speed at
Any Point on Treadway
(A17.1-1965 Through A17.1b-1980)

Maximum Treadway Slope at Any Point on Treadway, deg	Maximum Treadway Speed, ft/min
0 to 8	180
>8 to 15	140

GENERAL NOTES:
(a) 1 deg = 1.75 E−02 rad.
(b) 1 ft/min = 5.08 E−03 m/s.

ITEM 9.15
BALUSTRADES

9.15.1 Periodic Inspections

Inspect the balustrades and note any cracked or broken panels. Panels and fasteners should be smooth and free of burrs and snag points. Interior panels or molding must not be raised or depressed by more than $\frac{1}{4}$ in. (6.4 mm). Check that the balustrades are totally enclosed along both exterior and interior lengths, except where the handrail enters the newel base. For moving walks installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994, if gaps exist between interior panels, they should not be wider than $\frac{3}{16}$ in. (4.8 mm) and the edges should be beveled or rounded. Check that glass or plastic panels meet the treadway and that skirt panels do not exceed $\frac{1}{4}$ in. (6.4 mm). For skirtless balustrades installed under A17.1-1965, the vertical clearance between the top of the treadway and the underside of the balustrade should not exceed $\frac{1}{8}$ in. (3.2 mm).

For units installed under A17.1-1971 and later editions and moving walks required to conform to ASME A17.3a-1994, the vertical clearance between the top of the treadway and the underside of the balustrade should not exceed $\frac{1}{4}$ in. (6.4 mm). See Figure 9.15.1-1. Verify that skirt panels are smooth for moving walks installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994.

9.15.2 Periodic Test

9.15.3 Acceptance

Verify that the balustrades meet the material, strength, and dimensional requirements.

Glass or plastic, if used, should meet the requirements of ANSI Z97.1; 16 CFR Part 1201; or CAN/CGSB 12.1, CAN/CGSB 12.11, or CAN/CGSB 12.12, as applicable. The glass or plastic (glazing material) must be legibly and permanently marked "16 CFR Part 1201," "American National Standard Z97.1," or "ANSI Z97.1" and must also be marked with the manufacturer's distinctive mark or designation. Plastic bonded to basic support panels need not conform to ANSI Z97.1 or 16 CFR Part 1201.

Check that components not used directly in connection with the operation of the moving walk are not installed on, in, or through the moving walk.

Check that the width between the balustrade interior panels does not change in the direction of travel.

9.15.4 References

A17.1d-2000 and earlier editions — Rules 902.3 and 1009.2g and Appendix D.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.3.3, 6.2.3.17, 8.10.4.1.1(n), 8.10.4.2.2 (a), and 8.11.4.1(o).

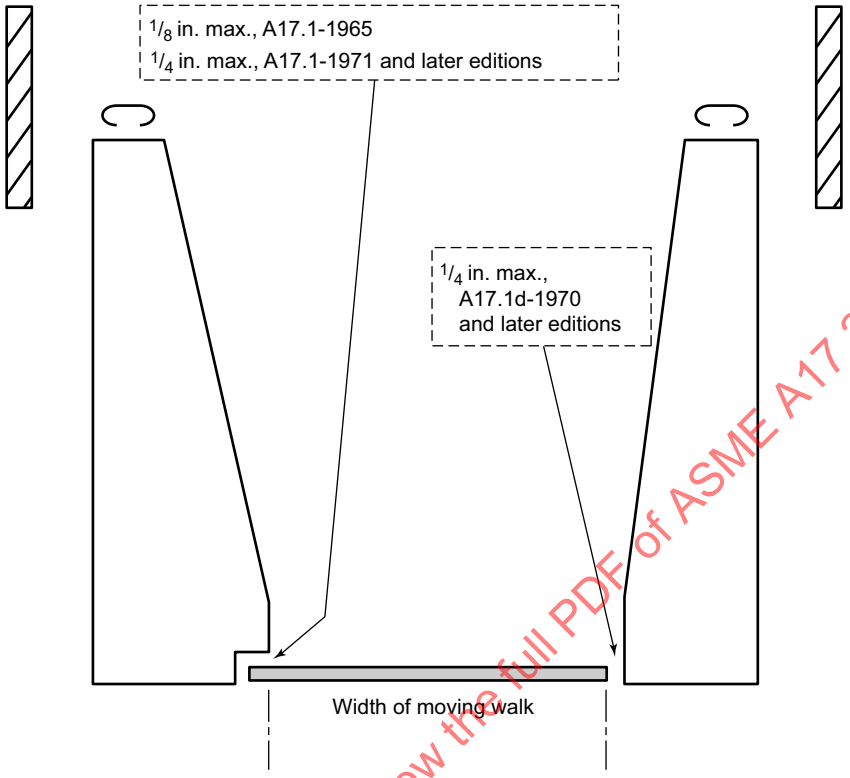
ASME A17.3 — Paragraph 9.3.3.

ITEM 9.16
CEILING INTERSECTION GUARDS

9.16.1 Periodic Inspections

Moving walks installed under A17.1-1981 and later editions, where the clearance of the exterior deck and the ceiling or soffit is 12 in. (305 mm) or less or where the projected intersection of the exterior deck and ceiling or soffit is 24 in. (610 mm) or less from the handrail centerline, require ceiling intersection guards. This requirement was restricted to high decks for moving walks installed under A17.1-1987 and later editions and moving walks required to conform to ASME A17.3a-1994. On low decks for moving walks installed under A17.1-1987 and later editions and moving walks required to conform to ASME A17.3a-

Figure 9.15.1-1
Treadway Clearances



GENERAL NOTE: 1 in. = 25.4 mm.

1994, where the centerline of the handrail is 14 in. (356 mm) or less from the ceiling or soffit, guards are also required.

Inspect the guards for damage and secure attachment.

9.16.2 Periodic Test

9.16.3 Acceptance

Verify that guards are the correct size, are in place and secure, and conform to dimensional requirements (see Figure 7.16.1-1).

Check that glass or plastic guards are properly marked.

9.16.4 References

A17.1d-2000 and earlier editions — Rule 902.3g and Appendix D.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.3.3.7, 8.10.4.1.1(o), and 8.11.4.1(p) and (NR Appendix D).

ASME A17.1a-2005/CSA B44a-05 and later editions — Requirements 6.2.3.3.7, 8.6.9.7, 8.10.4.1.1(o), and 8.11.4.1(p) and (NR Appendix D).

ASME A17.3 — Paragraph 9.3.3.5.

ITEM 9.17
SKIRT PANELS

9.17.1 Periodic Inspections

Check the clearance between the skirt panel and the treadway using a thickness gage or by laying a small rule on the side of the treadway to read the distance. The treadway should be checked at several points along its entire travel.

For moving walks installed under A17.1-1971 and later editions and moving walks required to conform to ASME A17.3a-1994, the horizontal clearance between the treadway and skirt panels should not exceed ¼ in. (6.4 mm). For skirtless balustrades installed under A17.1-1965, the vertical clearance between the top of the treadway and the underside of the balustrade should not exceed ⅛ in. (3.2 mm).

For units installed under A17.1-1971 and later editions and moving walks required to conform to ASME A17.3a-1994, the vertical clearance between the top of the treadway and the underside of the balustrade should not exceed ¼ in. (6.4 mm). See Figure 9.15.1-1. Verify that skirt panels are smooth for moving walks installed

under A17.1a-1987 and later editions and moving walks required to conform to ASME A17.3a-1994.

Verification of conformance with applicable skirt deflection requirements for units installed under ASME A17.1-2019/CSA B44-19 and later editions or that have skirt panels or their supporting components that are altered to ASME A17.1-2019/CSA B44-19 and later editions must be documented in the on-site maintenance records.

9.17.2 Periodic Test

9.17.3 Acceptance

Check that the skirt panels, where provided, extend to a height of at least 1 in. (25 mm) vertically above the treadway tread nose line. Inspect the exposed surface and the joints of the skirt panels adjacent to the treadway for smoothness.

The person or firm installing the equipment must provide engineering test documentation in the on-site documentation to verify that each skirt panel design does not deflect more than 0.625 in. (1.6 mm) under a force of 150 lb (667 N). Where skirt panels or their supports have been altered, skirt panel deflection must be verified as specified in ASME A17.1/CSA B44, requirement 8.10.4.1.1(p)(3).

9.17.4 References

A17.1d-2000 and earlier editions — Rules 902.3e and 902.3f.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.3.3.5, 6.2.3.3.6, 8.10.4.1.1(p), and 8.11.4.1(q).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2016/CSA B44-16 — Requirements 6.2.3.3.5, 6.2.3.3.6, 8.6.9.13, 8.10.4.1.1(p), and 8.11.4.1(q).

ASME A17.1-2019/CSA B44-19 and later editions — Requirements 6.2.3.3.5, 6.2.3.3.6, 8.3.15, 8.6.1.2.2(e), 8.6.9.14, 8.7.6.2.18, 8.10.4.1.1(p), and 8.11.4.1(q).

ASME A17.3 — Paragraphs 9.3.3.3 and 9.3.3.4.

ITEM 9.18
OUTDOOR PROTECTION

9.18.1 Periodic Inspections

For moving walks installed under A17.1b-1989 and later editions, check that the required cover over the horizontal projection of the unit is present and in good condition.

Verify that there is no accumulation of snow or freezing rain on the treadways or landing plates.

9.18.2 Periodic Test

Heaters are required for moving walks installed under A17.1b-1989 and later editions only if treadways are subject to snow or freezing rain. Check that heaters are operational. The heaters may be located inside the units (see 10.3.2).

9.18.3 Acceptance

Check that the cover extends outward from the centerline of the handrail such that a line from the edge of the cover to the handrail centerline is not less than 15 deg from the vertical. Two methods for checking this are shown in Figure 7.18.3-1.

Check that the landing plates and combplates have provisions to provide a secure foothold when they are wet. Check that all electrical components are weatherproof, that all wiring is identified for use in wet locations, and that all wiring and electrical components are properly installed (gaskets, seals, etc.).

9.18.4 References

A17.1d-2000 and earlier editions — Rules 907, 1008.2p, and 1009.2i.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 6.2.8, 8.11.4.1(r), 8.11.4.2.14, and 8.10.4.1.1(q).

ITEM 9.19
MAINTENANCE RECORDS

9.19.1 Periodic Inspections

Review the maintenance records and verify that they are available to elevator personnel and that they are legible and up to date. They should include the following:

(a) description of maintenance task(s) performed and dates

(b) description and dates of examinations, tests, adjustments, repairs, and replacements

(c) description and dates of callbacks (trouble calls) or reports that are made to elevator personnel by any means, including corrective action taken

Verify that a startup procedure is available to authorized personnel (ASME A17.1-2000/CSA B44-00, requirement 8.6.10.5).

9.19.2 Periodic Test

9.19.3 Acceptance

9.19.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.6.1.4.

ITEM 9.20
EARTHQUAKE INSPECTION AND TESTS
(SEISMIC RISK ZONE 2 OR GREATER)

9.20.1 Periodic Inspections

9.20.2 Periodic Test

Check the operation of the seismic switch where one is provided.

9.20.3 Acceptance

(a) Verify that balustrades are installed and fastened according to the manufacturer's drawings.

(b) Verify that the seismic switch is installed and, if it is used exclusively to control the moving walk, that it is located in a machine room or machinery space and, where possible, is mounted adjacent to a vertical load-bearing member. If there is no vertical load-bearing member in close proximity, the seismic switch may be located at the nearest accessible vertical load-bearing member at approximately the same horizontal level as the upper machinery space or machine room.

(c) Verify that the seismic switch, when actuated, causes power to be removed from the moving walk drive machine and brake.

9.20.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.5.1 and 8.5.4.

Part 10
Moving Walk — Internal

ITEM 10.1
MACHINERY SPACE ACCESS, LIGHTING, RECEPTACLE, AND CONDITION

10.1.1 Periodic Inspections

For remote machine rooms, see 10.1.2.

10.1.2 Periodic Test

Determine that the means of access is securely fastened in place. If a door is used, verify that it is kept locked and that the key is available only to authorized personnel. Check the lighting and test the receptacle. In a remote machinery space, check that the lighting is at least 10 fc (108 lx) for moving walks installed under A17.1-1981 and later editions.

Verify that the space is clean of dirt and rubbish and free of oil and combustibles. Combustible items unrelated to moving walk maintenance or operation with a flashpoint less than 110°F (43°C) should not be present. Water should not have accumulated on the floor of the space. Verify that jumpers are not stored in the machinery space, hoistway, or pit.

Verify that no penetrations exist through the sides and undersides of the machinery space and truss that would compromise its fire resistance rating or allow contact with moving parts by the public.

For moving walks installed under ASME A17.1-2000/CSA B44-00 and later editions, check that a guard is in place to protect against accidental contact with the moving pallets or treadway.

10.1.3 Acceptance

Determine whether a reasonable means of access to the interior is provided. Verify that the weight of access plates is in compliance with Code requirements. Removal of the floor plates over the landing pit constitutes reasonable access if the uncovered opening affords ample space for the entry of one person. When an access door is provided on the side of the enclosure, verify that the door is locked and the key is removable only in the locked position.

If fire shutters are required by the local building code, verify that they are present at ventilation openings and that they operate correctly. Verify that the 15 A, 120 V duplex receptacles located in the machinery space, under access plates and machine areas located along the line of travel within the unit, are functional. Verify that the light control for remote machine rooms is within easy reach of the access and can be operated without reaching or passing over any machinery components.

Check that components not used directly in connection with the operation of the moving walk are not installed on, in, or through the moving walk.

10.1.4 References

A17.1d-2000 and earlier editions — Section 906 and Rules 901.1, 907.2, 1008.2a, and 1009.2j.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.7, 6.2.2.1, 6.2.8.2, 8.1, 8.6.8.14, 8.6.8.15, 8.11.4.2.1, and 8.10.4.1.2(a).

ASME A17.1a-2005/CSA B44a-05 through ASME A17.1-2007/CSA B44a-05 — Requirements 6.2.7.1, 6.2.2.1, 6.2.8.2, 8.1, 8.6.9.11, 8.11.4.2.1, and 8.10.4.1.2(a).

ASME A17.1a-2008/CSA B44-08 and later editions — Requirements 6.2.7.1, 6.2.2.1, 6.2.8.2, 8.1, 8.6.9.11, 8.6.8.15.1, and 8.10.4.1.2(a).

ASME A17.3 — Paragraph 9.7.2.

ITEM 10.2
STOP SWITCH AND INSPECTION CONTROL

10.2.1 Periodic Inspections

For remote machine rooms, see 10.2.2.

10.2.2 Periodic Test

Test the operation of machinery space stop switch(es) by placing them in the “STOP” position; make sure that everyone is clear and attempt to start the moving walk with the key switch.

For moving walks installed under ASME A17.1-2000/CSA B44-00 and later editions, check the operation of the inspection control device from each end. The device should only permit movement by a constant-pressure means and should clearly indicate the direction of travel.

If a plug-in control station is used, verify that it is stored in the upper landing machinery space.

Have the unit operated with the inspection control device. Check that the device only permits movement by a constant-pressure means and clearly indicates the direction of travel.

10.2.3 Acceptance

Check that proper stop switches are installed and that they operate correctly in all machinery spaces or other spaces where access to the interior is provided. Where the mainline disconnect switch is located, a separate stop switch is not required.

10.2.4 References

A17.1d-2000 and earlier editions — Rules 905.3e, 1008.2b, and 1009.2k.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.3.5, 8.10.4.1.2 (b), 8.10.4.1.2(s), 8.10.4.2.2(h), and 8.11.4.2.2.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.3.5, 8.6.8.15.2, 8.10.4.1.2(b), 8.10.4.1.2(s), 8.10.4.2.2(h), and 8.6.8.16.2.

ITEM 10.3
CONTROLLER AND WIRING

10.3.1 Periodic Inspections

Inspect remote machine rooms as outlined in 10.3.2.

10.3.2 Periodic Test

Examine the controller visually to verify that it is clean and that the switches, contactors, and relays and their electrical connections are in good condition. Check that the fuses are in place, are the proper type and rating, and have not been jumped or otherwise tampered with. Check for jumper wires or other changes, which may indicate that safety devices have been defeated or altered.

Visually examine wiring for damage and all components for evidence of overheating. Operate the mainline circuit breakers or disconnect switch to verify that all power is removed from the drive machine. Verify that all electrical components are enclosed to prevent accidental contact. If heaters are present (see 9.18.2), verify that they are operational. For moving walks installed under A17.1-1965 through A17.1c-1986, verify that the circuit breakers will not be automatically opened by the fire alarm.

10.3.3 Acceptance

Check for proper voltage, correct wiring, and arrangement of wiring, controller, and other components.

Check the numbering of drive machines and disconnects where multiple drive machines are in a machine room. Verify that disconnects are in sight of the machines they operate. Inspect all wiring enclosure raceways conduit, electrical metallic tubing, metal wireways, and junction boxes for condition, workmanship, and fastening. Visually inspect the condition of the weatherproof electrical enclosure where required on outdoor units. Verify that use of flexible conduit, armored cable, and flexible leads complies with the applicable electrical Code requirements.

The person or firm installing the moving walk shall provide a manufacturer's written procedure and demonstrate compliance with ASME A17.1/CSA B44, requirement 6.1.6.10 or requirement 6.2.6.9. Where there are no test or check requirements, the written checklist must state "No test or check required." The documentation must state the reason that no test or check is required. This procedure may also be part of the maintenance control program (MCP) as required by ASME A17.1/CSA B44, requirement 8.6.1.2.1.

The following shall be documented or demonstrated:

(a) completion or maintenance of the circuit (requirement 6.1.6.13)

(b) redundancy and its checking (requirements 6.1.6.10.1 and 6.1.6.10.2)

(c) static control (requirement 6.1.6.10.3)

(d) electrically powered safety devices (EPDs) (requirement 6.2.6.10)

(e) installation of devices to make EPDs ineffective (requirement 6.2.6.11)

(f) contactors and relays for use in critical operating circuits (requirement 6.1.6.14)

Also include documentation when required by requirements 2.10.1 and 2.10.2 of ASME A17.7-2007/CSA B44.7-07 and later editions.

10.3.4 References

A17.1d-2000 and earlier editions — Section 906 and Rules 907.2, 905.3i, (NR 6.2.6.12), 1206.1, 1008.2c, and 1009.2l.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44a-05 — Requirements 6.2.7.4, 8.6.1.6.3, 8.11.4.2.3, and 8.10.4.1.2(c).

ASME A17.1a-2005/CSA B44a-05 — Requirements 6.2.7.4, 8.6.1.6.3, 8.11.4.2.3, and 8.10.4.2.2(i).

ASME A17.1-2007/CSA B44-07 — Requirements 6.2.7.4, 6.2.8.1.2, 8.6.1.6.3, 8.11.4.2.3, and 8.10.4.2.2(i).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.7.4, 6.2.8.1.2, 8.6.1.6.3, 8.6.8.15.3, and 8.10.4.2.2(i).

NFPA 70 or CSA C22.1, as applicable.

ITEM 10.4
DRIVE MACHINE AND BRAKE

10.4.1 Periodic Inspections

10.4.2 Periodic Test

Determine whether the drive machine is properly secured, lubricated, clean, and in good condition. Visually check the drive machine fastenings and bearing caps to verify that they are secure and in place.

Verify that the drive machine is connected to the main drive shaft by toothed gearing, a mechanical coupling, or a chain and that it is in good condition. Look for evidence of any excessive backlash in the driving gears or chains. If a chain is used to connect the drive machine to a sprocket on the main drive shaft, visually examine the chain and sprockets for wear, excessive slack, and proper lubrication. Lack of lubrication for a chain may be indicated by rouge (red rust deposits) on the side plates of the links.

For moving walks installed under A17.1a-1988 and later editions, verify that cast iron links are not used. If the links appear to be cast iron, drill a small hole (in a low-stress area) and observe the drill cuttings. If the cuttings are a fine powder, cast iron is indicated. If the cuttings are shavings, then the links are not cast iron.

Inspect any drive belts and sheaves for damage, wear, belt tension, and reasonable equality of tension in a set of belts.

Visually examine the components for signs of overheating. Verify that an electrically released brake is present and automatically applied when power is interrupted. A brake was not required for units installed under A17.1-1987 and earlier editions if the unit would not run in the down direction under rated load with the power off. The brake is to be located on the drive machine for units installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994. Earlier editions allowed the brake to be on the drive shaft. For moving walks installed under A17.1-1981 through A17.1-1987 and ASME A17.3, the brake may be applied to specially attached braking surfaces directly on the treadway.

For moving walks installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994, where means other than a continuous shaft, mechanical coupling, or toothed gearing is used to connect the motor to the reduction gear, verify that the brake is located on the gear reducer or main drive shaft. ASME A17.3a-1994 required this brake on the main drive shaft or a specially attached braking surface attached directly to the treadway.

For moving walks installed under A17.1a-1988 and later editions and moving walks required to conform to ASME A17.3a-1994, the brake may be magnetically applied using a ceramic permanent magnet. Prior to this, a mechanically applied brake was required. Visually inspect the condition of the brake pads, drums, and discs.

For moving walks installed to A17.1a-1988 and later editions, this brake must stop a down- or horizontal-running moving walk with a retardation not to exceed 3 ft/s^2 (0.91 m/s^2). For moving walks installed to A17.1a-1988 through A17.1-2000, this was a maximum rate. For moving walks installed to A17.1a-2002 and later editions, it is an average rate, but there is an additional restriction on the peak horizontal retardation, which is not intended to be field verified.

It is not required to measure the actual retardation. Instead, the brake torque will provide verification that those requirements are met in addition to other brake requirements (e.g., stopping and holding the rated load).

Verify that moving walks installed under A17.1a-1988 and later editions have a nameplate or data plate that specifies the required brake torque. Moving walks installed under A17.1b-1989 and later editions require that the nameplate or data plate torque be specified as breakaway, the maximum torque required to cause the brake to begin moving, or dynamic, the torque required to keep the shaft moving very slowly at a steady rate. The location where the torque is to be measured is required to be clearly indicated.

For moving walks installed under A17.1a-1991 and later editions, the nameplate or data plate is required to specify the range of brake torque. For moving walks installed under A17.1-2000 and later editions, the minimum stopping distance with no load must be indicated.

Have the torque tested to verify that the torque complies, and check the minimum stopping distance. Note that temperature can affect the brake torque. The torque wrench should have a current calibration certificate traceable to the National Bureau of Standards and have a range at least 25% higher than the required torque.

If the drive machine brake is separated from the main drive shaft by a chain and the moving walk is capable of running by gravity with any load, check for the presence of a second brake that is required on the main drive shaft. The requirements for this brake are as follows:

(a) A17.1-1965 through A17.1-1987 required this brake to be electrically released unless an electrically released brake was provided on the drive machine.

(b) A17.1a-1988 and later editions require the brake to be mechanically or magnetically applied (ceramic permanent magnets) and allow it to be located on either the main drive shaft or a special braking surface attached to the treadway.

(c) For moving walks installed under A17.1a-1988 through A17.1d-2000, the brake was required to stop a horizontal- or down-running moving walk at a rate not greater than 3 ft/s^2 (0.91 m/s^2).

10.4.3 Acceptance

Check the stopping distance with no load against the minimum distance information on the data plate.

The person or firm installing the equipment must provide a written procedure to demonstrate whenever the drive machine brake is applied that the moving walk braking distance monitor detects when the maximum and minimum stopping distances are not achieved and prevents the unit from restarting unless the device is manually reset.

10.4.4 References

A17.1d-2000 and earlier editions — Section 904 and Rule 1008.2d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.5, 8.10.4.1.2(d), 8.10.4.2.2(g), and 8.11.4.2.4.

ASME A17.1a-2008/CSA B44a-08 through ASME A17.1-2013/CSA B44-13 — Requirements 6.2.5, 8.6.8.15.4, 8.10.4.1.2(d), and 8.10.4.2.2(g).

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 6.2.5, 6.2.6.8, 8.6.8.15.4, 8.10.4.1.2(d), 8.10.4.2.2(g).

ASME A17.3 — Paragraph 9.5.1.

ITEM 10.5
SPEED GOVERNOR

10.5.1 Periodic Inspections

10.5.2 Periodic Test

Test the speed governor, when provided, to verify that it is functioning. Manually operate the switch or use any testing mechanisms (such as flywheel weights) that may be provided. The flyballs and all operating mechanisms must be present and in good operating condition. When the switch is opened, it should interrupt power to the drive machine. For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

ASME A17.3a-1994 requires that the speed governor activate when the speed exceeds 20% above the rated speed. A17.1-1965 and later editions require that the speed governor activate when the speed exceeds 40% above the rated speed.

10.5.3 Acceptance

When a speed governor is required, verify that it activates at the proper speed, which cannot be more than 40% above the rated speed. This can be done on some models using a rubber drive wheel driven by a variable-speed drill and a tachometer. Other methods approved by the manufacturer for field testing pulse-pickup-type or other electronic governors may be used.

10.5.4 References

ASME A17.1d-2000/CSA B44-00 and earlier editions — Rules 905.3b, 1008.2e, and 1009.2l.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.3.2, 8.11.4.2.5, 8.10.4.1.2(e), and 8.10.4.2.2(h).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.3.2, 8.6.8.15.5, 8.10.4.1.2(e), and 8.10.4.2.2(h).

ASME A17.3 — Paragraph 9.6.4.

ITEM 10.6
BROKEN DRIVE CHAIN DEVICE AND DISCONNECTED MOTOR SAFETY DEVICE

10.6.1 Periodic Inspections

10.6.2 Periodic Test

(a) If the drive machine is connected to the main drive shaft by a chain, check the broken drive chain device to verify that it will apply the main shaft brake and stop the drive machine if the drive chain breaks. All parts of the device should be in good condition and show freedom to move. Have the switch manually operated and verify that it will open the drive motor circuit. Common devices include a block that is held in tension by the drive chain that activates the switch when tension is lost, or a plate that depresses a switch when the drive chain strikes it. For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(b) If the drive motor is attached to a gear reducer by means other than a continuous shaft, coupling, or toothed gearing, check that the device provided will apply the brake if the motor becomes disconnected from the gear reducer. Have the switch manually operated and verify that all operating mechanisms are present, clean, lubricated, and in good condition. For moving walks installed under A17.1-1990 and later editions, verify

that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

10.6.3 Acceptance

10.6.4 References

A17.1d-2000 and earlier editions — Rules 904.3b, 905.3d, 905.3h, and 1008.2f.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.5.3.2, 6.2.6.3.4, 6.2.6.3.8, 8.10.4.1.2(f), 8.10.4.2.2(g), 8.10.4.2.2(h), and 8.11.4.2.6.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.5.3.2, 6.2.6.3.4, 6.2.6.3.8, 8.6.8.15.6, 8.10.4.1.2(f), 8.10.4.2.2(g), and 8.10.4.2.2(h).

ASME A17.3 — Paragraphs 9.6.6 and 9.6.10.

ITEM 10.7
REVERSAL STOP SWITCH

10.7.1 Periodic Inspections

10.7.2 Periodic Test

Manually operate the reverse stop switch to verify that all operating mechanisms are present and in good condition and that the device will open the circuits to the drive machine motor and brake to stop an ascending moving walk from reversing its direction of travel. For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

There are several different types of devices that are used (friction reversal devices, speed monitoring, etc.). Therefore, the type of device will dictate the testing procedure. If the device cannot be manually operated, a written procedure must be provided by the person or firm performing the tests.

10.7.3 Acceptance

10.7.4 References

A17.1d-2000 and earlier editions — Rules 905.3g and 1008.2g.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.3.7, 8.10.4.1.2(g), 8.10.4.2.2(h), and 8.11.4.2.7.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.3.7, 8.6.8.15.7, 8.10.4.1.2(g), and 8.10.4.2.2(h).

ASME A17.3 — Paragraph 9.6.8.

ITEM 10.8
BROKEN TREADWAY DEVICE

10.8.1 Periodic Inspections

10.8.2 Periodic Test

Manually operate the broken treadway devices to verify that each will interrupt power to the drive machine and brake. Visually inspect each device to verify that it is in position to operate and that either will activate when the connecting means breaks between pallets and belt.

For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

10.8.3 Acceptance

10.8.4 References

A17.1d-2000 and earlier editions — Rules 905.3c and 1008.2h.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.3.3, 8.10.4.1.2(h), 8.10.4.2.2(h), and 8.11.4.2.8.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.3.3, 8.6.8.15.8, 8.10.4.1.2(h), and 8.10.4.2.2(h).

ITEM 10.9
(RESERVED)

ITEM 10.10
MISSING PALLET DEVICE

10.10.1 Periodic Inspections

10.10.2 Periodic Test

For moving walks installed under A17.1b-1989 and later editions, test the missing pallet device by running the moving walk with a pallet missing on the underside

of the moving walk. The device must stop the moving walk before the gap resulting from the missing pallet emerges from the combplate.

For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

10.10.3 Acceptance

10.10.4 References

A17.1d-2000 and earlier editions — Rules 905.5 and 1008.2j.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.5, 8.10.4.1.2(j), 8.10.4.2.2(h), and 8.11.4.2.10.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.5, 8.6.8.15.10, 8.10.4.1.2(j), and 8.10.4.2.2(h).

ITEM 10.11
PALLET LEVEL DEVICE

10.11.1 Periodic Inspections

10.11.2 Periodic Test

For moving walks equipped with pallets and trail wheels that are installed under A17.1-1990 and later editions, visually inspect the pallet level devices at each end and on both sides to verify that they are in place and able to function. Have the switch manually operated to verify that it will open the safety circuit and stop the moving walk.

For moving walks installed under A17.1-1990 and later editions, verify that the moving walk cannot be started by the start switch until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

10.11.3 Acceptance

Have the devices tested (at both ends and on each side) by mechanically lowering a pallet $\frac{1}{8}$ in. (3.2 mm) and operating the moving walk. A smaller roller or adjustment may be used to lower the pallet.

10.11.4 References

A17.1d-2000 and earlier editions — Rules 905.3i, 1008.2k, and 1009.2n.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.3.9, 8.11.4.2.11, 8.10.4.1.2(k), and 8.10.4.2.2(h).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.3.9, 8.6.8.15.11, 8.10.4.1.2(k), and 8.10.4.2.2(h).

ITEM 10.12
PALLETS, PALLET CHAINS, AND TRUSSES

10.12.1 Periodic Inspections

10.12.2 Periodic Test

Have at least half of the pallets removed, then move the remaining pallets to one end of the moving walk and, using a good light, visually inspect the drip pans, undersides of pallets, trusses, roller tracks, chains, handrails, and the interiors of balustrades, skirts, and newels to verify that they are present, in good condition, clean of dirt and rubbish, and free of oil and combustibles.

Visually inspect for any damage to the fire-resistive material on the moving walk enclosure. See Item 10.1.

Visually inspect the chains for lubrication and buildup of dirt and grease. Lack of lubrication may be indicated by rouge (red rust deposits) on the side plates of the links.

Verify that cast iron links are not used on moving walks installed under A17.1-1978 and later editions. See 10.4.2 for a method of identifying cast iron.

Check the operation of any moving walk pallet-chain tension devices. If they are of the automatically operated "tension-weight" type, verify that the truss is provided with a positive means to retain the weights in the truss if the weights are released.

Move the remaining pallets to the opposite end of the moving walk and inspect the other half in the same manner.

10.12.3 Acceptance (23)

(a) Verify that if the tracking system fails, the running gear is retained in its guides and the treadway wheel tracks will prevent displacement of the treadways and running gear if the chain breaks.

(b) Inspect the treadway support structure for compliance with the Code for the following types of walks:

(1) Slider Bed. Verify that the treadway is supported for its entire length, except where it passes a pulley support, and that the bed is smooth and noncombustible.

(2) Roller Bed. Test the deflection of the treadway surface by placing a 25 lb (11.3 kg) weight on a cylinder 2 in. (51 mm) long and 1 in. (25 mm) in diameter with its long axis across the belt midway between rollers. Use a

straight edge that spans the rollers and a feeler gage or dial indicator depth gage to measure the deflection. Perform this test on 5% of the rollers at random and verify that the deflection does not exceed 0.09 in. (2.29 mm) plus 0.004 times the distance in inches between the roller centers. Ride the moving walk and check for roller concentricity over the full width of the belt.

(3) Edge Support Belt. When the treadway belt is transversely rigid and supported by rollers along the edges, test the slope (or tension) as follows:

(-a) The belt should be properly tensioned and a 150 lb (68 kg) weight placed on a rigid plate 152 mm (6 in.) by 10 in. (254 mm) with the 10 in. (254 mm) dimension in the direction of travel located on the treadway centerline.

(-b) Use a straight edge and feeler gage or dial indicator depth gage to measure the deflection across the treadway from the center. The Code allowance of 3% slope maximum would result in a deflection of 0.33 in. (8.4 mm) for a 22 in. (559 mm) treadway width, 0.6 in. (15.2 mm) for a 40 in. (1 016 mm) width, and 0.9 in. (22.9 mm) for a 60 in. (1 525 mm) width.

(-c) Inspect the center support for localized loading for distance apart [6 ft (1.789 m) max.] and distance from the underside of the treadway [2 in. (51 mm) max.].

(4) Pallet Type. Inspect the support and wheels to verify that the pallets cannot be displaced vertically more than $\frac{1}{8}$ in. (3.2 mm) should the pallet connecting means break. With the power off, have two pallets disconnected at the center of the moving walk run. Find the maximum displacement by lifting on the pallet edges with a moderate force. The stop should be detected before the maximum displacement allowed by the Code is reached. Verify that foreign material such as stone or concrete is not in the truss interior.

(c) Check that components not used directly in connection with the operation of the moving walk are not installed on, in, or through the moving walk.

10.12.4 References

A17.1d-2000 and earlier editions — Rules 901.1, 902.9, 902.13, 1008.2l, 1009.2o, and 1206.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.2.1, 6.2.3.9, 6.2.3.13, 6.2.3.17, 8.10.4.1.2(l), 8.10.4.2.2(c) through 8.10.4.2.2(e), 8.6.8.6, and 8.11.4.2.12.

ASME A17.1a-2008/CSA B44-08 — Requirements 6.2.2.1, 6.2.3.9, 6.2.3.13, 6.2.3.17, 8.6.8.15.12, 8.10.4.1.2 (l), 8.10.4.2.2(c) through 8.10.4.2.2(e), and 8.6.8.6.

ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 6.2.2.1, 6.2.3.9, 6.2.3.10.4, 6.2.3.11 through 6.2.3.13, 6.2.3.17, 8.6.8.15.12, 8.10.4.1.2(l), 8.10.4.2.2(c) through 8.10.4.2.2(e), and 8.6.8.6.

ITEM 10.13
HANDRAIL SYSTEMS AND SAFETY DEVICES

10.13.1 Periodic Inspections

10.13.2 Periodic Test

Examine the handrail drive systems to ensure that all chains, pulleys, gears, rollers, and belts are present and in good condition. The operation should be free of excessive noise and slack, which indicate wear.

(a) For moving walks installed under A17.1b-1989 through A17.1b-1992, test the operation of the stopped handrail device. Have the handrail motion sensor mechanically disconnected while the unit is off and then run the unit, or grab the handrail and stall it while the moving walk is running. Verify that the alarm sounds immediately and the moving walk stops within 15 s.

(b) For moving walks installed under A17.1-1993 and later editions, check the operation of the handrail speed-monitoring device. An alarm must sound immediately if the speed of either handrail deviates from the step speed by 15% or more, and the unit must shut down if the speed deviation is continuous for 2 s to 6 s. If holding the moving handrail cannot activate the device, then it will be necessary to activate the device by another means (disconnecting the speed sensor, changing dip switch settings on the controller, etc.). Verify that the unit cannot be started until the device is manually reset.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(c) For moving walks installed under A17.1b-1992 and later editions, test the operation of the handrail entry device by having a soft object that will not damage the unit inserted between the handrail and hand guard. After the unit stops, verify that it cannot be restarted with the key switch until the device has been manually reset. The device only needs to operate in the direction of the handrail travel, except for units installed under A17.1a-1997 and later editions, under which the device must operate regardless of the direction of travel of the handrail where an opening is created in the balustrade to prevent entrapment.

When a manual reset is required for units installed under A17.1b-1995 and later editions, turn the power off and back on, and then try the start switch to check that the device will not reset. Also, some indication that the device has been activated needs to be provided (fault finder, etc.).

(23) **10.13.3 Acceptance**

The person or firm installing the equipment must provide a written checkout procedure and demonstrate that the handrail speed monitor device (see ASME 17.1, requirement 6.2.6.4) will activate an alarm without any intentional delay and the device will shut down the unit when a speed deviation of 15% or more is continuous within a 2 s to 6 s range.

Verify that the handrail speed-monitoring device requires a manual reset, or the person or firm installing the equipment shall provide a written checkout procedure and demonstrate that it automatically resets not more than once in 24 hr of operation and then requires a manual reset.

10.13.4 References

A17.1d-2000 and earlier editions — Rules 902.4, 902.13, 905.1, 905.4, 905.3j, (NR 8.6.9.1), 1008.2m, 1008.2q, and 1009.2c.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.3.4, 6.2.3.13, 6.2.6.1, 6.2.6.4, 6.2.6.3.10, 8.11.4.2.13, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), and 8.10.4.2.2(h).

ASME A17.1a-2008/CSA B44a-08 — Requirements 6.2.3.4, 6.2.3.13, 6.2.6.1, 6.2.6.4, 6.2.6.3.10, 8.6.8.15.13, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), and 8.10.4.2.2(h).

ASME A17.1b-2009/CSA B44b-09 and later editions — Requirements 6.2.3.4, 6.2.6.1, 6.2.6.4, 6.2.6.3.10, 8.6.8.15.13, 8.10.4.1.1(c), 8.10.4.1.1(k), 8.10.4.1.2(m), 8.10.4.2.2(b), and 8.10.4.2.2(h).

ITEM 10.14
CODE DATA PLATE

10.14.1 Periodic Inspections

Check that the Code data plate is installed. This is the Code that is to be used for the inspection and test.

10.14.2 Periodic Test

10.14.3 Acceptance

10.14.4 References

A17.1d-2000 and earlier editions — Rules 808, 908, and 1200.6.

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2005/CSA B44a-05 — Requirements 8.9, 8.7.1.8, 8.10.4.1.2(p), and 8.11.4.1(v).

ASME A17.1-2007/CSA B44-07 — Requirements 8.9, 8.7.1.8, and 8.11.4.1(t).

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 8.9, 8.7.1.8, and 8.11.4.1(v).

ITEM 10.15
RESPONSE TO SMOKE DETECTORS

10.15.1 Periodic Inspections

10.15.2 Periodic Test

For units installed under A17.1a-1994 and later editions, when smoke detectors are provided that will shut down a running unit, verify that the emergency stop button alarm will sound and the unit does not shut down for at least 15 s. The unit may be tested by activating the smoke detector or by other means.

CAUTION: If the sensing system is connected to a central fire alarm system, notify the proper authorities before activating it.

10.15.3 Acceptance

10.15.4 References

A17.1d-2000 and earlier editions — Rule 905.7.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2005/CSA B44a-05 — Requirement 6.2.6.7.

ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.7, 8.10.4.1.2(v), and 8.11.4.2.17.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.7, 8.6.8.15.17, 8.10.4.2.2(h), and 8.10.4.1.2(v).

ITEM 10.16
INSPECTION CONTROL

10.16.1 Periodic Inspections

10.16.2 Periodic Test

If one is provided, check the operation of the inspection control device. Check that the device only permits movement by a constant-pressure means and clearly indicates the direction of travel. If a plug-in control station is used, verify that it is stored in the upper pit.

10.16.3 Acceptance

Verify that when the transfer switches located at each landing are enabled, only the inspection control device can operate the equipment. Verify that the switches are properly located, manually operated, protected against accidental contact, and properly labeled. Verify that if both switches are activated, then all inspection control devices are inoperative.

If a portable control station is used, verify that the cord does not exceed the maximum allowed length. If a plug-in portable control station is used, check that either a transfer switch is provided or that when the portable control station is plugged in, control of the equipment is automatically transferred to the control station.

10.16.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1a-2002/CSA B44-02 — Requirement 6.2.6.2.2.

ASME A17.1b-2003/CSA B44a-05 through ASME A17.1-2007/CSA B44-07 — Requirements 6.2.6.2.2, 8.10.4.1.2(u), and 8.11.4.2.21.

ASME A17.1a-2008/CSA B44a-08 and later editions — Requirements 6.2.6.2.2, 8.6.8.15.21, and 8.10.4.1.2(u).

ITEM 10.17
EARTHQUAKE INSPECTION AND TESTS (SEISMIC RISK ZONE 2 OR GREATER)

10.17.1 Periodic Inspections

10.17.2 Periodic Test

10.17.3 Acceptance

(a) Verify that the connections between the truss and the building are installed according to the manufacturer's drawings.

(b) Verify that restraints are installed and allow movement as required.

10.17.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 8.5.2 and 8.5.3.

Part 11
Elevator — Machine-Room-Less (MRL)

This Part is an informative guide to the inspection and testing of elevators with machine-room-less (MRL) configurations. This guide is intended as a supplement for arrangements of machinery and control spaces where the inspections and tests in Parts 1 through 5 are not appropriate.

CAUTION: It is important for the inspector to be familiar with the location of all components and with the manufacturer's recommended procedures prior to beginning any inspections or tests.

See the Foreword in the *Elevator Industry Field Employee's Safety Handbook* regarding the need to carefully observe the safety conditions at each jobsite to make sure there are no conditions that would require safety precautions beyond those contained in the Handbook.

ITEM 11.1
ACCESS TO MACHINE ROOM/MACHINERY SPACE/ CONTROL ROOM/CONTROL SPACE

11.1.1 Periodic Inspections

11.1.2 Periodic Test

11.1.3 Acceptance

Check to ensure that permanent and unobstructed access is provided to machine/control rooms, to machinery and control spaces outside of the hoistway, and to machinery and control spaces inside the hoistway that do not have a means of access specified in ASME A17.1/CSA B44, requirement 2.7.3.1.2. For spaces located in the hoistway, ensure the following:

(a) Where machine or emergency brake(s) or elevator motion controller are located in the pit, a permanent means is stored or installed in the pit to provide access when required.

(b) Where access to a working platform is in the line of movement with a car or counterweight through an access panel or door, verify that it is provided with an electromechanical device that will prevent operation of the machine.

Access panels for access through the car to machinery/control spaces in the hoistway must use a Group 1 security key to open. The access panel must have an electrical switch to prevent operation when the panel is open. The access panel must not be self-closing and must be self-locking.

Where required, vertical ladders may be used in lieu of stairs to reach overhead machinery spaces, except those containing controllers and generators.

11.1.4 References

A17.1S-2005 and later editions — Requirements 2.7.3, 2.2.4/2.7.5.2.4, 2.12.6/2.12.7, 2.7.3.1.2/2.7.5.3.5, and 2.7.3.1.2/2.7.5.1.4.

ITEM 11.2
ACCESS DOOR AND OPENINGS

11.2.1 Periodic Inspections

Verify that access doors

(a) are self-closing and self-locking

(b) have a spring-type lock, made to be opened from the inside without a key

(c) are kept closed and locked

(d) are Group 2 security

11.2.2 Periodic Test

11.2.3 Acceptance

Check to see that doors to machine and control rooms are 29.5 in. (750 mm) × 80 in. (2 030 mm). All other access doors shall be a minimum width and height of 29.5 in. (750 mm).

11.2.4 References

A17.1S-2005 and later editions — Requirements 2.7.3.4.1 and 2.7.3.4.2.

ITEM 11.3
ENCLOSURE OF ROOMS AND SPACES

11.3.1 Periodic Inspections

11.3.2 Periodic Test

11.3.3 Acceptance

When the local building code requires the room to be of fire-resistive construction, ensure that the room containing the elevator equipment complies with the requirements of the building code.

When of non-fire-resistive construction, the following shall apply:

(a) machine rooms/control rooms/control spaces must be enclosed a minimum of 79 in. (2 000 mm)

(b) machinery spaces must be enclosed to a height of not less than 79 in. (2 000 mm) or to the height of the machinery space if it is less than 79 in. (2 000 mm)

11.3.4 References

A17.1S-2005 and later editions — Requirements 2.7.1.1.1/2.7.1.1.2 and 2.7.1.2/2.7.1.2.1.

ITEM 11.4
(RESERVED)

ITEM 11.5
MACHINE/CONTROL ROOMS CONTAINING OVERHEAD DRIVE MACHINES

11.5.1 Periodic Inspections

11.5.2 Periodic Test

11.5.3 Acceptance

For machine/control rooms and machinery/control spaces, verify

(a) that permanent lighting is installed in the room or space

(b) that the light switch is within easy reach of the access to the room or space

(c) that operating instructions for safe access to the car top working area are kept on the premises

(d) correct lighting intensity

NOTE: The machinery space lighting may be the top-of-car lighting, provided it meets the requirements.

(23) ### 11.5.4 References

A17.1S-2005 and later editions — Requirements 2.7.4, 2.7.9/2.7.6.3.2(c), and 8.6.11.8.

ITEM 11.6
(RESERVED)

ITEM 11.7
DISCONNECTING MEANS

11.7.1 Periodic Inspections

11.7.2 Periodic Test

11.7.3 Acceptance

Verify that a stop switch or disconnecting means is provided in the machinery or control space and is accessible and visible from the point of access.

11.7.4 References

A17.1S-2005 and later editions — Requirement 2.7.3.5.

ITEM 11.8
REMOTE MACHINE ROOMS AND CONTROL ROOMS

11.8.1 Periodic Inspections

11.8.2 Periodic Test

11.8.3 Acceptance

(a) If the elevator has a remote machine room and/or control room, verify the following:

(1) a permanent means of communication is operative between the car and room

(2) ropes/sheaves are fully enclosed, if necessary

(3) unauthorized persons cannot access these enclosures (Group 2 security key)

(b) If means are provided to access the equipment for inspection, verify that

(1) a stop switch is present

(2) a permanent light and switch are present and accessible from the access door or opening

(3) a duplex receptacle is present [ground fault interrupter (GFI) receptacle, if CSA C22.1 is enforced]

11.8.4 References

A17.1S-2005 and later editions — Requirements 2.7.8.1, 2.7.8.4, and 2.7.8.3.

ITEM 11.9
INSPECTION AND TEST PANELS

11.9.1 Periodic Inspections

11.9.2 Periodic Test

11.9.3 Acceptance

(a) Means necessary for tests are as follows:

(1) If the drive machine or emergency brake or motion or motor controller is located in the hoistway or pit, verify that the car can be moved from outside of the hoistway (see the Cautionary Note at the beginning of this Part).

(2) In order to move the car, verify that normal building power is not needed and that the means is accessible only to elevator personnel and requires continuous effort.

(3) If the drive sheave or rope cannot be seen from the test location, verify that display devices are provided for the following:

(-a) direction of movement

(-b) indication of position within the door-unlocking zone

(-c) indication of speed

Verify that the display devices are operable if there is a loss of normal building power.

(4) If display devices are dependent on batteries, verify the following:

(-a) monitoring of any batteries is operative

(-b) the car cannot restart after a normal stop when there is insufficient power for the display devices

(5) Verify that the means to move the car from outside of the hoistway

(-a) is not dependent on normal power

(-b) is accessible only by Group 1 security

(-c) needs continuous effort to move the car

(6) If a manual means is needed to move the car, verify

(-a) its presence

(-b) it is suitably marked and, if portable, is stored outside the hoistway and is only accessible by Group 1 security

The manual device must not require more than 90 lbf (400 N) to move the car or an electrical means shall be provided.

(7) If electrical means are provided to move the car

(-a) verify that it requires constant pressure

(-b) if the monitoring system indicates there is insufficient power for the movement of the car, it must not be permitted to restart after a normal stop

(-c) it must prevent operation of the car by all other operating means

(b) Check the inspection and test panel, where provided, for the following:

(1) that it is readily accessible

(2) that it is keyed for Group 1 security

(3) that it has self-locking but not self-closing doors or panels

(4) that a stop switch is present

(5) that lighting is permanent and of sufficient foot-candles (lux)

(6) that it contains car and hoistway door bypass switches

(7) that it has means to manually reset the following:

(-a) unintended car movement

(-b) ascending car protection

(-c) the car safety mechanism

(-d) the car buffer switch

(-e) final terminal stopping devices and governor switches (where these devices are not accessible from outside the hoistway)

11.9.4 References

A17.1S-2005 and later editions — Requirements 2.7.6.4, 2.7.6.4.1, 2.7.6.4.3, 2.7.6.5.2, 2.7.6.4.3(e), and 2.7.3.5.

ITEM 11.10
(RESERVED)

ITEM 11.11
(RESERVED)

ITEM 11.12
TRACTION SHEAVES

11.12.1 Periodic Inspections

Refer to the Cautionary Note at the beginning of this Part.

11.12.2 Periodic Test

11.12.3 Acceptance

Refer to the Cautionary Note at the beginning of this Part.

11.12.4 References

ITEM 11.13
SECONDARY AND DEFLECTOR SHEAVES

11.13.1 Periodic Inspections

Refer to the Cautionary Note at the beginning of this Part.

11.13.2 Periodic Test

11.13.3 Acceptance

Refer to the Cautionary Note at the beginning of this Part.

11.13.4 References

ITEM 11.14
TERMINAL STOPPING DEVICES

11.14.1 Periodic Inspections

11.14.2 Periodic Test

11.14.3 Acceptance

For normal terminal stopping devices (NTSDs) located in a machine/control room or machinery/control space, verify that the NTSDs are operated by movement of the car.

If a switch is provided to bypass the top final terminal or buffer switch when performing the top-of-car inspection, verify proper operation.

11.14.4 References

A17.1S-2005 and later editions — Requirements 2.25.2.2.1, 2.26.1.4.2(g), and 2.26.1.4.4.

ITEM 11.15
WORKING AREAS INSIDE THE HOISTWAY AND IN THE PIT

11.15.1 Periodic Inspections

11.15.2 Periodic Test

11.15.3 Acceptance

11.15.3.1 Working Area in the Car or on the Car Top

(a) If the drive machine or emergency brake or motion or motor controller is inspected or maintained from inside the car or on the car top

(1) if unexpected movement can occur during inspection or maintenance, verify means to prevent movement

(2) provide a clearance above the crosshead of 24 in. (600 mm) when the car has reached its maximum upward movement

(3) ensure 6 in. (150 mm) critical clearance is maintained above the car top handrails and car top equipment when the car reaches its maximum upward movement

(b) When the means provided to prevent movement is engaged, verify

(1) that the car cannot be operated

(2) that the electrical device conforms to ASME A17.1/CSA B44, requirement 2.26.2.34

(3) that proper signage is present

(4) that there is access and egress from the working area

(5) that the platform guard completely covers the distance between the landing and the car sill

(6) that there is clear headroom of not less than 53 in. (1 350 mm)

(c) When access panels are provided in the car for access to elevator equipment outside of the car, verify

(1) that they are self-locking but not self-closing

(2) that they are equipped with an electrical switch to prevent movement

(3) that Group 1 security is provided

11.15.3.2 Working Area in the Pit

(a) If the drive machine brake, emergency brake, or motion or motor controller is inspected or maintained from within the pit, and if unexpected movement can occur during inspection or maintenance, verify the means to prevent movement by one of the following:

(1) When the means provided to prevent movement is engaged, verify

(-a) that the car cannot be operated

(-b) that proper signage is present

(-c) that there is access and egress from the working area

(-d) that there is clear headroom of not less than 53 in. (1 350 mm)

(2) For mechanical means to stop vertical movement, verify

(-a) that the car can only operate on inspection operation when the device is active

(-b) that proper signage is present

(-c) that the device cannot be accidentally disengaged

(b) When egress is through the landing door, verify

(1) that it can be opened from the hoistway side

(2) that the required vertical opening is provided [48 in. (1 220 mm)]

(c) When egress is through a pit access door, verify that the car does not block the opening.

(d) When access to the machine brake, emergency brake, or elevator motion or motor controllers exceeds the maximum distance from the pit floor, verify that there is a permanent means in the pit to access the equipment.

11.15.3.3 Working Platforms

(a) For working platforms, verify the following:

(1) that the working platform is permanently installed.

(2) the operation of the electrical devices on any retractable platform that is in the path of a moving car or counterweight. However, if this electrical device

permits inspection operation, then an additional electrical device must be provided to stop the car before it strikes the movable stops, but be rendered ineffective when the stops are retracted.

(3) presence of a standard railing when required.

(4) that shear protection is provided when required.

(5) that the electromechanical device for an access door to a platform in the path of a moving car or counterweight in the hoistway is operative.

(b) For working platforms in the line of movement of the car or counterweight, verify that there is a means to prevent movement by one of the following:

(1) If retractable stops are provided and the car is

(-a) below the platform, verify that you have sufficient car top refuge space

(-b) above the platform, verify that the required vertical clearance is provided

(2) If unexpected movement can occur during inspection or maintenance, verify that there is a means to prevent movement.

11.15.3.4 Retractable Stops. When retractable stops are provided, verify the following:

(a) that operation of the electrical device removes power from the elevator drive machine motor and brake when it is not in the completely retracted position

(b) that the car cannot strike these stops if an electrical device is provided to allow inspection operation

(c) that the electrical device is operable from outside of the hoistway or from the platform

(d) that the device cannot be accidentally disengaged

11.15.4 References

A17.1S-2005 and later editions — Requirements 2.7.5, 2.7.5.1 through 2.7.5.4, 2.26.2.36, 2.26.4.3, 2.7.4.2, and 2.4.

ITEM 11.16
LOCATION OF MACHINERY SPACES, MACHINE ROOMS, CONTROL SPACES, CONTROL ROOMS, AND EQUIPMENT

11.16.1 Periodic Inspections

11.16.2 Periodic Test

11.16.3 Acceptance

11.16.4 References

ITEM 11.17
HYDRAULIC ELEVATORS — SHUTOFF/MANUAL LOWERING VALVES

11.17.1 Periodic Inspections

11.17.2 Periodic Test

11.17.3 Acceptance

(a) If the hydraulic machine and the shutoff valve are located in the hoistway, verify the following:

(1) The valve is accessible from outside of the hoistway.

(2) The valve is not accessible to anyone but elevator personnel.

(b) If the hydraulic machine is located in the hoistway, verify the following:

(1) The manual lowering valve is accessible from outside of the hoistway.

(2) The valve is not accessible to anyone but elevator personnel.

11.17.4 References

A17.1S-2005 and later editions — Requirements 3.19.4 and 3.19.4.4.

ITEM 11.18
HYDRAULIC ELEVATORS — PRESSURE GAGE FITTINGS

11.18.1 Periodic Inspections

11.18.2 Periodic Test

11.18.3 Acceptance

If the hydraulic machine is located in the hoistway, verify the following:

(a) The fittings are accessible from outside of the hoistway.

(b) The hydraulic machine is not accessible to anyone but elevator personnel.

11.18.4 References

A17.1S-2005 and later editions — Requirement 3.19.4.5.

ITEM 11.19
HYDRAULIC ELEVATORS — ATMOSPHERE STORAGE AND DISCHARGE TANKS

11.19.1 Periodic Inspections

11.19.2 Periodic Test

11.19.3 Acceptance

If the tank is located in the hoistway, verify

(a) that it is vented so that fumes cannot accumulate in the hoistway

(b) that covers will resist the force of falling objects

11.19.4 References

A17.1S-2005 and later editions — Requirement 3.24.3.1.

ITEM 11.20
HYDRAULIC ELEVATORS — PRESSURE PIPING

11.20.1 Periodic Inspections

11.20.2 Periodic Test

11.20.3 Acceptance

If the hydraulic machine is located in the hoistway and the piping, tubing, or fittings are located outside of the hoistway, verify one of the following:

(a) These objects shall be protected from damage.

(b) If the objects are not protected from damage, ensure that there are means to prevent uncontrolled movement.

11.20.4 References

A17.1S-2005 and later editions — Requirement 3.19.2.6.

ITEM 11.21
EXPLANATORY FIGURES FOR DEFINITIONS OF ELEVATOR MACHINERY SPACE, MACHINE ROOM, CONTROL SPACE, CONTROL ROOM, REMOTE MACHINE ROOM, OR REMOTE CONTROL ROOM

See Figures 11.21-1 through 11.21-6 and Table 11.21-1.

ITEM 11.22
INSPECTION OPERATION AND HOISTWAY ACCESS SWITCH OPERATION HIERARCHY

See Table 11.22-1.

ITEM 11.23
MOTOR CONTROLLER NOT INSTALLED IN A MACHINE ROOM, CONTROL ROOM, CONTROL SPACE, OR MACHINERY SPACE (23)

11.23.1 Periodic Inspections

If a motor controller (see ASME A17.1/CSA B44, Nonmandatory Appendix A) is located outside of machine room, control room, machinery space, or control space, then verify that it is enclosed in a locked cabinet marked AGP in accordance with CSA B44.1/ASME A17.5 that is readily accessible at all times for maintenance and inspection. Verify that the cabinet doors are closed and locked, that the keys are Group 1 Security, and that the doors are not self-closing but are self-locking. Verify that the cabinet is provided with permanent electrical lighting or at least 200 lux (19 fc) at the floor level and located in a space provided with natural or mechanical means to maintain the temperature and humidity range indicated on the motor controller cabinet. Verify that the Code-required signage, "DOOR TO BE CLOSED AND LOCKED WHEN ELEVATOR PERSONNEL ARE NOT PRESENT AT THIS CONTROLLER," is posted inside the cabinet.

NOTES:

(1) A motor controller is defined as the operative units of a motion control system comprising the starter devices and/or power conversion equipment required to drive an electric motor.

(2) See ASME A17.1/CSA B44, Nonmandatory Appendix A.

(3) The motor control can be located separately from the rest of the motion control system or from the operation control system.

11.23.2 Periodic Test

11.23.3 Acceptance

11.23.4 References

11.23.4.1 Electric Elevators

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 2.7.6.3.2 and Nonmandatory Appendix A.

CSA B44.1-14/ASME A17.5-2014 and later editions — Clauses 5.3, 7.2, and 20.22.

CSA B44.1-19/ASME A17.5-2019 and later editions — Clauses 5.3, 7.2, and 20.23.

11.23.4.2 Hydraulic Elevators

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 3.7.1 and Nonmandatory Appendix A.

CSA B44.1-14/ASME A17.5-2014 and later editions — Clauses 5.3, 7.2, and 20.22.

CSA B44.1-19/ASME A17.5-2019 and later editions — Clauses 5.3, 7.2, and 20.23.

Figure 11.21-1
Configuration A

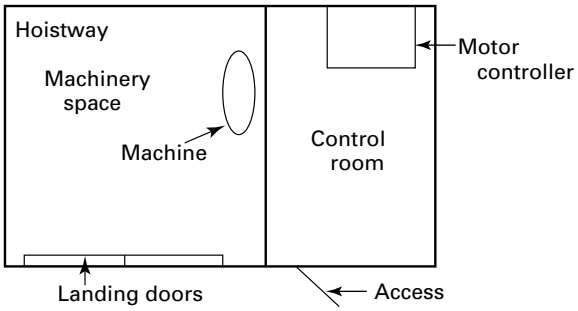


Figure 11.21-2
Configuration B

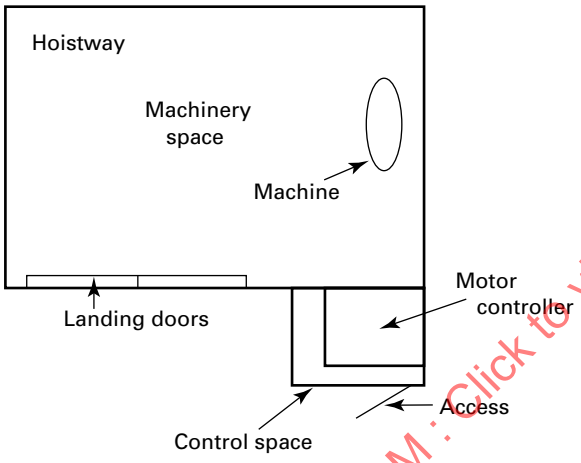


Figure 11.21-3
Configuration C

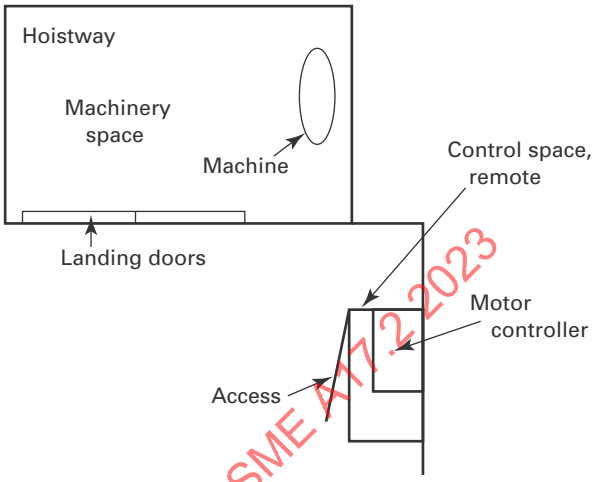


Figure 11.21-4
Configuration D

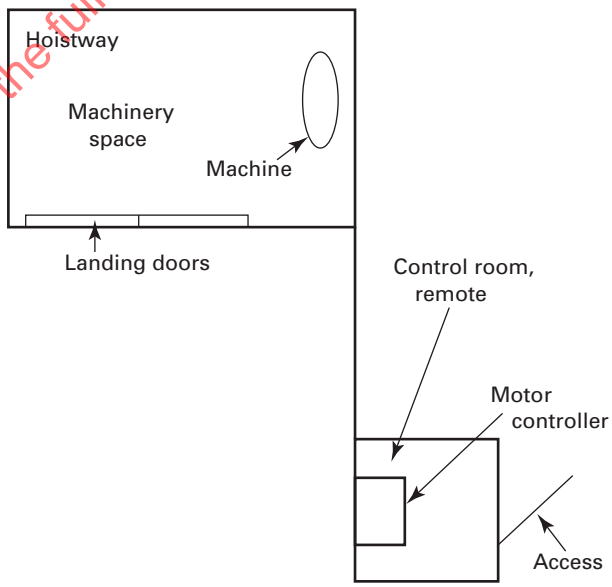


Figure 11.21-5
Configuration E

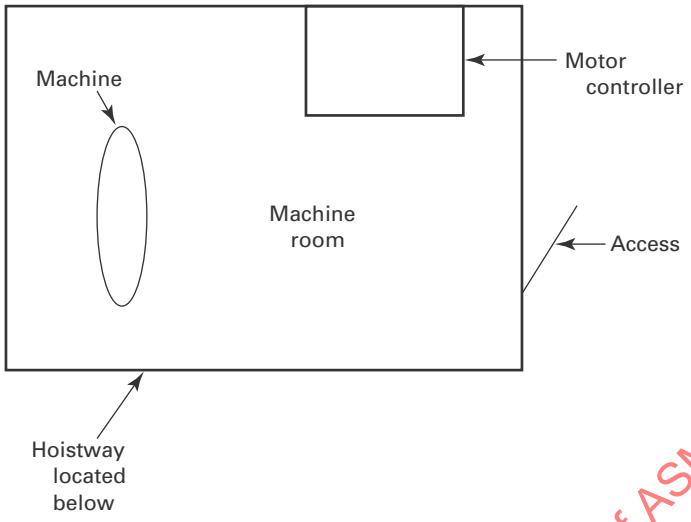


Figure 11.21-6
Configuration F

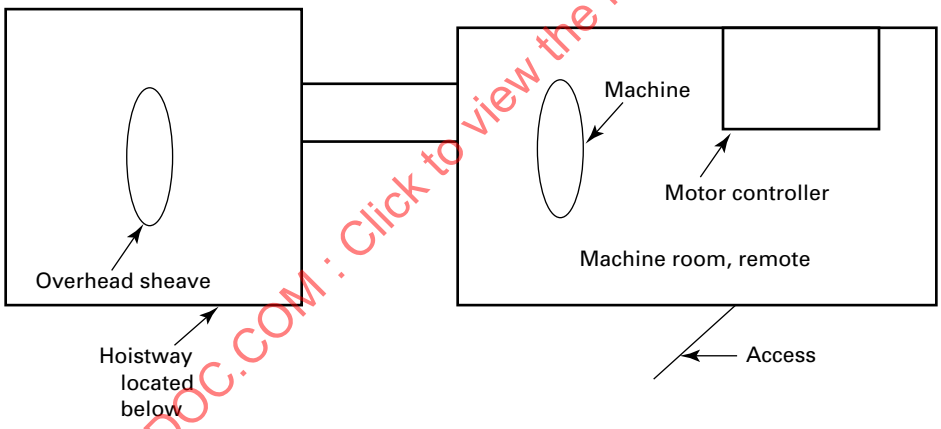


Table 11.21-1
Definitions of Elevator Machinery Space, Machine Room, Control Space, Control Room, Remote Machine Room, or Remote Control Room

	Location			Equipment Used Directly in Connection With the Elevator, Dumbwaiter, or Material Lift		Equipment Contained Within	
	Inside or Outside the Hoistway	Attached to or Within the Hoistway	Entry Into the Space, Full or Partial	Mechanical Other Than Electric Drive Machine or Hydraulic Machine	Electrical Other Than Motor Controller	Electric Drive Machine or Hydraulic Machine	Motor Controller
Machinery space [Note (1)]	Either	Either	Either	Permitted	Permitted	Permitted	Permitted
Control space						Not permitted	Required
Machine room [Note (1)]	Outside the hoistway	Attached to but not within	Full bodily entry required			Required	Permitted
Control room						Not permitted	Required
Machine room, remote		No				Required	Permitted
Control room, remote						Not permitted	Required
Machine space, remote			Either			Permitted	Permitted
Control space, remote			Either			Not permitted	Required

NOTE: (1) A machinery space outside the hoistway containing an electric drive machine and a motor controller or a hydraulic machine and a motor controller is a machine room.

Table 11.22-1
Inspection Operation and Hoistway Access Switch Operation Hierarchy

											BYPASS Operation, Rqmt. 2.26.1.5		
Operation Modes Activated	**Top-of-Car, Rqmt. 2.26.1.4.2**	**In-Car, Rqmt. 2.26.1.4.3**	**Hoistway Access Operation, Rqmt. 2.12.7.3**	**Machine Room, Rqmt. 2.26.1.4.4**	**Control Room, Rqmt. 2.26.1.4.4**	**Machinery Space Outside Hoistway, Rqmt. 2.26.1.4.4**	**Control Space Outside Hoistway, Rqmt. 2.26.1.4.4**	**Landing, Rqmt. 2.26.1.4.4**	**Pit, Rqmt. 2.26.1.4.4**	**Working Platform, Rqmt. 2.26.1.4.4**	**Top-of-Car**	**In-Car**	**Operation Modes Activated**
Top-of-car	**Top-of-car**	Top-of-car	Top-of-car	Top-of-car	Top-of-car	Top-of-car	Top-of-car	Top-of-car	No operation	No operation	Top-of-car	Top-of-car	**Top-of-car**
In-car	Top-of-car	**In-car**	In-car	In-car	In-car	In-car	In-car	In-car	No operation	No operation	Top-of-car	In-car	**In-car**
Hoistway access	Top-of-car	In-car	**Hoistway access**	Hoistway access	Hoistway access	Hoistway access	Hoistway access	Hoistway access	No operation	No operation	Top-of-car	In-car	**Hoistway access**
Machine room	Top-of-car	In-car	Hoistway access	**Machine room**	No operation	No operation	No operation	No operation	No operation	No operation	Top-of-car	In-car	**Machine room**
Control room	Top-of-car	In-car	Hoistway access	No operation	**Control room**	No operation	No operation	No operation	No operation	No operation	Top-of-car	In-car	**Control room**
Machinery space outside hoistway	Top-of-car	In-car	Hoistway access	No operation	No operation	**Machinery space**	No operation	No operation	No operation	No operation	Top-of-car	In-car	**Machinery space outside hoistway**
Control space outside hoistway	Top-of-car	In-car	Hoistway access	No operation	No operation	No operation	**Control space**	No operation	No operation	No operation	Top-of-car	In-car	**Control space outside hoistway**
Landing	Top-of-car	In-car	Hoistway access	No operation	No operation	No operation	No operation	**Landing**	No operation	No operation	Top-of-car	In-car	**Landing**
Pit	No operation	No operation	No operation	No operation	No operation	No operation	No operation	No operation	**Pit**	No operation	No operation	No operation	**Pit**
Working platform	No operation	No operation	No operation	No operation	No operation	No operation	No operation	No operation	No operation	**Working platform**	No operation	No operation	**Working platform**

GENERAL NOTE: Requirements (Rqmts.) are in ASME A17.1/CSA B44.

Part 12
Dumbwaiter — Car

Parts 12 through 16 provide an informative guide for the inspection of dumbwaiters. These Parts are intended to be used in conjunction with ASME A17.1-2010/CSA B44-10 and later editions and will permit those jurisdictions requiring acceptance inspections to have procedures available for their inspectors. In addition, these Parts will be available to other interested inspection parties who might be called upon to examine dumbwaiter installations for conformance with the Code, and they contain important warnings and cautions for existing dumbwaiters.

ITEM 12.1
DOOR REOPENING DEVICE

Where power operation of the doors or gates is provided, the doors or gates must conform to the specific requirements prescribed for dumbwaiters. Kinetic energy requirements apply to both horizontally and vertically sliding doors. Power collapsible gates are restricted as to the distance they can be opened by power.

12.1.1 Periodic Inspections

12.1.2 Periodic Test

12.1.3 Acceptance

Power opening of the car door is permitted to take place only within the specified distance from the landing.

(a) Mechanical Reopening Device (Safety Edge). Actuate the device while the door is being closed and note whether the car door stops and reopens.

(b) Electronic and/or Photoelectric Reopening Device. Place an object in front of the leading edge of the car door at various positions while the door is being closed. The car door must stop and reopen.

12.1.4 References

A17.1-1993 through A17.1d-2000 — Rules 112.2a(1), 112.2b(1), and 700.13 and definition of "landing zone" in Section 3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.2.1.1 and 7.1.13 and definition of "landing zone" in Section 1.3.

ITEM 12.2
OPERATING CONTROL DEVICES

Dumbwaiters may be hand or power operated. If a dumbwaiter is power operated, the operating controls must be adjacent to each landing entrance.

12.2.1 Periodic Inspections

12.2.2 Periodic Test

12.2.3 Acceptance

(a) Continuous-Pressure Operation. Operate the car in each direction by means of the operating buttons or other devices at the landing. Determine that the operating devices do not stick or bind and are properly marked, and that the car stops when the operating device is released, except when an anticreep leveling device is provided.

(b) Automatic Operation. Operate the car, making stops in both the up and down directions. At each stop, open the car door or gate and note the accuracy of stopping. Verify operating push buttons work properly.

(c) Car Leveling Device. When inching buttons are provided, test them to verify that they will operate the car only within the zone allowed by the Code.

12.2.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11(e).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.6.

ITEM 12.3
SILLS AND CAR FLOOR

12.3.1 Periodic Inspections

12.3.2 Periodic Test

12.3.3 Acceptance

(a) Sills and Car Floor. Determine the condition of the car floor and landing sills.

(b) Horizontal Car Clearance. Verify the clearance between the car and landing sills. The distance between the car platform sill and the hoistway edge of

the landing sill must be within the specified distances allowed by the Code.

12.3.4 References

A17.1-1993 through A17.1d-2000 — Rules 108.1d and 700.9.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5.1.4 and 7.1.5.

ITEM 12.4
CAR LIGHTING

12.4.1 Periodic Inspections

12.4.2 Periodic Test

12.4.3 Acceptance

Where provided, light bulbs or tubes must be guarded or recessed to provide protection from accidental breakage, and glass panels and their structure must be capable of withstanding the required dumbwaiter tests without damage.

12.4.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.5c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.1.3.

ITEM 12.5
CAR DOOR OR GATE

12.5.1 Periodic Inspections

12.5.2 Periodic Test

On dumbwaiters that can operate with no car door/gate or with the car door/gate in the open position, confirm that the slack rope/chain switch (see 14.26.2) is properly functioning.

12.5.3 Acceptance

(a) Examination of Doors and Gates. Examine the car door or gate and note any broken, bent, or sprung members. Operate doors or gates to determine that they operate freely in their guiding members, are securely fastened, and will not permit the doors or gates to come out of their guiding members at any position in their travel. Car doors and gates must guard the full width of the opening.

(b) Collapsible Gates. Collapsible gates in the fully closed position must reject a ball 113 mm (4.5 in.) in diameter.

(c) Test for Closed Position. Verify that the car will not move under normal operation unless the car door or gate is within the Code-specified distance of the closed position.

12.5.4 References

A17.1-1993 through A17.1d-2000 — Rules 112.2a(1), 700.13, and 701.5(b).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.13.2.2.1, 7.1.13, and 7.2.1.2.

ITEM 12.6
POWER CLOSING OF DOORS OR GATES

12.6.1 Periodic Inspections

12.6.2 Periodic Test

12.6.3 Acceptance

Where a door open button is provided, check that when it is depressed and the door is closing, it causes the door to stop or to stop and reopen.

12.6.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.13.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.13.

ITEM 12.7
POWER OPENING OF DOORS OR GATES

12.7.1 Periodic Inspections

12.7.2 Periodic Test

12.7.3 Acceptance

(a) Leveling Zone. Determine that power opening of the doors or gates can occur only when the car is within the specified distance of the landing.

(b) Leveling Speed. Verify that the leveling speed does not exceed 0.75 m/s (150 ft/min).

(c) Inner Landing Zone. On static control dumbwaiters, verify that the zone in which the car can move with the doors open is no more than 75 mm (3 in.) above or below the landing.

12.7.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11(e).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.6.

ITEM 12.8
CAR VISION PANELS

12.8.1 Periodic Inspections

12.8.2 Periodic Test

12.8.3 Acceptance

Where provided with glass vision panels, verify that the glass is the right type (wired or laminated). Check that the size of a glass vision panel does not exceed 0.016 m^2 (25 $in.^2$). Where the vision panel in the car door does not contain glass, the perforations must reject a ball 38 mm (1.5 in.) in diameter.

12.8.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.5a(8).
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.1.1.10.

ITEM 12.9
CAR ENCLOSURE

12.9.1 Periodic Inspections

12.9.2 Periodic Test

12.9.3 Acceptance

Check that nonmetal cars are reinforced with metal from the bottom of the car to the point of suspension. Check the dimensions of the car. The car height should not exceed 1 220 mm (48 in.). Hinged or removable panels are not permitted in the car top. Verify that any grille or perforated construction rejects a ball 38 mm (1.5 in.) in diameter. Determine that the car enclosure is structurally sound and is securely fastened to the platform.

12.9.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.5a.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.1.1.

ITEM 12.10
SIGNS AND OPERATING DEVICE SYMBOLS

12.10.1 Periodic Inspections

12.10.2 Periodic Test

12.10.3 Acceptance

Verify that a “NO RIDERS” sign is located in the car.

12.10.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.8d.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.3.4.

ITEM 12.11
RATED LOAD, PLATFORM VOLUME, AND DATA CAPACITY PLATE

12.11.1 Periodic Inspections

12.11.2 Periodic Test

12.11.3 Acceptance

Measure the inside dimensions of the car and compute the inside net car volume (width × depth × height). Divide the rated load by the volume and check to ensure that it is not less than 221 kg/m^3 (13.9 lb/ft^3). Check to be sure that the inside net platform area is not more than 1 m^2 (10.75 ft^2). Check that the capacity plate is installed inside the car and the data plate is installed on the car top or crosshead.

12.11.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.8a through 701.8c.
ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.3.1 through 7.2.3.3.

ITEM 12.12
CAR RIDE

12.12.1 Periodic Inspections

12.12.2 Periodic Test

12.12.3 Acceptance

The car speed must not exceed the value specified on the data plate. Operate the car at normal operating speed from one terminal landing to the other, and listen for unusual noise, which may indicate that the car or counterweight guide rails are not properly aligned. If such noise occurs, check for loose guide shoes or rollers and proper alignment of the guide rails.

12.12.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.1.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.9.

Part 13
Dumbwaiter — Machinery Space, Machine Room, Control Space, and Control Room

ITEM 13.1
ACCESS TO EQUIPMENT SPACE

13.1.1 Periodic Inspections

13.1.2 Periodic Test

13.1.3 Acceptance

Check that access to the machinery space, machine room, control space, or control room meets the access requirements of the Code. For access doors required to have fire-protection ratings, check for proper labeling. Check that the maintenance path and clearances meet the requirements of the Code or that the equipment is guarded to prevent accidental contact with moving parts and that the guarding permits visual inspection without complete removal.

13.1.4 References

A17.1-1993 through A17.1d-2000 — Rules 101 and 700.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.7 and 7.1.7.

ITEM 13.2
HEADROOM

13.2.1 Periodic Inspections

13.2.2 Periodic Test

13.2.3 Acceptance

There are no headroom requirements in ASME A17.1/CSA B44 other than the working clearances specified in NFPA 70 or CSA C22.1, as applicable.

13.2.4 References

A17.1-1993 through A17.1d-2000 — Rules 210.4 and 701.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.4 and 7.2.12.

NFPA 70 or CSA C22.1, as applicable.

ITEM 13.3
LIGHTING AND RECEPTACLES

13.3.1 Periodic Inspections

13.3.2 Periodic Test

13.3.3 Acceptance

Check machinery space, machine room, control space, or control room for adequate lighting. Check that a GFCI duplex receptacle has been provided in these spaces.

13.3.4 References

A17.1-1993 through A17.1d-2000 — Rules 101.5a and 700.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.7.9.

NFPA 70 or CSA C22.1, as applicable.

ITEM 13.4
MACHINERY SPACE, MACHINE ROOM, CONTROL SPACE, AND CONTROL ROOM

13.4.1 Periodic Inspections

13.4.2 Periodic Test

13.4.3 Acceptance

Check that all exposed moving parts are guarded when dumbwaiter machine or control equipment is located in a room or space containing other building operation equipment.

13.4.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.2(c)(1).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.8.2.

ITEM 13.5
HOUSEKEEPING

13.5.1 Periodic Inspections

Check that the machinery space, machine room, control space, or control room area is not used for the storage of any flammable liquids with a flash point less than 43°C (110°F) or for materials and articles not necessary for the maintenance and operation of the dumbwaiter.

Check the floor area for cleanliness, noting any accumulation of oil, grease, or dirt.

Check that the tops of cars are kept clean and dry and are not being used for storage.

13.5.2 Periodic Test

13.5.3 Acceptance

13.5.4 References

A17.1-1993 through A17.1d-2000 — Rules 1206.2b and 1206.5.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirement 8.6.9.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.4.8 and 8.6.10.1.

ITEM 13.6
VENTILATION

13.6.1 Periodic Inspections

13.6.2 Periodic Test

13.6.3 Acceptance

If a machinery space, machine room, control space, or control room is provided, check that adequate ventilation is provided by natural or mechanical means to ensure safe and normal operation of the dumbwaiter.

13.6.4 References

A17.1-1993 through A17.1d-2000 — Rules 101.5b and 700.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.7.9.

ITEM 13.7
FIRE EXTINGUISHER

13.7.1 Periodic Inspections

In jurisdictions not enforcing the NBCC, check to see that a class ABC fire extinguisher is mounted convenient to the access door of the dumbwaiter machine room, control room, or control space outside the hoistway that is intended for full bodily entry.

13.7.2 Periodic Test

13.7.3 Acceptance

13.7.4 References

A17.1-1993 through A17.1d-2000 — Rules 1206.1h and 1206.5.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.1.6.5 and 8.6.9.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 8.6.1.6.5 and 8.6.10.1.

ITEM 13.8
PIPES, WIRING, AND DUCTS

13.8.1 Periodic Inspections

13.8.2 Periodic Test

13.8.3 Acceptance

Pipes that convey steam, gas, or liquid that are not required for operation of the dumbwaiter must not be installed in the hoistway.

13.8.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.8.

ITEM 13.9
GUARDING OF EQUIPMENT

13.9.1 Periodic Inspections

13.9.2 Periodic Test

13.9.3 Acceptance

Check that appropriate guards have been installed on the drive machine and moving equipment.

13.9.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.10.

ITEM 13.10
NUMBERING OF DUMBWAITERS, MACHINES, AND DISCONNECT SWITCHES

13.10.1 Periodic Inspections

13.10.2 Periodic Test

13.10.3 Acceptance

Where there is more than one dumbwaiter machine in the same machine room or machinery space, verify that they are properly identified.

13.10.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.14.

ITEM 13.11
DISCONNECTING MEANS AND CONTROL

13.11.1 Periodic Inspections

13.11.2 Periodic Test

13.11.3 Acceptance

Check that the mainline disconnecting means has been located where it is readily accessible to authorized persons and within sight of the motor controller. Drive machines or motion and operation controllers not within sight of the disconnecting means must be provided with a manually operated switch installed in the control circuit to prevent starting. The manually operated switch or switches must be installed adjacent to this equipment. The location must meet the working clearance requirements of NFPA 70 or, in jurisdictions enforcing the NBCC, CSA C22.1. Verify that disconnects are properly rated and fused per machine requirements. If there are multiple power sources, verify that the controller is marked and the disconnect is labeled to indicate which power source is being disconnected.

13.11.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.
NFPA 70 or CSA C22.1, as applicable.

ITEM 13.12
CONTROLLER WIRING, FUSES, GROUNDING, ETC.

13.12.1 Periodic Inspections

13.12.2 Periodic Test

13.12.3 Acceptance — Inspection Made With Power Off

Check for proper fuse type and rating and any jumper wires or temporary wiring changes. Check that fuses are not jumped out or shorted. Check that sufficient clear working space has been provided around control panels and disconnecting means, to provide safe and convenient access to all live parts of the equipment necessary for maintenance and adjustment. Verify compliance with CAN/CSA B44.1/ASME A17.5 by the certification label issued by a nationally recognized test laboratory.

13.12.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.
CAN/CSA B44.1/ASME A17.5
NFPA 70 or CSA C22.1, as applicable.

ITEM 13.13
GOVERNOR

13.13.1 Periodic Inspections

13.13.2 Periodic Test

13.13.3 Acceptance

(a) Check the governor marking plate, if provided, to determine that it is marked with size, material, and construction of the governor rope used and the governor-tripping speed.

(b) The tachometer reading must be taken after the car has reached its constant speed. Record speed readings with no load in the car and with rated load in the car in both the up and down directions. To ensure accuracy, tachometer readings must be taken from the side of the governor rope or hoisting ropes. Where the car is roped 2:1, the car speed is one-half the hoist rope speed.

(c) Verify that means of adjusting tripping speed and pull-through force are sealed. If the governor is not sealed, it must be sealed and tagged after the test.

(d) Verify that a governor rope tag has been installed and that it contains the necessary information.

13.13.4 References

A17.1-1993 through A17.1d-2000 — Rules 206.9 and 701.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.18.5.3 and 7.2.5.

ITEM 13.14
CODE DATA PLATE

13.14.1 Periodic Inspections

13.14.2 Periodic Test

13.14.3 Acceptance

Check that the Code data plate is installed and is mounted on the controller or inside the controller such that it is in plain view when the controller door is open. Verify that the data on the Code data plate correctly corresponds to the equipment installed.

13.14.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.15 and 702.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.9.

ITEM 13.15
OVERHEAD BEAM AND FASTENINGS

13.15.1 Periodic Inspections

13.15.2 Periodic Test

13.15.3 Acceptance

Examine machine and sheave beam supports and fastenings. Record the dimensions and span of beams and check the beams and supports against the manufacturer's recommended installation procedures.

13.15.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.9.

ITEM 13.16
DRIVE MACHINE BRAKE

13.16.1 Periodic Inspections

13.16.2 Periodic Test

13.16.3 Acceptance

(a) Inspection Made With Power On. Run the car and observe the operation of the brake. The brake must not chatter. It may apply on or before the completion of the slowdown and leveling operation. Check to see that the brake is automatically applied on or after normal stops.

(b) Inspection Made With Power Off

(1) Examine the brake and drum or disc to determine that the brake linings are free of oil and whether there is any scoring of the drum.

(2) If the dumbwaiter has been running, the braking surface may be warm but must not be uncomfortable to the touch. A hot drum usually indicates a dragging brake shoe.

13.16.4 References

A17.1-1993 through A17.1d-2000 — Rules 208.2, 210.8, and 701.9a.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.8 and 7.2.10.1.3.

ITEM 13.17
TRACTION DRIVE MACHINES

13.17.1 Periodic Inspections

13.17.2 Periodic Test

13.17.3 Acceptance

Have the dumbwaiter operated in each direction, making frequent stops, and observe the operation of the machine. Excessive lubrication of the wire ropes may result in reduced traction. Test traction by operating the empty car in the up direction and stopping it by opening the safety circuit.

13.17.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.9a(2), 701.13a(1)(a), 701.13a(1)(b), 701.13b, and 701.13e through 701.13g.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.6.1.1(a), 7.2.6.3, 7.2.6.5 through 7.2.6.8, and 7.2.10.1.2.

ITEM 13.18
GEARS, BEARINGS, AND FLEXIBLE COUPLINGS

13.18.1 Periodic Inspections

13.18.2 Periodic Test

13.18.3 Acceptance

Have the dumbwaiter operated in each direction, making frequent stops. Observe if there is unusual noise. Check the oil level.

13.18.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.9.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.10.

ITEM 13.19
WINDING DRUM MACHINE

13.19.1 Periodic Inspections

13.19.2 Periodic Test

See Item 14.26 for the test of the slack rope switch.

NOTE: This is especially important for existing units that have no car door/gate or that can run with the car door/gate in the open position.

13.19.3 Acceptance

Open the mainline disconnect switch and examine the hoisting rope fastenings in the drum. Note that not less than one full turn of rope would remain on the drum if the car is resting on its fully compressed buffer or on the pit floor.

Visually examine the drum for defects or cracks. Test the drum with light blows from a small hammer. If the sound resulting from the blows is dull and flat, unlike the ring given by sound metal, the drum must be examined carefully for cracks.

Where the ropes extend beyond their clamps or sockets, check to see that means have been provided to prevent the rope ends from coming out of the inside of the drum and interfering with other parts of the machine.

Check and record that the drum diameter conforms to the approved drawings and specifications. Ensure that the rope is spooling properly, without stacking or crossovers. Verify that a rope data tag has been provided.

13.19.4 References

A17.1-1993 through A17.1d-2000 — Rules 212.6, 212.7, and 701.9a(2).

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.20.6, 2.20.7, and 7.2.10.1.2.

ITEM 13.20
CHAIN DRIVE MACHINE AND DRIVE SPROCKETS

13.20.1 Periodic Inspections

13.20.2 Periodic Test

13.20.3 Acceptance

Make sure the chain is cogging correctly on the sprocket and is not trying to climb off the sprocket. Verify that a chain data tag has been provided.

13.20.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.13a(1)(c) and 701.13c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.6.1.1(c) and 7.2.6.3.

ITEM 13.21
ABSORPTION OF REGENERATED POWER

13.21.1 Periodic Inspections

13.21.2 Periodic Test

13.21.3 Acceptance

If the normal power source is incapable of absorbing the energy generated by an overhauling load, a separate means such as a resistor bank must be provided on the load side of each dumbwaiter power supply line disconnecting means to absorb the regenerated power.

13.21.4 References

A17.1-1993 through A17.1d-2000 — Rule 210.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 2.26.10.

ITEM 13.22
AC DRIVE FROM A DC SOURCE

13.22.1 Periodic Inspections

13.22.2 Periodic Test

13.22.3 Acceptance

The person or firm installing or maintaining an AC drive from a DC source should demonstrate that the dumbwaiter conforms to Code requirements.

(a) Run the car and demonstrate that either of two devices will prevent the flow of alternating current to the AC motor and cause the car to stop. At least one of the devices must be an electromechanical relay, which in its de-energized position prevents alternating current from flowing in the hoist motor.

(b) Prevent the relay described in (a) from being energized and register a call. Demonstrate, with the doors closed, that the brake will not lift and the car will not move.

(c) Demonstrate that either of two contactors in the brake circuit will prevent the brake from lifting.

(d) Demonstrate that the operation of any of the electrical protective devices will cause both devices specified in (a) to prevent the flow of alternating current to the hoist motor.

13.22.4 References

A17.1-1993 through A17.1d-2000 — Rule 210.9e.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 2.26.9.6.

ITEM 13.23
TRACTION SHEAVES

13.23.1 Periodic Inspections

13.23.2 Periodic Test

13.23.3 Acceptance

Tractive forces may be noted by observing slippage between ropes and traction sheaves. Note any evidence of lost motion or misalignment of the traction sheaves with other sheaves. Check that the sheaves and drums are permanently and legibly marked to state the minimum groove bottom diameter permissible for regrooving and required to maintain structural integrity. Check that the rope height on the sheave is the same for each rope. Uneven rope height indicates possible groove wear.

13.23.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.9a.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.10.1.

ITEM 13.24
SECONDARY AND DEFLECTOR SHEAVES OR SPROCKETS

13.24.1 Periodic Inspections

13.24.2 Periodic Test

13.24.3 Acceptance

(a) Check and record conformity with the approved drawings and specifications the diameter of the following:
(1) drums
(2) overhead sheaves
(3) secondary sheaves
(b) Examine the overhead, secondary, and deflector sheaves and test them with light blows from a small hammer. If the sound resulting from the blows is dull and flat, unlike the ring given by sound metal, sheave parts must be examined carefully for cracks.
(c) Look for evidence of any misalignment of sheaves.

13.24.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.9a.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.10.1.

ITEM 13.25
ROPE AND CHAIN FASTENINGS

13.25.1 Periodic Inspections

13.25.2 Periodic Test

13.25.3 Acceptance

(a) Rope. Determine that all lock nuts and cotter pins are in place. Verify the data shown on the rope data tag attached to one of the wire rope fastenings. Verify the size of the wedge and the body of the shackle housing are matched.
(b) Chain. Check that any master links are correctly installed in roller chains and that the locking clip is correctly positioned and secured. Verify that any removable link pins are secured in place and that locking features are used to protect against pin rotation.

13.25.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.13g.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.6.8.

ITEM 13.26
TERMINAL STOPPING DEVICES

13.26.1 Periodic Inspections

13.26.2 Periodic Test

13.26.3 Acceptance

In some cases, the normal terminal stopping switches may be located in the machine room or machinery space and be operated by a rope, tape, or chain attached to the car.
The person or firm installing or maintaining the dumbwaiter should check normal terminal devices as follows:
(a) Render the normal stopping means, if provided, inoperative.
(b) Run the car into the bottom terminal and verify that the car slows down and stops at or near the bottom terminal.
(c) Repeat the test in (b) at the top terminal.
(d) Restore the normal stopping means, if provided.
(e) Check normal dumbwaiter operation.

13.26.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.10.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.11.

ITEM 13.27
CAR AND COUNTERWEIGHT SAFETIES

13.27.1 Periodic Inspections

13.27.2 Periodic Test

13.27.3 Acceptance

Examine the car and counterweight guide shoes and their fastenings to determine that they are properly secured, aligned, and adjusted. Check the gibs or rollers for excessive wear. Verify that the clearance between the guide rail and each rail-gripping face of the safety is approximately equal.

Test the car safeties with rated load on the car. Test counterweight safeties with an empty car. Make sure that, regardless of load, the gripping face of the safety does not drag on the rail while in the resting position. After the safety has been inspected, position the car or counterweight in the lower portion of the hoistway.

(a) If a speed governor is provided for safety operation, have the persons performing the test jump out the switches on the governor and safety that would prevent a full setting of the safety. Start the car or counterweight, whichever is being tested, in the down direction and have the persons performing the test trip the governor by hand. Continue running down until the drive machine stalls or drives through the hoisting ropes. Have the persons performing the test open the mainline disconnect switch and remove the jumpers. Next visually inspect safeties to see if they have been equally applied.

(b) On counterweighted and noncounterweighted dumbwaiters equipped with a slack-rope-type safety, have the car or counterweight lowered on to a vertically placed wood block substantial enough to carry the load and create a slack rope condition. With the ropes slack and power removed from the machine, have the persons performing the test use a rod to dislodge the blocking from the underside of the car, being sure to stay clear and to the outside of the hoistway. The car or counterweight must securely set on the safeties. With the safeties set, restore power to the controller and verify the removal of power to the motor and brake.

To release safeties, have the persons performing the test move the car or counterweight, whichever is being tested, up. Once the safeties have been released, examine all parts to determine that they have returned to their normal operating positions.

Inspect the guide rails to determine if the scoring on the rails is equal. Dress any scoring on the rails after the visual inspection.

13.27.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.10 and 701.6.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.1.6 and 7.2.4.

ITEM 13.28
HYDRAULIC POWER UNIT

13.28.1 Periodic Inspections

13.28.2 Periodic Test

13.28.3 Acceptance

Have the dumbwaiter operated in the up direction, making several starts and stops, and observe the operation of the motor, pump, and drive. Check for excessive noise, misalignment, and loose mounting. With the car at the top landing, verify the hydraulic fluid level for operation with the supplied fluid level measuring device. Listen for pump cavitation due to partially plugged fluid lines or pickup strainer.

13.28.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.29
RELIEF VALVES

13.29.1 Periodic Inspections

13.29.2 Periodic Test

13.29.3 Acceptance

Check the working pressure given on the dumbwaiter layout with that on the data plate. Have the person(s) performing the test install a pressure gage in the system or use the gage supplied by the manufacturer and run the car up at rated speed with rated load. Verify the gage indicates the working pressure. Have the person(s) performing the test next test the relief valve by inching the car at slow speed against the stop ring. Then attempt to use the controls to run the car at full speed and read the gage. The full output of the pump must bypass at a gage reading 150% or less of the working pressure. After the test, have the means of adjustment sealed. Check the car for proper operation, and visually inspect the system for leaks.

13.29.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.30
CONTROL VALVE

13.30.1 Periodic Inspections

13.30.2 Periodic Test

13.30.3 Acceptance

The valves, fittings, and interconnecting piping must be checked for pressure rating, leakage, adequate support, and applicable certification.

13.30.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.31
TANKS

13.31.1 Periodic Inspections

13.31.2 Periodic Test

13.31.3 Acceptance

Note whether the tank is covered to prevent entrance of foreign material and is suitably vented to the atmosphere. A means is required for indicating the permissible minimum and maximum liquid levels. Check for any damage that may have resulted from handling and installation.

13.31.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.32
FLEXIBLE HYDRAULIC HOSES AND FITTING ASSEMBLIES

13.32.1 Periodic Inspections

13.32.2 Periodic Test

13.32.3 Acceptance

Visually examine flexible hydraulic hoses and check that the hose is not installed in the hoistway and does not project into or through any wall. Also check that the hose does not have any twists, kinks, or a sharp bending radius. The hose must have the proper rating identification in relationship to the working pressure. Check the installation date of the hoses. Hoses must be replaced if more than 6 yr have elapsed since their installation or if there is no recorded installation date.

13.32.4 References

A17.1-1993 through A17.1d-2000 — Rules 702.2, 1206.1, 1206.2, 1206.4, 1206.5, and 1206.5b(6).

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 7.3.5, 8.6.1.6.5, and 8.6.9.1.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 7.3.5, 8.6.5.6, and 8.6.10.1.

ITEM 13.33
SUPPLY LINE AND SHUTOFF VALVE

13.33.1 Periodic Inspections

13.33.2 Periodic Test

13.33.3 Acceptance

Inspect the supply line between the cylinder and the pumping unit for adequate support or evidence of any damage and verify that the supply line is installed so as to permit disassembly and inspection of components. Shutoff valves should be located outside the hoistway adjacent to the hydraulic machine. Where the hydraulic machine is located in the hoistway, the shutoff valve may be located inside the hoistway, provided it is accessible from outside the hoistway to elevator personnel only. Verify that the manufacturer's pressure ratings of the supply line and fittings are greater than the working pressure indicated on the data plate.

13.33.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.34
HYDRAULIC CYLINDERS

13.34.1 Periodic Inspections

13.34.2 Periodic Test

13.34.3 Acceptance

This test must be performed after the relief valve test in Item 13.29 and the flexible hose examination in Item 13.32. Cylinders that cannot be visually inspected must be tested in the following manner with no load in the car:

(a) Mark the location of the car at any convenient position.

(b) Open the disconnect switch for 15 min.

(c) Note the position of the car platform with respect to the reference mark. A change in position that cannot be accounted for by visible oil leakage, valve leakage, or temperature change of the oil indicates a leak of the cylinder or a leak in the underground piping and a need for further investigation.

13.34.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 13.35
PRESSURE SWITCH

13.35.1 Periodic Inspections

13.35.2 Periodic Test

13.35.3 Acceptance

Where a pressure switch is required to prevent operation of the valves if there is no pressure in the line between the down valve and cylinder, have the person(s) performing the test place the car at the top landing, and simulate an indication of low pressure from the pressure switch. Have the person(s) performing the test try to run the car in the down direction. The car must not run by normal means. Have the person(s) performing the test open the mainline disconnect and connect a circuit continuity tester, such as an ohmmeter, across the pressure switch. Have the person(s) performing the test lower the car to the pit with the manual lowering valve. The ohmmeter must indicate that the pressure switch senses low pressure when the car comes to rest on the buffer.

13.35.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.4i.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.11.9.

ITEM 13.36
CONTROLS FOR HYDRAULIC AND ROPE OR CHAIN HYDRAULIC DUMBWAITERS

13.36.1 Periodic Inspections

13.36.2 Periodic Test

13.36.3 Acceptance

The person or firm installing or maintaining a dumbwaiter employing hydraulic operation must demonstrate conformance with the Code as follows:

(a) If the pump motor is the only control means in the up direction, run the car and demonstrate that there are two devices provided to remove power independently from the pump motor. At least one device must be an electromechanical contactor.

(b) If in the up direction, the pump motor is one control means and there is a second control means (e.g., a valve), run the car and demonstrate that a device is provided to remove power independently from each control means. At least one device must be an electromechanical contactor or relay.

(c) Prevent the electromechanical contactor or relay in (b) from being energized and register a call. Demonstrate, with the doors closed, that the car will not move.

(d) Demonstrate that the operation of the devices specified in (a) and (b) will remove power from each control means.

13.36.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 7.3.11.7.

Part 14
Dumbwaiter — Top of Car

Inspectors are cautioned not to get on the car top unless it is intended and equipped for top-of-car inspection.

ITEM 14.1
TOP-OF-CAR SWITCH

14.1.1 Periodic Inspections

14.1.2 Periodic Test

14.1.3 Acceptance

Where a top-of-car switch is provided or required, check it in both directions to ensure it is functioning properly before proceeding with the inspection.

14.1.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11(i).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.10.

ITEM 14.2
TOP-OF-CAR OPERATING DEVICE

14.2.1 Periodic Inspections

14.2.2 Periodic Test

14.2.3 Acceptance

Where a top-of-car operating device is provided or required, check it for proper operation.

14.2.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11(d).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.4.

ITEM 14.3
TOP-OF-CAR CLEARANCE AND REFUGE SPACE

14.3.1 Periodic Inspections

14.3.2 Periodic Test

14.3.3 Acceptance

Determine that the hoistway provides adequate top-of-car clearance based on the requirements of the Code.

14.3.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.8.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirement 7.1.4.

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 7.1.4.3.

ITEM 14.4
NORMAL TERMINAL STOPPING DEVICE

14.4.1 Periodic Inspections

14.4.2 Periodic Test

14.4.3 Acceptance

Normal terminal stopping devices are usually located in the hoistway, but they may be located in the machine room and mechanically connected to and driven by the car.

Determine that the dumbwaiter car will stop at or near the terminal landing once the normal terminal stopping device is activated while in normal operation. When no car top inspection station is provided, the following procedure can be used. See Item 13.26.

The person or firm installing or maintaining the dumbwaiter should check the normal terminal device as follows:

(a) Render the normal stopping means, if provided, inoperative.

(b) Run the car at contract speed into the bottom terminal and verify that the car slows down and stops at or near the bottom terminal.

(c) Repeat the test in (b) at the top terminal.

(d) Restore the normal stopping means.

(e) Check normal dumbwaiter operation.

Electric dumbwaiters with a rated speed greater than 0.75 m/s (150 ft/min) and all hydraulic dumbwaiters must be equipped with a normal terminal stopping device that operates independently from the normal stopping means at the terminals. Ensure that the normal stopping means is disabled when testing the normal terminal stopping device. Verify that the car will move in the opposite direction when the normal terminal stopping device is activated at each end of the hoistway.

Verify that the stopping switches, vanes, cams, switch rollers, magnets, etc., as applicable, are in the correct alignment and securely fastened. The alignment of the bottom terminal stopping device can be checked by stopping the car near the bottom terminal and sighting the alignment of the cam and switch roller. The switch roller must strike the bevel of the cam. Also, determine the condition of the limit switch rollers, as a reduction of the effective roller diameter due to either wear or loss of rollers or any of their components may interfere with or prevent proper switch operation. The combination of excessively worn guide shoes and limit switch rollers may cause cars to overrun their terminals.

14.4.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.10 and 702.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.11 and 7.3.10.

ITEM 14.5
FINAL TERMINAL STOPPING AND TERMINAL SPEED-REDUCING DEVICES

14.5.1 Periodic Inspections

14.5.2 Periodic Test

14.5.3 Acceptance

14.5.3.1 Electric Dumbwaiters. Verify the bottom final terminal stopping device will stop a car in the down direction with no load at rated speed. Verify that both the top and bottom final terminal stopping devices are set to stop the car after it travels past the normal terminal stopping device and before an obstruction is struck.

When no car top inspection station is provided, the following procedure can be used. The person or firm installing or maintaining the dumbwaiter should check the final terminal device as follows:

(a) Render the normal stopping means and normal terminal stopping means, if provided, inoperative.

(b) Run the car into the bottom terminal and verify that the car slows down and stops after passing the normal terminal stopping device.

(c) Repeat the test in (b) at the top terminal.

(d) Restore the normal stopping means and the normal terminal stopping means.

(e) Check normal dumbwaiter operation.

14.5.3.2 Hydraulic Dumbwaiters. Hydraulic dumbwaiters require a terminal speed-reducing device at the top terminal landing when the car speed exceeds 0.25 m/s (50 ft/min). Final terminal stopping devices are not required.

14.5.4 References

14.5.4.1 Electric Dumbwaiters. A17.1-1993 through A17.1d-2000 — Rule 701.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.11.

14.5.4.2 Hydraulic Dumbwaiters. A17.1-1993 through A17.1d-2000 — Rule 702.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.10.

ITEM 14.6
CAR LEVELING AND ANTICREEP DEVICES

14.6.1 Periodic Inspections

14.6.2 Periodic Test

14.6.3 Acceptance

Observe that the anticreep device keeps the car to within 25 mm (1 in.) of the floor level. Verify that the anticreep device remains operational regardless of the position of the car or hoistway door, car door, and the hinged car platform sill and regardless of application of the broken rope, tape, or chain switch on normal stopping devices when such devices are located in the machine room, machinery space, or overhead space.

For continuous-pressure-operation dumbwaiters, verify that the anticreep device operates in both directions.

14.6.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.4c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.11.3.

ITEM 14.7
HOISTWAY CONSTRUCTION

14.7.1 Periodic Inspections

14.7.2 Periodic Test

14.7.3 Acceptance

Determine if the hoistway enclosure conforms to the building code requirements.

14.7.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.1.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.1.

ITEM 14.8
PIPES, WIRING, AND DUCTS

14.8.1 Periodic Inspections

14.8.2 Periodic Test

14.8.3 Acceptance

Verify that there are no pipes conveying steam, gas, or liquids installed in the hoistway. Where sprinklers are provided, check that sprinkler risers and returns have been located outside the hoistway.

14.8.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.3.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.8.

ITEM 14.9
WINDOWS, PROJECTIONS, RECESSES, AND SETBACKS

14.9.1 Periodic Inspections

14.9.2 Periodic Test

14.9.3 Acceptance

(a) Hoistway Windows. Windows in hoistways are only permitted in jurisdictions enforcing the NBCC. Where windows are permitted, verify that they are in compliance with the local building code.

(b) Projections, Recesses, and Setbacks. Verify that any projections, recesses, and setbacks greater than 100 mm (4 in.) are appropriately beveled and, if necessary, braced.

14.9.4 References

A17.1-1993 through A17.1d-2000 — Rule 100.6.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 2.1.6.

ITEM 14.10
HOISTWAY CLEARANCE

14.10.1 Periodic Inspections

14.10.2 Periodic Test

14.10.3 Acceptance

Verify that the horizontal dimensions and clearances are within guidelines.

14.10.4 References

A17.1-1993 through A17.1d-2000 — Rules 108 and 700.9.
ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.5 and 7.1.5.

ITEM 14.11
MULTIPLE HOISTWAYS

14.11.1 Periodic Inspections

14.11.2 Periodic Test

14.11.3 Acceptance

Verify that multiple hoistways are constructed in compliance with ASME A17.1/CSA B44. Measure the running clearance between cars, including any equipment attached to cars.

14.11.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.1 and 700.9.
ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.1.1 and 7.1.5.

ITEM 14.12
TRAVELING CABLES AND JUNCTION BOXES

14.12.1 Periodic Inspections

14.12.2 Periodic Test

14.12.3 Acceptance

Verify that traveling cables are properly installed, supported, and protected against damage.

14.12.4 References

A17.1-1993 through A17.1d-2000 — Rules 210.4 and 701.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.26.4 and 7.2.12.

ITEM 14.13
DOOR AND GATE EQUIPMENT

14.13.1 Periodic Inspections

14.13.2 Periodic Test

14.13.3 Acceptance

Verify that the hoistway doors meet the requirements of the Code. Check that the interlocks or combination mechanical locks and electric contacts and car door or gate electric contacts are labeled properly as a listed/certified device.

14.13.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.11, 700.12a, 700.12b, and 701.5b.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.1.11, 7.1.12.1, 7.1.12.2, and 7.2.1.2.

ITEM 14.14
CAR FRAME AND STILES

14.14.1 Periodic Inspections

14.14.2 Periodic Test

14.14.3 Acceptance

Determine through visual inspection that no cracks exist in the stiles or car frame.

14.14.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.2.

ITEM 14.15
GUIDE RAILS, FASTENING, AND EQUIPMENT

14.15.1 Periodic Inspections

14.15.2 Periodic Test

14.15.3 Acceptance

Determine through visual inspection that the guide rails are adequately fastened to the structure. Verify that the guiding means are properly engaged in the guide rails.

14.15.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.9.

ITEM 14.16
GOVERNOR ROPE

14.16.1 Periodic Inspections

14.16.2 Periodic Test

14.16.3 Acceptance

If a governor has been provided, verify that the governor rope is the proper material and correct size as recorded on the governor rope tag.

14.16.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.6c and 701.7.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.4.4 and 7.2.5.

ITEM 14.17
WIRE ROPE OR CHAIN FASTENING AND HITCH PLATE

14.17.1 Periodic Inspections

14.17.2 Periodic Test

14.17.3 Acceptance

Verify that the ropes or chains conform to the specifications on the data plate and are properly fastened at each end.

14.17.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.13a through 701.13c and 701.13g.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.6.1 through 7.2.6.3 and 7.2.6.8.

ITEM 14.18
SUSPENSION ROPE OR CHAIN

14.18.1 Periodic Inspections

14.18.2 Periodic Test

14.18.3 Acceptance

Inspect ropes for high wires, breaks, or bird-caging as well as for even tensioning. See wire rope replacement criteria in ASME A17.6.

Inspect chains to confirm proper lubrication, alignment, and tensioning. Chains must be replaced if any of the following conditions are observed:

(a) link plates worn more than 5% of their total height

(b) abnormal protrusion of pins or evidence of pin rotation

(c) cracked link plates

(d) enlarged pinholes

(e) corrosion

(f) broken, cracked, or deformed rollers

Ensure that rope or chain data tags are provided.

14.18.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.13.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.6.

ITEM 14.19
TOP COUNTERWEIGHT CLEARANCE

14.19.1 Periodic Inspections

14.19.2 Periodic Test

14.19.3 Acceptance

With the car at the bottom landing, check the top counterweight clearance.

14.19.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.8.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.4.

ITEM 14.20
CAR, OVERHEAD, AND DEFLECTOR SHEAVES

14.20.1 Periodic Inspections

14.20.2 Periodic Test

14.20.3 Acceptance

Verify that sheaves are the proper size, as indicated on the layout drawings provided by the equipment manufacturer. Verify that the sheaves are designed to prevent ropes from leaving the grooves and are adequately lubricated.

14.20.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.9a, 701.9a(2), and 702.5b.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.10.1, 7.2.10.1.2, and 7.3.6.2.

ITEM 14.21
BROKEN ROPE, CHAIN, OR TAPE SELECTOR SWITCH

14.21.1 Periodic Inspections

14.21.2 Periodic Test

14.21.3 Acceptance

(a) Check the device by manually opening the switch and attempting to move the car. The car should not move.

(b) Verify that the linkage attached to the switch permits free operation of the switch.

14.21.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.10.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.11.

ITEM 14.22
DATA PLATES

14.22.1 Periodic Inspections

14.22.2 Periodic Test

14.22.3 Acceptance

Verify the location of and information on the capacity plate, data plate, and, if applicable, the rope or chain data plate. The capacity plate is located in the car. The data plate may be located on the car crosshead, on the car top, or inside the car.

14.22.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.8b, 701.8c, 701.13b, and 701.13c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.3.2, 7.2.3.3, 7.2.6.2, and 7.2.6.3.

ITEM 14.23
COUNTERWEIGHT AND COUNTERWEIGHT BUFFER

14.23.1 Periodic Inspections

14.23.2 Periodic Test

14.23.3 Acceptance

Determine that the counterweights, sheaves, and buffers are securely fastened and adequately lubricated.

14.23.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.2 and 701.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.7 and 7.2.8.

ITEM 14.24
COUNTERWEIGHT SAFETY

14.24.1 Periodic Inspections

14.24.2 Periodic Test

14.24.3 Acceptance

If a counterweight is provided and the space below the hoistway is not permanently secured against access, verify that a counterweight safety is provided. Test the counterweight safety as outlined in Item 2.29.

14.24.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.10.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.6.

ITEM 14.25
SPEED TEST

14.25.1 Periodic Inspections

14.25.2 Periodic Test

14.25.3 Acceptance

Check and verify the speed information on the data plate. Have the rated load placed in the car and use a tachometer to verify the rated speed going up and the operating speed in the down direction.

14.25.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.8c(2)(b).
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.3.3.2(b).

ITEM 14.26
SLACK ROPE OR SLACK CHAIN DEVICE

14.26.1 Periodic Inspections

14.26.2 Periodic Test

Verify that the slack rope/chain switch prevents operation if any one rope or chain fails. See the maintenance control program for the recommended procedure.

NOTE: On existing units, if there is no car door or gate or if the car can run with the car door/gate in the open position, it is especially important that the slack rope/chain switch operates correctly as the car can hang up if the load shifts and descend uncontrolled when it is freed.

14.26.3 Acceptance

Verify that the slack rope/chain switch prevents operation if any one rope or chain fails. See the manufacturer's recommended procedure.

14.26.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.4d(2)(a).
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.11.4.1.

ITEM 14.27
TRAVELING SHEAVE

See Item 14.20.

ITEM 14.28
COMPENSATING ROPES OR CHAINS

14.28.1 Periodic Inspections

Examine compensating chains and fastenings for excessive wear, damage, or deterioration. Sash cord wear is no indication of chain damage. See Item 14.18 for inspection of compensating ropes.

14.28.2 Periodic Test

14.28.3 Acceptance

14.28.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.3.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.7.

Part 15
Dumbwaiter — Outside Hoistway

ITEM 15.1
CAR GUARDS

15.1.1 Periodic Inspections

15.1.2 Periodic Test

15.1.3 Acceptance

For all dumbwaiters with leveling or inching devices that operate with the hoistway door(s) in the open position, check that there is a smooth metal guard extending a distance below the platform floor and above the top of the car equal to the length of the inching or leveling zone plus 13 mm (0.5 in.) on the entrance side of the platform. This guard must not strike the pit floor and must extend the full width of the widest hoistway door.

15.1.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.4(g).

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.2.8.

ITEM 15.2
HOISTWAY DOORS

15.2.1 Periodic Inspections

15.2.2 Periodic Test

15.2.3 Acceptance

Examine hoistway doors or gates, locking devices, and latching means. Measure the distances between the hoistway face of the doors or gates and the hoistway edge of the landing sill.

Measure the distance between the hoistway face of the landing doors or gates and the car door or gate. Verify that the clearances meet the requirements. Check that opening the door or gate does not require reaching behind any structure.

Verify that only permitted hardware projects into the hoistway beyond the sill line.

15.2.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.11.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.11.

ITEM 15.3
VISION PANELS

15.3.1 Periodic Inspections

15.3.2 Periodic Test

15.3.3 Acceptance

Verify that, where required, vision panels are in place and in good condition. Where vision panels are provided, check that

(a) each clear panel opening rejects a ball 150 mm (6 in.) in diameter

(b) the glass is clear wire glass or other transparent glazing material not less than 6 mm (0.25 in.) thick and meets the applicable impact standard (16 CFR Part 1201 or CAN/CGSB 12.1, CAN/CGSB 12.11, or CAN/CGSB 12.2)

(c) the vision panels are substantially flush with the landing door surface

(d) the total area of vision panels does not exceed 0.16 m^2 (25 $in.^2$)

(e) muntins between panels are noncombustible and of substantial construction

15.3.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.11h.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.11.8.

ITEM 15.4
HOISTWAY DOOR-LOCKING DEVICES

15.4.1 Periodic Inspections

15.4.2 Periodic Test

15.4.3 Acceptance

15.4.3.1 Electric and Hydraulic Dumbwaiters. Verify that the locking device has been type tested and is properly labeled and inaccessible from the landing side. Verify that the car does not respond to calls with the hoistway

door open. Verify that when the car is outside of the unlocking zone, the hoistway door cannot be opened.

15.4.3.2 Hand Dumbwaiters. Verify that a spring-type latch is provided on each hoistway door to hold the door closed. The latch must be accessible from both the hoistway and landing sides of the door regardless of the car position.

15.4.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.12 and 1101.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.1.12 and 8.3.3.

ITEM 15.5
ACCESS TO HOISTWAY

15.5.1 Periodic Inspections

15.5.2 Periodic Test

15.5.3 Acceptance

(a) Verify that hoistway doors or gates at the top and bottom terminal landings are fitted with an unlocking device.

(b) Hoistway access switches are permitted at the top and bottom landings. Check for proper operation, and verify that the switch key is kept in a location where it is available only to elevator personnel.

(c) Where hoistway access doors are provided, check that an electric contact is provided that will prevent operation of the dumbwaiter when the door is open.

15.5.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.2(e), 700.12c, and 700.12d.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.1.12.3, 7.12.12.4, and 7.1.7.6.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.1.7.6.2, 7.1.12.3, and 7.1.12.4.

ITEM 15.6
POWER CLOSING OF HOISTWAY DOORS

15.6.1 Periodic Inspections

15.6.2 Periodic Test

15.6.3 Acceptance

Where both hoistway and car doors are closed by power, verify they are both either

(a) horizontally sliding
(b) of the vertical sliding type

15.6.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.13.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.13.

ITEM 15.7
HOISTWAY ENCLOSURE

15.7.1 Periodic Inspections

15.7.2 Periodic Test

15.7.3 Acceptance

Check the hoistway for the installation of any pipes or ducts not related to the operation of the dumbwaiter.

15.7.4 References

A17.1-1993 through A17.1d-2000 — Rules 700.1 and 700.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.1.1 and 7.1.8.

ITEM 15.8
SEPARATE COUNTERWEIGHT HOISTWAY

15.8.1 Periodic Inspections

15.8.2 Periodic Test

15.8.3 Acceptance

Verify that the counterweight enclosure (if provided) is equipped with a door that is self-closing and self-locking. If the available space is sufficient for full bodily entry, the door must be openable from the inside without the use of a key or other instrument. Verify that a stop switch is located so that it is readily reachable from outside the enclosure.

15.8.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.3.

Part 16
Dumbwaiter — Pit

ITEM 16.1
PIT ACCESS, LIGHTING, STOP SWITCH, AND CONDITION

16.1.1 Periodic Inspections

16.1.2 Periodic Test

16.1.3 Acceptance

Pits are not required. When one is provided, examine pit construction for Code compliance and guarding.

16.1.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.7.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.2.

ITEM 16.2
BOTTOM CLEARANCE AND RUNBY

16.2.1 Periodic Inspections

16.2.2 Periodic Test

16.2.3 Acceptance

Check the bottom of the car and the counterweight clearance to ensure that the car and counterweight and any equipment attached thereto do not strike the pit or floor beneath the lowest landing or any equipment in the hoistway except a buffer or bumper.

16.2.4 References

A17.1-1993 through A17.1d-2000 — Rule 700.8(a).
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.1.4.1.

ITEM 16.3
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

See Item 14.5.

ITEM 16.4
NORMAL TERMINAL STOPPING DEVICES

See Item 14.4.

ITEM 16.5
TRAVELING CABLES

16.5.1 Periodic Inspections

16.5.2 Periodic Test

16.5.3 Acceptance

Verify that the traveling cable is supported properly and does not come in contact with the pit floor or rub the hoistway wall or other objects in the hoistway.

16.5.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.11.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.12.

ITEM 16.6
GOVERNOR-ROPE TENSION DEVICE

16.6.1 Periodic Inspections

16.6.2 Periodic Test

16.6.3 Acceptance

If a governor-rope tension device is provided, verify that it is securely fastened and lubricated properly.

16.6.4 References

A17.1-1993 through A17.1d-2000 — Rules 206.9(2) and 701.7.
ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.18.5.3 and 7.2.5.

ITEM 16.7
CAR FRAME AND PLATFORM

See Item 14.14.

ITEM 16.8
CAR SAFETIES AND GUIDING MEMBERS

16.8.1 Periodic Inspections

16.8.2 Periodic Test

16.8.3 Acceptance

Examine the data on the safety marking plate, if provided, and verify that it meets the requirements for speed and load of installation.

16.8.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.6.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.4.

ITEM 16.9
BUFFER

16.9.1 Periodic Inspections

16.9.2 Periodic Test

16.9.3 Acceptance

If buffers are provided, compare and verify the information on the buffer data plate with layout drawings and Code requirements. If buffers are not provided, bumpers are required.

16.9.4 References

A17.1-1993 through A17.1d-2000 — Rule 701.2.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.2.8.

ITEM 16.10
PLUNGER AND CYLINDER

16.10.1 Periodic Inspections

16.10.2 Periodic Test

16.10.3 Acceptance

Verify that the information on the data plate matches the information on layout drawings and is in compliance with Code requirements.

16.10.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

ITEM 16.11
CAR BUFFER

See Item 16.9.

ITEM 16.12
GUIDING MEMBERS

16.12.1 Periodic Inspections

16.12.2 Periodic Test

16.12.3 Acceptance

Verify that guide members are adequately secured and properly aligned and adjusted.

16.12.4 References

A17.1-1993 through A17.1d-2000 — Rules 701.1, 701.6g(1), and 702.1a.
ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.2.4.6.1, 7.2.9, and 7.3.9.

ITEM 16.13
SUPPLY PIPING

16.13.1 Periodic Inspections

16.13.2 Periodic Test

16.13.3 Acceptance

Verify that hydraulic piping, valves, and fittings are the proper size and pressure rating and are not leaking. Ensure that adequate support is provided.

16.13.4 References

A17.1-1993 through A17.1d-2000 — Rule 702.2.
ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.3.5.

Part 17
Material Lift — Car

(23)

Parts 17 through 21 are an informative guide for the inspection of material lifts. These Parts are intended to be used in conjunction with ASME A17.1-2000/CSA B44-00 and later editions and will permit those jurisdictions requiring acceptance inspections to have procedures available to their inspectors. In addition, these Parts will be available to other interested inspection parties who might be called upon to examine material lifts installations for conformance to the Code and contain some important warnings/cautions for existing material lifts.

ITEM 17.1
DOOR REOPENING DEVICE

Where power operation of the doors or gates is provided, specific requirements are prescribed for material lifts. Kinetic energy requirements apply only to Type B material lifts. Power collapsible gates are restricted as to the distance they can be opened by power.

17.1.1 Periodic Inspection

17.1.2 Periodic Test

17.1.3 Acceptance

Power opening of the car door is permitted to take place only within the specified distance from the landing.

(a) Mechanical Reopening Device (Safety Edge). Arrange to have the device activated while the door is being closed and note whether the car door stops and reopens.

(b) Electronic and/or Photoelectric Reopening Device. Have an object placed in front of the leading edge of the car door at various positions while the door is being closed. Verify that the car door stops and reopens. For material lifts installed under ASME A17.1-2010/CSA B44-10 and later editions, check that the reopening device on vertical sliding doors can detect an object located immediately adjacent to the plane created by both the car door and the hoistway door and can detect an object when located in the area between the plane of both car door and hoistway door.

17.1.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 2.13.5 and 7.4.15, and definition of "landing zone" in Section 1.3.

ASME A17.1-2010/CSA B44-10 — Requirements 2.12.1, 2.13.3.4, 2.13.5, and 7.4.15; Nonmandatory Appendices B and S; and definition of "landing zone" and "unlocking zone" in Section 1.3.

ITEM 17.2
STOP SWITCHES

17.2.1 Periodic Inspection

17.2.2 Periodic Test

17.2.3 Acceptance

Verify that an emergency stop switch is provided. Have the emergency stop switch operated and note whether the car stops promptly. On Type A material lifts, the stop switch is required to be located adjacent to the entrance(s) in a position that is accessible to a person standing at the floor adjacent to entrance. On Type B material lifts, the stop switch is to be located in the car control station.

17.2.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.5.12.1.5 and 7.5.12.2.5.

ASME A17.1-2010/CSA B44-10 through ASME A17.1-2013/CSA B44-13 — Requirements 7.5.12.1.5 and 7.5.12.2.6.

ASME A17.1-2016/CSA B44-16 through ASME A17.1-2019/CSA B44-19 — Requirements 7.5.12.1.6 and 7.5.12.2.6.

ITEM 17.3
OPERATING CONTROL DEVICES

Type A material lifts are not permitted to have controls in the car other than a stop switch. The controls for a Type A material lift are to be located at the landing only. Type B

material lifts are only to have operating devices of the continuous-pressure type.

17.3.1 Periodic Inspection

17.3.2 Periodic Test

17.3.3 Acceptance

Verify that the car control station on Type B material lifts is at least 1 000 mm (39 in.) horizontally from the car sill or, if the car is a through car, less than 2 000 mm (79 in.) deep and is in the center of the side enclosure.

Verify the operation as follows:

(a) Continuous-Pressure Operation. Have the car operated in each direction by means of the operating buttons or other devices in the car and at the landing. Determine that they do not stick or bind and are properly marked, and that the car stops when the operating device is released, except when an anticreep leveling device is provided.

(b) Automatic Operation (Type A Only). Have the car operated, making stops in both the up and down directions. At each stop, have the car door or gate opened and note the accuracy of stopping. Verify operating push buttons work properly.

(c) Car Leveling Device. When inching buttons are provided, test them to verify that they will operate the car only within the zone allowed by the Code.

17.3.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 7.5.12.1.4, 7.5.12.1.24, and 7.5.12.2.28 through 7.5.12.2.32.

ASME A17.1-2007/CSA B44-07 through ASME A17.1-2010/CSA B44-10 — Requirements 7.5.12.1.4, 7.5.12.1.24, and 7.5.12.2.30 through 7.5.12.2.34.

ASME A17.1-2013/CSA B44-13 — Requirements 7.5.12.1.4, 7.5.12.1.23, and 7.5.12.2.29 through 7.5.12.2.33.

ASME A17.1-2016/CSA B44-16 through ASME A17.1-2019/CSA B44-19 — Requirements 7.5.12.1.5, 7.5.12.1.24, and 7.5.12.2.29 through 7.5.12.2.33.

ITEM 17.4
SILLS AND CAR FLOOR

17.4.1 Periodic Inspection

17.4.2 Periodic Test

17.4.3 Acceptance

(a) Sills and Car Floor. Determine the condition of the car floor and landing sills.

(b) Horizontal Car Clearance. Verify the clearance between the car and landing sills. Check that the distance between the car platform sill and the hoistway edge of the landing sill is within the specified distances allowed by the Code.

17.4.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.7.

ITEM 17.5
CAR LIGHTING

17.5.1 Periodic Inspection

17.5.2 Periodic Test

17.5.3 Acceptance

The Code requires a minimum illumination at the car threshold of 27 lx (2.5 fc). Check that the light bulbs or tubes are guarded or recessed to provide protection from accidental breakage, and glass panels and their structure are capable of withstanding the required material lift tests without damage.

17.5.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.1.3.

ITEM 17.6
CAR DOOR OR GATE

17.6.1 Periodic Inspection

17.6.2 Periodic Test

17.6.3 Acceptance

Car doors or gates are only required on Type A material lifts.

Verify that the distance from the face of the car door or gate to the face of the hoistway door does not exceed the Code.

Verify that openings in doors or gates do not exceed the Code requirements.

Verify that two independent suspension means are provided for vertically sliding car doors or gates and weights for balancing or closing comply with Code requirements.

Verify that the car will not move under normal operation unless the car door or gate is within the Code-specified distance of the closed position.

17.6.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.1.2.

ITEM 17.7
POWER CLOSING OF DOORS OR GATES

17.7.1 Periodic Inspection

17.7.2 Periodic Test

17.7.3 Acceptance

Where a door open button is provided, check that when depressed and the door is closing it causes the door to stop or to stop and reopen. For a Type A material lift, verify that a door open button is provided at each landing.

17.7.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.4.15 and 2.13.3.3.2.

ITEM 17.8
POWER OPENING OF DOORS OR GATES

17.8.1 Periodic Inspection

17.8.2 Periodic Test

17.8.3 Acceptance

(a) Leveling Zone. Determine that power opening of the doors or gates can occur only when the car is within the specified distance of the landing. For Type B material lifts, the leveling zone is limited to 75 mm (3 in.) above and 75 mm (3 in.) below the landing unless a truck-zoning device is provided.

(b) Leveling Speed. Verify that the leveling speed does not exceed 0.75 m/s (150 ft/min). For Type B material lifts, the maximum car speed is 0.15 m/s (30 ft/min).

(c) Inner Landing Zone. On static control material lifts, verify that the zone in which the car can move with the doors open is no more than 75 mm (3 in.) above or below the landing.

17.8.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.5.12.1.4, 7.5.12.2, and 2.26.1.6.

ASME A17.1-2010/CSA B44-10 through ASME A17.1-2013/CSA B44-13 — Requirements 7.5.12.1.4 and 7.5.12.2.5.

ASME A17.1-2016/CSA B44-16 through ASME A17.1-2019/CSA B44-19 — Requirements 7.5.12.1.5 and 7.5.12.2.6.

ITEM 17.9
CAR VISION PANELS

17.9.1 Periodic Inspection

17.9.2 Periodic Test

17.9.3 Acceptance

Solid doors or gates on Type B material lifts where fire-resistive construction is not required are to have vision panels. Type A material lifts are not required to have vision panels.

Where provided with glass vision panels, verify that the glass is the right type (wired or laminated). Check that the size of any single vision panel does not exceed 0.014 m^2 (24 $in.^2$), that the total area of all vision panels in any hoistway door does not exceed 0.055 m^2 (85 $in.^2$), and that each clear opening will reject a ball 150 mm (6 in.) in diameter.

17.9.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2016/CSA B44-16 — Requirement 7.4.13.2.6.

ASME A17.1-2019/CSA B44-19 — Requirement 7.4.13.2.5.

ITEM 17.10
CAR ENCLOSURE

17.10.1 Periodic Inspection

17.10.2 Periodic Test

17.10.3 Acceptance

Check the dimensions of the car.

The height of a Type A material lift is not to exceed 2 280 mm (90 in.). The width of a Type A enclosure is not to exceed 1 220 mm (48 in.). For Type A material lifts installed under the ASME A17.1-2016/CSA B44-16 and later editions, the width may exceed 1 220 mm (48 in.) when the height of the enclosure is 1 525 mm (60 in.) or less.

The height of a Type B material lift is not to be less than 2 030 mm (80 in.) on nonaccess sides. A car enclosure top is not required on Type B material lifts. Determine that the car enclosure is structurally sound and is securely fastened to the platform.

17.10.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.1.1.

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 7.5.1.1.1(a).

ITEM 17.11
SIGNS AND OPERATING DEVICE SYMBOLS

17.11.1 Periodic Inspection

17.11.2 Periodic Test

17.11.3 Acceptance

(a) Verify that Type A material lifts have a "NO RIDERS PERMITTED" sign located in the car.

(b) Check the wording on the capacity sign. The capacity signs permitted for Type A and Type B material lifts include the following:

(1) "CLASS A LOADING. MATERIAL LIFT TO BE LOADED OR UNLOADED MANUALLY OR BY MEANS OF HAND TRUCKS ONLY. NO SINGLE PIECE OF FREIGHT OR SINGLE HAND TRUCK AND ITS LOAD SHALL EXCEED _____ KG (_____ LB)."

(2) "CLASS B LOADING. THIS MATERIAL LIFT DESIGNED TO TRANSPORT MOTOR VEHICLES HAVING A MAXIMUM GROSS WEIGHT NOT TO EXCEED _____ KG (_____ LB)."

(3) "CLASS C3 LOADING. THIS MATERIAL LIFT DESIGNED TO TRANSPORT CONCENTRATED LOADS NOT TO EXCEED _____KG (____ LB)."

(c) Type B material lifts are permitted to have loading class C1 or class C2. The capacity signs permitted for Type B material lifts include the following in addition to those identified in (b) above.

(1) "CLASS C1 LOADING. THIS MATERIAL LIFT DESIGNED TO TRANSPORT LOADED INDUSTRIAL TRUCK. MAXIMUM COMBINED WEIGHT OF INDUSTRIAL TRUCK AND LOAD NOT TO EXCEED _____ KG (_____ LB)."

(2) "CLASS C2 LOADING. THIS MATERIAL LIFT DESIGNED FOR LOADING AND UNLOADING BY INDUSTRIAL TRUCK. MAXIMUM LOADING AND UNLOADING WEIGHT WHILE PARKED NOT TO EXCEED _____ KG (_____ LB). MAXIMUM WEIGHT TRANSPORTED NOT TO EXCEED _____ KG (_____ LB)."

(d) Verify that Type B material lift cars contain the following additional signs:

(1) at each control station in the hall: "MAXIMUM LOAD _____ KG (____ LB)" and "NO RIDERS EXCEPT ONE OPERATOR OR FREIGHT HANDLER"

(2) at the control station in the lift: "NO RIDERS EXCEPT ONE OPERATOR OR FREIGHT HANDLER"

(3) at each entrance or gate: "AUTHORIZED PERSONNEL ONLY ON THIS MATERIAL LIFT"

17.11.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.3.

ITEM 17.12
RATED LOAD, PLATFORM AREA, AND CAPACITY AND DATA PLATES

17.12.1 Periodic Inspection

17.12.2 Periodic Test

17.12.3 Acceptance

Measure the inside dimensions of the car and compute the inside net platform area (width × depth). Divide the rated load by the area and check that the result is not less than 240 kg/m^2 (49 lb/ft^2) for class A and class C loading and not less than 145 kg/m^2 (30 lb/ft^2) for class B loading. Check that the capacity plate is installed inside the car and the data plate is installed on the car top or crosshead.

Verify that type A material lifts do not include class C1 or class C2 loading.

17.12.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.3.1, 7.5.3.2, and 2.16.3.

ITEM 17.13
CAR RIDE

17.13.1 Periodic Inspection

17.13.2 Periodic Test

17.13.3 Acceptance

Have the car operated at normal operating speed from one terminal landing to the other and listen for unusual noise that may indicate that the car or counterweight guide rails are not properly aligned. If such noise occurs, check for loose guide shoes or rollers and proper alignment of the guide rails.

17.13.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.9.

Part 18
Material Lift — Machinery Spaces, Machine Rooms, Control Spaces, and Control Rooms (23)

ITEM 18.1
ACCESS TO EQUIPMENT SPACE

18.1.1 Periodic Inspection

18.1.2 Periodic Test

18.1.3 Acceptance

Check that access to the machinery space, machine room, control space, or control room meets the access requirements of the Code. For access doors required to have fire-protection ratings, check for proper labeling. Check that the maintenance path and clearances meet the requirements of the Code or that the equipment is guarded to prevent accidental contact with moving parts and that the guarding permits visual inspection without complete removal. Ensure there is 1000 mm (39 in.) of secure footing in front of all electrical panels.

Type B material lifts are not required to comply with ASME A17.1/CSA B44, Section 2.7. Hydraulic machines and tanks for Type B material lifts are to be enclosed and accessed through a locked door or panel. Controls and equipment are to be protected against unauthorized use.

18.1.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Section 2.7 and Requirements 7.4.9, 7.5.12.2.30, and 7.6.6.

ASME A17.1-2010/CSA B44-10 — Section 2.7 and Requirements 7.4.9, 7.5.12.2.30, and 7.6.6.

ASME A17.1-2013/CSA B44-13 and later editions — Section 2.7 and Requirements 7.4.9, 7.5.12.2.30, and 7.6.6.

CSA C22.1.

NFPA 70.

ITEM 18.2
HEADROOM

18.2.1 Periodic Inspection

18.2.2 Periodic Test

18.2.3 Acceptance

There are no headroom requirements in ASME A17.1/CSA B44 for Type B material lifts other than those working clearances specified in the NFPA 70 or CSA C22.1.

Verify that machine and control rooms for Type A material lifts installed under the ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 have the minimum overhead clearances. Type A material lifts installed under the ASME A17.1-2010/CSA B44-10 and later editions do not have headroom requirements other than those working clearances specified in the NFPA 70 or CSA C22.1.

18.2.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.4.9 and 2.7.5.

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 7.4.9.2.

CSA C22.1.

NFPA 70.

ITEM 18.3
LIGHTING AND RECEPTACLES

18.3.1 Periodic Inspection

18.3.2 Periodic Test

18.3.3 Acceptance

Check machinery space, machine room, control space, or control room for adequate lighting. For Type A material lifts check that a GFCI duplex receptacle has been provided in these spaces.

18.3.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 7.4.9 and 2.7.5.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 7.4.9 and 2.7.9.1.

CSA C22.1.

NFPA 70.

ITEM 18.4
EQUIPMENT IN MACHINERY SPACE, MACHINE ROOM, CONTROL SPACE, AND CONTROL ROOMS

18.4.1 Periodic Inspection

18.4.2 Periodic Test

18.4.3 Acceptance

For Type A material lifts, only such pipes, wiring, and ducts used in direct connection with the material lift are permitted to be installed in the machine room or machinery spaces. Check the permitted sprinkler piping for any leakage.

For Type B material lifts installed under the ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07, only such pipes, wiring, and ducts used in direct connection with the material lift are permitted to be installed in the machine room or machinery spaces. Check the permitted sprinkler piping for any leakage. Type B material lifts installed under the ASME A17.1-2010/CSA B44-10 are permitted to have machinery or equipment not used directly in connection with the material lift in the machine room or machinery space.

18.4.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirement 7.4.10.

ASME A17.1-2010/CSA B44-10 and later editions — Requirement 7.4.10.

ITEM 18.5
HOUSEKEEPING

18.5.1 Periodic Inspection

Check that the machinery space, machine room, control space, or control room area is not used for the storage of any flammable liquids with a flash point less than 43°C (110°F). For Type A material lifts with a separate machinery space, machine room, control space, or control room, ensure that materials and articles not necessary for the maintenance and operation of the material lift are not stored in said room.

Check the floor area for cleanliness, noting any accumulation of oil, grease, or dirt.

Check that the tops of cars are kept clean and dry and are not being used for storage.

18.5.2 Periodic Test

18.5.3 Acceptance

18.5.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 8.6.9.1 and 8.6.4.8.

ASME A17.1-2007/CSA B44-07 — Requirements 8.6.10.2 and 8.6.4.8.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 8.6.10.1 and 8.6.4.8.

ITEM 18.6
VENTILATION

18.6.1 Periodic Inspection

Check that the machinery space, machine room, control space, or control room area, when provided, is within the temperature range required by the material lift manufacturer as posted on the material lift equipment. For material lifts with separate machinery space/machine room, check that mechanical ventilation and air conditioning, if provided, are in operating condition. Check that natural machine room ventilation is open and functioning.

18.6.2 Periodic Test

18.6.3 Acceptance

If a machinery space, machine room, control space, or control room is provided, check that adequate ventilation is provided by natural or mechanical means to ensure safe and normal operation of the material lift.

18.6.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 7.4.9, 2.7.5.2, and 2.8.4.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 7.4.9, 2.7.9.2, and 2.8.5.

ITEM 18.7
FIRE EXTINGUISHER

18.7.1 Periodic Inspection

In jurisdictions not enforcing the NBCC, and where a material lift machine room, control room, or control space intended for full bodily entry has been provided outside the hoistway, check to see that a class ABC fire extinguisher is mounted convenient to the access door of the material lift machine room.

18.7.2 Periodic Test

18.7.3 Acceptance

18.7.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04– Requirements 8.6.9.1 and 8.6.1.6.5.

ASME A17.1-2007/CSA B44-07 — Requirements 8.6.10.2 and 8.6.1.6.5.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 8.6.10.1 and 8.6.1.6.5.

ITEM 18.8
PIPES, WIRING, AND DUCTS

18.8.1 Periodic Inspection

Check sprinkler piping, if provided, for any leakage. Verify that only such pipes, wiring, and ducts used in direct connection with the material lift are installed in the machine room or machinery spaces.

18.8.2 Periodic Test

18.8.3 Acceptance

Verify that pipes not required for operation of the material lift that convey steam, gas, or liquid are not installed in the machine room.

18.8.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.10.

ITEM 18.9
GUARDING OF EQUIPMENT

18.9.1 Periodic Inspection

Check that guards of auxiliary equipment are in place and secure.

18.9.2 Periodic Test

18.9.3 Acceptance

Check that appropriate guards have been installed on the driving machine and moving equipment.

18.9.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.12.

ITEM 18.10
NUMBERING OF MATERIAL LIFTS, MACHINES, AND DISCONNNECT SWITCHES

18.10.1 Periodic Inspection

18.10.2 Periodic Test

18.10.3 Acceptance

Where there is more than one elevating device in the same building, verify that each is properly identified as applicable.

18.10.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.16.

ITEM 18.11
DISCONNECTING MEANS AND CONTROL

18.11.1 Periodic Inspection

Check that the mainline disconnecting means is in good working order and securely mounted.

18.11.2 Periodic Test

18.11.3 Acceptance

18.11.3.1 Electric/Hydraulic Material Lifts

(a) Location. Check that the main line disconnecting means has been located where it is readily accessible to authorized persons and within sight of the motor controller. Verify that driving machines or motion and operation controllers not within sight of the disconnecting means are provided with a manually operated switch installed in the control circuit to prevent starting. Check that the manually operated switches are installed adjacent to this equipment and that the location meets the working clearance requirements of NFPA 70 or, in jurisdictions enforcing the NBCC, CSA 22.1.

(b) Power From More Than One Source. For material lifts with more than one power source, check that a separate disconnecting means has been provided for each source of electrical power and that the mainline disconnecting means is within sight of the equipment served. Check that warning signs for multiple disconnecting means indicating parts of the control panel are not de-energized by one switch and are mounted on or adjacent to the disconnecting means.

(c) Type. Check that disconnecting means for the mainline power and for the car light, receptacles, and ventilation is an enclosed, externally operable fused motor circuit switch or circuit breaker capable of being locked in the open position and that it is a listed device. Verify that

disconnects are properly rated and fused per machine requirements.

(d) Identification and Signage. If there are multiple power sources, verify that the controller is marked and the disconnect is labeled to indicate which power source is being disconnected. Verify that a sign is provided for each disconnecting means that indicates the location of the supply-side overcurrent protective device (fuse or circuit breaker). For material lifts with hydraulic driving machines, verify that there is also a sign stating "KEEP SWITCH CLOSED EXCEPT DURING MAINTENANCE, REPAIRS, AND INSPECTIONS."

(e) Branch Circuits. Check that the disconnecting means for the cab lighting/ventilation circuit does not disconnect power to the door operator or door protection device. Verify that the mainline disconnecting means does not control the car lighting, receptacles, or ventilation, or the pit lighting or receptacles.

18.11.3.2 Hydraulic Material Lifts. For hydraulic material lifts where an auxiliary power–lowering device has been provided, check that an auxiliary contact that is positively opened mechanically is provided in the disconnect to prevent movement of the platform when the disconnecting means is opened.

18.11.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.5.12, 7.6.8, and 2.26.4.1.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.5.12, 7.6.8.1, and 2.26.4.1.

NFPA 70.

CSA 22.1.

ITEM 18.12
CONTROLLER WIRING, FUSES, GROUNDING, ETC.

18.12.1 Periodic Inspection

18.12.1.1 Electric Material Lifts

(a) Inspection Made With Power Off. Examine all controller and selector relays, switches, contactors, control circuit rectifiers, transformers, capacitors, resistors, vacuum tubes, printed circuit boards, etc.

(1) Note any excessively worn or burned contacts, broken connectors, or broken or cracked resistance grids or resistance tubes.

(2) Note proper fuse type and rating. No fuses should be bypassed or shorted.

(3) Check

(-a) for jumper wires or temporary wiring changes

(-b) whether the equipment is clean

(-c) any accumulation of combustible materials, especially on resistance grids or wires or on control circuit rectifiers

(-d) whether contacts of reverse-phase relay, where provided, are open

(-e) excessively worn hinge pins and shunt wiring on relays or contactors

(-f) mechanical interlock between relays

(-g) visually for blocked relays or circuits defeated by any other means and ensure that there is no evidence of a safety device being rendered inoperative

(-h) any accumulation of electrically conductive materials

(4) Verify that jumpers are not stored in the hoistway, machine room, machine space, control room, control space, or pit.

(5) Check that signage is legible and maintained. For material lifts subject to NFPA 70 and CSA 22.1 where power is supplied from more than one source, check for warning signs.

(6) Check that all "no touch" shields (barriers) and guards, where provided, are in place and not damaged.

(b) Inspection Made With Power On. Observe the operation of the control equipment when the material lift is run in each direction. Note any arcing of contacts, excessive heating of coils or resistance, and misalignment of relays, contactors, and switches.

18.12.1.2 Hydraulic Material Lifts. Hydraulic material lifts require a reverse-phase relay or other means to prevent overheating in the event of a phase failure or reversal. If a reverse-phase relay is not provided, a low-oil timer, line starters with phase protection, rotation sensors, and thermistors in motor and oil, etc., may be used to meet the requirement to prevent overheating in the event of a phase reversal and/or failure. The condition of the control provided should be checked.

18.12.2 Periodic Test

18.12.3 Acceptance

Check that sufficient clear working space has been provided around control panels and disconnecting means, to provide safe and convenient access to all live parts of the equipment necessary for maintenance and adjustment. Verify compliance with CAN/CSA B44.1/ASME A17.5 by the certification label issued by an independent testing laboratory.

18.12.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.12 and 7.6.8.

NFPA 70.

CSA 22.1.

ITEM 18.13
GOVERNOR

18.13.1 Periodic Inspection

(a) Examine governor fastening bolts to verify that the governor is securely fastened in place and that the governor rope is free of the governor jaws or other obstructions.

(b) Examine all linkages, gears, pins, collars, bushings, and latches that are used to connect the weights and the rope-gripping devices for evidence of excessive wear and lost motion, and note whether all bearings and rubbing surfaces are not restricted by paint or other foreign substances.

(c) Manually lift the weights or flyballs and note whether all moving parts, including the governor-rope jaws, operate freely and that there is ample room for the rotation of governor weight or flyballs in their extreme extended position. Check all parts of the governor for lubrication.

(d) Examine rope gripping surfaces.

(e) Check that the proper type of rope, identified on the governor marking plate, has been installed.

(f) Where the governor is provided with a speed reducing switch and/or an overspeed (stopping) switch, determine by manually operating the governor mechanism, whether these switches operate.

(g) Verify that means of adjusting tripping speed and pull-through force are sealed.

(h) Where special or unique methods are required to test the governor, refer to the On-Site Documentation in jurisdiction enforcing the ASME A17.1-2013/CSA B44-13 or later editions.

18.13.2 Periodic Test

(a) Category 1 Test of Governor. Make a general examination of the governor-rope system, including the condition of the governor, governor rope, governor-rope tension sheave assembly, and releasing carrier. Check that the proper type of rope, identified on the governor-marking plate, has been installed. Where special or unique methods are required to test the governor, refer to the On-Site Documentation in jurisdiction enforcing the ASME A17.1-2013/CSA B44-13 or later editions.

(1) Inspection With Power Off. With the mainline switch in the open position, inspect governors by a manual extension of the governor weights to make sure there is no restriction of motion and verify that all parts, including the rope gripping jaws, operate freely. Check all bearings, pins, governor-rope grip jaws, and rubbing surfaces to make sure they are not worn excessively and are properly lubricated and free of paint.

(2) Inspection Made With Power On. Have the governor overspeed (stopping) switch opened, where provided, and check to be sure that the material lift cannot be operated. Have the governor switch reset, and have the car operated at normal speed in each direction and note

(-a) any tendency of the governor rope to slide on the sheave groove when the car is started or stopped

(-b) any eccentric or lateral motion of the governor sheave

(-c) whether the rope runs free of the jaws at all times

(3) Adjustment Means Seal. A test of the governor-tripping speed is not required unless the seal on the governor has been disturbed or the inspection indicates that for other reasons a test is necessary. Verify that if a test is made, the governor is sealed and tagged after the test.

(b) Category 5 Test. Where special or unique methods are required to test the governor, refer to the On-Site Documentation in jurisdiction enforcing the ASME A17.1-2013/CSA B44-13 or later editions. After the car and counterweight guide shoes, safety parts, and governors have been inspected, check as follows:

(1) Determine the acceptable range of tripping speed of the governor using Table 2.13.2.1-1 based on the rated speed. Also, the tripping speed should be stamped on the governor marking plate.

(2) Have the governor rope removed from the sheave. Arrange to spin the governor and measure the speed with a tachometer to determine if the trip speed matches the acceptable tripping speed as determined from Table 2.13.2.1-1. When testing ensure the sheave is free to rotate with no obstruction by the governor rope.

(3) If any adjustments are made, be sure the locknuts are tight and install a new seal. Retest as outlined above and record the tripping speed.

(4) Check the tripping speed of the governor switches using the same procedure. Table 2.13.2.1-1 may be used except that when applied to material lifts, overspeed switches are only required for rated speeds of 1 m/s (200 fpm) and higher. Verify that for rated speeds up to and including 2.5 m/s (500 fpm) the over speed switch is set to 90% of governor tripping speed. For rated speeds above 2.5 m/s (500 fpm), verify the overspeed switch trips at 95% of tripping speed. The overspeed switch may be set to 100% of governor tripping speed, so long as a speed reducing switch is provided. If a speed reducing switch is provided, check that the speed reducing switch is set to the requirements of the overspeed switch as if a speed-reducing switch had not been provided.

NOTE: If a material lift, for any reason, is running below the rated speed, verify the governor calibration is based on the rated speed.

(5) For governors designed to work with Type B safeties, check the force necessary to pull the governor rope through the governor. In no case may the pull-through force exceed one-fifth of the rated ultimate strength of the governor rope and in no case less than 67% greater than the force necessary to activate the safeties. After this test, perform the following three steps:

Step 1. Carefully inspect the governor rope at the point of connection to assure that it has not been damaged.

Step 2. Restore the governor release carrier.

Step 3. Reset and inspect the governor.

(6) Ensure the governor has been sealed and tagged.

18.13.3 Acceptance

Check the governor marking plate to determine that it is marked with size, material, and construction of the governor rope used and the governor-tripping speed. Verify that a governor rope tag has been installed and that it contains the necessary information. Use the process specified in 18.13.2(b).

For Type A material lifts only installed under the ASME A17.1-2007/CSA B44-07 and later editions, where a governor has been installed in the hoistway, ensure that there is a means of access to the governor from outside the hoistway. If the means of access to the governor is from inside the hoistway, verify that a means to secure the car from movement is provided, that sign is posted at the governor stating, "SECURE CAR AGAINST MOVEMENT BEFORE SERVICING THE GOVERNOR" and that a means is provided to trip the governor from outside the hoistway to perform governor and safety testing.

18.13.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirement 7.5.5.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 7.5.5 and 2.7.6.3.4.

ITEM 18.14
CODE DATA PLATE

18.14.1 Periodic Inspection

18.14.2 Periodic Test

18.14.3 Acceptance

Check that the Code Data Plate is installed and that the Code Data Plate is mounted on the controller, inside the controller such that it is in plain view when the controller door is open, or the main line disconnect. Verify that the data on the plates correctly corresponds to the equipment installed.

18.14.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 8.9.

ITEM 18.15
OVERHEAD BEAM AND FASTENINGS

18.15.1 Periodic Inspection

18.15.2 Periodic Test

18.15.3 Acceptance

For Type A material lifts and Type B material lifts installed to the ASME A17.1-2007/CSA B44-07 and later editions, examine machine and sheave beam supports and fastenings. Record the dimensions and span of beams and check them against manufacturer's recommended installation procedures.

18.15.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.11.

ITEM 18.16
DRIVE MACHINE BRAKE

18.16.1 Periodic Inspection

(a) Electric Material Lifts: Inspection Made With Power On. With the car running observe the operation of the brake. The brake should not chatter. It may apply on or before the completion of the slowdown and leveling operation. Check to see that the brake is automatically applied on or after normal stops. The clearance between the brake shoe and the brake drum when the car is running should not be greater than necessary to permit free running. Examine the brake pins to determine whether they are properly lubricated and not frozen, and that retainers are in place. Note any harsh and abrupt brake action. Examine brake activated contacts, if provided, for proper operation.

(b) Electric Material Lifts: Inspection Made With Power Off

(1) Examine the brake and drum to determine that the brake linings are free of oil and whether there is any scoring of the drum.

(2) If the material lift has been running, the brake drum may be warm but should not be uncomfortable to the touch. A hot drum usually indicates a dragging brake shoe.

18.16.2 Periodic Test

(a) Electric Material Lifts: Category 1 Test (for ASME A17.1-2010/CSA B44-10 and Later Editions). For material lifts installed under ASME A17.1-2000/CSA B44-00 and later editions, have the brake setting verified in accordance with the data on the brake marking plate.

(b) Electric Material Lifts: Category 5 Test (for ASME A17.1-2019/CSA B44-19 and Later Editions). At an upper landing from which the maximum attainable speed in the down direction can be attained with rated load, arrange to have the rated load placed in the car.

(1) Have the car run to the lowest landing by the normal operating means. Confirm that the driving machine will safely lower, stop, and hold the car with this load. After the material lift has stopped, have the main line disconnect means opened and verify that the brake will hold the material lift.

(2) For material lifts installed to ASME A17.1–2010/CSA B44-10 and later editions, in addition to the procedure performed above, have the car run down by the normal operating means and have the safety circuit opened after the car has reached constant speed. It is not recommended that the main line disconnect switch be opened as the means to stop the car due to the possibility of a flashover. Confirm that the braking system safely stops and holds the load.

18.16.3 Acceptance

(a) Perform tests as specified in 18.16.2(b).

(b) Verify that the brake marking plate is permanently attached to the driving machine.

18.16.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.10 and 2.26.8.

ITEM 18.17
TRACTION DRIVE MACHINES AND SHEAVE

18.17.1 Periodic Inspection

Have the material lift operated in each direction, making frequent stops, and observe the operation of the machine. Excessive lubrication of the wire ropes may result in reduced traction. Inspect all machine fastening bolts for tightness. Tractive forces may be noted by observing slippage between ropes and traction sheaves. Note any evidence of lost motion or misalignment of the traction sheaves with other sheaves. Check that the rope height on the sheave is the same for each rope. Uneven rope height indicates possible groove wear. Test traction by operating the empty car in the up direction and stop it by opening the safety circuit.

18.17.2 Periodic Test

Category 5 Test (for ASME A17.1-2019/CSA B44-19 and Later Editions). Slipping traction or drive motor stalling test procedure is as follows:

(a) Verify with the empty car moving in the up direction at inspection speed, the car and hoistway doors in the closed position, the top terminal stopping devices temporarily rendered ineffective, and the counterweight stopped by the buffer that

(1) the hoist ropes slip on the drive machine sheave, or

(2) the driving machine motor stalls

(b) Restore all the top terminal stopping devices to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

(c) Verify with the empty car moving in down direction at inspection speed, car and hoistway doors in the closed position, the bottom terminal stopping devices temporarily rendered ineffective and the car is stopped by the buffer that

(1) the hoist ropes slip on the drive machine sheave, or

(2) the driving machine motor stalls

(d) Restore all the bottom terminal stopping devices to their normal operating condition in conformity with the applicable requirements prior to returning equipment to service.

18.17.3 Acceptance

Check that the sheaves and drums are permanently and legibly marked to state the minimum groove bottom diameter permissible for regrooving and required to maintain structural integrity.

18.17.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.10 and 2.24.

ITEM 18.18
GEARS, BEARINGS, AND FLEXIBLE COUPLINGS

18.18.1 Periodic Inspection — Electric Material Lifts

(a) Inspection Made With Power On

(1) Have the material lift operated in each direction, making frequent stops. Observe if there is any excessive play or backlash in the bearings or gearing. Unusual noise or play is usually an indication of gear or thrust bearing trouble, or damage to bearing liners, rollers, or balls. It may be constructive to run the material lift at inspection speed as well as rated speed to fully observe any deterioration.

(2) Observe through the access covers to determine whether gears are carrying oil and that oil rings, chains, or other methods of feeding lubricant, where used, operate freely.

(b) Inspection Made With Power Off. Verify that when the flexible part of the coupling fails, it will not completely disengage from each unit. Inspect flexible couplings for wear and excess slack.

18.18.2 Periodic Test

Electric Material Lifts. If possible, visually inspect flexible couplings to determine that failure of the flexible element will not result in disengagement.

18.18.3 Acceptance

18.18.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.10.

ITEM 18.19
WINDING DRUM MACHINE

18.19.1 Periodic Inspection

(a) Inspection and Tests — Rope Fastening and Drum

(1) Have the mainline switch opened and examine hoist rope fastenings in the drum.

(2) Note that the required tag indicates that the ropes have been refastened within 12 months for machines located over the hoistway and within 24 months for machines located at the bottom or at the side of the hoistway, except where provided with an auxiliary rope-fastening device.

(3) Visually examine and hammer test the drum for defects or cracks.

(4) Where ropes extend beyond their clamps or sockets, check to see that means have been provided to prevent the rope ends from coming out of the inside of the drum and interfering with other parts of the machine.

(b) Slack Rope Device. Slack rope devices are required on winding drum machines.

NOTE: This is especially important for existing units that have no car door/gate or can run with the car door/gate in the open position.

(1) Inspection Made With Power Off. Determine that there is no interference with free and complete movement of the slack rope device.

(2) Inspection Made With Power On. Have the slack rope device tripped manually and attempt to run the car. Verify that the enclosed contact remains open until manually reset.

(c) Final Terminal Stopping Switch, If Provided. A final terminal stopping switch (stop motion switch) is not required for material lifts. However, if it is provided, inspect it as follows: inspect both the final terminal stopping switches located on and operated by the driving machine (stop motion switch) and the additional stopping switches located in the hoistway and operated by cams attached to the car for condition and operation.

(1) Verify that these final limits directly open all contacts in the power circuit for machines equipped with single- or two-speed AC motors and AC brake coils.

(2) For machines equipped with DC motors and DC brakes, verify that each final limit operates independent relays to remove power from the driving machine and brake.

(3) Verify that the machine stopping switches are not driven by chains, ropes, or belts.

18.19.2 Periodic Test

(a) Machine. With the car resting on its fully compressed buffers, check that at least one turn of rope is remaining on the drum.

(b) Slack Rope Device

(1) Have the car lowered onto suitable blocking in the pit and verify that the resulting slack rope trips the slack rope switch and will stop the car. Verify the contact remains open until manually reset.

(2) For double-belt drum machine, check that the driving belt is shifted to the idler pulley.

(c) Final Limits. Test operation of both final limits (machine limit and limit located in the hoistway operated by cams on the car) by disabling the normal stopping means and normal terminal stopping means. Then run the car to each terminal and verify

(1) that the machine final located on the driving machine, if provided, operates before or coincident with the final limit located in the hoistway

(2) that the final limit located in the hoistway operates before the car contacts the spring buffer

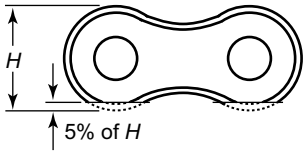
18.19.3 Acceptance

Check that the speed and Code limits of travel are not exceeded and that no counterweight is provided. Verify that the terminal limits will continue to operate, at the bottom, until the car rests on the fully compressed buffer and, at the top, until the car has reached its maximum upward movement.

18.19.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.20.6, 2.20.7, 2.24.2, 7.5.10, 7.5.11, and 8.6.4.10.

Figure 18.20.1-1
Link-Plate Wear



ITEM 18.20
CHAIN DRIVE MACHINE AND DRIVE SPROCKETS

18.20.1 Periodic Inspection

Make sure the chain is cogging correctly on the sprocket and is not trying to climb off the sprocket. Verify a chain data tag has been provided. Check the teeth of the sprocket for excessive wear or broken teeth. Check the sprocket connection to shafts and mounting for loose bolts, missing keys, broken splines, or other.

Examine all components of the chain including, but not limited to, the links, pins, and rollers. Look for bent components, corrosion, cracks, and wear. Chains with corrosion or cracked or bent components should be replaced. If the wear on the link plates is 5% or greater of the height, *H*, the chain should be replaced. Check the chain for elongation. If the elongation of the chain is 3% or greater, the chain should be replaced. See Figure 18.20.1-1.

18.20.2 Periodic Test

18.20.3 Acceptance

Verify a chain data tag has been provided.

18.20.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.6.

ITEM 18.21
(RESERVED)

ITEM 18.22
(RESERVED)

ITEM 18.23
(RESERVED)

ITEM 18.24
SECONDARY AND DEFLECTOR SHEAVES OR SPROCKETS

18.24.1 Periodic Inspection

Examine the overhead secondary and deflector sheaves and test them with light blows from a small hammer. If the sound resulting from the blows is dull and flat, unlike the ring given by sound metal, sheave parts should be examined carefully for cracks.

Examine the sheaves for worn grooves and determine whether all ropes seat to the same depth in the grooves. Look for evidence of any misalignment of sheaves. Determine whether bearing bolts are secure. Inspect sheave shafts and bearings for wear and other defects. Determine whether the shafts and bearings are adequately lubricated.

18.24.2 Periodic Test

18.24.3 Acceptance

Check and record the results for conformity to approved drawings and specifications, the diameter of drums, overhead sheaves, and secondary sheaves.

18.24.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.10.

ITEM 18.25
ROPE AND CHAIN FASTENINGS

18.25.1 Periodic Inspection

(a) Rope. Determine that all lock nuts and cotter pins are in place. Verify the data shown on the rope data tag attached to one of the wire rope fastenings. Verify the size of the wedge and the body of the shackle housing are matched.

(b) Chain. Check that any master links are correctly installed in roller chain and that the locking clip is correctly positioned and secured. Verify that any removable link pins are secured in place and that locking features are used to protect against pin rotation.

18.25.2 Periodic Test

18.25.3 Acceptance

18.25.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.6.

ITEM 18.26
TERMINAL STOPPING DEVICES

18.26.1 Periodic Inspection — Electric Material Lifts

(a) Normal Terminal Stopping Devices — Machine Room. In some cases, the normal terminal stopping switches are located in the machine room and operated by a rope, tape, or chain attached to the car. Examine these switches for alignment, fastening, cleanliness, and general condition of operation mechanisms.

(b) Normal Terminal Stopping Devices — Hoistway. See Item 19.4.

18.26.2 Periodic Test

See 19.4.2.

18.26.3 Acceptance

The person or firm installing or maintaining the material lift should check normal terminal device as follows:

(a) If provided, have the normal stopping means render inoperative.

(b) Have the car run into the bottom terminal and verify that the car slows down and stops at or near the bottom terminal.

(c) Repeat the above test at the top terminal.

(d) If provided, restore the normal stopping means.

(e) Check normal material lift operation.

18.26.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.11.

ITEM 18.27
CAR AND COUNTERWEIGHT SAFETIES

18.27.1 Periodic Inspection

See Item 21.8.

18.27.2 Periodic Test

Examine the car and counterweight guide shoes and their fastenings to determine that they are properly secured, aligned, and adjusted. Check the gibs or rollers for excessive wear. Verify that the clearance between the guide rail and each rail gripping face of the safety parts is approximately equal. Have the car safeties tested with rated load in the car. Have the counterweight safeties tested with an empty car. Make sure the gripping face of the safety does not drag on the rail while in the resting position regardless of load. After the safety has been inspected, position the car or counterweight in the lower portion of the hoistway.

(a) If a speed governor is provided for safety operation, have the persons performing the test render ineffective the switches on the governor and safety that would prevent a full setting of the safety. Have the car or counterweight, whichever is being tested, started in the down direction while holding up the brake and have the persons performing the test trip the governor by hand. Continue running down with the brake lifted, until the drive machine stalls or drives through the hoisting ropes. Have the persons performing the test open the main line disconnect switch and remove jumpers. Next, visually inspect safeties to see if they have been equally applied.

(1) For Category 1 Tests (annual), perform the previous test without load at inspection speed.

(2) For Category 5 Tests (5 yr), perform the previous test with rated load and trip the governor at rated speed. Ensure load is evenly distributed across the platform.

(b) On counterweighted and non-counterweighted material lifts equipped with a slack rope type safety, have the car or counterweight lowered on to vertically placed wood block substantial enough to carry the load and create a slack rope condition.

NOTE: A hydraulic jack or similar device may be used in place of wood blocking provided it can be released from outside the hoistway.

With the ropes slack and power removed from the machine, have the persons performing the test use the rod or similar object to dislodge the blocking from the underside of the car being sure to stay clear and to the outside of the hoistway. The car or counterweight is securely set on the safeties. With the safeties set, restore power to the controller and verify the removal of power to the motor and brake.

(1) For Category 1 Tests (annual), perform the previous test as described without load on the platform.

(2) For Category 5 Tests (5 yr), perform the previous test as described with rated load on the platform. Ensure load is evenly distributed across the platform.

To release safeties, have the persons performing the test move the car or counterweight up, whichever is being tested. Once the safeties have been released, examine all parts to determine that they have returned to their normal operating positions. Inspect the guide rails to determine if the scoring on the rails is equal. Dress any scoring on the rails after the visual inspection.

Refer to 2.29.2 for additional detail.

18.27.3 Acceptance

18.27.3.1 Electric Material Lifts

(a) Test Type A governor-operated safeties in the same manner as described in 18.27.2(a) for Category 5 Testing by operating the car at its normal speed in the down direction with rated load and manually tripping the governor jaws. Also, test the inertia application of safety. Arrange to test Type A safeties without governors that are operated because of the breaking or slackening of the hoisting ropes by obtaining the necessary slack rope to cause them to function (see 18.27.2).

(b) Type B and Type C safeties on electric material lifts are tested as outlined in 18.27.2(a) except they are to be subject to overspeed tests instead of a manual trip of the governor. Gradually increase the speed of the car until the governor causes application of the safety. Determine whether the stopping distance is in compliance with the maximum and minimum slide distances allowed. On material lifts equipped with AC driving machine motors, where the car with its rated load does not cause sufficient overspeed when the machine brake is released to trip the governor jaws, test the safeties by operating the car at its normal speed in the down direction and manually tripping the governor jaw.

(c) Where counterweight safeties are provided, test them with no load in the car.

18.27.3.2 Hydraulic Material Lifts

(a) Test Type A governor-operated safeties in the same manner as described in 18.27.2(a) for Category 5 Testing by having the car operated at its normal speed in the down direction with rated load and manually tripping the governor jaws. Also, test the inertia application of safety. Arrange to test Type A safeties without governors that are operated because of the breaking or slackening of the hoisting ropes obtaining the necessary slack rope to cause them to function (see 18.27.2).

(b) Type B and Type C safeties on hydraulic material lifts are tested as outlined in 18.27.2(a). Determine whether the stopping distance is in compliance with the maximum and minimum slide distances allowed. On material lifts equipped with AC driving machine motors, where the car with its rated load does not cause sufficient overspeed when the machine brake is released to trip the governor jaws, test the safeties by operating the car at its normal speed in the down direction and manually tripping the governor jaw.

For hydraulic material lifts with governor-applied safeties, determine that the stopping distance is in compliance with the maximum and minimum slide distances allowed.

18.27.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.4.

ITEM 18.28
HYDRAULIC POWER UNIT

18.28.1 Periodic Inspection

Have the material lift operated in the up direction, making several starts and stops and observe the operation of the motor, pump, and drive. Check for excessive noise, misalignment, and loose mounting. With the car at the top landing, verify the hydraulic fluid level for operation with the supplied fluid level measuring device. Listen for pump cavitation due to partially plugged fluid lines or strainer.

18.28.2 Periodic Test

18.28.3 Acceptance

18.28.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.3.

ITEM 18.29
RELIEF VALVES

18.29.1 Periodic Inspection

Examine the relief valve and verify that it is sealed to prevent tampering. If the means of sealing the valve is not intact, test adjustment and have it sealed.

18.29.2 Periodic Test

18.29.3 Acceptance

Check the working pressure given on the material lift layout drawing with that on the data plate. Have the persons performing the test install a pressure gauge in the system or use the gauge supplied by the manufacturer and run the car up at rated speed with rated load. Verify the working pressure indicated on the gauge is within the range provided on the data plate. Have the persons performing the test, test the relief valve by inching the car at slow speed against the stop ring, then cause the controls to attempt to run the car at full speed and read the gauge. Verify the full output of the pump bypasses at a gauge reading 150% or less of the working pressure. After the test, have the means of adjustment sealed and check the car for proper operation and visually inspect the system for leaks.

18.29.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.4.

ITEM 18.30
CONTROL VALVE

18.30.1 Periodic Inspection

Inspect the valves for leaks. If equipped with a manual lowering valve (Type A material lifts) ensure that the valve is identified. Use the manual lowering valve to test the anticreep. With the power on, have the valve opened. Before or when the car reaches 25 mm (1 in.) below the floor, the pump should start and level up to or within 25 mm (1 in.) of floor level. Quickly close the manual lowering valve when the pump starts. See Item 19.6 for anticreep testing of lifts not equipped with a manual lowering valve (Type B material lifts).

18.30.2 Periodic Test

18.30.3 Acceptance

Check the valves, fittings, and interconnecting piping for pressure rating, leakage, adequate support, and applicable certification.

18.30.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.4.

ITEM 18.31
TANKS

18.31.1 Periodic Inspection

Visually inspect the tank for defects such as leaks, corrosion, damage, and cover to prevent entrance of foreign materials.

(a) Have the car moved to the top landing and check the hydraulic fluid level. While the car is moving up, listen for sounds that may indicate cavitation or obstructed strainers. The liquid should be above the minimum level indicated.

(b) Observe drip pans for excess accumulation of hydraulic fluid that leaked from the system.

18.31.2 Periodic Test

From the machine room have the car inched up at slow speed until the stop ring is engaged. Then operate the system at rated speed to provide full relief valve bypass pressure for 30 s. While under pressure, observe the hoses in or on the tank for any signs of leakage, slippage of hose fittings, damage to outer hose covering, bulging, or distortion of the hose body. Any of these signs require replacement of the hose.

18.31.3 Acceptance

Note whether the tank is covered to prevent entrance of foreign material and is suitably vented to the atmosphere. Verify that a means for indicating the permissible minimum and maximum liquid level is provided. Check for any damage that may have resulted from handling and installation. For Type B material lifts, check that the hydraulic machine and tanks are enclosed and access is through a panel or door that is normally locked.

18.31.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.6.

ITEM 18.32
FLEXIBLE HYDRAULIC HOSE AND FITTING ASSEMBLIES

18.32.1 Periodic Inspection

Visually examine flexible hydraulic hoses, fitting assemblies, and flexible couplings for evidence of leakage, slippage of hose fittings, and damage to outer hose covering sufficient to expose reinforcement or cause distortion or bulging of hose body. Such damage will warrant further test. Check hose and fitting assemblies for proper identification and permanent marking and replacement date. Verify that hoses have been replaced if more than 6 yr has elapsed since their installation or if there is no recorded installation date.

18.32.2 Periodic Test

18.32.2.1 Hydraulic Material Lifts: Category 1 Test. From the machine room, have the car inched up at slow speed until the stop ring is engaged. Then operate the system at rated speed to provide full relief valve bypass pressure for 30 s. While under pressure, observe the hose for any signs of leakage, slippage of hose fittings, damage to outer hose covering, bulging, or distortion of the hose body. Any of these signs require replacement of the hose. Have a metal tag attached to the hose in a permanent manner indicating the date of the test and the name of the person or firm that performed the test.

18.32.3 Acceptance

Visually examine flexible hydraulic hoses and check that the hose has the proper rating identification in relationship to the working pressure. Ensure that the hose is appropriately and permanently marked with the manufacturer, the type of hose and fittings installed, the minimum factory test pressure, the minimum bending

radius of the hose, the date of installation, the inspection procedure, and the name of the material lift contractor.

NOTE: For material lifts, hoses can be installed through walls. Verify they are removable and accessible for the entire length including the portion through the wall.

18.32.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.6.4.1 and 8.6.5.6.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.6.4.1, 8.6.5.6, and 8.6.5.14.4.

ITEM 18.33
SUPPLY LINE AND SHUTOFF VALVE

18.33.1 Periodic Inspection

Inspect the supply line between the cylinder and the pumping unit for leaks, adequate support, vibration, or other evidence of damage. A careful examination of the piping and fittings will indicate if a replacement has been made that does not match the rest of the system. In such cases, the replacement part pressure rating should be checked by examining the rating supplied by the manufacturer. Also, inspect the piping for support to prevent undue stress due to weight of pipe or other equipment.

Check fittings for absence of corrosion, leaks, and evidence of excessive vibration. On grooved fittings, check that the housing segments are bolt pad to bolt pad, that coupling keys are in the pipe groove, that bolt heads are seated and nuts are tight.

Inspect the manual shutoff valve in the machine room for condition and leaks.

18.33.2 Periodic Test

18.33.3 Acceptance

Inspect the supply line between the cylinder and the pumping unit for adequate support or evidence of any damage and verify that they are installed so as to permit disassembly and inspection of components. Shutoff valves are to be located outside the hoistway adjacent to the hydraulic machine. Where the hydraulic machine is located in the hoistway, the shutoff valve is permitted to be located inside the hoistway provided it is accessible from outside the hoistway to elevator personnel only. Verify that the manufacturer's pressure rating of the supply line and fittings are greater than the working pressure indicated on the data plate.

18.33.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.4.

ITEM 18.34
HYDRAULIC CYLINDERS

18.34.1 Periodic Inspection

18.34.2 Periodic Test

Category 1 Test. This test should be performed after the relief valve test in Item 18.29 and the flexible hose examination in Item 18.32. If the cylinders cannot be visually inspected, arrange to have them tested in the following manner with no load in the car. Mark the location of the car at any convenient position. Have the shutoff valve closed. Have the disconnect switch opened for 15 min. Note the position of the car platform with respect to the reference mark. A change in position that cannot be accounted for by visible oil leakage, valve leakage, or temperature change of the oil indicates a leak of the cylinder or in the underground piping and a need for further investigation.

18.34.3 Acceptance

18.34.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.6.3 and 3.18.

ITEM 18.35
PRESSURE SWITCH

18.35.1 Periodic Inspection

A pressure switch is required if the top of the cylinder is above the storage tank. This switch is to prevent operation of the valves if there is no pressure in the line between the down valve and cylinder. Visually inspect for condition and damage.

18.35.2 Periodic Test

18.35.2.1 Category 1 Test. Where a pressure switch is required to prevent operation of the valves, if there is no pressure in the line between the down valve and cylinder, have the persons performing the test place the car at the top landing and simulate an indication of low pressure from the pressure switch. Have the persons performing the test try to run the car in the down direction. Verify the car will not run by normal means. Have the persons performing the test open the main line disconnect and connect a circuit continuity tester, such as an ohm meter, across the pressure switch. Have the persons performing the test lower the car to the pit with the manual lowering valve. Check that the ohmmeter indicates that the pressure switch senses low pressure when the car comes to rest on the buffer.

18.35.3 Acceptance

See 18.35.2.

18.35.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.6.8 and 3.26.8.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.6.8.4 and 3.26.8.

ITEM 18.36
LOW OIL PROTECTION

18.36.1 Periodic Inspection

18.36.2 Periodic Test

18.36.2.1 Type A Material Lifts. Check that a means is provided to detect when the liquid level in the tank falls below the minimum required for the car to reach the topmost landing. Verify that when activated, the car will automatically travel to the lowest landing, cycle power-operated doors, and then shut down. Also, verify that the in-car door open button (where provided) remains operative.

18.36.2.2 Type B Material Lifts. Check that a means is provided to detect when the liquid level in the tank falls below the minimum required for the car to reach the topmost landing. Verify that when activated, the pump will not run, and that continuous pressure operation continues to function in the down direction only. Check that a manual reset of the device is required before the device will be allowed to function in the up direction.

18.36.3 Acceptance

18.36.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.6.8, and 3.26.9.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.6.8.4, 7.6.8.5, and 3.26.9.

ITEM 18.37
MAINTENANCE RECORDS

See Item 2.40.

ITEM 18.38
CONTROLS FOR HYDRAULIC AND ROPE OR CHAIN HYDRAULIC MATERIAL LIFTS

18.38.1 Periodic Inspection

18.38.2 Periodic Test

18.38.3 Acceptance

Have the person or firm installing or maintaining a material lift employing hydraulic operation demonstrate conformance with the Code as follows:

(a) If in the up direction, the pump motor is the only control means, run the car and demonstrate that there are two devices provided to remove power independently from the pump motor. Check that at least one device is an electromechanical contactor.

(b) If in the up direction, the pump motor is one control means and there is a second control means (e.g., a valve), run the car and demonstrate that a device is provided to remove power independently from each control means. Check that at least one device is an electromechanical contactor or relay.

(c) Prevent the above electromechanical contactor or relay from being energized and register a call. Demonstrate, with the doors closed, that the car will not move.

(d) Demonstrate that the operation of the devices specified in (a) and (b) will remove power from each control means.

18.38.4 References

ASME A17.1-2007/CSA B44-07 — Requirements 3.26.6.3 and 7.6.8.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 3.26.6.3 and 7.6.8.3.

Part 19
Material Lift — Top of Car

(23)

Inspectors are cautioned not to get on the car top unless it is intended and equipped for top-of-car inspection. Note that Type B material lifts are not required to have car tops.

ITEM 19.1
TOP-OF-CAR STOP SWITCH

19.1.1 Periodic Inspection

Where provided or required, check the top-of-car stop switch in both directions to ensure it is functioning properly before proceeding with the inspection.

19.1.2 Periodic Test

19.1.3 Acceptance

For Type A material lifts, verify that a top of car stop switch is provided with the top of car inspection station.

For Type B material lifts, verify that a top of car stop switch is provided any time a lift is provided with a car top.

19.1.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2008/CSA B44-07 — Requirements 7.5.12.1 and 7.5.12.2.7.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.5.12.1 and 7.5.12.2.8.

ITEM 19.2
TOP-OF-CAR OPERATING DEVICE — TYPE A MANDATORY, TYPE B OPTIONAL

19.2.1 Periodic Inspection

Check the top-of-car operating device for proper operation.

19.2.2 Periodic Test

19.2.3 Acceptance

Confirm that top-of-car inspection operation has priority over in-car inspection operation.

19.2.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.12.

ITEM 19.3
TOP-OF-CAR CLEARANCE

19.3.1 Periodic Inspection

19.3.2 Periodic Test

19.3.3 Acceptance

(a) Measure and record the top car and counterweight clearances.

(b) For a Type A material lift and Type B material lifts equipped with a car top, if the vertical clearance on the top of the car is less than 1 070 mm (42 in.) when the car has reached its maximum upward movement, verify that a stopping device is provided and is functional when the car is under the control of the top-of-car operating device. The device is to be located in the hoistway and maintain the minimum vertical distance of 1 070 mm (42 in.).

(c) Verify that the minimum clearance for Type B material lifts without a car top when the platform is at the top landing is

(1) 600 mm (24 in.) over the highest anticipated load

(2) 2 000 mm (79 in.) over the empty platform

(d) For Type A material lifts installed to the ASME A17.1-2010/CSA B44-10 or later editions, where the driving drive machine brake, emergency brake, motion controllers, or motor controllers are located in the hoistway and are inspected or maintained from inside the car or from the car top, verify that a means to prevent uncontrolled and unexpected vertical car movement that poses a hazard to maintenance and inspection personnel is provided.

19.3.4 References

ASME A17.1- 2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirement 7.4.6.

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.4.6 and 7.4.9.3.

ITEM 19.4
NORMAL AND FINAL TERMINAL STOPPING DEVICE

19.4.1 Periodic Inspection

(a) Normal Terminal Stopping Devices — Hoistway. Where the normal terminal stopping switches are located in the hoistway or mounted on the car, examine the switches to ensure that they move freely, that they align with its mating actuating cam, and that they will stop the car in one direction, but allow travel away in the opposite direction depending on whether it is a Top Normal or Bottom Normal Terminal Stopping Device.

(b) Final Terminal Stopping Devices — Hoistway. These devices will always be mounted in the hoistway. Ensure that the switches move freely. Ensure that they align with their mating cam. Verify the switches stop the car and not allow it to move in either direction until the switch is released. Ensure that the Final Terminal Stopping Device does not activate before the Normal Terminal Stopping Device.

In addition to (a) and (b), also determine the condition of the limit switch rollers. A reduction of the effective roller diameter due to either wear or loss of the rollers or any roller components may interfere with or prevent proper switch operation. The combination of excessively worn guide shoes and limit switch rollers may cause cars to overrun their terminals.

19.4.2 Periodic Test

See 19.4.3.

19.4.3 Acceptance

Normal terminal stopping devices are usually located in the hoistway, but they may be located in the machine room and mechanically connected to and driven by the car.

Determine that the car will stop at or near the terminal landing once the normal terminal stopping device is activated while in normal operation. When no car top inspection station is provided, the following procedure can be used. See Item 19.2.

The person or firm installing or maintaining the material lift should check normal terminal device as follows:

(a) If provided, render inoperative the normal stopping means.

(b) Run the car at contract speed, into the bottom terminal and verify that the car slows down and stops at or near the bottom terminal.

(c) Repeat the above test at the top terminal.

(d) If provided, restore the normal stopping means.

(e) Check normal material lift operation.

Ensure that the normal stopping means is disabled when testing the normal terminal stopping device. Verify that the car will move in the opposite direction when the normal terminal stopping device is activated at each end of the hoistway.

Verify that the stopping switches, vanes, cams, switch rollers, magnets, etc., as applicable are in the correct alignment and securely fastened. The alignment of the bottom terminal stopping device can be checked by stopping the car near the bottom terminal and sighting the alignment of the cam and switch roller. Verify that switch roller will strike the bevel of the cam.

19.4.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.11 and 7.6.7.

ITEM 19.5
FINAL TERMINAL STOPPING AND TERMINAL SPEED REDUCING DEVICES

Type A material lifts require final terminal stopping devices. Type B material lifts require mechanical limits that will stop the car within 100 mm (4 in.) of the normal terminal stopping device. Where a mechanical limit at the top of travel cannot be provided because of the design of the hoisting machine, a final terminal stopping device is required.

19.5.1 Periodic Inspection

Observe caution if the top car clearance is limited. Run the car to the top of its travel at inspection speed and examine the final terminal stopping device.

(a) Verify that upper final terminal stopping device is located as close to the terminal landing as possible without interfering with the normal terminal stopping device, but actuates before the car strikes the overhead.

(b) Check the fastening and alignment of the switch and cam. Move the car up. The switch roller should strike the bevel surface of the cam. If properly located and adjusted, the roller will center laterally on the cam, assuring free motion of the roller arm and positive opening of the switch contact without damaging the switch.

19.5.2 Periodic Test

19.5.3 Acceptance

Verify the bottom final terminal stopping device will stop a car in down direction at no load at rated speed. Verify that both the top and bottom final terminal stopping devices are set to stop the car after it travels past the normal terminal stopping device and before an obstruction is struck.

When no car top inspection station is provided the following procedure can be used. The person or firm installing or maintaining the material lift should check final terminal device as follows:

(a) If provided, have the normal stopping means and normal terminal stopping means rendered inoperative.

(b) Run the car into the bottom terminal and verify that the car slows down and stops after passing the normal terminal stopping device.

(c) Repeat the above test at the top terminal.

(d) If provided, restore the normal stopping means and the normal terminal stopping means.

(e) Check normal material lift operation.

19.5.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.11.

ITEM 19.6
CAR LEVELING AND ANTICREEP DEVICES

Type A material lifts are required to stop within 13 mm (0.5 in.) of the landing on the initial stop and to relevel if the vertical distance exceeds 25 mm (1 in.) while loading or unloading. Type B material lifts are not required to meet this leveling requirement. All hydraulic material lifts require anticreep devices.

19.6.1 Periodic Inspection

19.6.2 Periodic Test

19.6.3 Acceptance

Type B material lifts installed to the ASME A17.1-2010/CSA B44-10 and later editions are restricted to a leveling zone that is not more than 75 mm (3 in.) above and below any landing. Leveling is only permitted when a car apron is provided.

19.6.3.1 Electric Material Lifts Examine fastenings and clearances of the car leveling device, including cams and vanes located in the hoistway.

Verify that Type A material lifts meet the leveling requirement and stop within 13 mm (0.5 in.) of the landing on the initial stop and relevel if this distance exceeds 25 mm (1 in.).

19.6.3.2 Hydraulic Material Lifts Examine fastenings and clearances of the car leveling device, including cams and vanes located in the hoistway.

Observe that the anticreep device keeps the car to within 25 mm (1 in.) of the floor level. Verify that the anticreep device remains operational regardless of car or hoistway door position, hinged car platform sill position and broke rope, tape, or chain switches on normal stopping devices when such devices are located in the machine room, machinery space, or overhead space.

19.6.4 References

ASME A17.1-2000/CSA B44-00 — Requirements 7.5.12.1.5, 7.5.12.2, 7.6.8, 2.26.1.6, 2.26.11, and 3.26.3.

ASME A17.1-2004/CSA B44-04 through ASME A17.1-2007/CSA B44-07 — Requirements 7.5.12.1.4, 7.5.12.2, 7.6.8, 2.26.1.6, 2.26.11, and 3.26.3.

ASME A17.1-2010/CSA B44-10 through ASME A17.1-2013/CSA B44-13 — Requirements 7.5.12.1.4, 7.5.12.2.5, 7.6.8.2, 2.26.1.6, 2.26.11, and 3.26.3.

ASME A17.1-2016/CSA B44-16 and later editions — Requirements 7.5.12.1.5, 7.5.12.2.5, 7.6.8.2, 2.26.1.6, 2.26.11, and 3.26.3.

ITEM 19.7
HOISTWAY CONSTRUCTION

19.7.1 Periodic Inspection

19.7.2 Periodic Test

19.7.3 Acceptance

Determine if the hoistway enclosure conforms to the building code requirements. Inspect the hoistway for substantially flush construction and ensure all projection or recesses are properly beveled or protected. Examine the open work hoistways for Type B material lifts and verify they reject a 25 mm (1 in.) ball. Where the hoistway for a Type B material lift is not fully enclosed at the top landing, verify that no part of the top landing enclosure is lower than the platform enclosure when the platform is at the top landing.

19.7.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.3.

ITEM 19.8
PIPES, WIRING, AND DUCTS

19.8.1 Periodic Inspection

19.8.2 Periodic Test

19.8.3 Acceptance

Verify that there are no pipes conveying steam, gas, or liquids installed in the hoistway. Where sprinklers are provided, check that sprinkler risers and returns have been located outside the hoistway.

19.8.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.10.

ITEM 19.9
WINDOWS, PROJECTIONS, RECESSES, AND SETBACKS

19.9.1 Periodic Inspection

19.9.2 Periodic Test

19.9.3 Acceptance

(a) Hoistway Windows. Windows in hoistways are only permitted in jurisdictions enforcing the NBCC. Where windows are permitted, verify they are in compliance with the local building code.

(b) Projections, Recesses, and Setbacks. Verify that any projections, recesses, and setbacks greater than 100 mm (4 in.) are appropriately beveled and if necessary braced. Check that on Type B material lifts, projections on the access side greater than 6 mm (0.25 in) are beveled.

(c) Door Recesses on Type B Material Lifts. Verify that on doors recessed more than 15 mm (0.6 in.) on Type B material lifts the header is beveled.

19.9.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.1.6 and 7.4.7.

ITEM 19.10
HOISTWAY CLEARANCE

19.10.1 Periodic Inspection

19.10.2 Periodic Test

19.10.3 Acceptance

Verify that the horizontal dimensions and clearances are within applicable Code requirements.

19.10.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.4.7 and 2.5.

ITEM 19.11
MULTIPLE HOISTWAYS

19.11.1 Periodic Inspection

19.11.2 Periodic Test

19.11.3 Acceptance

Verify multiple hoistways are constructed in compliance with ASME A17.1/CSA B44, 7.4.3 and 7.4.7 and the applicable building code. Measure the running clearance between cars including equipment attached to the car.

19.11.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.4.3 and 7.4.7.

ITEM 19.12
TRAVELING CABLES AND JUNCTION BOXES

19.12.1 Periodic Inspection

19.12.2 Periodic Test

19.12.3 Acceptance

Verify that traveling cables are properly installed, supported, and protected against damage.

19.12.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.12 and 2.26.4.

CSA C22.1.

NFPA 70.

ITEM 19.13
DOOR AND GATE EQUIPMENT

19.13.1 Periodic Inspection

19.13.2 Periodic Test

19.13.3 Acceptance

Verify that the hoistway doors meet the requirements of the Code. Check that the interlocks or combination mechanical locks and electric contacts and car door or gate electric contacts are labeled properly as a listed/certified device. Type B material lifts installed to the ASME A17.1-2010/CSA B44-10 and later are not permitted to have combination mechanical locks and electric contacts.

19.13.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.4.13 and 7.4.14.

ITEM 19.14
CAR FRAME AND STILES

19.14.1 Periodic Inspection

19.14.2 Periodic Test

19.14.3 Acceptance

Determine through visual inspection that no cracks exist in the stiles or car frame.

19.14.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.2.

ITEM 19.15
GUIDE RAIL FASTENING AND EQUIPMENT

19.15.1 Periodic Inspection

19.15.2 Periodic Test

19.15.3 Acceptance

Determine through visual inspection that the guide rails are adequately fastened to the structure. Verify that the guiding means are properly engaged in the guide rails.

19.15.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.9.

ITEM 19.16
GOVERNOR ROPE

19.16.1 Periodic Inspection

19.16.2 Periodic Test

19.16.3 Acceptance

If a governor has been provided, verify that the governor rope is the proper material and correct size as recorded on the governor rope tag.

19.16.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.5.

ITEM 19.17
WIRE ROPE OR CHAIN FASTENING AND HITCH PLATE

19.17.1 Periodic Inspection

19.17.2 Periodic Test

19.17.3 Acceptance

Verify that the ropes or chains conform to the specifications on the data plate and are properly fastened at each end.

19.17.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.6.2, 7.5.6.6, and 2.20.2.1.

ITEM 19.18
SUSPENSION ROPE OR CHAIN

19.18.1 Periodic Inspection

19.18.2 Periodic Test

19.18.3 Acceptance

Inspect ropes for high wires, breaks, or bird-caging as well as for even tensioning. See wire rope replacement criteria in ASME A17.6.

Inspect chains to confirm proper lubrication, alignment, and tensioning. Chains should be replaced if any of the following conditions are observed:

(a) link plates worn more than 5% of their total height
(b) abnormal protrusion of pins or evidence of pin rotation
(c) cracked link plates
(d) enlarged pin holes
(e) corrosion
(f) broken cracked or deformed rollers

Ensure that rope or chain data tags are provided.

19.18.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.6.

ITEM 19.19
TOP COUNTERWEIGHT CLEARANCE

19.19.1 Periodic Inspection

19.19.2 Periodic Test

19.19.3 Acceptance

With the car at the bottom landing, check the top counterweight clearance.

19.19.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.6.

ITEM 19.20
CAR, OVERHEAD, AND DEFLECTOR SHEAVES

19.20.1 Periodic Inspection

19.20.2 Periodic Test

19.20.3 Acceptance

Verify sheaves are of proper size as indicated on the layout drawings provided by the equipment manufacturer. Verify sheaves are designed to prevent ropes from leaving the grooves and are adequately lubricated.

19.20.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.10 and 7.6.3.1.2.

ITEM 19.21
BROKEN ROPE, CHAIN, OR TAPE SELECTOR SWITCH

19.21.1 Periodic Inspection

19.21.2 Periodic Test

19.21.3 Acceptance

(a) Check the device by having the switch manually opened and attempt to move the car. The car should not move.

(b) Verify the linkage attached to the switch permits free operation of the switch.

19.21.4 References

ASME A17.1-2000/CSA B44-00 and later editions and later editions — Requirement 7.5.11.

ITEM 19.22
DATA PLATES

19.22.1 Periodic Inspection

19.22.2 Periodic Test

19.22.3 Acceptance

Verify the location of and information on the capacity plate, data plate, and if applicable the rope or chain data plate. The capacity plate is located in the car. The data plate may be located on the car crosshead, on the car top, or inside the car.

19.22.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2016/CSA B44-16 — Requirements 7.5.3 and 2.16.3.

ASME A17.1-2019/CSA B44-19 — Requirements 7.5.3, 2.16.3, and 8.13.

ITEM 19.23
COUNTERWEIGHT AND COUNTERWEIGHT BUFFER

19.23.1 Periodic Inspection

19.23.2 Periodic Test

19.23.3 Acceptance

Determine that the counterweights, sheaves, and buffers are securely fastened and adequately lubricated.

19.23.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.7 and 7.5.8.

ITEM 19.24
COUNTERWEIGHT SAFETIES

19.24.1 Periodic Inspection

19.24.2 Periodic Test

19.24.3 Acceptance

If a counterweight is provided and the space below the hoistway is not permanently secured against access, verify that a counterweight safety is provided. Have the counterweight safeties tested as outlined in Item 18.27.

19.24.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.8.

ITEM 19.25
SPEED TEST

19.25.1 Periodic Inspection

19.25.2 Periodic Test

19.25.3 Acceptance

Check and verify the speed information on the data plate. Have the rated load placed in the car and use a tachometer to verify the rated speed going up and the operating speed in the down direction. Type B material lifts are limited to 0.15 m/s (30 fpm).

19.25.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2004/CSA B44-04 — Requirements 7.4.2(b), 7.5.3, and 2.16.3.2.2.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 7.4.2.2(b), 7.5.3, and 2.16.3.2.2.

ITEM 19.26
SLACK ROPE OR SLACK CHAIN DEVICE

19.26.1 Periodic Inspection

19.26.2 Periodic Test

Verify that the slack rope/chain switch prevents operation if any one rope or chain fails. See the maintenance control program for the recommended procedure.

NOTE: On existing units, if there is no car door or gate or if the car can run with the car door/gate in the open position, then it is especially important that the slack rope/chain switch operates correctly as the car can hang up if the loads shifts and the car can descend uncontrolled when freed.

19.26.3 Acceptance

Verify that the slack rope/chain switch prevents operation if any one rope or chain fails. See the On-Site Documentation.

19.26.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2010/CSA B44-10 — Requirements 7.6.3 and 3.18.1.2.7.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 7.6.3 and 3.18.1.2.5.

ITEM 19.27
TRAVELING SHEAVE

See Item 19.20.

ITEM 19.28
COMPENSATING ROPES OR CHAINS

19.28.1 Periodic Inspection

Examine compensating chains and fastenings for excessive wear, damage, or deterioration. Sash cord wear is no indication of chain damage. See Item 19.18 for inspection of compensating ropes.

19.28.2 Periodic Test

19.28.3 Acceptance

19.28.4 References

ASME A17.1-2010/CSA B44-10 and later editions — Requirements 7.5.6 and 7.5.7.

(23)

Part 20
Material Lift — Outside Hoistway

ITEM 20.1
CAR GUARDS

20.1.1 Periodic Inspection

20.1.2 Periodic Test

20.1.3 Acceptance

For all material lifts where leveling or inching devices are provided that operate with the hoistway door(s) in the open position, check that there is a smooth metal guard extending a distance below the platform floor and above the top of the car equal to the length of the inching or leveling zone plus 75 mm (3 in.), on the entrance side of the platform. Verify this guard does not strike the pit floor and extends the full width of the widest hoistway door.

Type A material lifts are required to have an apron length of not less than 525 mm (21 in.).

Type B material lifts are not required to have an apron if there is no leveling provided.

20.1.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.2.4 and 7.5.2.5.

ITEM 20.2
HOISTWAY DOORS

20.2.1 Periodic Inspection

20.2.2 Periodic Test

20.2.3 Acceptance

Examine hoistway doors or gates, interlocks, and mechanical locks and electric contacts (see Item 20.4). Determine whether the door type meets the requirements for material lifts. Measure the height and width of the entrances. For Type A material lifts, verify the entrance does not exceed 2 290 mm (90 in.) in height and 1 220 mm (48 in.) in width. For Type A material lifts installed to the ASME A17.1-2016/CSA B44-16 or later editions, the entrance may exceed 1 220 mm (48 in.) if the entrance height is 1 525 mm (60 in.) or less.

Measure the distances between the hoistway face of the doors or gates and the hoistway edge of the landing sill. Measure the distance between the hoistway face of the landing doors or gates and the car door or gate. Verify that the clearances meet the requirements.

Verify that only permitted hardware projects into the hoistway beyond the sill line. Check that the doors, door frame, and entrance hardware are labeled when fire resistive construction is required.

20.2.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.13.

ITEM 20.3
VISION PANELS

20.3.1 Periodic Inspection

20.3.2 Periodic Test

20.3.3 Acceptance

Type A material lifts do not require vision panels.

Check that Type B material lifts with manually operated or self-closing hoistway doors of the vertically or horizontally sliding type have a vision panel at all landings. Check that Type B material lifts with horizontally swinging doors have vision panels on all doors.

Verify that where required vision panels are in place and in good condition. Where vision panels are provided, check that each clear panel opening rejects a ball 150 mm (6 in.) in diameter, the glass is clear wire glass or other transparent glazing material not less than 6 mm (0.25 in.) thick that meets the applicable impact standards (16 CFR Part 1201 or CAN/CGSB 12.1, CAN/CGSB-12.11 or CAN/CGSB-12.2), that they are substantially flush with the landing door surface, that the total area of vision panels is between 0.015 m^2 (24 $in.^2$) and 0.055 m^2 (85 $in.^2$) and muntins between panels are noncombustible and of substantial construction . Vision panels are to be protected with steel grilles with openings not larger than 19 mm × 19 mm (0.75 in. × 0.75 in.).

20.3.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2016/CSA B44-16 — Requirement 7.4.13.2.6.

ASME A17.1-2019/CSA B44-19 and later editions — Requirement 7.4.13.2.5.

ITEM 20.4
HOISTWAY DOOR LOCKING DEVICES

20.4.1 Periodic Inspection

20.4.2 Periodic Test

20.4.3 Acceptance

Determine whether interlocks or mechanical locks and electric contacts are provided. Type B material lifts installed under ASME A17.1b-2009 and later are not permitted to have mechanical locks and electric contacts.

Verify that the locking device has been tested, approved, is properly labeled, and inaccessible from the landing side. Verify that the car does not respond to calls with the hoistway door open. Verify that when the car is outside of the unlocking zone the hoistway door cannot be opened.

For Type B material lifts, check that the interlock is not readily accessible from inside the platform.

20.4.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.14.

ITEM 20.5
ACCESS TO HOISTWAY

20.5.1 Periodic Inspection

20.5.2 Periodic Test

20.5.3 Acceptance

(a) Unlocking Devices. Verify that hoistway doors or gates at the top and bottom terminal landings are fitted with an unlocking device.

(b) Hoistway Access Switches. Hoistway access switches are required under certain conditions only on Type A material lifts at the top and bottom landing. Check for proper operation and verify that the switch key is kept in a location where it is available only to elevator personnel.

20.5.4 References

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2007/CSA B44-07 — Requirements 7.4.14.3 and 7.4.14.4.

ASME A17.1-2010/CSA B44-10 — Requirements 7.4.14.5 and 7.4.14.6.

ASME A17.1-2013/CSA B44-13 and later editions — Requirements 7.4.14.4 and 7.4.14.5.

ITEM 20.6
POWER CLOSING OF HOISTWAY DOORS

20.6.1 Periodic Inspection

20.6.2 Periodic Test

20.6.3 Acceptance

For Type A material lifts, or Type B material lifts with a car door or gate, and where both hoistway and car door are closed by power, verify they are

(a) both horizontally sliding, or

(b) both of the vertical sliding type

20.6.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.15.

ITEM 20.7
SEQUENCE OPERATION

20.7.1 Periodic Inspection

20.7.2 Periodic Test

20.7.3 Acceptance

Sequence operation is not required for Type A material lifts, but if provided check the door sequence operation on material lifts with vertical biparting power-operated hoistway doors and power-operated car doors or gates.

(a) During the opening operation, the hoistway door should be opened two-thirds or more of its travel before the car door or gate starts to open.

(b) During the closing operation, the car door or gate should be closed two-thirds or more of its travel before the hoistway door starts to close.

20.7.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.15.

ITEM 20.8
HOISTWAY ENCLOSURE

20.8.1 Periodic Inspection

20.8.2 Periodic Test

20.8.3 Acceptance

Where openwork-type enclosures and doors are permitted and used, check enclosure panels at all floors and note whether they are securely fastened in place. Where partially enclosed hoistways are provided, verify the height of the enclosure at each landing. Type B material lifts require a fully enclosed hoistway below the top landing and an enclosure height of 2 030 mm (80 in.) at the top landing. Type A material lifts are permitted to have a partially enclosed hoistway at all landings and require the height of the enclosure to be 2 400 mm (94.5 in.) on all sides that are located 1 500 mm (59 in.) or less from material lift equipment to areas accessible to other than elevator personnel.

20.8.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.3.

ITEM 20.9
SEPARATE COUNTERWEIGHT HOISTWAY

20.9.1 Periodic Inspection

20.9.2 Periodic Test

20.9.3 Acceptance

Verify that the counterweight enclosure, if provided, is equipped with a door that is self-closing and self-locking. If the available space is sufficient for full bodily entry, verify that the door is openable from the inside without the use of key or other instrument. Verify that a stop switch is located so that it is readily reached from outside the enclosure.

20.9.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.5.

Part 21
Material Lift — Pit

(23)

ITEM 21.1
PIT ACCESS, LIGHTING, STOP SWITCH, AND CONDITION

21.1.1 Periodic Inspection

21.1.2 Periodic Test

21.1.3 Acceptance

(a) Pits are not required for Type B material lifts. Where a pit greater than 600 mm (24 in.) deep is provided for a Type B material lift and for all Type A material lifts, examine pit construction for code compliance and guarding. See Item 5.1.

(b) Where access to the pit or the space under the car is required for maintenance or inspection and the under platform clearance is less than 920 mm (36 in.) verify that nonremovable mechanical means is provided to hold the car at a height of not less than 920 mm (36 in.) nor more than 2 030 mm (80 in.) above the pit floor and not less than 460 mm (18 in.) above the bottom landing sill or pit access door sill. If the means does not automatically activate, verify that it can be installed without complete bodily entry into the pit. Verify that a sign is displayed inside the hoistway warning of the insufficient bottom clearance and instructions for operating the means. The letters are to be 25 mm (1 in.) in height.

(c) For Type A material lifts installed to the ASME A17.1-2010/CSA B44-10 or later editions where the driving drive machine brake, emergency brake, or motion or motor controller is inspected or maintained from within the pit, verify that a mechanical means to prevent movement is provided and verify the means meets the requirements in (b).

21.1.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.4.4 and 7.4.6.

ITEM 21.2
BOTTOM CLEARANCE AND RUNBY

21.2.1 Periodic Inspection

21.2.2 Periodic Test

21.2.3 Acceptance

Check the bottom of car and counterweight clearance to ensure that the car and counterweight and any equipment attached thereto does not strike the pit or floor beneath the lowest landing or any equipment in the hoistway except a buffer or bumper.

When the pit depth is less than 920 mm (36 in.) verify that a nonremovable mechanical means is provided to hold the car above the pit floor not less than 920 mm (36 in.) and not more than 2 030 mm (80 in.), and not less than 460 mm (18 in.) above the pit access door sill.

21.2.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.4.6.

ITEM 21.3
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

See Items 19.4 and 19.5.

ITEM 21.4
NORMAL TERMINAL STOPPING DEVICES

See Item 19.4.

ITEM 21.5
TRAVELING CABLES

21.5.1 Periodic Inspection

21.5.2 Periodic Test

21.5.3 Acceptance

Verify the traveling cable is supported properly and does not come in contact with the pit floor or rub hoistway wall or other objects in hoistway.

21.5.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.12.
CSA C22.1.
NFPA 70.

ITEM 21.6
GOVERNOR ROPE TENSIONING DEVICE

21.6.1 Periodic Inspection

21.6.2 Periodic Test

21.6.3 Acceptance

If provided, verify that the governor rope tensioning device is securely fastened and lubricated properly.

21.6.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.5 and 2.18.5.3.

ITEM 21.7
CAR FRAME AND PLATFORM

See Item 19.14.

ITEM 21.8
CAR SAFETIES AND GUIDING MEMBERS

21.8.1 Periodic Inspection

21.8.2 Periodic Test

21.8.3 Acceptance

If provided, examine data on safety marking plate and verify it meets requirements for speed and load of installation.

21.8.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.4.

ITEM 21.9
BUFFER

21.9.1 Periodic Inspection

21.9.2 Periodic Test

21.9.3 Acceptance

If buffers are provided, compare and verify information on buffer data plate with layout drawing and code requirements. If buffers are not provided for Type A material lifts, bumpers are required.

Type B material lifts do not require buffers or bumpers unless there is accessible space below the hoistway and the pit floor has not been designed to safely support the maximum load that would be applied by a free-falling platform carrying its rated load.

21.9.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.8 and 7.4.8.

ITEM 21.10
COMPENSATING CHAINS, ROPES, AND SHEAVES

21.10.1 Periodic Inspection

Where compensating ropes or chains are used on Type A material lifts, determine that

(a) there is sufficient remaining travel of the sheave frame to maintain tension in the compensating ropes and to operate the compensating sheave switch. Ropes should have sufficient tension to remain within the sheave grooves.

(b) the sheave frame moves freely in the guides while the car is in motion.

(c) there is no evidence of excessive wear of the sheave, shaft, or bearings, and all parts are lubricated.

(d) the car stops when the switch or switches operated by the compensating sheave frame are opened. Manually open these switches while the car is in motion at the lowest operating speed.

(e) the ropes or chains are properly hung and securely fastened to the underside of the car and counterweight (see Items 19.17, 19.18, and 19.23).

(f) Inspect the portion of the compensating chains or ropes and their fastenings that could not be inspected from the car top. Where chains are used, examine for wear at mating links. See 18.20.3 for roller, block, or multiple-link silent type chain replacement criteria.

(g) If a tie-down is provided for holding the compensating- rope sheave during the operation of the safety or buffer, it should be visually examined for condition and damage.

(h) Check the compensating sheave switch. Check the compensating-rope tie-down, which is required for speeds exceeding 3.5 m/s (700 ft/min).

NOTE: For Type B material lifts, compensating chains, ropes, and sheaves do not apply.

21.10.2 Periodic Test

21.10.3 Acceptance

Check the compensating rope tie-down if the rated speed is greater than 3.5 m/s (700 ft/min).

21.10.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.5.7.

ITEM 21.11
PLUNGER AND CYLINDER

21.11.1 Periodic Inspection

21.11.2 Periodic Test

21.11.3 Acceptance

Verify that the information on data plate matches the information on layout drawing and is in compliance with Code requirements.

21.11.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.3 and 7.6.4.

ITEM 21.12
CAR BUFFER

See Item 21.9.

ITEM 21.13
GUIDING MEMBERS

21.13.1 Periodic Inspection

21.13.2 Periodic Test

21.13.3 Acceptance

Verify guide members are adequately secured and properly aligned and adjusted.

21.13.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 7.5.4.4.1 and 7.5.9.

ITEM 21.14
SUPPLY PIPING

21.14.1 Periodic Inspection

21.14.2 Periodic Test

21.14.3 Acceptance

Verify hydraulic piping, valves, and fittings are the proper size, pressure rating, and are not leaking. Ensure adequate support is provided.

21.14.4 References

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 7.6.4.

MANDATORY APPENDIX I
GUIDE FOR INSPECTION OF INCLINED ELEVATORS

FOREWORD

This Appendix is to be used in conjunction with Parts 1 through 6 of ASME A17.2-2000 and later editions. It covers the variations in the recommended testing procedures for electric inclined elevators required to conform with the Code provisions of A17.1-1980 and later editions.

PREFACE

(a) Form and Arrangement. This Appendix only addresses variations in the guidelines and cautionary notes. Inclined elevators are required by the Code to conform with the requirements for electric elevators except as modified by the specific rules pertaining to this particular type of electric elevator. Where no item is cited, inspection guides and procedures shall be as contained in Parts 1 through 6.

(b) Requirements for Existing Installations. At the time of publication, the only requirements applicable to inclined elevators in those jurisdictions that have adopted ASME A17.3-2008 are those items that apply to electric elevators.

(c) Scope. This Appendix only applies to inclined elevators.

(d) Special Safety Concerns. Inspectors are cautioned to note that inclined elevators, due to operating at some degree from the horizontal, present some hazards not expected by persons familiar with the inspection of vertical electric elevators. The horizontal motion of the car and counterweight must always be considered, as well as the fact that most inclined elevators have their counterweight operating directly below the car chassis (frame).

(e) Orientation. The majority of inclined elevator installations will provide hoistway inspections from the uphill emergency exit and, on end-loading installations, from the uphill loading door. Use the same cautions in making inspections that would be appropriate for escalators with the steps removed. When inspecting at the midpoint of the hoistway, the counterweight will be passing below the car chassis, often on the same rail assembly.

Part I-1
Inclined Elevator — Inside of Car

ITEM I-1.6
CAR EMERGENCY SIGNAL

I-1.6.1 Periodic Inspections

I-1.6.1.3 Inclined Elevators. Inclined elevators installed exterior to a building structure must have special emergency signaling devices with a backup power supply.

Check the operation of the alarm or means of voice communication and verify that the receiving location is always manned when the elevator is in operation. Where the emergency power supply is provided by batteries, verify that they are in good condition and are properly maintained.

I-1.6.4 References

I-1.6.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1714.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.21.1.

ITEM I-1.10
POWER OPENING OF DOORS

I-1.10.2 Periodic Test

I-1.10.2.3 Inclined Elevators. Verify that the doors cannot open unless the car is located within the 152-mm (6-in.) unlocking zone in each direction of travel.

I-1.10.4 References

I-1.10.4.3 Inclined Elevators. A17.1a-1997 through A17.1d-2000 — Rule 1709.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.9.

ITEM I-1.11
CAR VISION PANELS AND CAR DOORS

I-1.11.1 Periodic Inspections

I-1.11.1.3 Inclined Elevators. Inclined elevators have been permitted to use glass or plastic in cars or doors since they first appeared in ASME A17.1. Prior to ASME A17.1-2000/CSA B44-00, glass was required to conform to the requirements of Rule 204.1h and plastics to the requirements of ANSI Z97.1, without restrictions as to size. ASME A17.1-2000/CSA B44-00 and later editions require glass or plastics to conform to Z97.1, 16 CFR 1201.1, or 16 CFR 1202.2.

I-1.11.3 Acceptance

I-1.11.3.3 Inclined Elevators. When a glass or plastic window or door is provided, check the following:

(a) type of glass or plastic
(b) thickness
(c) minimum surface area
(d) edging

I-1.11.4 References

I-1.11.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1708.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.11.3.

ITEM I-1.13
EMERGENCY EXIT

I-1.13.1 Periodic Inspections

I-1.13.1.3 Inclined Elevators. Very few inclined elevators have car top emergency exits. Some inclined elevators can use the car door for an emergency exit, although most installations require an uphill-end emergency exit.

For emergency exits located on the car top, follow 1.13.1.1. For uphill-end emergency exits, check the electric contact. The key for unlocking the uphill-end emergency exit must be available to authorized personnel but not available to the public.

I-1.13.3 Acceptance

I-1.13.3.3 Inclined Elevators. Verify that the uphill-end emergency exit is hinged to swing in, that it can be opened from inside the car only by using a special shape removable key, that it can be opened from outside the car by means of a nonremovable handle, and that it is provided with a properly functioning electric contact to interrupt power to the drive machine and the brake when opened. Check that the electric contact and nonremovable handle are not accessible from inside the car. If an emergency exit

unloading platform is provided to assist exiting the car, verify that it is attached to the car, that it is retractable and only openable from the exterior of the car, and that it is equipped with an electric contact that will not permit the car to start or run unless the platform is retracted.

I-1.13.4 References

I-1.13.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1708.3.8a through 1708.3c.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.11.1.1 through 5.1.11.1.3.

ITEM I-1.16
RATED LOAD, PLATFORM AREA, AND DATA PLATE

I-1.16.3 Acceptance

I-1.16.3.3 Inclined Elevators. Follow the procedures in 1.16.3, except deduct from the inside measurement of the car 50% of the area of a permanently installed nonfolding bench or seat prior to computing the net platform area (see Figure I-1.16.3.3-1). The net area computed now relates to the rated load formula for electric elevators.

I-1.16.4 References

I-1.16.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 17.1.1.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.11.13.1.

ITEM I-1.18
RESTRICTED OPENING OF CAR OR HOISTWAY DOORS

I-1.18.1 Periodic Inspections

I-1.18.1.3 Inclined Elevators. Prior to ASME A17.1-2000/CSA B44-00, inclined elevators were required to have a car door interlock if the car was more than 2 m (6 ft) above grade and the enclosure was more than 152 mm (6 in.) away. Prior to A17.1a-1997, the door was only permitted to be unlocked in the leveling zone. In A17.1a-1997, "leveling zone" was changed to "unlocking zone." The interlock was required to be openable from outside of the car. This special requirement was in addition to the requirement for electric elevators. In ASME A17.1-2000/CSA B44-00, inclined elevators have the same requirement as electric elevators, except that the unlocking zone is limited to 152 mm (6 in.).

(a) For inclined elevators installed under A17.1-1996 and earlier editions, check that the car door can be opened only within the leveling zone, except by the means provided on the car exterior.

(b) For inclined elevators installed under A17.1d-2000 and earlier editions, check that the car door can be opened only within the unlocking zone, except by the means provided on the car exterior.

(c) For inclined elevators installed under ASME A17.1-2000/CSA B44-00 and later editions, check that the car door can be opened only within the 152 mm (6 in.) unlocking zone, except by the means provided on the car exterior.

I-1.18.4 References

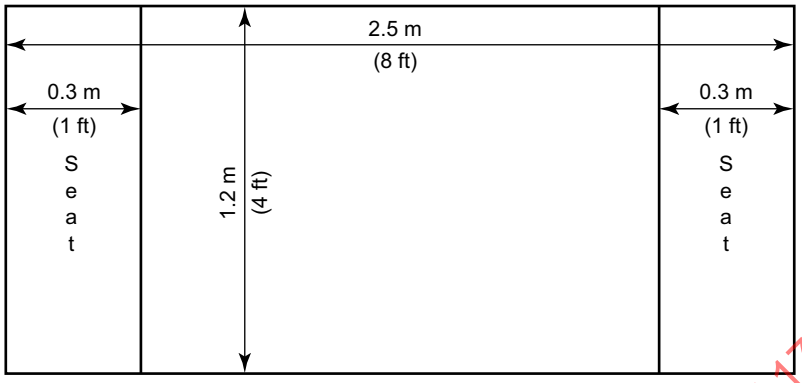
I-1.18.4.3 Inclined Elevators. A17.1-1996 and earlier editions — Rule 1709.3.

A17.1a-1997 — Rule 1709.3.

A17.1d-2000 and earlier editions — Rule 1709.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 2.12.5.

Figure I-1.16.3.3-1
Net Platform Area Measurements



GENERAL NOTE: The net platform area for the above example is calculated as follows:

(SI Units)

gross platform area = 2.5 m × 1.2 m = 3 m^2
seat area = 0.3 m × 1.2 m × 2 = 0.72 m^2
net platform area = 3 m^2 − (0.72 m^2 × 50%) = 2.64 m^2

(Imperial Units)

gross platform area = 8 ft × 4 ft = 32 ft^2
seat area = 1 ft × 4 ft × 2 = 8 ft^2
net platform area = 32 ft^2 − (8 ft^2 × 50%) = 28 ft^2

Part I-2
Inclined Elevator — Machine Room

ITEM I-2.13
GOVERNOR, OVERSPEED SWITCH, AND SEAL

I-2.13.1 Periodic Inspections

I-2.13.1.3 Inclined Elevators. Some inclined elevators will have the governor located on the car, either driven by a static wire rope drive or by another positive-type drive. Rope-driven governors are not required. If the governor is located on the car, inspection will have to be performed under Part 5.

Examine per 2.13.1.1. Where the governor is driven by other than a wire rope drive, verify that the driving means is free of evidence of excessive wear and lost motion, and verify that all bearings and moving components are not restricted by paint or other foreign substances. Move the components to verify that all parts will move freely.

I-2.13.2 Periodic Test

I-2.13.2.3 Inclined Elevators. Test per 2.13.2.1 when the governor is located in the machine room or machinery space (see Figure I-2.13.2.3-1). When the governor is located on the car and is wire rope driven, perform similar testing (see Figure I-2.13.2.3-2). When the governor is located on the car, testing will have to be performed under Part 5.

I-2.13.4 References

I-2.13.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1710.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.15.

ITEM I-2.20
WINDING DRUM MACHINE AND SLACK CABLE DEVICES

I-2.20.1 Periodic Inspections

I-2.20.1.3 Inclined Elevators. Inspect per 2.20.1.1.

(a) Winding Drum Machine. Inclined elevators are permitted to use a winding drum machine without counterweights for passenger use when the net rated load does not exceed 453 kg (1,000 lb), the distance of travel does not exceed 38 m (125 ft), and the rated speed does not exceed 0.51 m/s (100 ft/min).

(b) Slack Cable Device. Unlike vertical electric elevators, traction-drive inclined elevators operating at an inclination of less than 35 deg must have slack cable devices. The devices must be located on both the car and counterweight sides of the drive machine.

I-2.20.3 Acceptance

I-2.20.3.3 Inclined Elevators. For winding drum machines, verify that the net rated load, speed, and distance of travel do not exceed Code limitations and that no counterweight is provided.

I-2.20.4 References

I-2.20.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1712 and Rule 1713.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.19 and 5.1.20.5.

ITEM I-2.28
TERMINAL STOPPING DEVICES

Inclined elevators with runby can be inspected as per Item 2.28. End-loading inclined elevators have no runby and must be inspected with greater care. In addition to normal and final terminal stopping devices, some installations may be equipped with retractable sills that include switchgear. Note that end-loading inclined elevators are limited to a speed of 0.51 m/s (100 ft/min) and will have precompressed oil buffers at each terminal.

I-2.28.1 Periodic Inspections

I-2.28.1.3 Inclined Elevators. Inspect per 2.28.1.1 including, if retractable sills are provided, examination of the switchgear.

I-2.28.2 Periodic Test

I-2.28.2.3 Inclined Elevators. Test per 2.28.2.1. If retractable sills are provided on an end-loading inclined elevator, retract the sill and verify that the car cannot operate in the direction toward that landing (see Figure I-2.28.2.3-1).

I-2.28.3 Acceptance

I-2.28.3.3 Inclined Elevators. Perform the test as indicated in 2.28.3.1.

I-2.28.4 References

I-2.28.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1716.4 and 1716.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.22.4 and 5.1.22.5.

ITEM I-2.29
CAR AND COUNTERWEIGHT SAFETIES

There are major differences between vertical electric elevators and inclined electric elevators with regard to safeties and the guide rails to which they apply. The stopping distances are governed in A17.1b-1995 and earlier editions by a formula and table based on $\frac{1}{2}g$. Beginning with A17.1-1996, the formula and table are based on $\frac{1}{4}g$ and A17.1-1996 also included horizontal retardations for emergency electrical stopping that should be tested with the safeties. Guide rails used with Types A and C safeties do not have to be machined; however, inclined elevators installed under A17.1-1996 and later editions are not permitted to use Type A or Type C safeties that develop horizontal retardation in excess of the Code-permitted allowance. Inclined elevators installed under ASME A17.1-2000/CSA B44-00 and later editions are permitted to have a single safety guide rail located between the main guide rails. If the governor is provided on the car, tests will have to be performed under Part 5.

NOTE: Inclined elevators must conform to the requirements for occupied space. ASME A17.1-2000/CSA B44-00 clarifies that occupied space on inclined elevators is in line with the direction of travel rather than underneath the counterweight or car.

I-2.29.1 Periodic Inspections

I-2.29.1.3 Inclined Elevators

(a) See 5.8.1.1.

(b) Examine the means provided to prevent derailment of the car or counterweight.

I-2.29.2 Periodic Test

I-2.29.2.3 Inclined Elevators

(a) Perform the examinations indicated in 2.29.2(a) from the pit or from the work space, if provided.

(c) Perform the test indicated in 2.29.2(c) with the car positioned either in the lower portion of the hoistway or just above the work space, if provided.

(e), (f) Perform the tests indicated in 2.29.2(e) and 2.29.2(f) using ASME A17.1/CSA B44, Tables 1710.2(a) and 1710.2(b) for installations under A17.1-1996 and earlier editions. Use the revised ASME A17.1/CSA B44, Tables 1710.2(a) and 1710.2(b) for installations under A17.1a-1997 and later editions.

I-2.29.3 Acceptance

I-2.29.3.3 Inclined Elevators. In addition to the inability of some AC drive machine motors to permit sufficient overspeed, some inclined elevators provided with DC drive machine motors and with shallow angles of inclination will not cause sufficient overspeed. Test per 2.29.3(a) and 2.29.3(b).

I-2.29.4 References

I-2.29.4.3 Inclined Elevators. A17.1b-1995 and earlier editions — Rules 1706.3 and 1707.3 and Section 1710 with Table 1710.4.

A17.1d-2000 and earlier editions — Rules 1706.3 and 1707.3, Section 1710 with Tables 1710.2(a) and 1710.2(b), and Rule 1713.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.14 with Tables 5.1.14.2, 5.1.15, 5.1.17.3, 5.1.18.3, 5.1.18.4, and 5.1.20.6.

Figure I-2.13.2.3-1
Static Governor-Rope Drive

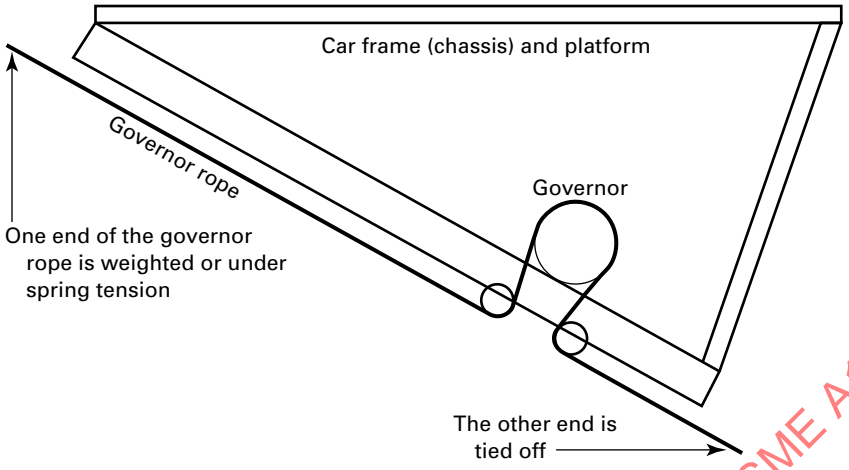


Figure I-2.13.2.3-2
Wheel-Driven Governor

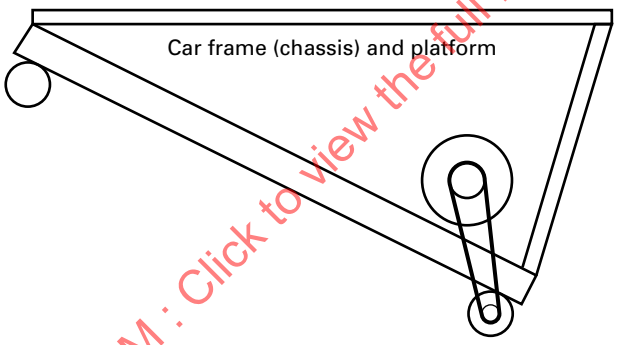
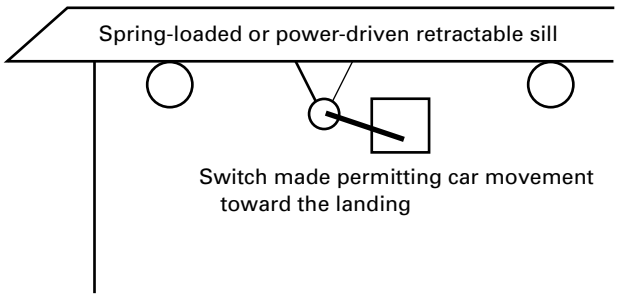


Figure I-2.28.2.3-1
Retractable Sill



Part I-3
Inclined Elevator — Top-of-Car/Uphill Emergency Exit/ End-Loading Top-of-Car Door

Due to the horizontal component of their travel, inclined elevators rarely have use for car top access, and such access normally will not be found under 49 deg of inclination, where it starts to be possible for inspection, etc., of some components. The majority of installations will have the uphill emergency exit or uphill loading door to be used for hoistway inspections. Car tops do not have to meet structural requirements unless access is provided.

Starting with ASME A17.1-2000/CSA B44-00, inclined elevators are specifically permitted to omit car top stop switches when access is not provided to the car top.

Safety precautions are as follows:

(a) Follow the safety precautions for the top of the car in Part 3.

(b) Uphill Emergency Exit

(1) On cars equipped with an unloading platform, move the platform from its retracted position.

(2) Without an unloading platform, remain inside the door until the car stops to perform examinations.

(3) As inclined elevator counterweights are most commonly located within the same guide rail assembly and below the car, be extremely cautious near the midpoint of travel.

(c) End-Loading Top-of-Car Door. End-loading inclined elevators have no runby and the car door will be extremely close to the landing door at the uphill terminal. Keep all parts of the body and any tools inside the car when it is in motion.

ITEM I-3.1
TOP-OF-CAR STOP SWITCH

I-3.1.1 Periodic Inspections

I-3.1.1.3 Inclined Elevators. Check the top-of-car stop switch if provided, or the uphill emergency exit or end-loading top-of-car door stop switch in accordance with 3.1.1.

I-3.1.4 References

I-3.1.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1708.3, 1708.4, and 1713.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.11 and 5.1.20.1 through 5.1.20.3.

ITEM I-3.2
CAR TOP/INSPECTION LOCATION LIGHT AND OUTLET

The light and outlet on inclined elevators should be located at the inspection location. Follow the checks as described in 3.2.1 and 3.2.3.

I-3.2.4 References

I-3.2.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 204.7 and 1713.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.7 and 5.1.2.

ITEM I-3.3
TOP-OF-CAR EXTERIOR OPERATING DEVICE

I-3.3.1 Periodic Inspections

I-3.3.1.3 Inclined Elevators. The operating device is most commonly located at the uphill-end emergency exit of the uphill loading door on end-loading inclined elevators; on very steep inclined elevators with access to the car top, an operating device must be located on the car top and may also be located at an uphill emergency exit, if provided.

Check in accordance with the directions in 3.3.1.

I-3.3.4 References

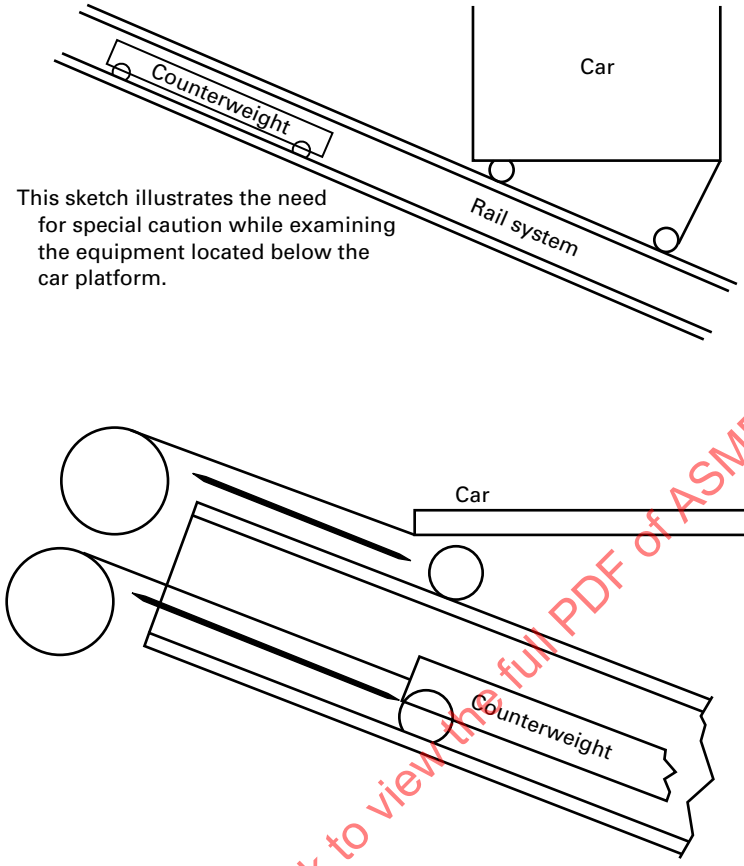
I-3.3.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 204.1g, 210.1d, and 1713.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.14.1.7, 2.26.1.4, and 5.1.20.

ITEM I-3.4
TOP-OF-CAR/UPHILL-OF-CAR CLEARANCE AND REFUGE SPACE

Before making any inspections or tests, determine the available car top or uphill-end clearance following the procedure provided in 3.4.1.1 (see Figure I-3.4-1). Where the measurement is to be made in the direction of travel, measure the distance from the car chassis or uphill unloading platform or the furthest projecting

Figure I-3.4-1
Uphill Clearance



item in the direction of travel. There is no clearance or refuge space on end-loading inclined elevators.

I-3.4.1 Periodic Inspections

I-3.4.1.3 Inclined Elevators. Measure as described in 3.4.1.1 and modified in Item I-3.4.

I-3.4.3 Acceptance

I-3.4.3.3 Inclined Elevators. Measure as described in 3.4.3.1 and modified in Item I-3.4.

I-3.4.4 References

I-3.4.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1702.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.5.2.

ITEM I-3.5
NORMAL TERMINAL STOPPING DEVICES

In addition to the other cautions in this Guide, use special care when examining or testing end-loading inclined elevators as they do not have runby or refuge space.

ITEM I-3.6
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

In addition to the other cautions in this Guide, use special care when examining or testing end-loading inclined elevators as they do not have runby or refuge space.

I-3.6.2 Periodic Test

I-3.6.2.3 Inclined Elevators. Test inclined elevators as suggested by this Guide, using extra caution on end-loading inclined elevators. If a retractable sill is provided,

its contact may have to be jumped out to properly test the final terminal stopping device.

I-3.6.4 References

I-3.6.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 209.3, 1716.4, and 1716.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.25.3, 5.1.22.4, and 5.1.22.5.

ITEM I-3.8
TOP/UPHILL-END EMERGENCY EXIT

Prior to ASME A17.1-2000/CSA B44-00, top emergency exits were not required on inclined elevators unless there was equipment installed that required servicing from the top of the car. Inclined elevators installed under ASME A17.1-2000/CSA B44-00 and later editions require top emergency exits where the angle of inclination exceeds 49 deg and where an uphill-end emergency exit is not provided.

I-3.8.3 Acceptance

I-3.8.3.3 Inclined Elevators. Inspect top emergency exits in accordance with 3.8.1. Inspect uphill-end emergency exits to verify that they open only into the car and that the size of the opening is as required by the Code. Check that the locking means can be opened only from the car exterior by a nonremovable handle and that it may be opened from within the car by a special key. Check that the electric contact meets Code requirements.

I-3.8.4 References

I-3.8.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1708.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.11.

ITEM I-3.10
HOISTWAY CONSTRUCTION

Inclined elevators installed in open areas are not normally required to meet fire-resistive construction. There are special requirements for these open installations.

I-3.10.1 Periodic Inspections

I-3.10.1.3 Inclined Elevators. Inspect fire-resistive hoistways as per 3.10.1. Inspect hoistway enclosures on non-fire-resistive construction to determine if the enclosure is maintained in a condition that will provide the intended security.

I-3.10.3 Acceptance

I-3.10.3.3 Inclined Elevators. For fire-resistive enclosures, inspect per 3.10.3. For non-fire-resistive enclosures, measure the clearances and heights and examine the materials used for compliance with the Code. If structures are used to support the hoistway, note that they are designed to prevent climbing. If acrylics, glass, or wired glass is used in the construction of the enclosure, verify compliance with the Code.

I-3.10.4 References

I-3.10.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1700.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.2.

ITEM I-3.16
TRAVELING CABLES, JUNCTION BOXES, AND PROTECTIVE MEANS

Traveling cables on inclined elevators must have additional protection against abrasion and fouling as they pass by the guide rail structure. The protective means provided may be in conjunction with that provided to protect the hoist ropes. Corrosion protection is required for components used on weather-exposed installations.

I-3.16.1 Periodic Inspections

I-3.16.1.3 Inclined Elevators. In addition to the examinations called for in 3.16.1, examine the means provided to protect the cables from abrasion and fouling. Verify that it is not excessively worn and that moving parts operate freely. Verify that corrosion is not affecting components used in weather-exposed installations.

I-3.16.3 Acceptance

I-3.16.3.3 Inclined Elevators. In addition to the examinations called for in 3.16.3, examine the means provided to protect the cables from abrasion and fouling. Note that the means provided prevents lateral motion of the cables into an area where fouling is possible. Verify that all moving components operate freely. Verify that components used in weather-exposed installations are protected against corrosion.

I-3.16.4 References

I-3.16.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1717.1 and 1717.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.7.

ITEM I-3.18
CAR FRAME (CHASSIS)

Inclined elevator car frames (chassis) are weight bearing and are usually located below the car enclosure. There are no stiles, but the car must be considerably more structural due to the horizontal forces imposed in a safety stop or buffer engagement. Cast iron is not permitted to be used for guiding support or guide shoes on inclined elevators.

I-3.18.1 Periodic Inspections

I-3.18.1.3 Inclined Elevators. In addition to the procedures found in 3.18.1, take note of the operating/supporting roller guides for bad bearings, tread delamination, and cracks. Most installations will also have lateral guiding rollers to be checked.

I-3.18.4 References

I-3.18.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1708.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.12.1.

ITEM I-3.19
GUIDE RAILS, FASTENINGS, AND EQUIPMENT

Inclined elevators are not required to have finished surfaces when used with a Type A or Type C safety. Slower-speed installations often have H beams for guide rails with the car chassis operating on the upper flange and the counterweight operating on the lower flange. Guide rails, together with guiding members, must keep the car and counterweight from derailing. A single guide rail located between the main guide rails is permitted to be used for application of the safety, and side guiding should be included in the inspection procedure.

I-3.19.1 Periodic Inspections

I-3.19.1.3 Inclined Elevators. Examine in accordance with the procedures found in 3.19.1.1.

I-3.19.3 Acceptance

I-3.19.3.3 Inclined Elevators. Verify that the design includes protection against derailment upthrust or side-thrust forces.

I-3.19.4 References

I-3.19.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1706.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.18.

ITEM I-3.20
GOVERNOR ROPE

I-3.20.1 Periodic Inspections

I-3.20.1.3 Inclined Elevators. Inclined elevators are permitted to use other than rope to drive governors. Such drives will be found located on the car chassis. In addition, some governors located on the car will be driven by a static governor rope.

Inspect in accordance with 3.20.1.

I-3.20.4 References

I-3.20.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1710.4.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.15 and 5.1.16.

I-3.23.4 References

I-3.23.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1715.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.16.

ITEM I-3.23
SUSPENSION ROPE

I-3.23.1 Periodic Inspections

I-3.23.1.3 Inclined Elevators. In addition to the requirements for electric elevators, suspension ropes on inclined elevators must be protected against abrasion as the ropes move over the supporting structure. The means used may also protect the governor rope, if used, and the traveling cable.

Inspect in accordance with 3.23.1, including the protection against abrasion, unless previously inspected under Item 3.16.

I-3.23.4 References

I-3.23.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1715.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.16.

ITEM I-3.27
CROSSHEAD/UPHILL CHASSIS MEMBER DATA PLATE

I-3.27.1 Periodic Inspections

I-3.27.1.3 Inclined Elevators. Inclined elevator data plates will be found on the uphill chassis member. Inspect in accordance with 3.27.3.1.

I-3.27.4 References

I-3.27.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1711.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.13.2.

Part I-4
Inclined Elevator — Outside Hoistway

ITEM I-4.1
CAR PLATFORM GUARD

Prior to ASME A17.1-2000/CSA B44-00, inclined elevator platform guards were required to cover all of the vertically exposed area during leveling and 51 mm (2 in.) over the leveling zone in each direction. Inclined elevators installed under ASME A17.1-2000/CSA B44-00 and later editions must have aprons that extend at least the width of the widest hoistway opening plus the leveling zone in each direction, and a vertical face in the direction of travel as described +75 mm (3 in.). In addition, aprons must be angled in the direction of travel and extend a minimum of 25 mm (1 in.) below the landing sill at any position to the extent of the leveling zone (see Figure I-4.1-1).

I-4.1.1 Periodic Inspections

I-4.1.1.3 Inclined Elevators. Position the car at each extreme of the leveling zone with the hoistway door open and inspect the guard to determine that it is in place and securely fastened. In some cases, the guard can be inspected from the pit or from the work space, if provided, but the dimensions of the leveling zone will have to be a known factor.

I-4.1.3 Acceptance

I-4.1.3.3 Inclined Elevators. Verify that a smooth guard extends beyond the leveling zone in each direction of travel +75 mm (3 in.) and that it extends a minimum of 25 mm (1 in.) vertically below the landing sill in all positions throughout the leveling zone, that it is bent back in the direction of travel, and that it is secured against the required forces.

I-4.1.4 References

I-4.1.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1708.1 and 1708.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.12.2.

ITEM I-4.5
ACCESS TO HOISTWAY

Inclined elevators installed under A17.1d-2000 and earlier editions that are located exterior to a building and are not fully enclosed were not required to conform to the access requirements for vertical electric elevators. Inclined elevators installed under ASME A17.1-2000/CSA B44-00 and later editions that are of non-fire-resistive construction, due to their location exterior to the building structure, are permitted to have other means of access than those required for electric vertical elevators. The means used will vary considerably at each location, but it must provide safety equivalent to that provided by vertical elevators, and if it includes entrance through the hoistway guarding, it must be locked and contacted. Operating device requirements are special to inclined elevators, including speed limitation to 38 m/s (125 ft/min).

I-4.5.1 Periodic Inspections

I-4.5.1.3 Inclined Elevators. Inspect enclosed hoistway installations in accordance with 4.5.1. Inspect other types of access for the condition and security of the means of access.

I-4.5.4 References

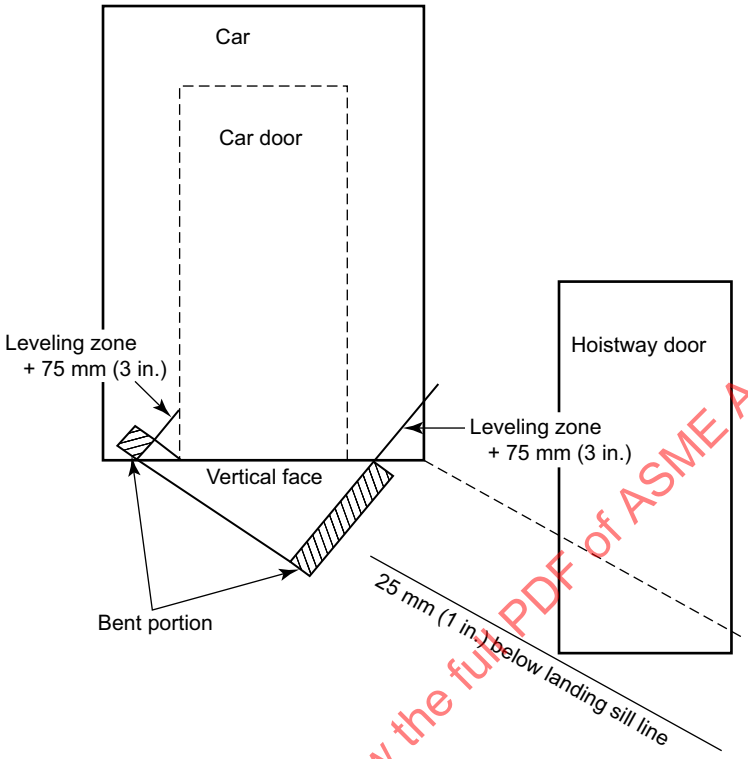
I-4.5.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1704 and Rule 1713.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.10.

ITEM I-4.8
HOISTWAY ENCLOSURE

Inclined elevators are permitted to have enclosures of acrylics, laminated glass, or wire glass, subject to the provisions of the building code. Installations located in non-fire-resistive hoistways have specific requirements to protect against unauthorized access.

Figure I-4.1-1
Car Platform Guard



I-4.8.1 Periodic Inspections

I-4.8.1.3 Inclined Elevators

(a) Hoistway Enclosures. Where non-fire-resistive construction is permitted and used, check that the materials used are in satisfactory condition and adequately braced to maintain running clearances. Verify that the means used to prevent climbing any structures are in satisfactory condition.

(b) Transparent Enclosures. Verify that the glazing means are in good condition to prevent penetration of the enclosure.

I-4.8.3 Acceptance

I-4.8.3.3 Inclined Elevators. Inspect fire-resistive hoistways in accordance with 4.8.3. Inspect non-fire-resistive hoistways to verify that the materials used are within the requirements and will sustain the horizontal forces, and that supporting structures are protected against climbing to prevent unauthorized access.

I-4.8.4 References

I-4.8.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1700.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.1.1 and 5.1.2.

Part I-5
Inclined Elevator — Pit

Some inclined elevator installations are configured so that the area surrounding the terminus of the guides cannot be used as a pit in which work can be performed. These installations must provide a work space of minimum size that is provided with a stop switch, lighting, and convenience outlet.

Safety precautions are as follows:

(a) In addition to all of the safety precautions found in the Guide, inspectors must be very aware of the multidirectional movement of the car and counterweight. Note also that as counterweights are normally located directly under the car chassis, sometimes within the same rail structure, counterweight pit guards are not required. In some installations, the pit will not provide adequate inspection space and a work space must be provided.

(b) Before entering the pit or work space, if provided, observe the operation and locations of the car and counterweight and the available refuge spaces.

ITEM I-5.1
PIT ACCESS, LIGHTING, STOP SWITCH, AND CONDITION

I-5.1.1 Periodic Inspections

I-5.1.1.3 Inclined Elevators

(a) Inspect either the pit or the work space, if provided, in accordance with 5.1.1 (see Figure I-5.1.1.3-1).

(b) For inclined elevators installed outside a building structure under ASME A17.1-2000/CSA B44-00 and later editions, verify that the means provided to remove weather-caused water collection has been maintained.

I-5.1.3 Acceptance

I-5.1.3.3 Inclined Elevators. Examine the pit or work space as per 5.1.3. On exterior installations, verify that electrical devices are weatherproof and that provision has been made to remove rainwater.

I-5.1.4 References

I-5.1.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1701 and Rule 1702.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.3, 5.1.4, and 5.1.10.

ITEM I-5.2
BOTTOM CLEARANCE, RUNBY, AND MINIMUM REFUGE SPACE

I-5.2.1 Periodic Inspections

I-5.2.1.3 Inclined Elevators. Inclined elevators must meet the requirements for electric elevators or provide refuge space to either side of the pit or toward the downhill end of the pit (see Figure I-5.2.1.3-1).

Inspect in accordance with 5.2.1.1, making measurements in the direction of travel.

I-5.2.3 Acceptance

I-5.2.3.3 Inclined Elevators. Inspect in accordance with 5.2.3.1 in the direction of travel. Verify the refuge space for Code compliance.

I-5.2.4 References

I-5.2.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1701.2 and 1702.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.4 and 5.1.5.1.

ITEM I-5.3
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

End-loading inclined elevators have special requirements due to the absence of runby. The final terminal stopping device must operate within the extremely short distance between the normal stopping device and the landing. Some installations may be provided with retractable sills to permit a form of runby. Spring buffers are not permitted on end-loading inclined elevators, and oil buffers with switchgear are required at both terminals and will be compressed under normal stopping conditions.

Perform inspections and tests in accordance with 5.3.1.1.

I-5.3.4 References

I-5.3.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 209.3, 1716.4, and 1716.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 2.25.3, 5.1.22.4, and 5.1.22.5.

ITEM I-5.4
NORMAL TERMINAL STOPPING DEVICES AND RETRACTABLE SILLS

End-loading inclined elevators are permitted to use a retractable sill to provide an extremely short form of runby.

I-5.4.1 Periodic Inspections

I-5.4.1.3 Inclined Elevators. Perform inspections in accordance with 5.4.1. If retractable sills are provided on end-loading inclined elevators, verify that the car cannot operate in the direction of the particular sill unless the sill has returned to its normal location.

I-5.4.4 References

I-5.4.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rule 1716.5.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 5.1.22.5.

ITEM I-5.5
TRAVELING CABLES

I-5.5.1 Periodic Inspections

I-5.5.1.3 Inclined Elevators. Inclined elevators require means to guide and protect traveling cables from pinching and abrasion as they move over the guide rail supporting structure. The means provided may also be used for suspension and compensating-rope guidance and abrasion protection.

In addition to the procedures in 5.5.1, examine the means provided to guide and protect the traveling cables from abrasion and fouling.

I-5.5.4 References

I-5.5.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1715.2 and 1717.1.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.7.1 and 5.1.16.1.

ITEM I-5.8
CAR SAFETIES AND GUIDING MEMBERS

There are several special conditions to be observed on inclined elevators. The rails used for Types A and C safeties are not required to have machined surfaces, and structural steel shapes might be used. The guiding supports and guide shoes are not permitted to be of cast iron. When making safety tests, be aware that some inclined elevators have the governor located on the car (see Items 2.13, 2.29, and 3.20).

I-5.8.1 Periodic Inspections

I-5.8.1.3 Inclined Elevators. Examine in accordance with 5.8.1.1.

I-5.8.2 Periodic Test

I-5.8.2.3 Inclined Elevators. See Item 2.29.

I-5.8.3 Acceptance

I-5.8.3.3 Inclined Elevators. Examine in accordance with 5.8.3.

I-5.8.4 References

I-5.8.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Rules 1706.3 and 1708.1 and Section 1710.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.12.1, 5.1.14, 5.1.15, and 5.1.18.

ITEM I-5.9
BUFFERS AND EMERGENCY TERMINAL SPEED-LIMITING DEVICES

I-5.9.1 Periodic Inspections

I-5.9.1.3 Inclined Elevators. Inclined elevators installed at exterior locations require corrosion protection. End-loading inclined elevators must use only oil buffers located at each terminal.

Inspect and test in accordance with 5.9.1.1. Note the buffer stroke tables for inclined elevators are different from those for electric elevators.

I-5.9.2 Periodic Test

I-5.9.2.3 Inclined Elevators. Note that the buffer stroke tables for inclined elevators are different from those for electric elevators.

I-5.9.4 References

I-5.9.4.3 Inclined Elevators. A17.1d-2000 and earlier editions — Section 1707 and Rule 1716.3.

ASME A17.1-2000/CSA B44-00 and later editions — Requirements 5.1.17 and 5.1.22.3.

Figure I-5.1.1.3-1
Pits and Work Spaces

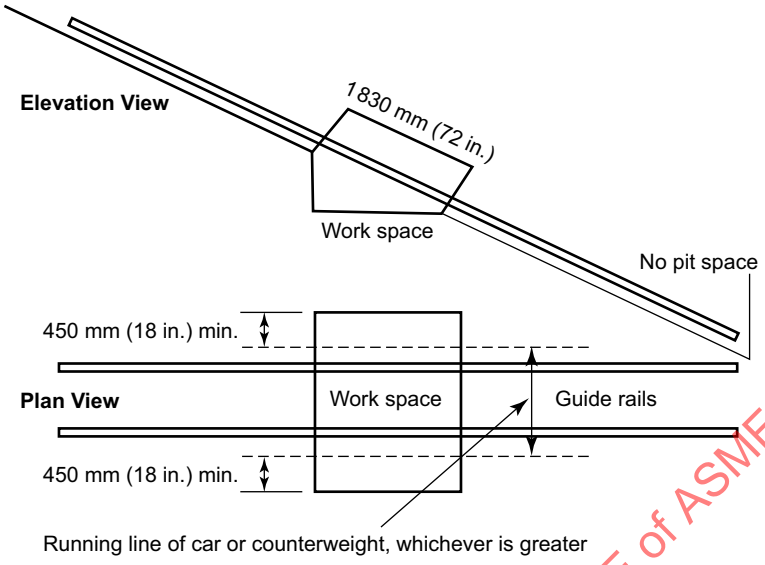
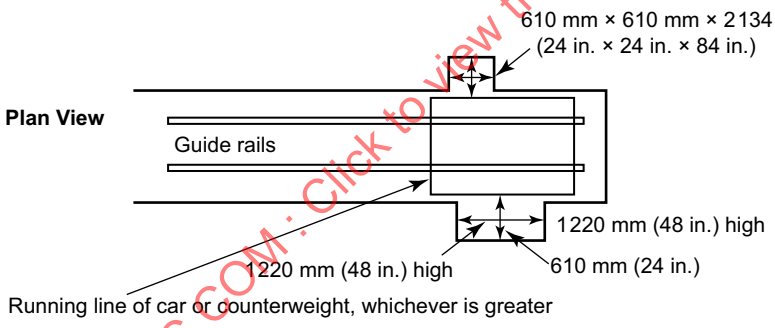


Figure I-5.2.1.3-1
Refuge Space When Conformance to ASME A17.1/CSA B44, Requirement 2.4.1 Is Not Provided



Part I-6
Inclined Elevator — Firefighters' Service

Until A17.1a-1997, there was no specific exception for firefighters' service for inclined elevators installed exterior to a building structure.

Where inclined elevators are installed within a building structure, inspect in accordance with Part 6. See Table I-6-1.

If the jurisdictional authority requires inclined elevators located exterior to a building structure to be provided with firefighters' service, inspect in accordance with Part 6.

ITEM I-6.4
FIREFIGHTERS' SERVICE

I-6.4.4 References

I-6.4.4.3 Inclined Elevators. A17.1-1996 and earlier editions — no rule.

A17.1a-1997 through A17.1d-2000 — Rule 1714.2.

ASME A17.1-2000/CSA B44-00 and later editions — Requirement 2.27.3.

Table I-6-1
Additional Checklist for Inclined Elevators

Item	Check	A17.1-1996 Section/Rule	A17.1-2000 Requirements	Comments
		Part I-1 Inclined Elevator — Inside of Car		
I-1.6	Car emergency signal	1714.1	5.1.21.1	
I-1.10	Power opening of doors	1709.3	5.1.9	
I-1.11	Car vision panels and car doors	1708.5	5.1.11.3	
I-1.13	Emergency exit	1708.3a through 1708.3c	5.1.11.1.1 through 5.1.11.1.3	
I-1.16	Rated load, platform area, and data plate	1711.1	5.1.13.1	
I-1.18	Restricted opening of car or hoistway doors	1709.3	2.12.5	Note A17.1a-1997
		Part I-2 Inclined Elevator — Machine Room		
I-2.13	Governor, overspeed switch, and seal	1710.4	5.1.15	
I-2.20	Winding drum machine and slack cable devices	1712 1713.2	5.1.19 5.1.20.5	
I-2.28	Terminal stopping devices	1716.4 1716.5	5.1.22.4 5.1.22.5	
I-2.29	Car and counterweight safeties	Prior to A17.1b-1995: 1706.3 1707.3 1710 Table 1710.4 Table 1710.2(a) Table 1710.2(b) 1713.3	5.1.14 Table 5.1.14.2 5.1.15 5.1.17.3 5.1.18.3 5.1.18.4 5.1.20.6	Major change in stopping distances Electrical stopping
		Part I-3 Inclined Elevator — Top-of-Car/Uphill-End Emergency Exit/End-Loading Top-of-Car Door		
I-3.1	Top-of-car stop switch	1708.3 1708.4 1713.1	5.1.11 5.1.20.1 through 5.1.20.3	
I-3.2	Car top/inspection location light and outlet	204.7 1713.1	2.14.7 5.1.20	
I-3.3	Top-of-car exterior operating device	204.1g 210.1d 1713.1	2.14.1.7 2.26.1.4 5.1.20	
I-3.4	Top-of-car/uphill-of-car clearance and refuge space	1702.2	5.1.5.2	
I-3.6	Final and emergency terminal stopping devices	209.3 1716.4 1716.5	2.25.3 5.1.22.4 5.1.22.5	
I-3.8	Top/uphill-end emergency exit	1708.3	5.1.11	
I-3.10	Hoistway construction	1700	5.1.2	
I-3.16	Traveling cables, junction boxes, and protective means	1717.1 1717.2	5.1.7	
I-3.18	Car frame (chassis)	1708.1	5.1.12.1	
I-3.19	Guide rails, fastenings, and equipment	1706	5.1.18	
I-3.20	Governor rope	1710.4	5.1.15 5.1.16	
I-3.23	Suspension rope	1715	5.1.16	
I-3.27	Crosshead/uphill chassis member data plate	1711.2	5.1.13.2	
		Part I-4 Inclined Elevator — Outside Hoistway		
I-4.1	Car platform guard	1708.1 1708.2	5.1.12.2	
I-4.5	Access to hoistway	1704 1713.1	5.1.10	

Table I-6-1
Additional Checklist for Inclined Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	A17.1-2000 Requirements	Comments
		Part I-4 Inclined Elevator — Outside Hoistway (Cont'd)		
I-4.8	Hoistway enclosure	1700.1	5.1.1.1 5.1.2	
		Part I-5 Inclined Elevator — Pit		
I-5.1	Pit access, lighting, stop switch, and condition	1701 1702.1	5.1.3 5.1.4 5.1.10	
I-5.2	Bottom clearance, runby, and minimum refuge space	1701.2 1702.1	5.1.4 5.1.5.1	
I-5.3	Final and emergency terminal stopping devices	209.3 1716.4 1716.5	2.25.3 5.1.22.4 5.1.22.5	
I-5.4	Normal terminal stopping devices and retractable sills	1716.5	5.1.22.5	
I-5.5	Traveling cables	1715.2 1717.1	5.1.7.1 5.1.16.1	
I-5.8	Car safeties and guiding members	1706.3 1708.1 1710	5.1.12.1 5.1.14 5.1.15 5.1.18	
I-5.9	Buffers and emergency terminal speed-limiting devices	1707 Table 1707.2 Table 1707.4	5.1.17 Table 5.1.17.2 Table 5.1.17.4.4	
		Part I-6 Inclined Elevator — Firefighters' Service		
I-6.4	Firefighters' service	No rule A17.1a-1997: 1714.2	2.27.3	

MANDATORY APPENDIX II
GUIDE FOR INSPECTION OF PRIVATE RESIDENCE ELECTRIC AND HYDRAULIC ELEVATORS

FOREWORD

Although private residence elevators have been included in ASME A17.1 since 1953, this is the first guide for the inspection of private residence elevators. This Guide, initiated to be used in conjunction with ASME A17.1-2007/CSA B44-07 and later editions, will permit those jurisdictions requiring acceptance inspections to have procedures available to their inspectors. In addition, the Guide will be available to such other interested inspection parties who might be called on to examine private residence installations for conformance to the Code. Some requirements in earlier editions of ASME A17.1 are also addressed.

PREFACE

(a) Form and Arrangement. This Guide addresses the inspection guidelines, techniques, and cautionary notes following the sequence found in ASME A17.2. The Guide is prepared for acceptance inspections and can also be used for periodic inspections. Appropriate references to the latest edition of the Code, in effect at the time of this Guide's publication, are listed at the end of each subsection. Some references to ASME A17.3 and earlier editions of ASME A17.1 are also addressed. The Parts are arranged to show the location of the inspection as in ASME A17.2.

Part II-1 Private Residence Elevator — Inside of Car
Part II-2 Private Residence Elevator — Machine Room
Part II-3 Private Residence Elevator — Top of Car (when used)
Part II-4 Private Residence Elevator — Outside Hoistway
Part II-5 Private Residence Elevator — Pit

Each inspection location is further subdivided as follows:

II-X	Location of inspection
II-X.X	Item to be inspected
II-X.X.3	Acceptance inspection (periodic)
	Electric elevators (as applicable)
	Hydraulic elevators (as applicable)
II-X.X.4	Code references
	Electric elevators (as applicable)
	Hydraulic elevators (as applicable)

This Guide references requirements from ASME A17.1-2007/CSA B44-07 and later editions. Some requirements in earlier editions of ASME A17.1 are also addressed. The Foreword and Preface that are included in this Appendix have been approved by the A17 Standards Committee but are not part of this Guide.

(b) Private Residence Vertical Elevators. This Appendix contains pertinent notes and inspection guides for private residence vertical elevators.

Part II-1
Private Residence Elevator — Inside of Car

ITEM II-1.1
DOOR REOPENING DEVICE

Very few private residence elevators are provided with power operation of the doors or gates. Where power operation of the doors or gates is provided, it must conform to the specific requirements as prescribed for passenger elevators installed in public applications. Door reopening devices are required with power closing of doors or gates. Power collapsible gates, if provided with a reopening device, are restricted as to the distance they can be reopened by power.

II-1.1.3 Acceptance

Power opening of the car door is permitted to take place only within the specified distance from the landing.

(a) Mechanical Reopen Device (Safety Edge). Actuate the device while the door is being closed, and note whether the car door stops and reopens.

(b) Electronic and/or Photoelectric Reopening Device. Place an object in front of the leading edge of the car door at various positions while the door is being closed. The car door must stop and reopen.

II-1.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.2.

ITEM II-1.2
STOP SWITCHES

II-1.2.3 Acceptance

Run the car in both directions, and actuate the emergency stop switch between floors. Note whether the car stops promptly. While the car is stopped, actuate the stop switch, and verify that the car does not respond to any demand. The switch must be located in or adjacent to each operating panel. The emergency stop switch must be the manually opened and closed type, have red handles or buttons, be conspicuously and permanently marked “STOP,” and indicate the “STOP” and “RUN” positions.

II-1.2.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.7.

ITEM II-1.3
OPERATING CONTROL DEVICES

II-1.3.3 Acceptance

(a) Continuous-Pressure Operation. Operate the car in each direction by means of the operating buttons or other devices in the car. Determine that they do not stick or bind and are properly marked, and that the car stops when the operating device is released, except when an automatic leveling device is provided and the car is within the specified distance of the landing.

(b) Automatic Operation. Operate the car, making stops in both the up and down directions. At each stop, open the car door or gate and note the accuracy of stopping. Verify that the operating push buttons work properly.

(c) Car Leveling Device. When an automatic leveling device is provided, the accuracy of stopping in both directions of travel must be noted at each landing. While the car is leveling, operate the emergency stop switch as outlined in II-1.2.3. This must not stop the car from leveling into the landing within the specified distance of the landing.

II-1.3.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.

ITEM II-1.4
SILLS AND CAR FLOOR

II-1.4.3 Acceptance (Periodic)

(a) Car Floor. Determine the condition of the car floor and landing sills. Verify the clearance between the car and landing sills. The distance between the hoistway face of any hoistway door or gate and the hoistway edge of the landing sill must not exceed the specified distance. A17.1-1921 through A17.1-1942 required the same maximum clearance between the hoistway face of any hoistway door and the hoistway edge of the landing sill as for other elevators. A17.1.5-1953 and A17.1-

1955 through A17.1b-1980 required a maximum clearance of 51 mm (2 in.) between the hoistway face of any hoistway door and the hoistway edge of the landing sill. A17.1-1981 through ASME A17.1-2013 required a maximum clearance of 75 mm (3 in.) between the hoistway face of any hoistway door and the hoistway edge of the landing sill. ASME A17.1-2016 and later editions require a maximum distance of 19 mm (0.75 in.) for swinging doors and 57 mm (2.25 in.) for sliding doors between the hoistway face of the hoistway door and the hoistway edge of the landing sill.

(b) Horizontal Car Clearance. The clearance between the car sill and hoistway enclosure must not be less than the specified distance. The clearance between the car sill and any landing sill must not be less than or greater than the specified distances.

II-1.4.4 References

A17.1.5-1953 and A17.1-1955 through A17.1b-1980 — Rules 500.2a, 500.2b, 500.8b, and 500.8c.

A17.1-1981 through ASME A17.1d-2000/CSA B44-00 — Rules 500.6a, 500.6b, 500.4b, and 500.4c.

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.4.1, 5.3.1.4.2, 5.3.1.7.2, and 5.3.1.7.3.

ITEM II-1.5
CAR LIGHTING

II-1.5.3 Acceptance

The car must be provided with an electric light. A switch must be provided near the car entrance, where an automatic means is not provided. Minimum illumination at the car threshold must not be less than specified.

II-1.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.3.

ITEM II-1.6
CAR EMERGENCY SIGNAL

II-1.6.3 Acceptance

Determine whether the audible signaling device and telephone are operable.

An auxiliary power source is not required, but if one is provided, disconnect the normal power source to check that the emergency power source will not interfere with the safe and proper operation of the elevator.

II-1.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.19.

ITEM II-1.7
CAR DOOR OR GATE

II-1.7.3 Acceptance (Periodic)

(a) Examination of Doors and Gates. Examine the car door or gate, and note any broken, bent, or sprung members. Operate doors or gates to determine that they operate freely in their guiding members, are securely fastened, and will not permit the doors or gates to come out of their guiding members at any position in their travel. Car doors and gates must guard the opening to the specified height.

(b) Collapsible Gates. Collapsible gates must reject a ball of the specified diameter.

(c) Test for Closed Position. Verify that the car will not move under normal operation unless the car door or gate is within the specified distance of the closed position. If the hoistway enclosure is not continuous or if the car door or gate swings outward, a car door or gate is required to be closed and locked.

(d) Maximum Clearance. The distance between the hoistway face of any hoistway door or gate and the car door or gate must not exceed the specified distance. A17.1-1921 through A17.1-1942 required the same maximum clearance between the hoistway face of hoistway doors and the car door or gate as for other elevators. A17.1.5-1953 and A17.1-1955 through A17.1b-1980 required a maximum clearance of 102 mm (4 in.) between the hoistway side of the landing door and the hoistway side of the car door or gate. A17.1-1981 through ASME A17.1-2013 required a maximum clearance of 125 mm (5 in.) between the hoistway side of the landing door and the hoistway side of the car door or gate. Where folding doors were used, the clearance is the maximum at any point with the car door in the closed position. ASME A17.1-2016 and later editions require the maximum distance between the hoistway face of the landing door and the car door or gate to be as in Table II-1.7.3-1.

(e) Strength and Deflection of Doors and Gates. The deflection of fully closed horizontally sliding doors or gates (including their guides, guide shoes, track, and hangers) must not permanently deform or deflect more than 19 mm (0.75 in.) or displace from their guides or tracks when a force of 335 N (75 lbf) is applied horizontally on an area 100 mm by 100 mm (4 in. by 4 in.) at right angles to any location of the door or gate.

The deflection of fully closed folding car doors (including their guides, guide shoes, track, and hangers) must not permanently deform or deflect more than 19 mm (0.75 in.) or displace from their guides or tracks when a force of 335 N (75 lbf) is applied using a 100-mm (4-in.) diameter sphere at any location within the folds of the car door.

Table II-1.7.3-1
Maximum Distance Between Hoistway Face of Landing Door and Car Door or Gate, Private Residence Elevator (ASME A17.1-2016/CSA B44-16 and Later Editions)

Type of Door or Gate	Maximum Distance
Power-operated horizontally sliding hoistway and car doors	A 100-mm (4-in.) maximum distance between leading edge of the doors or sight guard, except if possible to detach or disconnect either door from the operator and it allows manual operation of the door. In that case, see "Swinging or horizontally sliding hoistway doors and manually operated horizontally sliding car doors."
Swinging hoistway doors and folding car doors	Space between fully closed hoistway and car doors must reject a 100-mm (4-in.) diameter ball at all points.
Swinging hoistway doors and car gates	Space between fully closed hoistway doors and car gate must reject a 100-mm (4-in.) diameter ball at all points.
Swinging hoistway doors and power-operated horizontally sliding car doors	A 100-mm (4-in.) maximum distance between hoistway face and hoistway face of car door at its leading edge except if possible to detach and disconnect either door from the operation and it allows manual operation of the door. In that case, see "Swinging or horizontally sliding hoistway doors and manually operated horizontally sliding car doors."
Swinging or horizontally sliding hoistway doors and manually operated horizontally sliding car doors	Space between hoistway and car doors must reject a 100-mm (4-in.) diameter ball at all points.

II-1.7.4 References

A17.1.5-1953 and A17.1-1955 through A17.1b-1980 — Rules 500.2a, 500.2b, 500.8b, and 500.8c.

A17.1-1981 through ASME A17.1d-2000/CSA B44-00 — Rules 500.6a, 500.6b, 500.4b, and 500.4c.

ASME A17.1-2000/CSA B44-00 through ASME A17.1-2013/CSA B44-13 — Requirements 5.3.1.7.2 and 5.3.1.8.2.

ASME A17.1-2016/CSA B44-16 and later editions — Requirement 5.3.1.8.3.

ITEM II-1.8
DOOR CLOSING FORCE

II-1.8.3 Acceptance

If provided with self-closing or power-closing doors or gates, test the closing force. Park the car at floor level, and start the doors or gates in the closing direction. Allow the doors or gates to close between one-third and two-thirds of their normal travel, and stop them. Push a force-measuring device with a range appropriate to measure 133 N (30 lbf) against the stopped door or gate, removing the stop so the door or gate is held stationary by the force-measuring device. Slowly back off on the device until the point when the door or gate just starts to move. At this point, the door or gate and measuring forces are in equilibrium, and the force can be read.

II-1.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 2.13.4.2.3 and 5.3.1.8.2.

ITEM II-1.9
POWER CLOSING OF DOORS OR GATES

II-1.9.3 Acceptance

When power closing of car doors or gates is used with manual swing hoistway doors, make sure that the hoistway door is closed before the car door or gate begins to close.

Where a door open button is provided, check that when it is depressed and the door is closing, it causes the door to stop or to stop and reopen.

II-1.9.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.2.

ITEM II-1.10
POWER OPENING OF DOORS OR GATES

II-1.10.3 Acceptance

Check that a collapsible car gate is not power opened to a distance exceeding one-third of the clear gate opening or no more than the specified distance.

Determine that power opening of the doors or gates can occur only when the car is within the specified distance of the landing. Determine that the car is stopped or substantially level with the landing before the hoistway door or gate is fully open.

II-1.10.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.2(a).

ITEM II-1.11
CAR VISION PANELS AND GLASS CAR DOORS

This item is not applicable.

ITEM II-1.12
CAR ENCLOSURE

II-1.12.3 Acceptance

The car must not have more than one compartment. Check glass, plastic, and acrylics for the marking required by the applicable standard. Verify that the glass is the right type (wired or laminated), is not cracked or broken, and is marked with a glazing standard. Since this applicable standard covers many types of glazing materials, the required marking does not ensure that the glazing is laminated glass. If laminated glass is tapped lightly with the edge of a coin, the sound will be dampened and different from nonlaminated glass.

Determine that the car enclosure is structurally sound and is securely fastened to the platform. Determine that capacity plates and any required certificates are posted in the car. Note any evidence of alterations or additions to the car that have materially changed the car weight. Also, note any alteration to the car enclosure, including decorative panels.

II-1.12.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.8.1 and 5.3.1.20.

ITEM II-1.13
ACCESS PANELS

II-1.13.3 Acceptance

If provided, determine that the access panels for elevator equipment outside the car are in place and are not obstructed. They must be kept closed and locked. The Code requires an electric contact to interrupt power to the machine.

II-1.13.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.1(d).

ITEM II-1.14
VENTILATION

This item is not applicable.

ITEM II-1.15
SIGNS AND OPERATING DEVICE SYMBOLS

This item is not applicable.

ITEM II-1.16
RATED LOAD, PLATFORM AREA, AND CAPACITY DATA PLATE

II-1.16.3 Acceptance

Measure the inside dimensions of the car 914 mm (36 in.) above the floor, inside of any panels or wall surfaces but exclusive of any handrails and space for doors, and compute the inside net platform area. Compare this area with the maximum area permitted for the rated load.

Check that the capacity plate is installed inside the car.

II-1.16.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.10.1 and 5.3.1.20.1.

ITEM II-1.17
STANDBY POWER OPERATION

This item is not applicable.

ITEM II-1.18
RESTRICTED OPENING OF CAR OR HOISTWAY DOORS

This item is not applicable.

ITEM II-1.19
CAR RIDE

II-1.19.3 Acceptance

The car speed must not exceed the specified value.

Operate the car at normal operation speed from one terminal landing to the other, listen for unusual noise, and observe whether there is excessive or irregular motion of the car, which may indicate that the car or counterweight guide rails are not properly aligned. If such motion occurs, check for loose guide shoes or rollers and proper alignment of the guide rails.

II-1.19.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.10.2.

Part II-2
Private Residence Elevator — Machine Room or Machinery Space

CAUTION: Private residence elevators commonly have very small equipment rooms or spaces. Often the machine and controller are located in the basement or attic space with or without an enclosure separating the machine from other household appliances. If any household items are stored near the equipment, have the homeowners move such items, and caution them about the danger involved with keeping those items in the proximity of the equipment. Inclined elevators will commonly have a machinery shed or might have only a removable box enclosure around the equipment. Observe any low headroom that creates a hazard in equipment rooms for your own safety. Before inspecting any moving parts (such as sheaves, drums, brakes, governors, or relays), make certain the power supply to the equipment under inspection is off. Further, it is required to lock out and tag out the mainline disconnect switch. To ensure the proper disconnect switch has been opened, attempt to operate the elevator.

ITEM II-2.1
ACCESS TO EQUIPMENT SPACE

II-2.1.3 Acceptance

There are no access requirements in ASME A17.1-2007/CSA B44-07, Sections 5.3 and 5.4 other than the working clearances specified in NFPA 70.

II-2.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.4.

NFPA 70 — Sections 620.5, 620.51, and 620.71 or CSA 22.1.

ITEM II-2.2
HEADROOM

II-2.2.3 Acceptance

There are no access requirements in ASME A17.1-2007/CSA B44-07, Sections 5.3 and 5.4 other than the working clearances specified in NFPA 70.

II-2.2.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.4.

NFPA 70 — Sections 620.5, 620.51, and 620.71.

ITEM II-2.3
LIGHTING AND RECEPTACLES

II-2.3.3 Acceptance

Check the equipment room or space for adequate lighting. Check that a ground fault interrupter (GFI) receptacle has been provided in the equipment room or space and in any auxiliary equipment space and that they are operable.

II-2.3.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.4.

NFPA 70 — Sections 620.23(B), 620.23(C), 620.82, and 620.85.

ITEM II-2.4
MACHINERY SPACE

II-2.4.3 Acceptance

Check the condition of the equipment in the machinery space, overhead machinery spaces, and machinery space located in the hoistway.

II-2.4.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 8.10.5.2.

ITEM II-2.5
HOUSEKEEPING

II-2.5.3 Acceptance

Check the equipment room or space for storage of nonelevator-related materials that may contact the machine.

II-2.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 8.10.5.2.

ITEM II-2.6
VENTILATION

This item is not applicable.

ITEM II-2.7
FIRE EXTINGUISHER

This item is not applicable.

ITEM II-2.8
PIPES, WIRING, AND DUCTS

II-2.8.3 Acceptance

Pipes that convey steam, gas, or liquid and are not required for the operation of the elevator must not be installed in a machinery space in the hoistway.

II-2.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.5.

ITEM II-2.9
GUARDING OF SUSPENSION MEANS

II-2.9.3 Acceptance

Where the suspension means is located outside the hoistway, check that the guards are in place and secure. The openings through which the suspension means pass must be large enough for the suspension means only.

II-2.9.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.6.

ITEM II-2.10
NUMBERING OF ELEVATORS, MACHINES, AND DISCONNNECT SWITCHES

This item is not applicable.

ITEM II-2.11
DISCONNECTING MEANS AND CONTROL

II-2.11.3 Acceptance

Check that the mainline disconnecting means has been located where it is readily accessible to qualified persons and within sight of the motor controller. Drive machines or motion and operation controllers not within sight of the disconnecting means shall be provided with a manually operated switch installed in the control circuit to prevent starting. The manually operated switch(es) shall be installed adjacent to this equipment. If the controller is located on the car, an auxiliary disconnect must be located at the main landing. The location must meet the working clearance requirements of NFPA 70 or the local jurisdiction. Verify that disconnects are properly rated and fused per machine requirements. If there are multiple power sources, verify that the controller is so marked and that the disconnect is labeled to indicate which power source is being disconnected.

II-2.11.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.18.4 and 5.3.1.18.5.

NFPA 70 — Requirements 620.51 through 620.53.

ITEM II-2.12
CONTROLLER WIRING, FUSES, GROUNDING, ETC.

II-2.12.3 Acceptance

Inspection Made With Power Off. Check for proper fuse type and rating and any jumper wires or temporary wiring changes. No fuses must be jumped or shorted.

Check that sufficient clear working space has been provided around control panels and disconnecting means to provide safe and convenient access to all live parts of the equipment necessary for maintenance and adjustment. Verify compliance with B44.1/ASME A17.5 by the certification label issued by an independent testing laboratory.

II-2.12.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.18.4.

B44.1/ASME A17.5.

NFPA 70 — Requirements 620.5 and 620.82.

ITEM II-2.13
GOVERNOR

II-2.13.3 Acceptance

If provided, check the governor marking plate to determine that it is marked with size, material, and construction of the governor rope used and the governor-tripping speed. The tachometer reading must be taken after the car has reached its constant speed. Take and record speed readings with no load in the car and with rated load in the car in both the up and down directions. Tachometer readings must be taken from the side of the governor rope or hoisting ropes. Speed readings from any other position on the governor rope or hoisting ropes will be inaccurate. Where the car is roped 2:1, the car speed is one-half the hoist rope speed.

Verify that means of adjusting tripping speed and pull-through force are sealed. A test of the governor-tripping speed is not required unless the seal on the governor has been disturbed or the inspection indicates that, for other reasons, a test is necessary. If a test is made, the governor must be sealed and tagged after the test.

II-2.13.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11.2, 5.3.1.11.3(b), 5.3.1.11.5 through 5.3.1.11.7, 8.10.2.2.2, and 8.10.5.2.

ITEM II-2.14
DATA PLATE

II-2.14.3 Acceptance

Check that the data plate is installed inside the machine room and that the data plate is mounted on the controller. Verify that the data on the plates correctly correspond to the equipment installed.

II-2.14.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.20.2.

ITEM II-2.15
STATIC CONTROL

This item is not applicable.

ITEM II-2.16
OVERHEAD BEAM AND FASTENINGS

II-2.16.3 Acceptance

Examine machine and sheave beam supports and fastenings. Record the dimensions and span of beams, and check them against the manufacturer's recommended installation procedures.

II-2.16.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.16.1, 5.3.1.16.2(c), and 5.3.1.16.2(d).

ITEM II-2.17
DRIVE MACHINE BRAKE

II-2.17.3 Acceptance

(a) Inspection Made With Power On. Run the car, and observe the operation of the brake. The brake must not chatter. It may apply on or before the completion of the slowdown and leveling operation. Check to see that the brake is automatically applied on or after normal stops. The clearance between the brake shoe and the brake drum or disc when the car is running must not be greater than necessary to permit free running. Examine the brake pins to determine whether they are properly lubricated and not frozen and that retainers are in place. Note any harsh and abrupt brake action. Examine brake-activated contacts (if provided) for proper operation.

(b) Inspection Made With Power Off

(1) Examine the brake and drum or disc to determine that the brake linings are free of oil and whether there is any scoring of the drum.

(2) If the elevator has been running, the braking surface may be warm but must not be uncomfortable to the touch. A hot drum usually indicates a dragging brake shoe.

II-2.17.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.16.2(h).

ITEM II-2.18
TRACTION-DRIVE MACHINES

II-2.18.3 Acceptance

Have the elevator operated in each direction, making frequent stops, and observe the operation of the machine. Excessive lubrication of the wire ropes may result in a reduction of traction. Test traction by operating the empty car in the up direction, and stop it by opening the emergency stop switch. Verify that the suspension means retainers are in place.

II-2.18.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12.1(b), 5.3.1.12.4, and 5.3.1.16.2.

ITEM II-2.19
GEARS, BEARINGS, AND FLEXIBLE COUPLINGS

II-2.19.3 Acceptance

Have the elevator operated in each direction, making frequent stops. Observe if there is unusual noise. Check the oil level.

II-2.19.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.16.2(d) through 5.3.1.16.2(f).

ITEM II-2.20
WINDING DRUM MACHINE AND SLACK CABLE DEVICES

II-2.20.3 Acceptance

Check that the car speed and Code limits of travel are not exceeded and that no counterweight has been provided. Open the mainline disconnect switch, and examine the hoisting rope fastenings in the drum. Note that not less than one full turn of rope would remain on the drum if the car is resting on its fully compressed buffer or on the pit floor. Visually examine and hammer test the drum for defects or cracks. Where the ropes extend beyond their clamps or sockets, check to see that means have been provided to prevent the rope ends from coming out of the inside of the drum and interfering with other parts of the machine. Record and check the diameter of the drum for conformity with approved drawings and specifications. Make sure the rope is winding correctly on the drum and not trying to wind on itself.

II-2.20.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12.5, 5.3.1.12.6, 5.3.1.16.2(b), 5.3.1.16.2(c), and 5.3.1.16.3.

ITEM II-2.21
CHAIN-DRIVE MACHINE AND DRIVE SPROCKETS

II-2.21.3 Acceptance

Check that the car speed and Code limits of travel are not exceeded. Record and check the diameter of the sprocket for conformity with approved drawings and specifications. Make sure the chain is cogging correctly on the sprocket and is not trying to climb off the sprocket.

II-2.21.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12.4 and 5.3.1.16.2(g).

ITEM II-2.22
MOTOR GENERATOR

This item is not applicable.

ITEM II-2.23
ABSORPTION OF REGENERATED POWER

This item is not applicable.

ITEM II-2.24
AC DRIVES FROM A DC SOURCE

This item is not applicable.

ITEM II-2.25
TRACTION SHEAVES

II-2.25.3 Acceptance

Tractive forces may be noted by observing slippage between ropes and traction sheaves. Note any evidence of lost motion or misalignment of the traction sheaves with other sheaves.

II-2.25.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.12.4.

ITEM II-2.26
SECONDARY AND DEFLECTOR SHEAVES OR SPROCKETS

II-2.26.3 Acceptance

(a) Check and record the diameter of the following for conformity with approved drawings and specifications:
- *(1)* drums
- *(2)* overhead sheaves
- *(3)* secondary sheaves

(b) Examine the overhead secondary and deflector sheaves, and test them with light blows from a small hammer. If the sound resulting from the blows is dull and flat, unlike the ring given by sound metal, sheave parts must be examined carefully for cracks.

(c) Look for evidence of any misalignment of sheaves.

II-2.26.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.16.2(b) and 5.3.1.16.2(g).

ITEM II-2.27
ROPE FASTENINGS

II-2.27.3 Acceptance

Determine that all lock nuts and cotter pins are in place. Verify the data shown on the rope data tag attached to one of the wire rope fastenings. Verify the size of the wedge and the body of the shackle housing are matched.

II-2.27.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12.6 and 5.3.1.12.7.

ITEM II-2.28
TERMINAL STOPPING DEVICES

II-2.28.3 Acceptance

Check the normal terminal device as follows:

(a) Render the normal stopping means, if provided, inoperative.

(b) Run the car into the bottom terminal, and verify that the car slows down and stops at or near the bottom terminal.

(c) Repeat the test in (b) at the top terminal.

(d) Restore the normal stopping means, if provided.

(e) Check normal elevator operation.

II-2.28.3.1 Traction Machines. In some cases, the normal terminal stopping switches are located in the machine room and operated by rope, tape, or chain attached to the car. Examine these switches for alignment, fastening, and operation.

II-2.28.3.2 Winding Drum Machines. Examine the final terminal stopping switch operated by the machine for alignment, fastening, and operation, or if supplied with additional top and bottom final limits operated by a separate means, in addition to the required final limit and slack rope switch, refer to the car top inspection, Item II-3.6, or incline inspection, II-5.4.14.

II-2.28.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.17 and 5.4.14.

ITEM II-2.29
CAR AND COUNTERWEIGHT SAFETIES

II-2.29.3 Acceptance

Examine the car and counterweight guide shoes and their fastenings to determine that they are properly secured, aligned, and adjusted. Check the gibs or rollers for excessive wear. Under normal operating conditions, the clearance between the guide rail and each rail-gripping face of the safety parts is approximately equal. Test the car safeties with rated load on the car. Test counterweight safeties with an empty car. Make sure the gripping faces of the safety do not drag on the rail while in the resting position regardless of load. After the safety has been inspected, position the car or counterweight in the lower portion of the hoistway.

(a) If a speed governor is provided for safety operation, jump out the switches on the governor and safety that would prevent a full setting of the safety. Start the car or counterweight, whichever is being tested, in the down direction, and trip the governor by hand. Continue running down until the drive machine stalls, bypasses, or drives through the hoisting ropes. Open the mainline disconnect switch, and remove jumpers. Next, visually inspect safeties to see if they have been equally applied.

(b) For counterweighted elevators with a slack-rope-type safety only, lower the car or counterweight onto a vertically placed wood block substantial enough to carry the load and create a slack rope condition. With the ropes slack and power removed from the machine, use a pole or rod to dislodge the wood block from the underside of the car, being sure to stay clear and to the outside of the hoistway. The car or counterweight must securely set on the safeties. With the safeties set, restore power to the controller, and verify the removal of power to the motor and brake.

(c) For noncounterweighted elevators with a slack-rope-type safety only, lower the car onto a vertically placed wood block substantial enough to carry the load until the ropes are slack. With the ropes slack and power removed from the machine, use a pole or rod to dislodge the wood block from the underside of the car, being sure to stay clear and to the outside of the hoistway. The car must securely set on the safeties. With the safeties set, restore power to the controller, and verify the removal of power to the motor and brake. To release safeties, move the car or counterweight, whichever is being tested, up. Once the safeties have been released, examine all parts to determine that they have returned to their normal operating positions. Inspect the guide rails to determine if the scoring on the rails is equal. Dress any scoring on the rails after the visual inspection.

II-2.29.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.11.

ITEM II-2.30
HYDRAULIC POWER UNIT

II-2.30.3 Acceptance

Have the elevator operated in the up direction, making several starts and stops, and observe the operation of the motor, pump, and drive. Check for excessive noise, misalignment, and loose mounting. With the car at the top landing, verify the hydraulic fluid level for operation with the supplied fluid-level-measuring device. Listen for pump cavitation due to partially plugged fluid lines or pickup strainer.

II-2.30.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.31
RELIEF VALVES

II-2.31.3 Acceptance

Check the working pressure given on the elevator layout with that on the data plate. Verify the pressure by installing an inspector's pressure gage in the system, or use the gage supplied by the manufacturer, and run the car up at rated speed with rated load. The gage must read the working pressure. Test the relief valve by inching the car at slow speed against the stop ring. Then cause the controls to attempt to run the car at full speed, and read the gage. The full output of the pump must bypass at a gage reading 150% or less of the working pressure. After the test, check the car for proper operation, and visually inspect the system for leaks.

II-2.31.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.32
CONTROL VALVE

II-2.32.3 Acceptance

The valves, fittings, and interconnecting piping must be checked for pressure rating, leakage, adequate support, and applicable certification.

II-2.32.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.33
TANKS

II-2.33.3 Acceptance

Note whether the tank is covered to prevent entrance of foreign material and is suitably vented to the atmosphere. A means is required for indicating the permissible minimum and maximum liquid levels. Check for any damage that may have resulted from handling and installation.

II-2.33.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.34
FLEXIBLE HYDRAULIC HOSES AND FITTING ASSEMBLIES

II-2.34.3 Acceptance

Visually examine flexible hydraulic hoses, and check that the hose is not installed in the hoistway and does not project into or through any wall. Also, check that the hose does not have any twists, kinks, or a sharp bending radius. The hose must have the proper rating identification in relationship to the working pressure.

II-2.34.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.35
SUPPLY LINE AND SHUTOFF VALVE

II-2.35.3 Acceptance

Inspect the supply line between the cylinder and pumping unit for adequate support or evidence of any damage, and verify that they are installed so as to permit disassembly and inspection of components. Verify that the manufacturer's pressure rating of the supply line and fittings is greater than the working pressure indicated on the data plate.

II-2.35.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.36
HYDRAULIC CYLINDERS

II-2.36.3 Acceptance

This test must be performed after the relief valve test in Item II-2.31 and the flexible hose examination in Item II-2.34. Cylinders that cannot be visually inspected must be tested in the following manner with no load in the car. Mark the location of the car at any convenient position. Open the disconnect switch for 15 min. Note the position of the car platform with respect to the reference mark. A change in position that cannot be accounted for by visible oil leakage, valve leakage, or temperature change of the oil indicates a leak of the cylinder or a leak in the underground piping and a need for further investigation.

II-2.36.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.37
PRESSURE SWITCH

II-2.37.3 Acceptance

A pressure switch is required to prevent operation of the valves if there is no pressure in the line between the down valve and cylinder. Place the car at the top landing, and remove one electrical lead from the pressure switch. Try to run the car in the down direction. The car must not run by normal means. Open the mainline disconnect, and connect a circuit continuity tester, such as an ohmmeter, across the pressure switch. Lower the car to the pit with the manual lowering valve. The ohmmeter must indicate that the pressure switch is open when the car comes to rest on the buffer.

II-2.37.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.

ITEM II-2.38
ROPED WATER HYDRAULIC ELEVATORS

This item is not applicable.

ITEM II-2.39
MANUAL OPERATION

II-2.39.3 Acceptance

Determine that manual operation cannot be accessed from within the car and that the instructions are posted at or near the device. Application of the device must not release the brake. Application of the device must lower the car.

II-2.39.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.16.2(i).

ITEM II-2.40
SLACK ROPE OR SLACK CHAIN DEVICES

II-2.40.3 Acceptance

Slack rope or slack chain devices are required on winding drum, roped hydraulic, chain hydraulic, and roller-chain-drive elevators. If located within the machine room, trip the device by hand with the car running, and determine that it stops. The device must be the manual reset type unless the drive is the chain type and the chains are retained and guarded on the drive sprocket. Determine that the slack rope or slack chain device detector bars are set as close as possible to the drive machine drum in order to open the switch with a minimum of slack rope or slack chain. Lower the car onto a suitable support or supports placed in the pit. The tension on the hoist ropes must decrease sufficiently to operate the slack rope device. Slack rope or slack chain devices on roped hydraulic and chain hydraulic elevators are generally found in the hoistway or on the car.

II-2.40.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.18.8, 5.3.2.1, and 5.3.2.4.6.

Part II-3
Private Residence Elevator — Top of Car

CAUTION: Private residence elevators are not required to have car top operating stations or refuge space unless they have the machine or its controls located on top of the car. Before accessing the car top or inspecting any moving parts (such as sheaves, drums, brakes, governors, relays, or switches), make certain the power supply to the equipment under inspection is opened. Further, it is required to lock out and tag out the mainline disconnect switch. To ensure the proper disconnect switch has been opened, attempt to operate the elevator. Because of the variable types and locations of devices, inspection of these devices located in the hoistway must be done in accordance with the manufacturer's recommendations. Inspectors are cautioned not to ride on the car top unless it is intended and equipped for top-of-car inspection.

ITEM II-3.1
TOP-OF-CAR STOP SWITCH

II-3.1.3 Acceptance

Where provided or required, check the top-of-car stop switch in both directions to ensure it is functioning properly before proceeding with the inspection.

II-3.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.16.2(j).

ITEM II-3.2
CAR TOP LIGHT AND OUTLET

This item is not applicable.

ITEM II-3.3
TOP-OF-CAR OPERATING DEVICE

II-3.3.3 Acceptance

Where provided or required, check the top-of-car operating device for proper operation.

II-3.3.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.16.2(j).

ITEM II-3.4
TOP-OF-CAR CLEARANCE AND REFUGE SPACE

II-3.4.3 Acceptance

Determine if the hoistway provides adequate top-of-car clearances based on the requirements of the Code.

II-3.4.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.3.

ITEM II-3.5
NORMAL TERMINAL STOPPING DEVICES

II-3.5.3 Acceptance

Normal terminal stopping devices are usually located in the hoistway, but they may be located in the machine room and mechanically connected to and driven by the car except for winding drum machines.

Determine that the elevator car will stop at or near the terminal landing once the normal terminal stopping device is activated while in normal operation.

Verify that the stopping switches, vanes, cams, switch rollers, magnets, etc., as applicable, are in the correct alignment and securely fastened. The alignment of the bottom terminal stopping device can be checked by stopping the car near the bottom terminal and sighting the alignment of the cam and switch roller. The switch roller must strike the bevel of the cam. Also, determine the condition of the limit switch rollers, as a reduction of the effective roller diameter due to either wear or loss of the roller(s) or any of their components may interfere with or prevent proper switch operation. The combination of excessively worn guide shoes and limit switch rollers may cause cars to overrun their terminals.

II-3.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.17.1(a) and 5.3.1.17.1(d).

ITEM II-3.6
FINAL TERMINAL STOPPING DEVICES

II-3.6.3 Acceptance

Verify that the bottom final terminal stopping device will stop a car in the down direction with rated load at rated speed. Verify that the top final terminal limit will stop a car in the up direction with no load at rated speed. In both cases, verify that the devices are set to stop the car after it travels past the normal terminal stopping device and before an obstruction is struck.

II-3.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.17.1(b), 5.3.1.17.1(c), 5.3.17.2, 5.4.14.2, and 5.4.14.3.

ITEM II-3.7
CAR LEVELING AND ANTICREEP DEVICES

II-3.7.3 Acceptance

Observe that the anticreep device keeps the car to within 25 mm (1 in.) of the floor level. Verify that the anticreep device remains operational regardless of car or hoistway door position, emergency stop or in-car switch, and activation of normal stopping devices.

II-3.7.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.4.

ITEM II-3.8
TOP EMERGENCY EXIT

This item is not applicable.

ITEM II-3.9
FLOOR AND EMERGENCY IDENTIFICATION NUMBERING

This item is not applicable.

ITEM II-3.10
HOISTWAY CONSTRUCTION

II-3.10.3 Acceptance

Determine if the hoistway enclosure conforms to the building code requirements.

II-3.10.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.1.

ITEM II-3.11
HOISTWAY SMOKE CONTROL

This item is not applicable.

ITEM II-3.12
PIPES, WIRING, AND DUCTS

II-3.12.3 Acceptance

Verify that there are no pipes conveying steam, gas, or liquids installed in the hoistway that would endanger life if discharged. Where sprinklers are provided, check that sprinkler risers and returns have been located outside the hoistway.

II-3.12.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.5.

ITEM II-3.13
WINDOWS, PROJECTIONS, RECESSES, AND SETBACKS

II-3.13.3 Acceptance

Determine that all exterior windows are protected by grillwork. Verify that all sill and toe guards are in place.

II-3.13.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.1.

ITEM II-3.14
HOISTWAY CLEARANCE

II-3.14.3 Acceptance

Verify that the horizontal dimensions and clearances are within guidelines.

II-3.14.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.4, 5.3.1.7.2, 5.4.2.4, and 5.4.2.5.

ITEM II-3.15
MULTIPLE HOISTWAYS

This item is not applicable.

ITEM II-3.16
TRAVELING CABLES AND JUNCTION BOXES

II-3.16.3 Acceptance

Verify that traveling cables are properly installed, supported, and protected against damage.

II-3.16.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.18.4 and 5.4.15.5.3.

ITEM II-3.17
DOOR AND GATE EQUIPMENT

II-3.17.3 Acceptance

Verify that the hoistway doors meet the requirements of the Code. Check that the interlocks or combination mechanical locks and electric contacts and car door or gate electric contacts are labeled by a certifying agency acceptable to the authority having jurisdiction.

II-3.17.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.7.1 through 5.3.1.7.6, 5.3.1.8.2(b), 5.3.1.8.2(c), and 5.4.4.2.1 through 5.4.4.2.3.

ITEM II-3.18
CAR FRAME AND STILES

II-3.18.3 Acceptance

Determine through visual inspection that no cracks exist in the stiles or car frame.

II-3.18.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.9 and 5.4.5.1.

ITEM II-3.19
GUIDE RAILS, FASTENINGS, AND EQUIPMENT

II-3.19.3 Acceptance

Determine through visual inspection that the guide rails are adequately fastened to the structure. Verify that the guiding means are properly engaged in the guide rails.

II-3.19.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.15 and 5.4.11.

ITEM II-3.20
GOVERNOR ROPE

II-3.20.3 Acceptance

If a governor has been provided, verify that the governor rope is the proper material and correct size.

II-3.20.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11.5 through 5.3.1.11.7 and 5.4.7.

ITEM II-3.21
GOVERNOR RELEASING CARRIER

This item is not applicable.

ITEM II-3.22
WIRE ROPE OR CHAIN FASTENING AND HITCH PLATE

II-3.22.3 Acceptance

Verify that the ropes or chains conform to the specifications on the data plate and are properly fastened at each end.

II-3.22.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12.1, 5.3.1.12.7, and 5.4.8.9.

ITEM II-3.23
SUSPENSION ROPE OR CHAIN

II-3.23.3 Acceptance

Inspect ropes for high wires, breaks, or bird-caging as well as for even tensioning. Inspect chains to confirm proper lubrication, alignment, and tensioning.

II-3.23.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.12 and 5.4.8.

ITEM II-3.24
TOP COUNTERWEIGHT CLEARANCE

This item is not applicable.

ITEM II-3.25
CAR, OVERHEAD, AND DEFLECTOR SHEAVES

II-3.25.3 Acceptance

Verify that sheaves are the proper size, are designed to prevent ropes from leaving the grooves, and are adequately lubricated.

II-3.25.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.16.2(b) through 5.3.1.16.2(e), 5.3.2.2, 5.4.13.1, 5.4.13.3, 5.4.13.4, and 5.4.13.8.

ITEM II-3.26
BROKEN ROPE, CHAIN, OR TAPE SELECTOR SWITCH

This item is not applicable.

ITEM II-3.27
DATA PLATE

II-3.27.3 Acceptance

Verify the location of the data plate and verify the information on the data plate.

II-3.27.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.20.2 and 5.4.16.

ITEM II-3.28
COUNTERWEIGHT AND COUNTERWEIGHT BUFFER

II-3.28.3 Acceptance

Verify that the weights, sheaves, and buffers are securely fastened and adequately lubricated. Verify that for elastomeric bumpers the marking plate is in place and the manufacturer's recommended replacement criteria have not been met. A written checkout procedure must be part of the on-site documentation required by ASME A17.1/CSA B44, requirement 8.6.1.2.2(c)(1).

II-3.28.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.13, 5.3.1.14, 5.4.9, and 5.4.10.

ITEM II-3.29
COUNTERWEIGHT SAFETIES

II-3.29.3 Acceptance

If a counterweight is provided and the space below the hoistway is not permanently secured against access, verify that a counterweight safety is provided.

Test counterweight safeties as outlined in Item II-2.29.

II-3.29.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11 and 5.4.9.

ITEM II-3.30
SPEED TEST

II-3.30.3 Acceptance

Check and verify the information on the data plate. Have the rated load placed in the car, and use a tachometer to verify the rated speed going up and the operating speed in the down direction.

II-3.30.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.10.2, 5.3.1.20.2, and 5.4.6.3.

ITEM II-3.31
SLACK ROPE OR SLACK CHAIN DEVICE

II-3.31.3 Acceptance

Verify the switch operation and function if any one rope or chain must fail. See the manufacturer's recommended procedure.

II-3.31.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.18.8, 5.3.2.4.6, and 5.4.7.7.

ITEM II-3.32
TRAVELING SHEAVE

See Item 3.25.

ITEM II-3.33
COMPENSATING ROPES OR CHAINS

There are no requirements for compensating ropes or chains in ASME A17.1-2007/CSA B44-07, Sections 5.3 and 5.4.

Part II-4
Private Residence Elevator — Outside Hoistway

ITEM II-4.1
CAR PLATFORM GUARD

II-4.1.3 Acceptance

For all elevators where leveling is provided, check that there is a smooth metal guard extending a distance below the platform floor equal to the depth of the unlocking zone above the landing sill plus 50 mm (2 in.) on the entrance side of the platform. This guard must not strike the pit floor and must extend the full width of the widest hoistway door.

II-4.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.9.2(b).

ITEM II-4.2
HOISTWAY DOORS

II-4.2.3 Acceptance

Examine hoistway doors or gates, locking devices, and latching means. Measure the distances between the hoistway face of the doors or gates and the hoistway edge of the landing sill. Measure the distance between the hoistway face of the landing doors or gates and the car door or gate. Verify that the clearances meet the requirements. Check that opening the door or gate does not require reaching behind any structure. Verify that only permitted hardware projects into the hoistway beyond the sill line.

II-4.2.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.7 and 5.4.2.

ITEM II-4.3
VISION PANELS

This item is not applicable.

ITEM II-4.4
HOISTWAY DOOR-LOCKING DEVICES

II-4.4.3 Acceptance

Verify that the locking device is tested and properly labeled and inaccessible from the landing side. Verify that the car does not respond to calls with the hoistway door open. Verify that when the car is outside of the unlocking zone, the hoistway door cannot be opened.

II-4.4.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.7.4 and 5.4.2.2.

ITEM II-4.5
ACCESS TO HOISTWAY

II-4.5.3 Acceptance

Verify that all hoistway doors or gates are fitted with an unlocking device.

II-4.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.7.7.

ITEM II-4.6
POWER CLOSING OF HOISTWAY DOORS

II-4.6.3 Acceptance

Where both the hoistway and car doors are closed by power, verify that they are both horizontally sliding.

II-4.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.8.2(a).

ITEM II-4.7
SEQUENCE OPERATION

This item is not applicable.

ITEM II-4.8
HOISTWAY ENCLOSURE

II-4.8.3 Acceptance

Where the elevator is installed in other than a single-family dwelling, verify that the elevator is not accessible to the general public or other occupants of the building. Verify that the construction of the hoistway is within the stated requirements, including strength, fire resistance, and grillwork over windows.

Check the hoistway for the installation of any pipes or ducts not related to the operation of the elevator. Note that there are several permissive exceptions to a fully enclosed hoistway.

II-4.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1, 5.3.1.5, 5.4.1, and 5.4.2.

ITEM II-4.9
ELEVATOR PARKING DEVICES

This item is not applicable.

ITEM II-4.10
EMERGENCY DOORS IN BLIND HOISTWAYS

This item is not applicable.

ITEM II-4.11
SEPARATE COUNTERWEIGHT HOISTWAY

II-4.11.3 Acceptance

Verify that the counterweight enclosure (if provided) is equipped with a door that is self-closing and self-locking. If the available space is sufficient for full bodily entry, the door must be openable from the inside without the use of a key or other instrument. Verify that a stop switch is located so that it is readily reached from outside the enclosure.

II-4.11.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.1.13.2.

ITEM II-4.12
STANDBY POWER SELECTION SWITCH

This item is not applicable.

Part II-5
Private Residence Elevator — Pit

ITEM II-5.1
PIT ACCESS, LIGHTING, STOP SWITCH, AND CONDITION

II-5.1.3 Acceptance

Examine pit construction for Code compliance and guarding.

II-5.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.2 and 5.3.1.18.4.

ITEM II-5.2
BOTTOM CLEARANCE, RUNBY, AND MINIMUM REFUGE SPACE

This item is not applicable.

ITEM II-5.3
FINAL AND EMERGENCY TERMINAL STOPPING DEVICES

See Item II-3.6.

ITEM II-5.4
NORMAL TERMINAL STOPPING DEVICES

See Item II-3.5.

ITEM II-5.5
TRAVELING CABLES

II-5.5.3 Acceptance

Verify that the traveling cable is supported properly and does not come in contact with the pit floor or rub the hoistway wall or other objects in the hoistway.

II-5.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.18.4 and 5.4.15.5.

ITEM II-5.6
GOVERNOR-ROPE TENSION DEVICES

II-5.6.3 Acceptance

If provided, verify that the governor-rope tension device is securely fastened and lubricated properly.

II-5.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11 and 5.4.7.

ITEM II-5.7
CAR FRAME AND PLATFORM

See Item II-3.18.

ITEM II-5.8
CAR SAFETIES AND GUIDING MEMBERS

II-5.8.3 Acceptance

Examine the data on the safety marking plate, if provided, and verify that it meets the requirements for speed and load of installation.

II-5.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11 and 5.4.7.

ITEM II-5.9
BUFFER

II-5.9.3 Acceptance

Compare and verify the information on the buffer data plate, if provided, with the layout drawing and Code requirements.

II-5.9.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.14 and 5.4.10.

ITEM II-5.10
COMPENSATING CHAINS, ROPES, AND SHEAVES

This item is not applicable.

ITEM II-5.11
PLUNGER AND CYLINDER

II-5.11.3 Acceptance

Verify that the information on the data plate matches the information on the layout drawing and is in compliance with Code requirements.

II-5.11.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.1.

ITEM II-5.12
CAR BUFFER

See Item II-5.9.

ITEM II-5.13
GUIDING MEMBERS

II-5.13.3 Acceptance

Verify that guide members are adequately secured and properly aligned and adjusted.

II-5.13.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.3.1.11.3(a), 5.3.1.13.1(a), 5.3.2.1, 5.4.9.1, and 5.4.12.

ITEM II-5.14
SUPPLY PIPING

II-5.14.3 Acceptance

Verify that hydraulic piping, valves, and fittings are the proper size and pressure rating and are not leaking. Ensure that adequate support is provided.

II-5.14.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.1.

ITEM II-5.15
OVERSPEED VALVE

II-5.15.3 Acceptance

Verify that the overspeed valve, if provided, is marked and installed according to the applicable Code requirements. Demonstrate that the overspeed valve will stop the car running in the down direction with rated load in accordance with the written procedure provided by the valve manufacturer or the person or firm maintaining the equipment. Verify that the valve is sealed.

II-5.15.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.3.2.2.1.

MANDATORY APPENDIX III
GUIDE FOR INSPECTION OF PRIVATE RESIDENCE INCLINED ELEVATORS

FOREWORD

This Appendix only contains pertinent notes and inspection guides peculiar to private residence inclined elevators. Where no specific instructions appear, the inspection guides for private residence vertical elevators can be used.

PREFACE

(a) Form and Arrangement. This Guide addresses the inspection guidelines, techniques, and cautionary notes following the sequence found in ASME A17.2. The Guide is prepared for acceptance inspections and can also be used for periodic inspections using the acceptance procedures. Appropriate references to the latest edition of the Code, in effect at the time of this Guide's publication, are listed at the end of each subsection. The Parts are arranged to show the location of the inspection, as in ASME A17.2.

Part III-1 Private Residence Inclined Elevators — Inside of Car

Part III-2 Private Residence Inclined Elevators — Machine Room

Part III-3 Private Residence Inclined Elevators — Top of Car (when used)

Part III-4 Private Residence Inclined Elevators — Outside Hoistway

Each inspection location is further subdivided as follows:

III-X Location of inspection

III-X.X Item to be inspected

III-X.X.3 Acceptance inspection (periodic)

Electric elevators (as applicable)

Hydraulic elevators (as applicable)

III-X.X.4 Code references

Electric elevators (as applicable)

Hydraulic elevators (as applicable)

This Guide only references requirements from ASME A17.1-2007/CSA B44-07 and later editions. The Foreword and Preface that are included in this Appendix have been approved by the ASME A17 Standards Committee but are not part of this Guide.

(b) Private Residence Inclined Elevators. This Appendix contains pertinent notes and inspection guides for private residence inclined elevators.

Part III-1
Private Residence Inclined Elevators — Inside of Car

ITEM III-1.1
DOOR REOPENING DEVICE

Private residence inclined elevator car doors are required to be manually operated. If power operated, hoistway doors can be inspected as provided for private residence electric elevators.

III-1.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.4.2.3.

ITEM III-1.2
STOP SWITCHES

Emergency stop switches are required.

III-1.2.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.15.2.

ITEM III-1.3
OPERATING CONTROL DEVICES

Private residence inclined elevator control devices are additionally required to be of the key-operated type.

III-1.3.3 Acceptance

Verify that the key-operated devices controlling the car direction return to the center "OFF" position upon release and that the key is only removable in the center "OFF" position. Inspect the other functions as per Mandatory Appendix II.

III-1.3.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.15.1.

ITEM III-1.4
SILLS AND CAR FLOOR

Refer to Mandatory Appendix II.

ITEM III-1.5
CAR LIGHTING

Where the car is enclosed, follow Mandatory Appendix II.

ITEM III-1.6
CAR DOOR OR GATE

III-1.6.3 Acceptance

Note that the car door or gate height is equal to the height of the enclosure and not less than 1 070 mm (42 in.). If the door or gate is constructed of openwork, verify that the openings will reject a 75-mm (3-in.) ball. Note that if the gate is of the swing type and moves outward from the car the contact does not make up until the gate is closed and latched.

III-1.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.4.2.1, 5.4.4.2.2, and 5.4.4.2.4.

ITEM III-1.7
CAR ENCLOSURE

III-1.7.3 Acceptance

Where the car enclosure is less than 1 830 mm (72 in.) above the car floor, verify that there is no obstruction that can be contacted within 610 mm (24 in.) of the outside top rail of the car unless it is guarded in accordance with the requirements. Refer to Mandatory Appendix II for inspection of the car enclosure.

III-1.7.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.1, 5.4.4, 5.4.5.1, and 5.4.5.2.

ITEM III-1.8
RATED LOAD, PLATFORM AREA, AND DATA PLATE

III-1.8.3 Acceptance

Measure the inside dimensions of the car as provided for in Mandatory Appendix II. If the car is provided with permanent fixed benches or shelves that reduce the standing area of the overall car, only 50% of the measurement of the bench or shelf is used to determine the net platform area. Determine that the capacity and data plates are provided. Note that the data plate should be located in the machine area.

III-1.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.6.1, 5.4.6.2, and 5.4.16.

ITEM III-1.9
CAR RIDE

III-1.9.3 Acceptance

Operate the car from one terminal landing to the other, listen for unusual noises, and observe whether there is excessive or irregular motion of the car. Stop at each landing, and verify that the landing-to-sill distances are within the requirements and that the car stops neither too high nor too low.

III-1.9.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.2.4 and 5.4.2.5.

Part III-2
Private Residence Inclined Elevators — Machine Room

Refer to Mandatory Appendix II.

Part III-3
Private Residence Inclined Elevators — Top of Car

It is not likely that any private residence inclined elevator will have access or top-of-car equipment. If an installation must be provided with access or car top equipment, inspect per Mandatory Appendix II. All of the inspections normally performed from the top of the car on public installations will be done under Part III-4.

Part III-4
Private Residence Inclined Elevators — Outside Hoistway

ITEM III-4.1
NORMAL TERMINAL STOPPING DEVICES

III-4.1.3 Acceptance

In addition to inspections suggested by Mandatory Appendix II, verify that switchgear used on exterior installations is suitable for the environment.

III-4.1.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.14.1 and 5.4.14.3.

ITEM III-4.2
FINAL TERMINAL STOPPING DEVICES

Private residence inclined elevators are not permitted to use the slack rope device in place of a lower final terminal stopping device.

III-4.2.3 Acceptance

Inspect as suggested by Mandatory Appendix II.

III-4.2.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.14.2 and 5.4.14.3.

ITEM III-4.3
HOISTWAY CONSTRUCTION

III-4.3.3 Acceptance

Verify that the landing construction conforms to ASME A17.1-2007/CSA B44-07, Section 5.4, unless the installation is required to conform to the building code.

III-4.3.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.1 and 5.4.2.1 through 5.4.2.3.

ITEM III-4.4
HOISTWAY CLEARANCES

III-4.4.3 Acceptance

In addition to the inspections made under Item III-1.7, note whether obstructions have been cleared away from the running path of the car. Verify the landing-to-car clearances.

III-4.4.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.2.4 and 5.4.2.5.

ITEM III-4.5
CAR FRAMES AND CHASSIS

III-4.5.3 Acceptance

Verify that the connections from the car to the chassis are sound. Note if the design of the chassis and guide rails provides a means to prevent derailment of the car. Cast iron is not permitted to be used for any member of the car frame or chassis.

III-4.5.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.5.1 through 5.4.5.3.

ITEM III-4.6
GUIDE RAILS, FASTENINGS, AND EQUIPMENT

III-4.6.3 Acceptance

Look down the guide rails from the top end to verify straightness. Examine the joints for installation of fasteners and alignment.

III-4.6.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.11.1 through 5.4.11.3.

ITEM III-4.7
WIRE ROPE AND FASTENING

Private residence inclined elevators are permitted a single suspension means with a safety factor of 8. To determine the actual load on the suspension means, multiply the weight of the car and its chassis plus the rated load by the sine of the angle of inclination.

EXAMPLE:

(SI Units)
weight of car and chassis + rated load
= 230 kg + 341 kg = 571 kg
angle of inclination = 25 deg
net load on the suspension means
= sine (25 deg) × 571 kg = 0.423 × 571 kg = 241 kg

(Imperial Units)
weight of car and chassis + rated load
= 500 lb + 750 lb = 1,250 lb
angle of inclination = 25 deg
net load on the suspension means
= sine (25 deg) × 1,250 lb = 0.423 × 1,250 lb = 529 lb

III-4.7.3 Acceptance

Note the information provided on the tag and the method of attachment. Verify that a suspension means has been provided.

III-4.7.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.8.

ITEM III-4.8
CAR, TRAVELING, AND DEFLECTOR SHEAVES

Private residence elevator sheaves are permitted to be reduced from 30 dia. to 21 dia. when using 8 × 19 steel ropes or 7 × 19 aircraft cable.

III-4.8.3 Acceptance

Check the diameter of all sheaves for compliance.

III-4.8.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.13.1 through 5.4.13.3, 5.4.13.8, and 5.4.13.9.

ITEM III-4.9
COUNTERWEIGHT

III-4.9.3 Acceptance

If the counterweight is not a single section, verify that multiple-section counterweights are mounted so that they will be retained securely in place.

III-4.9.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.9.

ITEM III-4.10
HOISTWAY DOORS OR GATES

Private residence inclined elevators may use landings that are part of the residence structure or landings that are created to serve the elevator away from the residence.

III-4.10.3 Acceptance

Note that the height of the door or gate is at least equal to the height of the enclosure. If constructed of openwork, check to verify that it will reject a 25-mm (1-in.) ball. Check the clearances between the landing doors or gates and the car door or gate and the clearance from the landing sill to the car sill for compliance.

III-4.10.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirements 5.4.2.2 through 5.4.2.5.

ITEM III-4.11
HOISTWAY DOOR- OR GATE-LOCKING DEVICES

III-4.11.3 Acceptance

Note that the locking devices cannot be opened from the landing side. Verify that the device is of a type that has been tested and approved and is marked for identification.

III-4.11.4 References

ASME A17.1-2007/CSA B44-07 and later editions — Requirement 5.4.2.2.

NONMANDATORY APPENDIX A
INSPECTION CHECKLISTS

See Tables A-1 through A-4.

Table A-1
Checklist for Electric Elevators

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car			
1.1	Door reopening device	112 1001.2(a)(1)	2.13.5 8.10.2.2.1(a) 8.11.2.1.1(a)		
1.2	Stop switches	210.2(e) 210.2(v) 1001.2(a)(2)	2.26.2.5 2.26.2.21 8.10.2.2.1(b)(2) 8.11.2.1.1(b)	3.10.4(t) 3.10.4(u)	
1.3	Operating control devices	210.1a 210.1e 1001.2(a)(3)	2.26.1.1 2.26.1.2 2.26.1.4.3 2.26.1.5 2.26.1.6 8.10.2.2.1(c) 8.11.2.1.1(c)	3.10.1 3.10.2 3.10.7	
1.4	Sills and car floor	108.1 110.10d, 110.11a 110.13a 203.16 210.12 1001.2(a)(4)	2.5.14 2.5.1.5 2.11.10 2.15.5 8.10.2.2.1(d) 8.11.2.1.1(d)	3.3.3 3.3.4	ANSI A117.1
1.5	Car lighting and receptacles	204.7 1001.2(a)(5)	2.14.7 2.14.7.1.3 8.10.2.2.1(e) 8.11.2.1.1(e)	3.4.5 3.4.6	
1.6	Car emergency signal and communication device(s)	211.1 1001.2(a)(6)	2.11.1.3, 2.27.1 8.10.2.2.1(f) 8.11.2.1.1(f)	3.11.1	
1.7	Car door or gate	112.2a 204.4 through 204.6 210.2q 1001.2(a)(7)	2.5.1.5.3 2.13.2.1 2.14.4.2 2.14.4.5 2.14.4.6 2.14.4.11 2.14.5 2.14.6 2.26.2.15 2.26.2.28 8.11.2.1.1(g)	3.4.2 3.4.3 Appendix A	
1.8	Door closing force	112.4(b) 1001.2(a)(8) 1002.2h	2.13.4.2.3 2.13.4.2.4 8.6.4.19.8 8.10.2.2.1(h) 8.11.2.1.1(h)	2.8.1	
1.9	Power closing of doors or gates	112.3 1001.2(a)(9)	2.13.3 8.10.2.2.1(i) 8.11.2.1.1(i)	2.8.2	
1.10	Power opening of doors or gates	111.12 210.1e 210.9c 1001.2(a)(10) 1002.3g through 1002.3i	2.13.2 2.16.1.6.3 2.26.1.6.6 2.26.1.6.7 2.26.9 (2.26.9.3) 8.6.4.20.7 through 8.6.4.20.9 8.10.2.2.1(j) 8.11.2.1.1(j)		

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car (Cont'd)			
1.11	Car vision panels and glass car doors	204.2e 204.5i 1001.2(a)(11)	2.14.2.5 2.14.2.6 2.14.5.9 8.10.2.2.1(k) 8.11.2.1.1(k)		
1.12	Car enclosure	(NR 2.7.5.1.4) 204 204.1b 204.1h 207.2b 207.4 207.5 211.9 1104 1206.9 1202.5 1001.2(a)(12) 204.2b (NR 2.14.2.6) (NR 8.1)	2.7.5.1.4 2.14.1.9 2.14.2.1 2.14.2.2 2.14.2.6 2.14.3.1 2.14.5.9 2.16.2.2 2.16.4 2.16.5 2.29.1 8.3.7 8.6.10.3 8.7.2.14 8.10.2.2.1(l) 8.11.2.1.1(l)	3.4.1 3.7.5	NFPA 70 or CSA C22.1, as applicable
1.13 (also see 1.20)	Emergency exit	204.1e 204.1j 204.2d 1001.2(a)(13)	2.14.1.5 2.14.1.10 2.14.2.4 8.1.2 8.10.2.2.1(m) 8.11.2.1.1(m)	3.4.4	
1.14	Ventilation	204.1(i) 204.2c 204.3c 1001.2(a)(14)	2.14.1.9.1(f) 2.14.2.3 2.14.3.3 8.10.2.2.1(n) 8.11.2.1.1(n)		NFPA 70 or CSA C22.1, as applicable
1.15	Signs and operating device symbols	210.13 1001.2(a)(15)	2.16.5 2.26.12 8.10.2.2.1(o) 8.11.2.1.1(o)		
1.16	Rated load, platform area, and data plate	207 1001.2(a)(16)	2.16.1 2.16.2 2.16.3g 8.10.2.2.1(p) 8.11.2.1.1(p)	3.7	
1.17	Standby power operation	207.8 210.10 211.2 1001.2(a)(17) 1002.2g 1002.3e	2.16.8 2.26.10 2.27.2 8.6.4.19.7 8.6.4.20.5 8.10.2.2.1(q) 8.11.2.1.1(q)		
1.18	Restricted opening of car or hoistway doors	111.12 1001.2(a)(18)	2.14.5.7 8.10.2.2.1(r) 8.11.2.1.1(r)	2.7.5	
1.19	Car ride	200 203.2 1001.2(a)(19)	2.15.2 2.23 2.23.6 8.10.2.2.1(s) 8.11.2.1.1(s)		

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car (Cont'd)			
1.20	Earthquake inspection and tests (seismic risk zone 2 or greater)	2406	8.4 8.10.2.2.1(m) 8.11.2.1.1(m)		
N/A	Door monitoring systems	210.15	2.26.5 8.10.2.2.1(t) 8.11.2.1.1(t)		
N/A	Stopping accuracy	N/A	2.26.11 8.10.2.2.1(u) 8.11.2.1.1(u)		
N/A	Machinery space/control space	N/A	2.7.5.1.1 2.26.2.34 8.6.10.6 8.6.10.7 8.10.2.2.2 8.11.2.1.1(v) 8.11.2.1.2		
N/A	Working areas in the car	N/A	2.7.5.1.1 2.26.2.34 8.6.10.6 8.6.10.7 8.10.2.2.1(w) 8.11.2.1.1(w)		
N/A	Equipment access panel electrical device	N/A	2.26.2.35 8.10.2.2.1(x) 8.11.2.1.1(x)		
		Part 2 Elevator — Machine Room			
N/A	Location of room/spaces	N/A	2.7.6.1 2.7.6.2 8.10.2.2.2(a)		
N/A	Location of equipment	N/A	2.7.6.3 8.10.2.2.2(b)		
N/A	Equipment exposure to weather	N/A	2.7.6.6 8.10.2.2.2(c)		
2.1	Access to machinery space	101.1a 101.3a through 101.3d 1001.2(b)(1)	2.7.1.1 2.7.3.1 through 2.7.3.4 8.10.2.2.2(d) 8.11.2.1.2(a)	2.2.2	NFPA 70 or CSA C22.1, as applicable
2.2	Headroom	101.4 1001.2(b)(2)	2.7.4 8.10.2.2.2(e) 8.11.2.1.2(c)		
N/A	Means necessary for tests	N/A	2.7.6.4 8.10.2.2.2(f) 8.11.2.1.2(d)		
N/A	Inspection and test panel	N/A	2.7.6.5 8.10.2.2.2(g) 8.11.2.1.2(e)		
2.3	Lighting and receptacles	101.5a 2.2.3 101.5c 1001.2(b)(3)	2.7.5.1 2.7.9.1 8.10.2.2.2(h) 8.11.2.1.2(f)	2.2.3	NFPA 70 or CSA C22.1, as applicable

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 2 Elevator — Machine Room (Cont'd)				
2.4	Machinery space	100.3c 100.3d 100.5 101.1a 101.2 101.8 1001.2(b)(4)	2.1.3.3 2.1.3.4 2.1.5 2.7.1.1 through 2.7.1.3 2.7.2 2.7.8 8.10.2.2.2(i) 8.11.2.1.2(g)	2.2.1 2.2.6	
2.5	Housekeeping	1001.2(b)(5) 1206.2b 1206.9	8.6.4.8 8.6.10.4 8.10.2.2.2(j) 8.11.2.1.2(h)		
2.6	Ventilation	101.5b 102.4 1001.2(b)(6)	2.7.5.2 2.7.9.2 2.8.4 2.8.5 8.10.2.2.2(k) 8.11.2.1.2(i)	2.2.4	
2.7	Fire extinguisher	1001.2(b)(7) 1206.1h	8.6.1.6.5 8.10.2.2.2(l) 8.11.2.1.2(j)		
2.8	Pipes, wiring, and ducts	102.1 102.2 1001.2(b)(8)	2.8.1 2.8.2 8.10.2.2.2(m) 8.11.2.1.2(k)	2.2.5	NFPA 13 ASME A17.1, Inquiry 88-26
2.9	Guarding of exposed auxiliary equipment	104.1 1001.2(b)(9)	2.10.1 8.10.2.2.2(n) 8.11.2.1.2(l)		
2.10	Numbering of elevators, machines, controllers, and disconnect switches	208.10 210.4 211.9 1001.2(b)(10)	2.29.1 8.10.2.2.2(o) 8.11.2.1.2(m)		NFPA 70 or CSA C22.1, as applicable
N/A	Maintenance path and maintenance clearance	N/A	2.7.2 8.10.2.2.2(p) 8.11.2.1.2(n)		
N/A	Stop switch	101.3e 210.2(v)	2.7.3.5 2.26.2.24 8.10.2.2.2(q) 8.11.2.1.2(o)		NFPA 70 or CSA C22.1, as applicable
2.11	Disconnecting means and control	210.4 1001.2(b)(11)	2.26.4 8.10.2.2.2(r) 8.11.2.1.2(p)	3.10.5	NFPA 70 or CSA C22.1, as applicable ASME A17.5-1991, clause 20.7
2.12	Controller wiring, fuses, grounding, etc.	102.1 210.4 1001.2(b)(12) 1206.1f	2.8.2 2.26.1 2.26.4.1 2.26.4.2 2.26.6 2.26.7 8.6.1.6.1 8.6.1.6.3 8.10.2.2.2(s) 8.11.2.1.2(q)	3.10	NFPA 70 or CSA C22.1, as applicable

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 2 Elevator — Machine Room (Cont'd)				
2.13	Governor, overspeed switch, and seal	206 205.15 210.2(j) 1001.2(b)(28) 1002.2c 1002.3a 1002.3b 1003.2a 1206.1a	2.7.6.3.4 2.17.15 2.18.2 through 2.18.4 2.18.6 2.18.9 2.26.2 (2.26.2.10) 8.6.1.6.2 8.6.4.19.3 8.6.4.20.1 8.6.4.20.2 8.6.4.20.2(c) 8.10.2.2.2(hh) 8.11.2.1.2(ff)	3.6.1 3.10.4(g)	
2.14	Code data plate	215 1200.6	8.9, 8.7.1.8 8.10.2.2.2(ll) 8.11.2.1.2(hh)		
N/A	Emergency brake		2.19.3 8.10.2.2.2(mm) 8.11.2.1.2(ii)		
2.15	Static control	210.2 210.9(d) 1001.2(b)(13) 1003.2h	2.26.2 2.26.6 2.26.9.1 through 2.26.9.6 2.26.9.8 8.10.2.2.2(t) 8.11.2.1.2(r)		
2.16	Overhead beam and fastenings	105.1 through 105.3 1001.2(b)(14)	2.9.1 through 2.9.3 8.10.2.2.2(u) 8.11.2.1.2(s)		
2.17	Drive machine brake	207.2b 207.8 (NR 2.24.8) 210.8 1001.2(b)(15) [NR 8.11.2.3.10(a)] 1002.3d	2.16.2.2 2.16.6 2.16.8 2.24.8.2.2 2.24.8.3 2.24.8.5 2.26.8 8.6.1.7.2 8.6.4.20.4 8.10.2.2.2(v) 8.11.2.1.2(t)	3.8.4	
2.18	Traction-drive machines	208 1001.2(b)(16) 1003.2 [NR 811.2.3.10(b)]	2.24.1 2.24.4 2.24.5 2.24.9 8.10.2.2.2(w) 8.11.2.2.2(u)	3.8.1	
2.19	Gears, bearings, and flexible couplings	208 1001.2(b)(17) 1206.1a	2.24.6 2.24.7 2.24.10 8.6.1.6.2 8.10.2.2.2(x) 8.11.2.1.2(v)	3.8.1	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 2 Elevator — Machine Room (Cont'd)				
2.20	Winding drum machine and slack rope device, stop-motion switch, and rope fastening	208.1 209.3c(2) 209.3e 210.2 212.6 212.7 212.10 1001.2(b)(18) (NR 8.6.4.19.4) (NR 8.6.4.19.5) 1002.2d 1206.3	2.20.2 2.20.6 2.20.7 2.20.10 2.24.1 2.24.2.1 2.24.2.2 2.25.3.3.2 2.25.3.5 2.26.2.1 8.6.4.10 8.6.4.19.4 8.6.4.19.5 8.10.2.2.2(y) 8.11.2.1.2(kk)	3.8.2 3.10.4 3.12.6 3.12.7 3.12.9	
2.21	Belt- or chain-drive machine	208.9 1001.2(b)(19)	2.24.9 8.10.2.2.2(z) 8.11.2.1.2(x)	3.8.3	
2.22	Motor generator	210.9f 1001.2(b)(20) 1003.2j	2.26.9.7 8.10.2.2.2(aa) 8.11.2.1.2(y)		
2.23	Absorption of regenerated power	210.10 1001.2(b)(21) 1003.2k	2.26.10 8.10.2.2.2(bb) 8.11.2.1.2(z)	3.10.10	
2.24	AC drives from a DC source	210.2 210.9(e) 1001.2(b)(22) 1003.2i	2.26.2 2.26.9.6 8.10.2.2.2(oo) 8.11.2.1.2(jj)		
2.25	Traction sheaves	207.8 208.2 208.3 212 1001.2(b)(23) 1202.14 1206.1a 1206.1b	2.16.6 2.20.8.1 2.24.2.1 through 2.24.2.4 2.26.2 (except 2.26.2.13) 8.6.1.6.2 8.6.4.1 8.7.2.21 8.10.2.2.2(cc) 8.11.2.1.2(aa)	3.8.1	
2.26	Secondary and deflector sheaves	208 1001.2(b)(24) 1206.1a	2.24.2 8.6.1.6.2 8.10.2.2.2(dd) 8.11.2.1.2(bb)	3.8.1	
2.27	Rope fastenings	105.3c 1001.2(b)(25) 212	2.9.3.3 2.20 2.20.5 2.20.9 8.10.2.2.2(ee) 8.11.2.1.2(cc)	3.12	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 2 Elevator — Machine Room (Cont'd)				
2.28	Terminal stopping devices	209 1001.2(b)(26) 1002.3f	2.16.8 2.25.2 2.25.4.1 2.25.4.2 8.6.4.20.6 8.10.2.2.2(ff) 8.11.2.1.2(z) 8.11.2.1.2(dd) 8.11.3.6	3.8.2 3.9.1 3.9.2 3.10.4(h) 3.10.4(i) 3.10.4(m) 3.10.4(q)	
N/A	Operating devices	210.1c 210.1.d 210.14 1003.2	2.26.1.3 2.26.1.4.4 2.26.1.5 8.10.2.2.2(gg) 8.11.2.1.2(cc)	3.10	
2.29	Car and counterweight safeties	205 1306 Table 205.3 1001.2(b)(29) 1002.2b 1002.3a 1003.2 1202.6	2.17.3 2.17.7 Table 2.17.3 2.17.8.1 2.17.8.2 2.17.8.2.6 through 2.17.8.2.8 2.17.9.2 2.17.11 2.18.2 through 2.18.4 8.2.6 8.6.4.19.2 8.6.4.20.1 8.7.2.18 8.10.2.2.2(ii) 8.11.2.1.2(gg)	3.5 3.6 3.10.4(m)	
2.40	Maintenance records	N/A	8.6.1.2.2 8.6.1.4 8.6.10.1 8.6.11.1		
2.42	Earthquake inspection and tests (seismic risk zone 2 or greater)	2401 2400.1 2408 2409	8.4.3.1 8.4.10.1.3 8.10.2.2.2(qq) 8.10.2.2.2(rr) 8.11.2.1.2(mm) 8.11.2.1.2(nn)		
N/A	Testing of broken suspension and residual-strength detection means	N/A	2.20.8.2 2.20.8.3 8.6.4.19.13 8.10.2.2.2(ss)		
	Part 3 Elevator — Top of Car				
3.1	Top-of-car stop switch	210.2(h) 1001.2(c)(1)	2.26.2.8 8.10.2.2.3(a) 8.11.2.1.3(a)	3.10.4(e)	
3.2	Car top light and outlet	204.7 1001.2(c)(2)	2.14.7 8.10.2.2.3(b) 8.11.2.1.3(b)	3.4.5(e)	NFPA 70 or CSA C22.1, as applicable
3.3	Top-of-car operating device	204.1g 210.1d 1001.2(c)(3)	2.14.1.7 2.26.1.4.2 2.26.1.5 8.10.2.2.3(c) 8.11.2.1.3(c)	3.10.3	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 3 Elevator — Top of Car (Cont'd)				
3.4	Top-of-car clearance, refuge space, and standard railing	1206.8 107 1304	8.6.4.11 2.4.6 through 2.4.8 2.4.10 2.14.1.7.1 8.2.4 8.6.4.11 8.10.2.2.3(d) 8.11.2.1(d)	2.4.4	
3.5	Normal terminal stopping devices	207.4 209.2 210.2 1001.2(c)(7) 1002.2e 1003.2f 1003.3(k)	2.25.1 2.25.2 8.6.4.19.5 8.6.5.14.3(a) 8.7.2.26 8.10.2.2.2(ff) 8.10.2.2.3(g) 8.10.2.3.2(k) 8.11.2.1.3(g)	3.9.1 3.10.4(q)	
3.6	Final and emergency terminal stopping devices	209.3 1001.2(c)(8) 1002.2e 1003.3(k)	2.25.3 2.26.4.3 8.6.4.19.5 8.7.2.26 8.10.2.23(h) 8.10.2.3.2(k) 8.11.2.1.3(h) 8.11.2.2.5	3.9.2	
3.7	Car leveling and anticreep devices	210.1e 1001.2(c)(10)	2.26.1.6 8.10.2.2.3(j) 8.11.2.1.3(j)		
3.8	Top emergency exit	204.1e 1001.2(c)(12)	2.14.1.5 2.26.2.18 8.4.4.1 8.10.2.2.3(l) 8.11.2.1.3(l)	3.4.4	
3.9	Floor and emergency identification numbering	100.7 211.9 1001.2(c)(15)	2.29.1(g) 2.29.2 8.10.2.2.3(o) 8.11.2.1.3(o)		
3.10	Hoistway construction	100 1001.2(c)(16)	2.1 8.10.2.2.3(p) 8.11.2.1.3(p)	2.1	
3.11	Hoistway smoke control	100.4 1001.2(c)(17)	2.1.4 8.10.2.2.3(q) 8.11.2.1.3(q)		
3.12	Pipes, wiring, and ducts	102 1001.2(c)(18)	2.8 8.10.2.2.3(r) 8.11.2.1.3(r)	2.1.4	
3.13	Windows, projections, recesses, and setbacks	100.5 100.6 110.10 1001.2(c)(19)	2.1.5 2.1.6 2.11.10 8.10.2.2.3(s) 8.11.2.1.3(s)	2.1.2 2.1.3	
3.14	Hoistway clearances	107 108 1001.2(c)(20)	2.4 2.5 8.10.2.2.3(t) 8.11.2.1.3(t)	2.4	Note: Incorrect item number in ASME A17.1/ CSA B44

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 3 Elevator — Top of Car (Cont'd)				
3.15	Multiple hoistways	100.1d 1001.2(c)(21)	2.1.1.4 8.10.2.2.3(u) 8.11.2.1.3(u)		See building code
3.16	Traveling cables and junction boxes	102.1 1001.2(c)(22)	2.8.1 8.10.2.2.3(v) 8.11.2.1.3(v)		NFPA 70 or CSA C22.1, as applicable
3.17	Door and gate equipment	110 111 210.1e 1001.2(c)(23)	2.1.1.1.3 2.11 2.11.1.2 2.11.11.5.8 2.11.11.8 2.11.12.4.8 2.11.15.1 2.12 2.12.2.2 2.12.2.3 2.12.2.5 2.12.3.2 2.12.3.3 2.12.3.5 2.26.1.6 2.26.2.14 2.26.4.3 8.10.2.2.3(w) 8.11.2.1.3(w)	2.6 2.7	ASME A17.1, Inquiry 96-71
3.18	Car frame and stiles	203 213 1001.2(c)(24) 1200.4 1202.4a	2.15 8.6.2.2 8.7.2.15.1 8.8 8.10.2.2.3(x) 8.11.2.1.3(x)		
3.19	Guide rails, fastenings, and equipment	205.16 1001.2(c)(25) 1206.1d	2.17.16 2.23.3 2.23.4 2.23.6 2.23.7 2.23.9 2.23.10 8.6.4.3 8.10.2.2.3(y) 8.11.2.1.3(y)		
3.20	Governor rope	206.5 1001.2(c)(26) 1202.7 1206.1c	2.8.19(c) 2.18.5 2.18.9 8.6.4.2 8.7.2.19 8.10.2.2.3(z) 8.11.2.1.3(z)	3.6.2	ASME A17.6
3.21	Governor releasing carrier	205.15 1001.2(c)(27)	2.17.15 8.6.2.4 8.10.2.2.3(aa) 8.11.2.1.3(aa)	3.5	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 3 Elevator — Top of Car (Cont'd)				
3.22	Wire rope fastening and hitch plate	212 105.3c 203.13 1001.2(c)(28) 1200.5 1206.3	2.9.3.4 2.15.13 2.17.13 2.20.5 2.20.9 8.6.3.3.3 8.6.3.3.4 8.6.4.10 8.10.2.2.3(bb) 8.11.2.1.3(bb)	3.12.5 3.12.8 3.12.9	
3.23	Suspension compensation and governor systems	212 206.7 1001.2(c)(29)(a) 1200.5 1202.14 1203.9 1004.2(c)	2.20.2 2.20.4 8.6.3.3 8.6.4.1 8.7.2.21 8.7.3.25 8.10.2.2.3(cc) 8.11.3.1.3(y)	3.12	ASME A17.6
3.24	Top counterweight clearance	107.1h 1001.2(c)(5)	2.4.9 8.10.2.2.3(e) 8.11.2.1.3(e)		
3.25	Car, overhead, and deflector sheaves	208	2.24.2 8.10.2.2.2(f) 8.11.2.1.3(f) 8.11.2.1.3(qq)	3.8.1	
3.26	Broken rope, chain, or tape switch	209.2c(2) 210.2(f) 1001.2(c)(9) 1002.2i	2.25.2.3.2 2.26.2.6 2.26.4.3 8.6.4.19.9 8.10.2.2.3(i) 8.11.2.1.3(i) 8.11.2.2.9	3.10.4(d)	
3.27	Crosshead data plate and rope data tags	207.3 212.2 1001.2(c)(11) 1202.14	2.16.3.3 2.20.2 8.7.2.21 8.10.2.2.3(k) 8.11.2.1.3(k)	3.12.2	
3.28	Counterweight and counterweight buffer	201 202 1001.2(c)(13)	2.3 2.4.9 2.21 2.22 8.6.4.20.3 8.10.2.2.3(m) 8.11.2.1.3(m)	2.1.5 2.4.3 3.1 3.2 4.9	
3.29	Counterweight safeties	205 206.5(e) 1001.2(b) 1001.2(c)(14) 1001.2(c) 1002.3(a) 1003.2 1002.3	2.17.4 2.18.5.3 8.6.4.20.1 8.10.2.2.2(ii) 8.10.2.2.3(n) 8.11.2.1.3(n)	3.5.2 3.6.2 3.12.2	
3.33	Compensating ropes and chains	202.4 1001.2(c)(30) 1003.2g	2.21.4 8.10.2.2.3(dd) 8.10.2.2.5(h) 8.11.2.1.3(dd)		Note: Incorrect item number in ASME A17.1/ CSA B44

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 3 Elevator — Top of Car (Cont'd)			
N/A	Machinery space/control space	N/A	8.10.2.2.2 8.10.2.2.3(ee) 8.11.2.1.3(ee)		
N/A	Working areas on the car top	N/A	2.5.7.1.1 2.7.5.1 2.26.2.34 8.6.10.6 8.6.10.7 8.10.2.2.3(ff) 8.11.2.1.3(ff)		
N/A	Equipment exposure to weather		2.7.6.6 8.10.2.2.3(gg) 8.11.2.1.3(gg)		
N/A	Machinery supports and fastenings	Section 105	2.9.1 2.9.3 8.10.2.2.3(hh) 8.11.2.1.3(hh)		
N/A	Guarding of equipment	104.1	2.10.1 8.10.2.2.3(ii) 8.11.2.1.3(ii)		
3.34	Earthquake inspection and tests (seismic risk zone 2 or greater)	2400 through 2405 2407	8.4.1 8.4.2 8.4.3.1.1 8.4.3.1.2 8.4.3.1.4 8.4.3.2 8.4.5 8.4.7 8.4.8 8.10.2.2.3(jj) 8.10.2.2.3(kk) 8.11.2.1.3(jj) through 8.11.2.1.3(nn) 8.11.2.1.3(pp)		Note: Item number not listed in ASME A17.1/ CSA B44
		Part 4 Elevator — Outside Hoistway			
4.1	Car platform guard	203.9 1001.2(d)(1)	2.15.9 2.15.9.4 8.10.2.2.4(a) 8.11.2.1.4(a)	3.2.2 3.3 3.3.2	
4.2	Hoistway doors	110 111.7 210.2 1001.2(d)(2)	2.11 2.11.12.4.3 2.11.12.4.7 2.12.7 2.26.2 8.10.2.2.4(b) 8.11.2.1.4(b)	2.6 3.10.4	
4.3	Vision panels	110.7 1001.2(d)(3)	2.11.7.1 8.10.2.2.4(c) 8.11.2.1.4(c)	2.6.3	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 4 Elevator — Outside Hoistway (Cont'd)				
4.4	Hoistway door-locking devices	111 1001.2(d)(4)	2.12.2.3 2.12.2.5 2.12.3.3 2.12.3.5 2.12.4.3 2.26.2.14 2.26.4.3 8.10.2.2.4(d) 8.11.2.1.4(d)	2.7.1	
4.5	Access to hoistway	111.6 111.7 1001.2(d)(5)	2.12.6 2.12.7 8.10.2.2.4(e) 8.11.2.1.4(e)	2.7.4	
4.6	Power closing of hoistway doors	112 1001.2(d)(6)	2.13.1 2.13.3 2.13.4 8.10.2.2.4(f) 8.11.2.1.4(f)		
4.7	Sequence operation	112 112.3d 1001.2(d)(7)	2.13.3.4 2.13.6 8.10.2.2.4(g) 8.11.2.1.4(g)		
4.8	Hoistway enclosure	110.1 110.4 110.5 1001.2(d)(8)	2.1.1 2.1.2 2.1.4 2.1.5 8.10.2.2.4(g) 8.11.2.1.4(h)	2.1.1 through 2.1.3	ANSI Z97.1 or 16 CFR Part 1201
4.9	Elevator parking devices	1001.2(d)(9)	8.11.2.1.4(i)	2.7.3	
4.10	Emergency doors in blind hoistways	110.1 1001.2(d)(10)	2.11.1.2 through 2.11.1.4 8.1 8.10.2.2.4(j) 8.11.2.1.4(j)		
4.11	Separate counterweight hoistway	103.1 103.3 110.1 1001.2(d)(11)	2.3.1 2.3.3 2.26.2.27 8.10.2.2.4(j) 8.11.2.1.4(k)		
4.12	Standby power selection switch	211.2 211.8 1001.2(d)(13) 1002.2g	2.27.2 2.27.8 8.6.4.19.7 8.10.2.2.4(k) 8.11.2.1.4(l)		
N/A	Location of equipment		2.7.6.3 8.10.2.2.4(l)		
N/A	Means necessary for tests		2.7.6.4 8.10.2.2.4(m) 8.11.2.1.4(m)		
N/A	Inspection and test panel and inspection with open door circuits		2.7.6.5 2.26.1.4.1 2.26.1.5 8.10.2.2.4(n) 8.11.2.1.4(n)		

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 4 Elevator — Outside Hoistway (Cont'd)			
N/A	Equipment exposure to weather		2.7.6.6 8.10.2.2.4(o) 8.11.2.1.4(o)		
		Part 5 Elevator — Pit			
5.1	Pit access, lighting, stop switch, and condition	102 103.2 106.1 210.2(g) 1001.2(e)(1) 1206.2a	2.2.2.2 through 2.2.2.5 2.2.3 through 2.2.8 2.3.2 2.8 2.26.2.7 8.6.4.7 8.10.2.2.5(a) 8.11.2.1.5(a)	2.3.1 through 2.3.3	NFPA 70 or CSA C22.1, as applicable
5.2	Bottom clearance, runby, and minimum refuge space	103.2 107.1a 107.1b 201.4h 1001.2(e)(2) 1202.14b 1206.8	2.3.2 2.4.1 2.4.1.3 2.4.1.4 2.4.1.6 2.4.2 through 2.4.4 2.4.4(b) 2.5.1.2 2.5.1.6 2.22.4.8 8.6.4.11 8.10.2.2.5(b) 8.11.2.1.5(b)	2.4.2 2.4.3	
5.3	Final and emergency terminal stopping devices	209.3 1001.2(e)(4) 1003.2e	2.25.3 2.25.4 2.26.4.3 8.10.2.2.5(c)(6) 8.10.2.2.5(d) 8.11.2.1.5(d)	3.9.2	
5.4	Normal terminal stopping devices	209 3.9.1 1002.2e	2.25.2 8.6.4.19.5 8.10.2.2.5(c) 8.11.2.1.5(e)		
5.5	Traveling cables	102.2	2.8.2 8.10.2.2.5(f) 8.11.2.1.5(f)		NFPA 70 or CSA C22.1, as applicable
5.6	Governor-rope tension devices	206.7 1001.2(e)(7) 1206.1a	2.18.7 8.6.1.6.2 8.10.2.2.5(g) 8.11.2.1.5(g)		
5.7	Car frame and platform	203.6 203.8 207.2b(3) 1001.2(e)(9)	2.15.4 through 2.15.9 2.16.2.2 8.10.2.2.5(i) 8.11.2.1.5(i)	3.3	
5.8	Car and counterweight safeties and guiding members	203 205.11 1001.2(e)(10) 1001.2b(2)(c) 1002.3a 1206.1g 1202.4a	2.15.2 2.17.10 2.17.11 2.17.14 8.6.4.5 8.6.4.19.2 8.7.2.15.1 8.10.2.2.5(j) 8.11.2.1.2(j)	3.5	

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 5 Elevator — Pit (Cont'd)			
5.9	Buffers and emergency terminal speed-limiting devices	201 109.1 210.2(w) 1002.3f 1003.2e 1206.1f 1308.2 8.2.3	2.6 2.22 2.26.2.22 8.3.1.3 8.3.2 8.6.4.20.3 8.6.4.20.6 8.10.2.2.5(c)	3.1 3.10.4(m)	
N/A	Machinery space/control space		8.10.2.2.2 8.10.2.2.5(k) 8.11.2.1.5(k)		
N/A	Working areas in the pit		2.7.5.2 2.7.5.2.1(a) 2.7.5.2.1(b) 2.26.2.34 8.6.10.6 8.6.10.7 8.10.2.2.5(l) 8.11.2.1.5(l)		
N/A	Equipment exposure to weather		2.7.6.6 8.10.2.2.5(m) 8.11.2.1.5(m)		
N/A	Machinery supports and fastenings		2.9.1 2.9.3 8.10.2.2.2(n) 8.11.2.1.5(n)		
N/A	Guarding of exposed auxiliary equipment		2.10.1 8.10.2.2.5(o)		
N/A	Pit inspection operation		2.26.1.4.4 8.10.2.2.5(p) 8.11.2.1.5(p)		
5.10	Compensating chains, ropes, and sheaves	202.4 205.17 210.2c 1001.2(e)(8)	2.21.4 2.21.4.2 2.26.2.3 2.26.4.3 8.10.2.2.5(h) 8.11.2.1.5(h)		
5.16	Earthquake inspection and tests (seismic risk zone 2 or greater)	2400 2410.2 2410.3	8.4.3.2 8.4.6 8.4.8 8.10.2.2.5(q)		
5.16.1	Seismic rope retainers and snag guards		8.11.2.1.3(oo)		
5.16.3(d)	Verify information on layout drawings		8.10.2.2.5(r)		
		Part 6 Elevator — Firefighters' Service			
6.1	Operation of elevators under fire and other emergency conditions (A17.1b-1973 through A17.1b-1980)	112.3d 112.5 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 8.6.4.19.6 8.6.11.1 8.11.2.1.6	3.11.3	Rule 211.3

Table A-1
Checklist for Electric Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 6 Elevator — Firefighters' Service (Cont'd)				
6.2	Operation of elevators under fire and other emergency conditions (A17.1-1981 through A17.1b-1983)	112.3d 112.5 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 8.6.4.19.6 8.6.11.1 8.11.2.1.6	3.11.3	Rule 211.3
6.3	Firefighters' service (A17.1-1984 through A17.1a-1988 and ASME A17.3)	112.3d 112.5 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 8.6.4.19.6 8.6.11.1 8.11.2.1.6	3.11.3	Rules 211.3 through 211.8
6.4	Firefighters' service (A17.1b-1989 through A17.1d-2000)	112.3d 112.5 211.2 through 211.8 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 2.27.2 through 2.27.8 8.6.4.19.6 8.6.11.1 8.11.2.1.6		Rules 211.3 through 211.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2000/CSA B44-00): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2002/CSA B44-02): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2004/CSA B44-04): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2007/CSA B44-07): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2010/CSA B44-10): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2013/CSA B44-13): Automatic elevators	N/A	8.6.4.19.6 8.10.2.2.6 8.11.2.1.6		Rules 2.27.3 through 2.27.11

Table A-2
Checklist for Hydraulic Elevators

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car			
1.1	Door reopening device	112 {300.13} 1001.2(a)(1) 1004.2(a)(1)	2.13 {3.13} 8.10.3.2.1(a) 8.11.3.1.1(a)	2.8	
1.2	Stop switches	306.4(b)(1) 306.4(b)(6) 1004.2(a)(2)	3.26.4.2(a) 3.26.4.2(f) 8.10.3.2.1(b) 8.11.3.1.1(b)	3.10.4(t) {4.7.4} 3.10.4(u) {4.7.4}	
1.3	Operating control devices	210.1a {306.1} 306.3 1004.2(a)(3)	2.26.1 {3.26.1} 3.26.3 8.10.3.2.1(c) 8.11.3.1.1(c)	3.10.1 {4.7} 3.10.2 {4.7} 3.10.9 {4.7.6}	
1.4	Sills and car floor	108.1 {300.9} 110.10d {300.11} 110.11a 110.13a 203.16 {301.6} 210.12 1004.2(a)(4)	2.5.1.4 {3.5} 2.11.10.3 {3.11} 2.11.11.1 2.11.13.1 2.15.16 {3.15} 8.10.3.2.1(d) 8.11.3.1.1(d)	3.3.3 {4.2.2} 3.3.4 {4.2.2}	ANSI A117.1
1.5	Car lighting and receptacles	301.7 1004.2(a)(5)	2.14.7 {3.14} 8.10.2.1(e) 8.11.3.1.1(e)	3.4.5 {4.2.3} 3.4.6 {4.2.3}	
1.6	Car emergency signal and communication device (s)	211.1 {306.11} 1004.2(a)(6)	2.27.1 {3.27} 8.10.3.2.1(f) 8.11.3.1.1(f)	3.11.1 {4.7.8}	
1.7	Car door or gate	111.7(c) {300.12} 112.2a {300.13} 204.4 through 204.6 {301.7} 210.2(q) {306.4} 1004.2(a)(7)	2.5.1.5.3 {3.5} 2.12.7.3 {3.12} 2.14.4 through 2.14.6 {3.14} 2.26.2 (2.26.2.15) {3.26.4} 8.10.3.2.1(g) 8.11.3.1.1(g)	3.4.2 {4.2.3} 3.4.3 {4.2.3} Appendix A	
1.8	Door closing force	112.4(b) 301.7 1004.2(a)(8)	2.13.4.2.3 2.13.4.2.4 3.14 8.6.5.14.6 8.10.3.2.1(h) 8.11.3.1.1(h)	2.8.1 {4.1}	
1.9	Power closing of doors or gates	112.3 {300.13} 1004.2(a)(9)	2.13.3 {3.13} 8.6.5.14.6 8.10.3.2.1(i) 8.11.3.1.1(i)	2.8.2 {4.1}	
1.10	Power opening of doors or gates	111.5 {300.12} 210.1e 210.9(c) 306.3 1004.2(a)(10)	2.13.2.1 {3.13} 2.14.5.7 2.26.1.6 2.26.9 (2.26.9.3) 3.26.3 8.10.2.1(j) 8.11.3.1.1(j)		Requirement 2.12.5 was relocated to 2.14.5.7 in ASME A17.1-2013
1.11	Car vision panels and glass car doors	204.2e {301.7} 204.5i {301.7} 1004.2(a)(11)	2.14.2.5 2.14.5.9 {3.14} 8.10.3.2.1(k) 8.11.3.1.1(k)	3.4.2 {4.2.3} 3.4.3 {4.2.3}	

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car (Cont'd)			
1.12	Car enclosure	204.1b {301.7} 204.1h {301.7} 1104 204.2d {301.7} 211.9 {306.11} 1004.2(a)(12) 1202.5 1203.2e	2.14 {3.14} 2.29.1 {3.29} 8.3.7 8.7.2.14 8.7.3.13 8.10.3.2.1(l) 8.11.3.1.1(l)	3.4.1 {4.2.3} 3.7.4 {4.2.3} 3.7.5 {4.2.4}	
1.13	Emergency exit	204.1j {301.7} 1004.2(a)(13)	2.14.1.5 2.14.1.10 3.14 8.1.2 8.6.11.3 8.10.3.2.1(m) 8.11.3.1.1(m)	3.4.4 {4.2.4}	
1.14	Ventilation	204.1(i) 204.2c {301.7} 204.3c {301.7} 1004.2(a)(14)	2.14.1.9.1(f) 2.14.2.3 2.14.3.3 {3.14} 8.10.3.2.1(n) 8.11.3.1.1(n)		NFPA 70 or CSA C22.1, as applicable
1.15	Signs and operating device symbols	210.13 {306.12} 1004.2(a)(15)	2.26.12 8.10.3.2.1(o) 8.11.3.1.1(o)		
1.16	Rated load, platform area, and data plate	207 {301.10} 1004.2(a)(16)	2.16 {3.16} 8.10.3.2.1(p) 8.11.3.1.1(p)	3.7 {4.2.4}	
1.17	Emergency power operation	211.2 {306.11} 1002.2g {1005.2c(6)} 1004.2(a)(17)	2.27.2 {3.27} 3.26.10 8.6.5.14.3(f) 8.10.3.2.1(q) 8.11.3.1.1(q)	3.11.2 {4.7.8}	
1.18	Restricted opening of car or hoistway doors	111.5 {300.12} 1004.2(a)(18)	2.14.5.7 8.10.3.2.1(r) 8.11.3.1.1(r)	2.7.5 {4.1}	Requirement 2.12.5 was relocated to 2.14.5.7 in ASME A17.1-2013
1.19	Car ride	301.1a 301.6 1004.2(a)(19) 1206.1a {1206.5a}	3.23.1 3.15 8.6.1.6.2 8.10.3.2.1(s) 8.11.3.1.1(s)		
1.20	Earthquake inspection and tests (seismic risk zone 2 or greater)	2406	8.4.11 8.10.3.2.1(m)		
N/A	Door monitoring systems	210.15	3.26.1 8.10.3.2.1(t) 8.11.3.1.1(t)		
N/A	Stopping accuracy	N/A	3.26.1 8.10.3.2.1(u) 8.11.3.1.1(u)		
N/A	Machinery space/control space	N/A	8.10.3.2.2 8.10.3.2.1(v) 8.11.3.1.1(v)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 1 Elevator — Inside of Car (Cont'd)			
N/A	Working areas in the car	N/A	2.7.5.1 2.7.5.1.1 2.26.2.34 3.7 8.6.10.6 8.6.10.7 8.10.3.2.1(w) 8.11.3.1.1(w)		
N/A	Equipment access panel electrical device	N/A	2.26.2.35 3.26.1 8.10.3.2.1(x) 8.11.3.1.1(x)		
		Part 2 Elevator — Machine Room			
N/A	Location of room/spaces	N/A	3.7.1 8.10.3.2.2(a) 8.11.3.1.2(a)		
N/A	Location of equipment	N/A	3.7.1 8.10.3.2.2(b)		
N/A	Equipment exposure to weather	N/A	3.7.1 8.10.3.2.2(c)		
2.1	Access to machinery space	300.1 300.2 1004.2(b)(1)	3.7.1 8.10.3.2.2(d) 8.11.3.1.2(b)	2.2.2 {4.1}	NFPA 70 or CSA C22.1, as applicable
2.2	Headroom	101.4 {300.2}, 1004.2(b)(2)	2.7.4 {3.7} 8.10.3.2.2(e) 8.11.3.1.2(c)		
N/A	Means necessary for tests	N/A	3.7.1 8.10.3.2.2(f) 8.11.3.1.2(d)		
N/A	Inspection and test panel	N/A	3.7.1 8.10.3.2.2(g) 8.11.3.1.2(e)		
2.3	Lighting and receptacles	101.5a {300.2} 101.5c {300.2} 1004.2(b)(3)	2.7.6.3.2(c) {3.7} 2.7.9.1 {3.7} 8.10.3.2.2(h) 8.11.3.1.2(f)	2.2.3 {4.1}	NFPA 70 or CSA C22.1, as applicable
2.4	Machinery space	101.1a {300.2} 105.2 {300.6} 105.4 {300.6} 1004.2(b)(4)	2.7.1 {3.7} 2.9.2 {3.9} 2.9.4 {3.9} 3.1 8.10.3.2.2(i) 8.11.3.1.2(g)	2.2.2 {4.1} 2.2.6 {4.1}	
2.5	Housekeeping	1004.2(b)(5) 1206.1 {1206.5a} 1206.2b {1206.5a} 1206.9	8.6.4.8 {8.6.5} 8.10.3.2.2(j) 8.11.3.1.2(h)		
2.6	Ventilation	101.5b {300.2} 102.4 1004.2(b)(6)	2.7.9.2 {3.7} 2.8.4 8.10.3.2.2(k) 8.11.3.1.2(i)	2.2.4 {4.1}	
2.7	Fire extinguisher	1004.2(b)(7) 1206.2f {1206.5a}	8.6.1.6.5 8.10.3.2.2(l) 8.11.3.1.2(i)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 2 Elevator — Machine Room (Cont'd)			
2.8	Pipes, wiring, and ducts	102.1 {300.3} 102.2 {300.3} 1004.2(b)(8)	2.8.2 2.8.3 {3.8} 8.10.3.2.2(m) 8.11.3.1.2(k)	2.2.5 {4.1}	NFPA 13 ASME A17.1, Inquiry 88-26
2.9	Guarding of exposed auxiliary equipment	104.1 {300.5} 1004.2(b)(9)	2.10.1 {3.10} 8.10.3.2.2(n) 8.11.3.1.2(l)		
2.10	Numbering of elevators, machines, controllers, and disconnect switches	210.4 211.9 {306.11} 306.6	2.26.4 2.29.1 {3.29} 8.10.3.2.2(o) 8.11.3.1.2(m)		NFPA 70 or CSA C22.1, as applicable
N/A	Maintenance path and maintenance clearance	N/A	3.7.1 8.10.3.2.2(p) 8.11.3.1.2(n)		NFPA 70 or CSA C22.1, as applicable
N/A	Stop switch	N/A	3.7.1 3.26.1 8.10.3.2.2(q) 8.11.3.1.2(o)		
2.11	Disconnecting means and control	306.3a(5)(b) 306.4 306.6 1004.2(b)(11)	2.26.4.1 2.26.4.5 3.26.1 3.26.3.1.4 8.10.3.2.2(r) 8.11.3.1.2(p)	3.10.5 {4.7.5}	NFPA 70 or CSA C22.1, as applicable
2.12	Controller wiring, fuses, grounding, etc.	102.1 {300.3} 306.5, 306.6 1004.2(b)(12) 1206.1f 1206.5a	2.26.4.1 2.26.4.2 2.26.7 2.26.9 3.26.1 3.26.5 3.26.9 8.6.1.6.1 8.6.1.6.3 8.6.5 8.10.3.2.2(s) 8.11.3.1.2(q)		NFPA 70 or CSA C22.1, as applicable
2.13	Governor, overspeed switch, and seal	205 206 301.8 1002.2(b) 1005.2c 1005.4 1202.7 1206.1	2.7.6.3.4 2.17 2.18 3.17.1 3.17.4 8.6.1.2 8.6.4.1.9.3 8.6.5.14.3(b) 8.7.2.19 8.10.3.2.2(ff) 8.11.3.1.2(bb)	4.9.7	
2.14	Code data plate	309 1200.6	8.7.1.8 8.9 8.10.3.2.2(dd) 8.11.3.1.2(aa)		
2.17	Drive machine brake	N/A	3.16.2 8.6.5.16.6 8.10.3.2.2(hh)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 2 Elevator — Machine Room (Cont'd)				
2.30	Hydraulic power unit	304 1004.2(b)(13) 1206.5	3.24.1 3.24.1.1 8.4.11.14 8.6.5 8.10.3.2.2(t) 8.11.3.1.2(r)		NFPA 70 or CSA C22.1, as applicable
2.31	Relief valves	303.1 303.2 303.4b 308 1004.2(b)(13) 1005.2a 1006.2b Definitions	3.17.1.2(a) 3.19.1 3.19.4.2 8.6.5.14.1 8.6.5.14.2 8.10.3.2.2(u) 8.11.3.1.2(s)	4.4.1	
2.32	Control valve	303 1004.2(b)(15)	3.19 3.19.4.3 through 3.19.4.5 3.19.4.6.2 3.19.7 8.10.3.2.2(v) 8.11.3.1.2(t)	4.4	
N/A	Recycling operation	N/A	8.10.3.2.2(u) 8.11.3.1.2(z)		
N/A	Wiring diagrams	N/A	8.6.1.2.2(a) 8.11.3.1.2(cc)		
2.33	Tanks	304 1004.2(b)(16) 1005.3b 1203.6 1206.5b	3.24.2.1 3.24.2.2 3.24.3 8.6.5.1 8.6.5.4 8.6.5.15.2 8.7.3.29 8.10.3.2.2(w) 8.11.3.1.2(u)	4.5	
2.34	Flexible hydraulic hose and fitting assemblies	303.3c 1004.2(b)(17) 1005.2d	3.19.3.3 8.6.5.6 8.6.5.14.4 8.10.3.2.2(x) 8.11.3.1.2(v)		
2.35	Supply line and shutoff valve	303	3.19.1.2 3.19.1.4 3.19.2 3.19.3 3.19.5 3.19.6 8.10.3.2.2(y) 8.11.3.1.2(w)	4.4.4	
2.36	Hydraulic cylinders	302.3 1004.2(b)(19) 1005.2b	3.18.3 3.18.4.1 8.6.5.14.2 8.6.5.15.1 8.10.3.2.2(z) 8.11.3.1.2(x)		
2.37	Pressure switch	306.14 1004.2(b)(20) 1005.2c	3.26.8 8.6.5.14.5 8.10.3.2.2(aa) 8.11.3.1.2(y)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 2 Elevator — Machine Room (Cont'd)			
2.38	Roped water hydraulic elevators	{NR}			
2.39	Low oil protection	306.15	3.26.9 8.6.5.14.3(i) 8.10.3.2.2(s)(7)		
2.40	Maintenance records		8.6.1.4		
2.41	Hydraulic control		2.25.2.4.4 8.10.3.2.2(cc)		
2.42	Earthquake inspection and tests (seismic risk zone 2 or greater)	2400.1 2401 2410.1 2410.5 2410.7	8.4.2 8.4.3.1 8.4.11.11 through 8.4.11.14 8.10.3.2.2(ii)		
N/A	Recycling operation		3.26.7 8.10.3.2.2(bb)		
N/A	Operating devices		2.26.1.4.4 2.26.1.5 3.26.1 3.26.2 8.10.3.2.2(cc)		
N/A	Wiring diagrams		8.6.1.2.2(a) 8.10.3.2.2(gg)		
		Part 3 Elevator — Top of Car			
3.1	Top-of-car stop switch	306.4 1004.2(c)(1)	3.26.1 3.26.4 8.10.3.2.3(a) 8.11.3.1.3(a)	4.7.4(a)	
3.2	Car top light and outlet	204.7 {301.7} 1004.2(c)(2)	2.14.7.1.4 {3.14} 8.10.3.2.3(b) 8.11.3.1.3(b)	3.4.5 {4.2.3}	NFPA 70 or CSA C22.1, as applicable
3.3	Top-of-car operating device	306.2 1004.2(c)(3)	2.26.1.5 3.26.1 3.26.2 8.10.3.2.3(c) 8.11.3.1.3(c)	3.10.3 4.7.2	
3.4	Top-of-car clearance, refuge space, and standard railing	300.8 302.4 1004.2(c)(4) 1006.2a 1006.2c	2.10.2 {3.10} 2.14.1.7 {3.14} 3.4.2.2 3.4.4 3.4.5 3.4.7 3.4.8 3.18.4 8.10.3.2.2(z) 8.10.3.2.3(d) 8.11.3.1.3(d)	2.4.4 {4.1}	
3.5	Normal terminal stopping devices	305.1a 1002.2e {1005.2c} 1003.3(k) 1004.2(c)(5)	3.25.1.1 8.6.4.14.3(a) 8.6.4.19.5 8.10.2.3.2(e) 8.10.3.2.3(e) 8.11.3.1.3(e)	3.9.1 {4.6} 3.10.4(h) 3.10.4(j)	

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 3 Elevator — Top of Car (Cont'd)			
3.6	Final and emergency terminal stopping devices	305.2 1004.2(c)(6) 1005.2(c)	3.25.2 8.6.5.14.3(h) 8.10.3.2.3(f) 8.11.3.1.3(f)		A17.1-1955, Rule 320.2
3.7	Car leveling and anticreep devices	306.3 306.4 1004.2(c)(7)	3.26.3.1 3.26.3.2 3.26.4 8.10.3.2.3(g) 8.11.3.1.3(g)	4.7.3 4.7.4	
3.8	Top emergency exit	204.1e {301.7} 1004.2(c)(9)	2.14.1.5 {3.14} 8.10.3.2.3(i) 8.11.3.1.3(i)	3.4.4 {4.2.3}	
3.9	Floor and emergency identification numbering	100.7 {300.1} 211.9 {306.11} 1004.2(c)(10)	2.29.1 {3.29} 2.29.2 {3.1} 8.10.3.2.3(j) 8.11.3.1.3(j)		
3.10	Hoistway construction	300.1 1004.2(c)(11)	3.1 8.10.3.2.3(k) 8.11.3.1.3(k)	2.1 {4.1}	
3.11	Hoistway smoke control	100.4 {300.1} 1004.2(c)(12)	2.1.4 {3.1} 8.10.3.2.3(l) 8.11.3.1.3(l)		
3.12	Pipes, wiring, and ducts	102 {300.3} 1004.2(c)(13)	2.8 {3.8} 8.10.3.2.3(m) 8.11.3.1.3(m)	2.1.4 {4.1}	
3.13	Windows, projections, recesses, and setbacks	100.5 {300.1} 100.6 {300.1} 110.10 {300.11} 1004.2(c)(14)	2.1.5 2.1.6 {3.1} 2.11.10 {3.11} 8.10.3.2.3(n) 8.11.3.1.3(n)	2.1.2 {4.1} 2.1.3 {4.1}	
3.14	Hoistway clearances	108 {300.9} 110 {300.11} 1004.2(c)(15)	2.5 {3.5} 2.11 {3.11} 8.10.3.2.3(o) 8.11.3.1.3(o)	2.4 {4.1}	
3.15	Multiple hoistways	100.1d {300.1} 1004.2(c)(16)	2.1.1.4 {3.1} 8.10.3.2.3(p) 8.11.3.1.3 (p)		See building code
3.16	Traveling cables and junction boxes	102.1 {300.3} 1004.2(c)(17)	2.8.2 {3.8} 8.10.3.2.3(q) 8.11.3.1.3(q)		NFPA 70 or CSA C22.1, as applicable
3.17	Door and gate equipment	110 {300.11} 111 {300.12} 210.1e {306.3} 1004.2(c)(18)	2.11 {3.11} 2.12 {3.12} 2.14.4 {3.14} 2.26.1.6 {3.26.3} 8.10.3.2.3(r) 8.11.3.1.3(r)	2.6 {4.1} 2.7 {4.1}	ASME A17.1, Inquiry 96-71
3.18	Car frame and stiles	213 {302.5} 301.6 1004.2(c)(19)	3.15 {2.15} 8.8 {3.18.5} 8.10.3.2.3(s) 8.11.3.1.3(s)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 3 Elevator — Top of Car (Cont'd)				
3.19	Guide rails, fastenings, and equipment	200 {301.1b} 308 301.1 301.6 1004.2(c)(20)	2.23 {3.23.2} 3.15.1.1.2 3.23 3.28 8.10.3.2.3(t) 8.11.3.1.3(t)	4.9.8	
3.20	Governor rope	206.5 301.8 1001.2(c)(26) 1004.2(c)(23) 1202.7 1206.1c	2.18.5 3.17.1 3.17.2 3.17.4 8.6.4.2 8.7.2.19 8.10.3.2.3(u) 8.10.3.2.3(w) 8.11.2.1.3(z) 8.11.3.1.3(u)	3.6 4.9.7	
3.21	Governor releasing carrier	205.15 301.8 1004.2(c)(22) 1005.4	2.17.15 3.17.1 8.6.5.16 8.10.3.2.3(v) 8.11.3.1.3(v)		
3.22	Wire rope fastening and hitch plate	105.3c 203.13 212 302.1b 1004.2(c)(24) 1200.5	2.9.3.4 2.15.13 2.20 3.18.1.2 8.6.3 8.10.3.2.3(x) 8.10.3.2.3(bb) 8.11.3.1.3(w)	4.9.10	ASME A17.6
3.23	Suspension compensation and governor systems	212 1001.2(c)(29) 1004.2(c)(25) 1200.4d 1202.14 1203.9 1307	2.20 3.17.1 3.18.1.2 3.20 3.24.5 8.2.7 8.6.2.5 8.6.3.2 8.6.5.16.3 8.10.3.2.3(y) 8.11.2.1.3(cc) 8.11.3.1.3(x)	4.8 4.9.10	For ASME A17.1-2010/ CSA B44-10 and later, see ASME A17.6-2010
3.26	Broken rope, chain, or tape switch	1005.2f	8.10.3.2.3(jj) 8.11.3.1.2(hh)		
3.27	Crosshead data plate and rope data tags	207.3 212.2 1001.2(c)(11) 1202.14	2.20.2 3.16 8.7.2.21 8.10.3.2.3(h) 8.11.3.1.3(x) 8.11.3.1.3(bb)	3.12.2	
3.28	Counterweight and counterweight buffer	300.8f 301.4 301.9 1005.2(c) 1308	3.3 3.4.6 3.22.2 8.6.5.14.3(d) 8.6.5.16.1 8.11.3.1.3(aa)	4.8 4.9.2	

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 3 Elevator — Top of Car (Cont'd)			
3.29	Counterweight safeties	300.10 301.9 1006.2 1005.2(c) 1005.4	3.6 3.17.2 8.6.5.14.3(d) 8.6.5.16.1 8.10.3.2.3(u)		
3.30	Speed test	205.16 300.8 301 1004.2(c)(8) 1006.2g Definitions	2.17.16 3.4 3.28.1(k) 8.10.3.2.3(cc) 8.11.3.1.3(h) 1.3 (Definitions)	4.9	
3.31	Slack rope device — roped hydraulic elevators installed under A17.1b-1989 and later editions	302.1b 306.4 1004.2(c)(26) 1005.2f	3.18.1.2.7 3.26.4 8.6.5.14.7 8.10.3.2.3(z) 8.11.3.1.3(y)	4.9.9	
3.32	Traveling sheave — roped hydraulic elevators installed under A17.1b-1989 and later editions	208.2 208.3 208.5 212 301.1b 302.1b 307 1004.2(c)(27) 1203.9	2.20 2.24.2 2.24.3 2.24.5 3.18.1.2 3.23.2 8.7.3.25 8.10.3.2.3(aa) 8.11.3.1.3(z)	4.9.8	
3.34	Earthquake inspection and tests (seismic risk zone 2 or greater)	2400.1(a) 2400.1(b) 2400.1(d) 2400.2 2401 through 2405	8.4.1 8.4.2 8.4.3.1.1 8.4.3.1.2 8.4.3.1.4 8.4.3.2 8.4.5 8.4.7 8.4.8 8.4.11		
N/A	Inertia tests		8.10.3.2.3(dd) Appendix M		Type A safeties
N/A	Machinery space/control space	N/A	8.10.3.2.2 8.10.3.2.3(ee) 8.11.3.1.3(ee)		
N/A	Working areas on the car top	N/A	2.7.5.1.1 2.26.2.34 8.6.10.6 8.6.10.7 8.10.3.2.3(ff) 8.11.3.1.3(dd)		
N/A	Equipment exposure to weather	N/A	3.7.1 8.10.3.2.3(gg) 8.11.3.1.3(ee)		
N/A	Machinery supports and fastenings		2.9.1 2.9.3 8.10.3.2.3(hh) 8.11.3.1.3(ff)		
N/A	Guarding of equipment		2.10.1 8.10.3.2.3(ii) 8.11.3.1.2(gg)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 4 Elevator — Outside Hoistway			
4.1	Car platform guard	301.6 1004.2(d)(1)	2.15.9 3.15 8.10.3.2.4(a) 8.11.3.1.4(a)	3.3.2 {4.2.2}	
4.2	Hoistway doors	110 {300.11} 111.2b {300.12} 111.3b {300.12} 306.4 1004.2(d)(2) 1006.2h	2.11 {3.11} 2.12.2.2 {3.12} 2.12.3.2 {3.12} 3.26.4 8.10.3.2.4(b) 8.11.3.1.4(b)	4.7.4	
4.3	Vision panels	110.7 {300.11} 1004.2(d)(3)	2.11.7 {3.11} 8.10.3.2.4(c) 8.11.3.1.4(c)	2.6.3 {4.1}	
4.4	Hoistway door-locking devices	111 {300.12} 1004.2(d)(4)	2.12 {3.12} 8.10.3.2.4(d) 8.11.3.1.4(d)	2.7.1 {4.1}	
4.5	Access to hoistway	111.6 {300.12} 111.7 {300.12} 1004.2(d)(5)	2.12.6 2.12.7 {3.12} 8.10.3.2.4(e) 8.11.3.1.4(e)	2.7.4 {4.1}	
4.6	Power closing of hoistway doors	112.3 through 112.6 {300.13} 1004.2(d)(6)	2.13.3 through 2.13.6 {3.13} 8.6.5.14.3(g) 8.10.3.2.4(f) 8.11.3.1.4(f)	2.8 {4.1}	
4.7	Sequence operation	112.6 {300.13} 112.3d {300.13} 1004.2(d)(7)	2.13.6 {3.13} 2.13.3.4 {3.13} 8.6.5.14.3(g) 8.10.3.2.4(g) 8.11.3.1.4(g)		
4.8	Hoistway enclosure	100.1 {300.1} 100.4 {300.1} 100.5 {300.1} 1004.2(d)(8)	2.1.1 2.1.4 2.1.5 {3.1} 8.10.3.2.4(i) 8.11.3.1.4(h)	2.1.1 {4.1} 2.1.2 {4.1}	
4.9	Elevator parking devices	1004.2(d)(9)	8.11.3.1.4(i)	2.7.3 {4.1}	
4.10	Emergency doors in blind hoistways	110.1 1004.2(d)(10)	2.11.1.1 {3.11.1} 2.11.1.2 8.1 8.10.3.2.4(i) 8.11.3.1.4(j)		
4.12	Standby power selection switch	207.8 {301.10} 211.2 {306.11} 211.8 {306.11} 1002.2g 1004.2(d)(11) 1005.2c	2.27.2 {3.27} 2.27.8 {3.27} 8.6.5.14.3(f) 8.10.3.2.4(j) 8.11.3.1.4(k)	3.11.2 {4.7.8}	
N/A	Location of equipment		3.7.1 8.10.3.2.4(k)		NFPA 70 or CSA C22.1, as applicable
N/A	Means necessary for tests	N/A	2.7.6.4 3.7.1.8 through 3.7.1.10 8.10.3.2.4(l) 8.11.3.1.4(l)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 4 Elevator — Outside Hoistway (Cont'd)			
N/A	Inspection and test panel	N/A	2.7.6.5 2.26.1.4.1 2.26.1.5 3.7.1 8.10.3.2.4(m) 8.11.2.1.4(m)		
N/A	Equipment exposure to weather		3.7.1 8.10.3.2.4(n) 8.11.2.1.4(n)		
		Part 5 Elevator — Pit			
5.1	Pit access, lighting, stop switch, and condition	102 {300.3} 106.1 {300.7} 300.10 306.4 1004.2(e)(1) 1206.2a	2.2 {3.2} 2.8 {3.8} 3.6 3.26.4 8.6.4.7 8.10.3.2.5(a) 8.11.3.1.5(a)	2.3.1 {4.1} 2.3.2 {4.1} 2.7.3 {4.1} 3.10.4	NFPA 70 or CSA C22.1, as applicable
5.2	Bottom clearance, runby, and minimum refuge space	300.8 302.3c 1004.2(e)(2) 1006.2e	3.4.1 through 3.4.3 3.18.3.3 8.10.3.2.5(b) 8.10.3.2.5(c) 8.11.3.1.5(b)	2.1.5 2.4.2 {4.1} 2.4.3 {4.1}	
5.4	Normal terminal stopping devices	305.1 1002.2e {1005.2c} 1004.2(e)(5)	3.25.1 8.6.4.19.5 8.6.5.14.3 8.10.3.2.5(e) 8.11.3.1.5(e)	3.9.1 {4.6}	
5.5	Traveling cables	102.2 {300.3} 1004.2(e)(6)	2.8.2 {3.8} 8.10.3.2.5(f) 8.11.3.1.5(f)		NFPA 70 or CSA C22.1, as applicable
5.6	Governor-rope tension devices	206.7 301.8 1004.2(e)(11) 1206.1a	2.18.7 3.17.1 8.6.1.6.2 8.10.3.2.5(k) 8.11.3.1.5(j)	4.9.7	
5.7	Car frame and platform	301.6 302.2c 308 1004.2(e)(7)	3.15 3.18.2.3 3.28 8.10.3.2.5(g) 8.11.3.1.5(g)	3.3 {4.2.2}	
5.8	Car and counterweight safeties and guiding members —including roped hydraulic elevators installed under A17.1b-1989 and later editions	205 301.8 301.9 1004.2(e)(10) 1005.2c 1005.4 1306	2.17 3.17.1 3.17.2 8.2.6 8.6.5.14.3(c) 8.6.5.16.1 8.10.3.2.5(h 8.10.3.2.5(j) 8.11.3.1.5(h)	4.8 4.9.8	
5.9	Car and counterweight buffers and emergency terminal speed-limiting devices	301.3 306.4 1004.2(e)(4) 1206.1e 1308.2	3.22.1 3.26.4 8.11.3.1.5(d) 8.6.4.4 8.2.3.2	4.2.1	

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
			Part 5 Elevator — Pit (Cont'd)		
5.11	Plunger and cylinder	302 1004.2(e)(3) 1206.5b	3.18.1.1 3.18.1.2 3.18.2.3 3.18.2.7 3.18.3.3 3.18.3.7 3.18.3.8.3(c) 3.18.3.9 3.18.5 8.4.11.9 8.6.5.1 8.6.5.2 8.6.5.5 8.6.5.6 8.6.5.15.1 8.10.3.2.5(c) 8.11.3.1.5(c)	4.3.1 4.3.2	
5.12	Car buffers	301.3 306.4 1004.2(e)(4) 1206.1e 1308.2	3.6.3 3.6.4 3.22.1 3.26.4 8.2.3.2 8.6.4.4 8.6.5.14.3(d) 8.6.5.16.1 8.10.3.2.5(d) 8.11.3.1.5(d)	4.2.1	
5.13	Guiding members	301.1 308 1004.2(e)(8) 1206.1d	3.15 3.23 3.28 8.6.4.3 8.10.3.2.5(h) 8.11.2.1.5(j) 8.11.3.1.5(h)	3.5.7	
5.14	Supply piping	308 1004.2(e)(9) 1006.2f	3.19.1 3.19.2 3.19.4 3.19.6 8.6.5.14.2 8.10.3.2.5(i) 8.11.3.1.5(i)	4.4.4	
5.15	Overspeed valve	303.3c(f) 2410.6 (NR 3.19.4.7.2) (NR 3.19.4.7.3) [NR 3.19.4.7.5(a)] (NR 3.19.4.7.6) [NR 8.10.3.2.5(i)] (NR 8.11.3.4.4)	3.11.3.1.5(q) 3.19.3.3.3 3.19.4.7 3.19.4.7.2 through 3.19.4.7.6 8.4.11.12 8.6.5.13 8.6.5.16.5 8.10.3.2.5(o) 8.11.3.1.5(q)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
			Part 5 Elevator — Pit (Cont'd)		
5.16	Earthquake inspection and tests (seismic risk zone 2 or greater)	2400 2410.2 2410.3 2410.5	8.4.3.1 8.4.3.2 8.4.4 8.4.5 8.4.11.1 through 8.4.11.3 8.4.11.5 8.4.11.7 8.4.11.9 8.4.11.13 8.10.3.2.5(i)		
5.17	Plunger gripper		3.17 8.2.6 8.2.8.6 8.4.11.2 8.4.11.12 8.6.5.8 8.6.5.16.4 8.6.5.17 8.7.3.23.7 8.10.1.1.4 8.10.1.1.5 8.10.3.2.5(n) 8.11.3.4.4 Appendix P		
N/A	Counterweights	300.4	3.8 3.4.6 3.21 3.22.2 8.10.3.2.5(l)		
N/A	Protection of spaces below hoistway	Section 109	3.6 8.10.3.2.5(m)		
N/A	Machinery space/control space	300.2	8.10.3.2.2 8.10.3.2.5(p)		
N/A	Working areas in the pit	N/A	2.7.5.2 2.7.5.2.1(a) 2.7.5.2.1(b) 2.26.2.34 3.7.1 8.6.10.6 8.6.10.7 8.10.3.2.5(q) 8.11.3.1.5(l)		
N/A	Equipment exposed to weather	N/A	3.7.1 8.10.2.5(r) 8.11.3.1.5(m)		
N/A	Machinery supports and fastenings	300.6	2.9.1 2.9.3 8.10.3.2.5(s) 8.11.3.1.5(n)		
N/A	Guarding of equipment	300.5	2.10.1 8.10.3.2.5(t) 8.11.3.1.5(o)		
N/A	Pit inspection operation	N/A	3.26.2 8.10.3.2.5(u) 8.11.3.1.5(p)		

Table A-2
Checklist for Hydraulic Elevators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 6 Elevator — Firefighters' Service				
6.1	Operation of elevators under fire and other emergency conditions (A17.1b-1973 through A17.1b-1980)	112.3d {306.11} 112.5 {306.11} 1001.2(d)(12) 1002.2f 1004.2(d)(12) 1206.7	2.13.3.4 2.13.5 {3.27} 8.6.4.19.6 8.6.5.14.3(e) 8.6.11.1 8.11.3.1.4(l)	3.11.3	Rule 211.3
6.2	Operation of elevators under fire and other emergency conditions (A17.1-1981 through A17.1b-1983)	112.3d 112.5 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 {3.27} 8.6.4.19.6 8.6.5.14.3(e) 8.6.11.1 8.11.3.1.4(l)	3.11.3	Rule 211.3
6.3	Firefighters' service (A17.1-1984 through A17.1a-1988 and ASME A17.3)	112.3d 112.5 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 {3.27} 8.6.4.19.6 8.6.5.14.3(e) 8.6.11.1 8.11.3.1.4(l)	3.11.3	Rules 211.3 through 211.8
6.4	Firefighters' service (A17.1b-1989 through A17.1d-2000)	112.3d 112.5 211.2 through 211.8 {306.11} 1001.2(d)(12) 1002.2f 1206.7	2.13.3.4 2.13.5 2.27.2 through 2.27.8 {3.27} 8.6.4.19.6 8.6.5.14.3(e) 8.6.11.1 8.11.3.1.4(l)		Rules 2.27.3 through 2.27.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2000/CSA B44-00): Automatic elevators	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2002/CSA B44-02): Automatic elevators	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.8
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2004/CSA B44-04): Automatic elevators	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2007/CSA B44-07): Automatic elevators	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2010/CSA B44-10)	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.9
6.5	Acceptance checklist for firefighters' service (ASME A17.1-2013/CSA B44-13)	N/A	3.27.1 through 3.27.4 8.6.4.19.6 8.10.3.2.6 8.11.3.1.6		Rules 2.27.3 through 2.27.11

Table A-3
Checklist for Escalators

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 7 Escalator — External			
7.1	General fire protection	800 801 1009.2a	6.1.1 6.1.2 8.10.4.1.1(a) 8.11.4.1(a)		
7.2	Geometry	802.1 802.2 802.3d 1009.2b 1009.2g 1207.5b Appendix D	6.1.3.1 6.1.3.2 6.1.3.3.4 8.7.6.1.5(b) 8.10.4.1.1(b) 8.10.4.2.2(a) 8.11.4.1(b)		
7.3	Handrails	802.2 802.4 1009.2c Appendix D	6.1.3.4 6.1.6.3.12 6.12.3.2.2 8.6.8.1 8.6.8.11 8.6.8.15.13 8.6.11.6.2(f) 8.7.6.1.6 8.10.4.1.1(c) 8.11.4.1(c)	5.1.5 5.1.6	
7.4	Entrance and egress ends	802.6 802.12	6.1.3.6 6.1.3.6.4 6.1.3.12 6.14.1.2(e)(3) 6.1.6.3.7 8.6.8.14 8.7.6.1.15 8.10.4.1.1(d) 8.10.4.1.1(r) 8.11.4.1(d)	5.5	
7.5	Lighting	805.7 806.2 1009.2d	6.1.7 6.1.7.1.1 6.1.7.2 8.6.8.15.1 8.6.11.6.2(i) 8.6.11.6.2(j) 8.7.6.1.14 8.10.4.1.1(e) 8.10.4.1.2(a)(2) 8.11.4.1(e)	5.4	
7.6	Caution signs	805.9 Figure 805.9a	6.1.6.9 Figure 6.1.6.9.1 8.10.4.1.1(f) 8.11.4.1(f)	Figure 5.3.11 5.3.11	
7.7	Combplate and comb step impact device	802.6a 805.3f 805.3n 1206.6 (NR 8.6.9.2.3) 1009.2e	6.1.6.3.13 6.1.8.3 8.6.8.4.3 8.6.8.15.18 8.6.9.2.3 8.10.4.1.1(g) 8.10.4.1.2(q) 8.11.4.1(g)	5.1.9 5.5.1	

Table A-3
Checklist for Escalators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
			Part 7 Escalator — External (Cont'd)		
7.8	Deck barricades and antislide devices	802.3i 902.3h 1009.2f	6.1.3.3.12 6.1.3.3.13 6.2.3.8.8 8.6.8.10 8.6.11.6.2(h) 8.10.4.1.1(h) 8.11.4.1(h)	5.1.4 5.1.10	
7.9	Steps and upthrust device	Definitions 802.5 802.6e 802.9d 805.3i 1008.2i 1105.1	1.3 6.1.3.5 6.1.3.6.5 6.1.3.9.4 6.1.6.3.9 8.3.11 8.6.8.6 8.6.8.15.9 8.6.8.15.15 8.10.4.1.1(i) 8.10.4.1.1(s)(2) 8.10.4.1.2(i) 8.11.4.1(i) Figure I8	5.1.7 5.1.8	
7.10	Operating and safety devices	805.2 805.3a 805.6 (NR 8.6.10.5)	6.1.6 8.10.4.1.1(j) 8.11.4.1(j)	5.3	
7.11	Skirt-obstruction device	805.3f 1007.2	6.1.6.3.6 8.6.8.2 Note (a) 8.10.4.1.2(t) 8.11.4.1(k)	5.3.7	
7.12	Reserved				
7.13	Egress restriction (rolling shutter) device	805.3g	6.1.6.3.7 8.10.4.1.1(l) 8.11.4.1(m)	5.3.8	
7.14	Speed	803.1 805.3b 1008.2o 1009.2p	6.1.4 6.1.6.3.2 8.10.4.1.1(m) 8.11.4.1(n)		
7.15	Balustrades	802.3 1009.2g Appendix D	6.1.3.3 6.1.6.3.1(a)(1) 6.1.6.3.1(a)(2) 8.10.4.1.1(n) 8.11.4.1(o)	5.1.1	
7.16	Ceiling intersection guards	802.3g Appendix D	6.1.3.3.11 8.10.4.1.1(o) 8.11.4.1(p)	5.1.3	
7.17	Step/skirt clearances, panels, and performance index	802.3e 802.3f 1008.2s 1008.2t 1206.6b 1206.6c	6.1.3.3.5 through 6.1.3.3.7 8.6.8.5 8.6.8.15.19 8.10.4.1.1(p) 8.11.4.1(q)	5.1.2 5.1.11	
7.18	Outdoor protection	807 1008.2p 1009.2i	6.1.8 8.10.4.1.1(q) 8.11.4.1(r)		
7.19	Maintenance records		8.6.1.2 8.6.1.4		

Table A-3
Checklist for Escalators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 7 Escalator — External (Cont'd)				
7.20	Earthquake inspection and tests (seismic risk zone 2 or greater)		8.5.1 8.5.4 8.6.8.15.23 8.6.8.15.24		
	Part 8 Escalator — Internal				
8.1	Machinery space access, lighting, receptacle, and condition	806 801.1 1007.2e 1008.2a 1009.2j	6.1.2.1 6.1.3.14 6.1.7 8.1 8.6.8.15.1 8.10.4.1.2(a)	5.5.5	
8.2	Machinery space stop switches and inspection control	805.3e (NR 6.1.6.2.2) 1008.2b 1009.2k	6.1.6.2.2 6.1.6.3.5 8.6.8.15.2 8.10.4.1.2(b)		
8.3	Controller and wiring	806 805.10b 805.12 1008.2c 1009.2 1009.2l 1101 (NR 10.3.3)	6.1.7.4 8.6.8.15.3 8.6.8.15.14 8.10.4.1.2(c) 8.10.4.1.2(o)		
8.4	Drive machine and brake	804 1008.2d	6.1.5 8.6.8.15.4 8.10.4.1.1(s)(1) 8.10.4.1.2(d)	5.2 5.3.5	
8.5	Speed governor	805.3b 1008.2e 1009.2m	6.1.6.3.2 8.6.8.15.5 8.10.4.1.2(e)	5.3.3	
8.6	Broken drive chain device and disconnected motor safety device	805.3d 805.3j 1008.2f	6.1.5.3.2 6.1.6.3.4 6.1.6.3.10 8.6.8.15.6 8.6.8.15.16 8.10.4.1.2(f)	5.3.6	
8.7	Reversal stop switch	805.3h 1008.2g	6.1.6.3.8 8.6.8.15.7 8.10.4.1.2(g)	5.3.9	
8.8	Broken step chain device	805.3c 1008.2h	6.1.6.3.3, 8.6.8.15.8 8.11.4.1.2(h)	5.3.4	
8.9	Step upthrust device	805.3i 1008.2i	6.1.6.3.9 8.6.8.15.9 8.10.4.1.2(i)	5.1.7(b)	
8.10	Missing step device	805.5 1008.2	6.1.6.5 8.6.8.15.10 8.10.4.1.2(j)		
8.11	Step level device	805.3k 1008.2k 1009.2n	6.1.6.3.11 8.6.8.15.11 8.10.4.1.2(k)		

Table A-3
Checklist for Escalators (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 8 Escalator — Internal (Cont'd)			
8.12	Steps, step chains, and trusses	801.1 802.7 802.8 802.11 805.3c 806.3 1008.2l 1009.2o 1206.6	6.1.2.1 6.1.3.5.8 6.1.3.7 6.1.3.8 6.1.3.11 8.6.8.15.12 8.10.4.1.2(l)	5.1.7 5.1.8	
8.13	Handrail systems and safety devices	802.4 802.11 805.3m 805.4 (NR 8.6.8.1) 1008.2m 1008.2r 1009.2c	6.1.3.4 6.1.3.12 6.1.6.4 6.1.6.11 8.6.8.1 8.6.8.11 8.6.8.15.13 8.10.4.1.1(c) 8.10.4.1.1(k) 8.10.4.1.2(m) 8.11.4.1(l)	5.1.5 5.1.6	
8.14	Code data plate	808 1200.6	8.7.1.8 8.9 8.10.4.1.2(p)		
8.15	Response to smoke detectors	805.8	6.1.6.8 8.6.8.15.17 8.10.4.1.2(v)		
8.16	Step lateral displacement device	805.3p 1003.2b(20)	6.1.6.3.14 8.10.4.1.2(a)(5) 8.10.4.1.2(r)		
8.17	Inspection control		6.1.6.2.2		
8.18	Earthquake inspection and tests (seismic risk zone 2 or greater)		8.5		

Table A-4
Checklist for Moving Walks

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 9 Moving Walk — External			
9.1	General fire protection	900 901 1009.2a	6.2.1 6.2.2 8.10.4.1.1(a) 8.11.4.1(a)	9.1.1 9.2.2	
9.2	Geometry	902.1 902.2 902.3d (NR 8.6.8.12) 1009.2b 1009.2g 1208.5 Appendix D	6.2.3.1 6.2.3.2 6.2.3.3.4(b) 8.7.6.2.5(b) 8.10.4.1.1(b) 8.11.4.1(b)	9.3.1 9.3.2	
9.3	Handrails	902.2 902.4 1008.2m 1008.2r 1009.2c Appendix D	6.2.3.2.3 6.2.3.4 8.6.15.13 8.10.4.1.1(c) 8.11.4.1(c)	9.3.4	
9.4	Entrance and egress ends	902.8 902.16 907.3	6.2.3.8 6.2.6.3.6 6.2.8.3 8.6.8.14 8.10.4.1.1(d) 8.10.4.1.1(r) 8.11.4.1(d)	9.4	
9.5	Lighting	906.2 1009.2d	6.2.7 8.10.4.1.1(e) 8.11.4.1(e)	9.7.1	
9.6	Caution signs	905.8a Figure 805.9a	6.2.6.8 Figure 6.1.6.9.1 8.10.4.1.1(f) 8.11.4.1(f)	9.6.11	
9.7	Combplate and comb step impact device	902.8a 905.3k 1009.2e 1206.6	6.2.3.8.1 6.2.6.3.11 6.2.8.3 8.6.8.4 8.6.8.15.18 8.10.4.1.1(g) 8.10.4.1.2(q) 8.11.4.1(g)	9.4.1 9.4.2	
9.8	Deck barricades	902.3h 1009.2f	6.2.3.3.8 8.10.4.1.1(h) 8.11.4.1(h)	9.3.3.6	
9.9	Treadways	902.5 through 902.7 902.9 902.11 1105.1	6.2.3.5 6.2.3.6 6.2.3.9 6.2.7.2 6.2.7.3.4 8.6.8.6 8.10.4.1.1(i)(2) 8.10.4.1.1(s)(2) 8.11.4.1(i)	9.3.5 9.3.6	

Table A-4
Checklist for Moving Walks (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
		Part 9 Moving Walk — External (Cont'd)			
9.10	Operating and safety devices	905.1 905.2 905.3a 905.6 (NR 8.6.10.5)	6.2.6 8.7.6.2.1 8.7.6.2.13 8.10.4.1.1(j) 8.10.4.1.2(s) 8.11.4.1(j)	9.6	
9.11	Reserved				
9.12	Reserved				
9.13	Egress restriction (rolling shutter) device	905.3f	6.2.6.3.6 8.10.4.1.1(l) 8.11.4.1(m)	9.6.7	
9.14	Speed	903.1 905.3b 1008.2o	6.2.4 6.2.6.3.2 8.10.4.1.1(m) 8.10.4.1.2(e) 8.11.4.1(n)	9.6.4	
9.15	Balustrades	902.3 1009.2g Appendix D	6.2.3.3 8.5.1 8.7.6.2.5(c) 8.10.4.1.1(n) 8.10.4.2.2(a) 8.11.4.1(o)	9.3.3	
9.16	Ceiling intersection guards	902.3g Appendix D	6.2.3.3.7 8.6.8.9 8.10.4.1.1(o) 8.11.4.1(p)	9.3.3.5	
9.17	Skirt panels	902.3e 902.3f	6.2.3.3.6 8.6.8.2 8.6.8.3 8.10.4.1.1(p) 8.11.4.1(q)	9.3.3.4	
9.18	Outdoor protection	907 1008.2p 1009.2i	6.2.8 8.10.4.1.1(q)		
9.19	Maintenance records		8.6.1.4		
9.20	Earthquake inspection and tests (seismic risk zone 2 or greater)		8.5 8.6.15.23		
		Part 10 Moving Walk — Internal			
10.1	Machinery space access, lighting, receptacle, and condition	901.1 906 1008.2a 1009.2j	6.2.2.1 6.2.6.3.5 6.2.7 8.6.8.15.1 8.10.4.1.2(a) 8.11.4.1(s)	9.7.2	
10.2	Stop switch and inspection control	905.3e (NR 6.2.6.2.2) 1008.2b 1009.2k	6.2.6.2.2 6.2.6.3.5 6.2.6.3.12 8.6.8.15.2 8.10.4.1.2(b)		
10.3	Controller and wiring	905.3i 906 (NR 6.2.6.12) 1008.2c 1009.2l	8.6.8.15.3 8.6.8.15.14 8.10.4.1.2(c)		NFPA 70 or CSA C22.1, as applicable

Table A-4
Checklist for Moving Walks (Cont'd)

Item	Check	A17.1-1996 Section/Rule	ASME A17.1-2013/ CSA B44-13 Requirements	ASME A17.3 Section/Para.	Comments
	Part 10 Moving Walk — Internal (Cont'd)				
10.4	Drive machine and brake	904 1008.2d	6.2.5 8.6.8.15.4 8.10.4.1.1(s)(1) 8.10.4.1.2(d)	9.5 9.6.5	
10.5	Speed governor	905.3b 1008.2e 1009.2m	6.2.6.3.2 8.6.8.15.5 8.10.4.1.2(e)	9.6.4	
10.6	Broken drive chain device and disconnected motor safety device	904.3b 905.3d 905.3h 1008.2f	6.2.5.3.2 6.2.6.3.4 6.2.6.3.8 8.6.8.15.6 8.6.15.16 8.10.4.1.2(f) 8.10.4.1.2(n)	9.6.6 9.6.10	
10.7	Reversal stop switch	905.3g 1008.2g	6.2.6.3.7 8.6.8.15.7 8.10.4.1.2(g)	9.6.8	
10.8	Broken treadway device	905.3c 1008.2h	6.2.6.3.3 8.6.8.15.8 8.10.4.1.2(h)		
10.9	Reserved				
10.10	Missing pallet device	905.5 1008.2j	6.2.6.5 8.10.8.15.10 8.10.4.1.2(j)		
10.11	Pallet level device	905.3i 1008.2k 1009.2n	6.2.6.3.9 8.6.8.15.11 8.10.4.1.2(k)		
10.12	Pallets, pallet chains, and trusses	901.1 902.9 902.11 902.13 902.14 1008.2l 1009.2o 1206.6	6.2.2.1 6.2.3.9 8.6.8.15.12 8.10.4.1.2(l)	9.3.5.1 9.3.5.2	
10.13	Handrail systems and safety devices	902.4 905.1 905.3 905.4 (NR 8.6.9.1) 1008.2m 1008.2q 1009.2c	6.2.3.4 6.2.6 8.6.9.1 8.7.6.2.6 8.6.8.15.13 8.10.4.1.1(c) 8.10.4.1.1(k) 8.10.4.1.2(m) 8.11.4.1(l)		
10.14	Code data plate	908 1200.6	8.9 8.7.1.8 8.10.4.1.2(p)		
10.15	Response to smoke detectors	905.7	6.2.6.7 8.6.8.15.17 8.10.4.1.2(v)		
10.16	Inspection control		6.2.6.2.2		
10.17	Earthquake inspection and tests (seismic risk zone 2 or greater)		8.5 8.10.4.1.2(a)(5)		

NONMANDATORY APPENDIX B
ACCEPTANCE CHECKLISTS

(23)

See Tables B-1 through B-7.

Table B-1

Acceptance Checklist for Firefighters' Service (A17.1-2000/B44-00): Automatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No. _____ BUILDING _____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No. _____
SIGNATURE: _____

Item	Check	A17.1-2000/ B44-00	Pass	Fail	N/A
6.5.1	**Emergency Signaling Devices**	2.27.1			
6.5.1.1	"ALARM" must sound and illuminate when pressed. If rise is over 30 m (100 ft), a second device is required.	2.27.1.1.1 2.27.1.1.1(d)(2)			
6.5.1.2	In-car emergency stop button (if present) must sound alarm.	2.27.1.1.1			
6.5.1.3	If rise is more than 18 m (60 ft), check for two-way communication between the cab and a point outside the hoistway.	2.27.1.1.2			
6.5.1.4	Ensure that audible alarms and communications are functional with loss of normal power.	2.27.1.1.3			
6.5.1.5	Check for means to communicate with machine room when required by A17.1/B44, requirement 2.26.1.5.10(c).	2.27.1.3			
6.5.2	**Phase I Key Switch and Instructions**	2.27.3.1 2.27.7 2.27.8			
6.5.2.1	Operating instructions.	2.27.7.1			
6.5.2.2	Group 3 security keys.	2.27.8			
6.5.2.3	Labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order.	2.27.3.1.1(b) 2.27.3.1.1(a)			
6.5.2.4	Located on the designated level for the group.	2.27.3.1.1(a)			
6.5.2.5	Located in the lobby, visible and readily accessible.	2.27.3.1.1(c)			
6.5.2.6	The key cannot be removed in the "RESET" position, but it can be removed in the other positions.	2.27.3.1.3			
6.5.2.7	The second switch, if present, must be at a central alarm and control facility, labeled "FIRE RECALL," and can only be a two-position switch marked "OFF" and "ON," in that order.	2.27.3.1.2			
6.5.3	**Phase II In-Car Switch and Instructions**	2.27.8 2.27.3.3			
6.5.3.1	Ensure that there is a key for each Phase I, each Phase II, and each standby power selection switch in the building.	2.27.8			
6.5.3.2	The same key is used for Phase I, Phase II, and standby power for all elevators in the building.	2.27.8			
6.5.3.3	Keys are available only to authorized emergency and firefighting personnel.	2.27.8			
6.5.3.4	The key can only be removed in the "OFF" or "HOLD" position.	2.27.3.3			
6.5.3.5	The keys shall be Group 3 security (see A17.1/B44, Requirement 8.1).	2.27.8			
6.5.3.6	Labeled "FIRE OPERATION" and marked "OFF," "HOLD," and "ON," in that order.	2.27.3.3			

Table B-1

Acceptance Checklist for Firefighters' Service (A17.1-2000/B44-00): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2000/ B44-00	Pass	Fail	N/A
6.5.4	**Monthly Test**	8.6.10.1			
6.5.4.1	Monthly test log is completed.				
6.5.5	**Phase I Operation While Running** Place several floor calls in the car. While going up, have the person at the designated level place the Phase I switch in the "ON" position. Where a duplicate switch is provided, verify that Phase I operation is initiated by placing the switch in the "ON" position. Determine the following:	2.27.3			
6.5.5(a)	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
6.5.5(b)	The in-car stop switch or emergency stop switch is inoperative.	2.27.3.1.6(c)			
6.5.5(c)	Call-registered lights and directional lanterns are extinguished and inoperative.	2.27.3.1.6(f)			
6.5.5(d)	Position indicators, where provided, are inoperative, except in the car, on the designated level, and in the central control station.	2.27.3.1.6(f)			
6.5.5(e)	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
6.5.5(f)	Car call buttons and corridor call buttons are inoperative.	2.27.3.1.6(f)			
6.5.5(g)	The car returns to the designated level and parks with power-operated doors open. If there is more than one entrance at the designated landing, only the doors serving the lobby with the fire recall switch open.	2.27.3.1.6(a)			
6.5.5(h)	The visual and audible signals operate and stay on until the cars at the designated level.	2.27.3.1.6(h)			
6.5.6	**Phase I Operation With Doors Open** Place the Phase I switch in the "OFF" position and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position and check the following:	2.27.3.1.6			
6.5.6(a)	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
6.5.6(b)	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to 2½ ft-lb (3.5 J).	2.27.3.1.6(e)			
6.5.6(c)	The emergency stop switch or in-car stop switch is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			
6.5.6(d)	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
6.5.7	**Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing** Place the Phase I switch in the "OFF" position and run the car to any floor. Activate the emergency stop switch or the in-car stop switch. With the doors open, have the Phase I switch turned to the "ON" position. Return the emergency stop switch or in-car stop switch to the "RUN" position.	2.27.3.1.6			
6.5.7.1	Verify that the automatic power-operated horizontal sliding doors close promptly, and that other types of doors can be closed, and that, once the doors are closed, the car moves to the designated level.	2.27.3.1.6(d)			
6.5.8	**Stop Switches and Door Buttons** While on Phase I operation, verify that	2.27.3.1.6(c) 2.27.3.1.6(g)			
6.5.8(a)	Stop switches other than those inside the car remain operative.	2.27.3.1.6(c)			
6.5.8(b)	For vertical sliding doors, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			

Table B-1

Acceptance Checklist for Firefighters' Service (ASME A17.1-2000/B44-00): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	ASME A17.1-2000/ B44-00	Pass	Fail	N/A
6.5.9	**Fire-Alarm-Initiating Device and Operation**	2.27.3			
6.5.9.1	Verify that there is a fire-alarm-initiating device in each elevator lobby, the elevator machine room, and sprinklered hoistways. In jurisdictions enforcing the NBCC, verify that there is a fire-alarm-initiating device in each elevator lobby and on the designated level if not sprinklered throughout and in the machine room if sprinklered.	2.27.3.2.1 2.27.3.2.2			
6.5.9.2	With the car(s) on normal operation, have the input for main return activated and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
6.5.9.3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset and then the Phase I switch must be cycled to "RESET" momentarily and then to "OFF."	2.27.3.1.6(k)			
6.5.9.4	With the car(s) on normal operation, have the input for alternate level return activated and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
6.5.9.5	Car(s) should only respond to the first fire alarm input.	2.27.3.2.5			
6.5.9.6	Activate the machine room fire-alarm-initiating device input and verify Phase I operation and that all cars return to the designated level.	2.27.3.2.3(b)			
6.5.9.7	Activate the designated level machine room fire-alarm-initiating device and verify Phase I operation and that all cars return to the alternate level.	2.27.3.2.3(b)			
6.5.9.8	With the car(s) on normal operation, have the input for machine room or hoistway return activated and verify that the visual signal in the car illuminates intermittently.	2.27.2.4			
6.5.9.9	In jurisdictions not enforcing the NBCC, where a fire-alarm-initiating device is required in the hoistway, activate the input and verify that all cars return to the designated landing, except that fire-alarm-initiating devices installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
6.5.10	**Fire-Alarm-Initiating Device and Phase I Switch**				
6.5.10.1	Activate the alternate landing return input and observe that the elevator returns to the alternate landing.	2.27.3.2.3(b)			
6.5.10.2	If a two-position key switch is provided, place it in the "ON" position and verify that the elevator remains at the alternate landing.	2.27.3.1.2			
6.5.10.3	Turn both the Phase I switch and the additional Phase I switch (when provided) to the "ON" position and verify that the car returns to the designated level.	2.27.3.1.6(j)			
6.5.11	**Phase II Key Switch and Sign** With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car and check the following:	2.27.3.3.1			
6.5.11(a)	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
6.5.11(b)	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. All landing position indicators, except at the designated landing and central alarm and control facility, are inoperative. Car position indicators are operative.	2.27.3.3.1(b)			
6.5.11(c)	Power-operated doors can only be opened by continuous pressure on the door open button; if the button is released before the doors are in the normal open position, the doors will close without delay.	2.27.3.3.1(d)			
6.5.11(d)	Open power-operated doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
6.5.11(e)	If two entrances can be opened and closed at the same landing, separate door open and door close buttons are provided for each entrance.	2.27.3.3.1(d)			

Table B-1

Acceptance Checklist for Firefighters' Service (A17.1-2000/B44-00): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2000/ B44-00	Pass	Fail	N/A
6.5.11(f)	All door reopening devices are inoperative (except the door open button). Full-speed closing is permitted.	2.27.3.3.1(g)			
6.5.11(g)	The "CALL CANCEL" button is labeled and, when activated, will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
6.5.11(h)	Floor selection buttons are provided and functional for all landings without restrictions.	2.27.3.3.1(i)			
6.5.11(i)	A moving car will stop at the next landing with a car call registered and remaining car calls are canceled.	2.27.3.3.1(j)			
6.5.12	**Phase II Switch in the "HOLD" Position**	2.27.3.3.2			
6.5.12.1	Place the Phase II switch in the "HOLD" position and remove the key.Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
6.5.12.2	Verify that the car call buttons are inoperative.	2.27.3.3.2			
6.5.13	**Phase II Switch in the "OFF" Position and Doors Closing Power-Operated Horizontally and Vertically Sliding Doors** With the elevator away from the designated level and Phase I operation in effect, place the Phase II switch in the "OFF" position and verify that	2.27.3.3			
6.5.13(a)	Horizontally sliding doors close automatically and continuous pressure on the door close button will close vertically sliding doors.	2.27.3.3.3			
6.5.13(b)	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.3(a)			
6.5.13(c)	The door reopening device is inoperative and full-speed closing is permitted.	2.27.3.3.3(a)			
6.5.13(d)	The door open button is operative.	2.27.3.3.3(a)			
6.5.13(e)	If the Phase II switch is turned to "ON" or "HOLD" before the door is closed, the door will reopen.	2.27.3.3.3(a)			
6.5.13(f)	With the car stopped and doors closed, or the car in motion with the Phase II switch turned to the "OFF" position, the car returns to the designated level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(m), but remains on Phase II operation.	2.27.3.3.4			
6.5.14	**Removal From Phase II Operation** Verify that the elevator can be removed from Phase II operation only when	2.27.3.3			
6.5.14(a)	The Phase II switch is in the "OFF" position at the designated level and the doors open.	2.27.3.3.5			
6.5.14(b)	The Phase II switch is in the "OFF" position and Phase I operation is in effect.	2.27.3.3.4			
6.5.15	**Power Disconnects Open**	2.27.3.4			
6.5.15.1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation.	2.27.3.4			
6.5.15.2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.				
6.5.15.3	The car is allowed to move to a position in the hoistway to reestablish position once movement is attempted.	2.27.3.4			
6.5.16	**Top-of-Car Operating Device** While operating from the top of the car, have the Phase I key switch placed in the "ON" position and verify that	2.27.6			
6.5.16(a)	An audible signal sounds.				
6.5.16(b)	The elevator remains under the control of the top-of-car operating device.				
6.5.16(c)	The elevator remains under the control of the hoistway access switch.				
6.5.17	**Automatic Elevators With Attendant Operation** With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify that	2.27.5.2			

Table B-1

Acceptance Checklist for Firefighters' Service (A17.1-2000/B44-00): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2000/ B44-00	Pass	Fail	N/A
6.5.17(a)	The audible and visual signals operate and a parked elevator will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			
6.5.17(b)	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
6.5.17(c)	If the car is on hospital emergency service, it will remain on that operation until removed by the operator, when it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately and remain activated until the car is returned to the designated landing. With the car on firefighters' emergency operation, the elevator cannot be placed on hospital service.	2.27.5.3			
6.5.18	**Elevators on Phase I and Phase II Operation** **Prevention of Operation and Disabling Not Allowed** With the elevator on normal operation, verify the following:	2.27.3.1.6.1(l) 2.27.3.1.6.1(m) 2.27.3.3.6			
6.5.18(a)	Activate means other than those specified in this Code to remove elevators from normal operation, and verify that Phase I emergency recall operation is not prevented.	2.27.3.1.6(l)			
6.5.18(b)	Activate input for devices that measure loads and verify that the elevator is not prevented from operating at or below the capacity that is required.	2.27.3.1.6(m)			
6.5.18(c)	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.	2.27.3.3.6			

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a focus for inspectors when completing acceptance testing of elevators equipped with firefighters' emergency operation.				
	Emergency Signaling Devices	**2.27.1**			
1	There is a help button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The help button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "HELP" is optional.	2.26.12.4			
3	The help button is no higher than 48 in. (1 220 mm) from the floor.	2.27.1.1.3(a)			
4	The help button or visual indication on the same panel illuminates when communication is established and extinguishes when communication is terminated.	2.27.1.1.3(c)			
5	On freight elevators, an audible signal must sound when the emergency stop button is pressed (A17.1/B44, requirement 2.27.1.1). If travel is over 100 ft (30 m), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
6	If travel is more than 60 ft (18 m), check for two-way communication between the cars and a point readily accessible to authorized and emergency personnel.	2.27.1.1.4(a) 2.27.1.1.4(b)			
7	If the site is not staffed 24 h, the call is automatically directed within 30 s to a location staffed by authorized personnel. Automated answering systems are not acceptable.	[2.27.1.1.2/ 2.27.1.1.3(h)]			
8	Authorized personnel who answer a call can identify the location and elevator number.	2.27.1.1.3(d)			
9	The call can only be terminated by authorized personnel outside the elevator.	2.27.1.1.3(f)			
	Keys and Key Switches	**[2.27.3/2.27.8]**			
1	Ensure that there is a key for each Phase I, Phase II, and standby power selection switch in the building.	2.27.8			
2	The same key is used for Phase I, Phase II, and standby power for all elevators in the building.	2.27.8			
3	Keys are available only to authorized emergency and firefighting personnel.	2.27.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
5	The standby power selection switch shall be in view of all elevator entrances (see A17.1/B44, requirement 2.27.2.4.3 for an alternate option).	2.27.2.4.3			
6	Verify all fire recall switches have a visual indicator.	2.27.3.1.5			
	Phase I Key Switch and Instructions	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	In operating instructions with or adjacent to the recall switch, only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.	2.27.7.1			
2	The switch should be labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order.	2.27.3.1.1(b)			
3	The switch should be provided at the designated level for the group.	2.27.3.1.1(a)			

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
4	The switch should be located in the lobby, visible, and readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position but can be removed in the other positions.	2.27.3.1.3			
6	The second switch, if present, must be at the building fire control station and labeled "FIRE RECALL"; it should be a two-position switch marked "OFF" and "ON," in that order.	2.27.3.1.2			
7	A visual indicator is provided at the fire recall switches.				
8	In jurisdictions enforcing the NBCC, there should be a min. 2-in. (50-mm) fire hat on "FIREFIGHTER'S ELEVATOR" on or adjacent to the entrance frame at the designated landing.	2.27.7.4			
	Phase I Operation While Running Place several floor calls in the car. While going up, have the person at the designated level place the Phase I switch in the "ON" position. Where a duplicate switch is provided, verify that Phase I is initiated by placing the switch in the "ON" position. Determine the following:	**2.27.3**			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	The in-car stop switch or emergency stop switch is inoperative.	2.27.3.1.6(c)			
3	Call register lights and directional lanterns are extinguished and inoperative.	2.27.3.1.6(f)			
4	Position indicators, where provided, are inoperative except in the car, on the designated level, and in the building fire control station.	2.27.3.1.6(f)			
5	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
6	Car call buttons are inoperative.	2.27.3.1.6(f)			
7	The car returns to the designated level and parks with power-operated doors open.	2.27.3.1.6(a)			
8	The visual and audible signals operate and stay on until the car is at the designated level.	2.27.3.1.6(h)			
	Phase I Operation With Doors Open Place the Phase I switch in the "OFF" position and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
2	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to $2\frac{1}{2}$ ft-lb (3.5 J). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch or in-car stop switch is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			
4	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
	Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing Place the Phase I switch in the "OFF" position, and run the car to any floor. Activate the emergency stop switch or the in-car stop switch. With the doors open, have the Phase I switch turned to the "ON" position. Return the emergency stop switch or in-car stop switch to the "RUN" position.	**2.27.3.1.6**			
1	Verify that the doors close promptly and the car moves to the designated level only after the emergency stop switch or in-car stop switch has been returned to the "RUN" position.	2.27.3.1.6(d)			

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
	Stop Switches and Door Buttons While on Phase I operation, verify the following:	[2.27.3.1.6(c)/ 2.27.3.1.6(g)]			
1	Stop switches other than those inside the car remain operative.	2.27.3.1.6(c)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			
	Fire-Alarm-Initiating Device and Operation	**2.27.3**			
1	Verify that there is a fire-alarm-initiating device (FAID) in each elevator lobby, in the elevator machine room, and in sprinklered hoistways. In jurisdictions enforcing the NBCC, verify that there is a FAID in each elevator lobby, at the designated level if not sprinklered throughout, and in the machine room if sprinklered.	[2.27.3.2.1/ 2.27.3.2.2]			
2	With the car(s) on normal operation, have the input for main return activated and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3(a)			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
4	With the car(s) on normal operation, have the input for alternate level return activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Car(s) should only respond to the first fire alarm input.	2.27.3.2.5			
6	Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated or alternate level, as appropriate — unless the machine room is at the designated level; if so, cars go to the alternate level.	2.27.3.2.3(b)			
7	With the car(s) on normal operation, have the input for machine room or hoistway return activated, and verify the visual signal in the car illuminates intermittently.	2.27.2.4			
8	In jurisdictions not enforcing the NBCC where the FAID is required in the hoistway, activate the input, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
	Alternate Recall (If Applicable) With the car at the alternate level and on Phase I emergency recall operation with the doors open, verify the following:	**2.27.3.2.4**			
1	If a two-position key switch is provided, place it in the "ON" position and verify that the elevator remains at the alternate landing.	2.27.3.1.2			
2	Turn both the Phase I switch and the additional Phase I switch (when provided) to the "ON" position and verify that the car returns to the designated level.	2.27.3.1.6(j)			
	Monthly Test (for Jurisdictions Not Enforcing the NBCC)	**8.6.10.1**			
	The monthly test log is completed.				

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

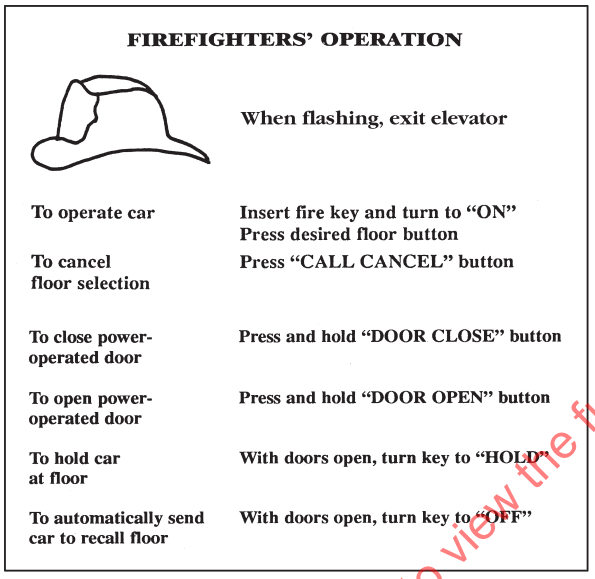
Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
	Phase II Key Switch and Instructions	[2.27.8/2.27.3.3]			
1					
2	The switch should be labeled "FIRE OPERATION" and marked "OFF," "HOLD," and "ON," in that order.	2.27.3.3			
3	The key can only be removed in the "OFF" or "HOLD" position.	2.27.3.3			
	Phase II Operation With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators are operative; landing position indicators are inoperative, except at the designated landing and fire control station.	2.27.3.3.1(b) 2.27.3.3.1(g)			
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button (DOB); if the button is released before the door is in the normal open position, the door will close without delay.	2.27.3.3.1(d)			
5	If two entrances can be opened and closed at the same landing, separate door open and door close buttons are provided for each entrance.	2.27.3.3.1(d)			
6	All door reopening devices are inoperative (except the DOB); full-speed closing is permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled, and when activated will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection buttons are provided and are functional for all landings without restrictions.	2.27.3.3.1(i)			

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
	Phase II Switch in the "HOLD" Position	**2.27.3.3.2**			
1	With the doors fully open, place the Phase II switch in the "HOLD" position and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call buttons are inoperative.	2.27.3.3.2			
	Phase II Switch in the "OFF" Position and Doors Closing **Horizontal Sliding Doors** With the elevator away from the designated level and Phase I operation in effect, place the Phase II switch in the "OFF" position and verify the following:	**2.27.3.3**			
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.4			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button is operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the door is closed, the door will reopen.	2.27.3.3.3(a)			
6	With the car stopped and doors closed, or the car in motion and the Phase II switch turned to "OFF," the car returns to the designated level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(m) but remains on Phase II operation.	2.27.3.3.4			
	Removal From Phase II Verify that the elevator can be removed from Phase II operation only when the following occur:	**2.27.3.3**			
1	The Phase II switch is in the "OFF" position at the designated level and the doors are open.	2.27.3.3.5			
2	The Phase II switch is in the "OFF" position and Phase I operation is in effect.	2.27.3.3.4			
	Power Disconnects Open	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation.	2.27.3.4			
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	The car is allowed to move to a position in the hoistway to reestablish position.	2.27.3.4			
	Inspection and Hoistway Access Operation While operating from the top of the car, have the Phase I key switch placed in the "ON" position and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of the car top, in-car, and machine room inspection operating device.				
3	The elevator remains under the control of the hoistway access switch.				
	Automatic Elevators With Attendant Operation With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			

Table B-2

Acceptance Checklist for Firefighters' Service (A17.1-2002/B44-02): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2002/ B44-02	Pass	Fail	N/A
2	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
3	If the car is on hospital emergency service, it will remain on that operation until removed by the operator, and at that point, it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately and remain activated until the car is returned to the designated landing.	2.27.5.3			
	Elevators on Phase I and Phase II **Prevention of Operation and Disabling Not Allowed** With the elevator on normal operation, verify the following:	**[2.27.3.1.6.1(l)** **2.27.3.1.6.1(m)/** **2.27.3.3.6]**			
1	Activate, using means other than those specified in this Code, to remove elevators from normal operation (card key access, etc.), and verify that Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate the input for devices that measure loads and verify that the elevator is not prevented from operating at or below the capacity that is required.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.	2.27.3.3.6			
	Hydraulic Elevators	**3.27.1**			
1	Where the car(s) are responding to low oil protection, plunger follower guide protection, or auxiliary power lowering and Phase I operation is activated, verify that the car descends to the designated recall level. If the car is incapable of reaching the recall level, then it should descend to an available landing, open its doors, and reclose the doors within 15 s. The door open button should remain operative.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s. The door open button remains operative.	3.27.2			
3	With the car(s) on Phase II operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can only answer calls to landings below its location.	3.27.4			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist will be. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a focus for inspectors when completing acceptance testing of elevators equipped with firefighters' emergency operation.				
	Emergency Signaling Devices	**2.27.1**			
1	There is a help button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The help button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "HELP" is optional.	2.26.12.4			
3	The help button is no higher than 48 in. (1 220 mm) from the floor.	2.27.1.1.3(a)			
4	The help button or visual indication on the same panel illuminates when communication is established and extinguishes when communication is terminated.	2.27.1.1.3(c)			
5	If the site is not staffed 24 h, the call is automatically directed within 30 s to a location staffed by authorized personnel. Automated answering systems are not acceptable.	[2.27.1.1.2/ 2.27.1.1.3(h)]			
6	Authorized personnel who answer the call can identify the location and elevator number.	2.27.1.1.3(d)			
7	The call can only be terminated by authorized personnel outside the elevator.	2.27.1.1.3(f)			
8	Ensure that audible alarms (where provided) and communications are functional with loss of normal power.	2.27.1.1.5			
9	On freight elevators, the audible signal must sound when emergency stop is pressed (A17.1/B44, requirement 2.27.1.2). If rise travel is over 100 ft (30 m), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
10	Where travel is 60 ft (18 m) or more, there should be two-way communication from within the building to each individual car.	2.27.1.1.4			
11	Where travel is 60 ft (18 m) or more, this communication means overrides any other communication to outside of the building.	2.27.1.1.4(a)			
12	Where travel is 60 ft (18 m) or more, communication can only be disconnected from outside the car within the building.	2.27.1.1.4(b)			
13	Where travel is 60 ft (18 m) or more, a visual indicator illuminates when communication is established and extinguishes when the call is terminated.	2.27.1.1.4(c)			
14	Where travel is 60 ft (18 m) or more, permanently posted and protected operating instructions are at a communication station outside the car [minimum letter height of 0.125 in. (3 mm)].	2.27.1.1.4(d)			
	Keys and Key Switches	**2.27.8**			
1	Ensure there is a key for each Phase I, Phase II, and standby power selection switch in the building in view of all elevator entrances (see A17.1/B44, requirement 2.27.2.4.3 for an alternate option).	2.27.8			
2	The same key is used for Phase I and Phase II (the firefighters' operation panel in the car if it does not open automatically) and standby power for all elevators in the building.	2.27.8			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
3	Keys are available only to authorized emergency and firefighting personnel.	2.27.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
5	Verify all fire recall switches have a visual indicator.	2.27.3.1.5			
	Phase I Key Switch and Instructions	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	In operating instructions with or adjacent to the recall switch, only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.				
2	The key switch is labeled "FIRE RECALL" and is marked "RESET," "OFF," and "ON," in that order.	2.27.3.1.1(b)			
3	The switch is provided at the designated level for the group.	2.27.3.1.1(a)			
4	The switch is located in the lobby, is visible, and is readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position, but can be removed in the other positions.	2.27.3.1.3			
6	The second switch, if present, must be at the building fire control station, labeled "FIRE RECALL" and should only be a two-position switch marked "OFF" and "ON," in that order.	2.27.3.1.2			
7	In jurisdictions enforcing the NBCC, there should be a min. 2-in. (50-mm) fire hat on the firefighters' elevator, on or adjacent to the entrance frame at the designated landing.	2.27.7.4			
	Phase I Operation While Running Place several floor calls in the car. While going up, have the person at the designated level place the Phase I switch in the "ON" position. Where an additional switch is provided, verify that Phase I operation is initiated by placing the switch in the "ON" position. Determine the following:	**2.27.3**			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	The in-car stop switch or emergency stop switch is inoperative.	2.27.3.1.6(c)			
3	Call register lights and directional lanterns are extinguished and inoperative.	2.27.3.1.6(f)			
4	Position indicators, where provided, are inoperative except in the car, on the designated level, and in the building fire control station.	2.27.3.1.6(f)			
5	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
6	Car call buttons are inoperative.	2.27.3.1.6(f)			
7	The car returns to the designated level and parks with power-operated doors open.	2.27.3.1.6(a)			
8	The visual and audible signals operate. The audible signal stays on for at least 5 s after the doors close and the visual signal stays on until the car is returned to automatic operation.	2.27.3.1.6(h)			
9	The in-car firefighters' emergency operation (FEO) panel cover opens automatically when at the designated level (if automatic unlocking is provided).	2.27.3.3.7			
	Phase I Operation With Doors Open Place the Phase I switch in the "OFF" position and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
2	If the door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to $2\frac{1}{2}$ ft-lb (3.5 J). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch or in-car stop switch is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			
4	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
	Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing Place the Phase I switch in the "OFF" position and run the car to any floor. Activate the emergency stop switch or the in-car stop switch. With the doors open, have the Phase I switch turned to the "ON" position. Return the emergency stop switch or in-car stop switch to the "RUN" position.	**2.27.3.1.6(d)**			
1	Verify that the doors close promptly and the car moves to the designated level.	2.27.3.1.6(d)			
	Stop Switches and Door Buttons While on Phase I operation, verify the following:	**[2.27.3.1.6(c)/ 2.27.3.3.3.1(m)/ 2.27.3.1.6(g)]**			
1	Stop switches other than those inside the car, as well as the stop switch in the firefighters' operation panel, remain operative.	2.27.3.1.6(c) 2.27.3.3.1(m)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			
	Fire-Alarm-Initiating Device and Operation	**2.27.3**			
1	Verify that there is a fire-alarm-initiating device (FAID) in each elevator lobby, in the elevator machine room, and in sprinklered hoistways. In jurisdictions enforcing the NBCC, verify that there is a FAID in each elevator lobby and at the designated level if not sprinklered throughout, and in the machine room if sprinklered.	[2.27.3.2.1/ 2.27.3.2.2]			
2	With the car(s) on normal operation, have the input for designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset and then the Phase I switch must be cycled to "RESET" momentarily and then to "OFF."	2.27.3.1.6(k)			
4	With the car(s) on normal operation, have the input for alternate level recall activated and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Car(s) should only respond to the first fire alarm input.	2.27.3.2.5			
6	Activate the machine room FAID input and verify Phase I operation and that all cars return to the designated level — unless the machine room is on the designated level; if it is, cars should go to the alternate level.	2.27.3.2.3(b)			
7	With the car(s) on normal operation, have the input for machine room or hoistway return activated, and verify that both visual signals in the car illuminate intermittently.	2.27.2.4			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
8	In jurisdictions not enforcing the NBCC, where the FAID is required in the hoistway, activate the input and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
	Alternate Recall Level (If Applicable) With the car at the alternate level, on Phase I emergency recall operation, and the doors open, check the following:				
1	If a two-position key switch is provided, place it in the "ON" position and verify that the elevator remains at the alternate landing.	2.27.3.1.2			
2	Turn both the Phase I switch and the additional Phase I switch (when provided) to the "ON" position and verify that the car returns to the designated level.	2.27.3.1.6(j)			
	Phase II In-Car Switch and Instructions	**[2.27.8/2.27.3.3]**			
1	Check that instructions are posted adjacent to the switch or operating panel as below. **FIREFIGHTERS' OPERATION**  **When flashing, exit elevator** **To operate car** — **Insert fire key and turn to "ON" Press desired floor button** **To cancel floor selection** — **Press "CALL CANCEL" button** **To close power-operated door** — **Press and hold "DOOR CLOSE" button** **To open power-operated door** — **Press and hold "DOOR OPEN" button** **To hold car at floor** — **With doors open, turn key to "HOLD"** **To automatically send car to recall floor** — **With doors open, turn key to "OFF"**				

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

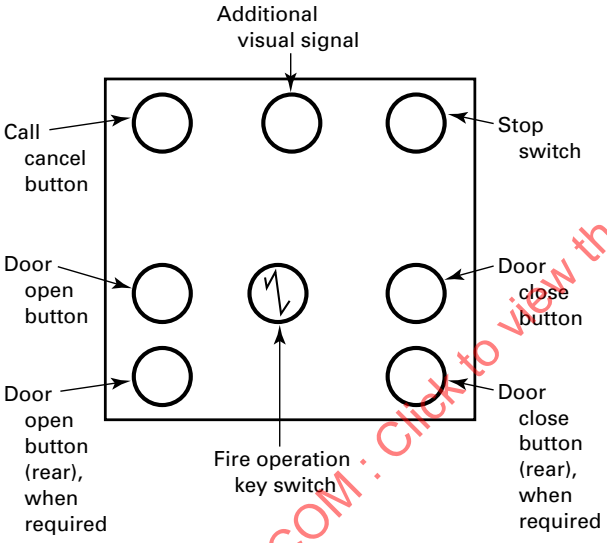
Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
2	FEO panel *(a)* The panel is located at the top of the operating station with buttons and switches not more than 71 in. (1 800 mm) above the floor. *(b)* The panel cover is marked "FIREFIGHTERS' OPERATION" in red letters at least 0.4 in. (10 mm) high. *(c)* The panel key (where the panel doesn't unlock automatically) is the same as the Phase I and Phase II keys. *(d)* The panel cannot be closed with the key in the Phase II operation switch. *(e)* The panel is self-locking. *(f)* The following switches and buttons are provided and laid out as follows:  				
3	The key can only be removed in the "OFF" or "HOLD" position.	2.27.3.3			
4	The key is labeled "FIRE OPERATION" and is marked "OFF," "HOLD," and "ON," in that order.	2.27.3.3			
5	There is an additional visual signal provided behind the panel.	2.27.3.3.8			
	Monthly Test (for Jurisdictions Not Enforcing the NBCC)	**8.6.10.1**			
	The monthly test log is completed.				
	Phase II Operation With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car, and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators are operative, and landing position indicators are inoperative at the designated landing and fire control station.	2.27.3.3.1(b) 2.27.3.3.1(g)			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button, and if the button is released before the door is in the normal open position, the door will close without delay.	2.27.3.3.1(d)			
5	If two entrances can be opened and closed at the same landing, separate door open and door close buttons are provided for each entrance.	2.27.3.3.1(d)			
6	All door reopening devices are inoperative (except the door open button); full-speed closing is permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled, and when activated, it will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection buttons are provided and are functional for all landings without restrictions.	2.27.3.3.1(i)			
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
10	Operation of the stop switch in the firefighters' operation panel cancels all calls and stops the car. The car does not move, except for the leveling operation, until a car call is registered.				
	Phase II Switch in the "HOLD" Position	**2.27.3.3.2**			
1	Place the Phase II switch in the "HOLD" position and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call buttons are inoperative.	2.27.3.3.2			
	Phase II Switch in the "OFF" Position and Doors Closing **Horizontal Sliding Doors** With the elevator away from the designated level and Phase I operation in effect, place the Phase II switch in the "OFF" position, and verify the following:	**2.27.3.3**			
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.4			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button is operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the door is closed, the door will reopen.	2.27.3.3.3(a)			
6	With the car stopped and its doors closed, or the car in motion and the Phase II switch turned to the "OFF" position, the car returns to the designated level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(m) but remains on Phase II operation.	2.27.3.3.4			
	Removal From Phase II Operation Verify that the elevator can be removed from Phase II operation only when	**2.27.3.3**			
1	The Phase II switch is in the "OFF" position at the designated level and the doors are open.	2.27.3.3.5			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
2	The Phase II switch is in the "OFF" position and Phase I operation is in effect.	2.27.3.3.4			
	Power Disconnects Open	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation.	2.27.3.4			
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	The car is allowed to move to a position in the hoistway to reestablish position.	2.27.3.4			
	Inspection and Hoistway Access Operation While operating from the top of the car, have the Phase I key switch placed in the "ON" position and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of the car top, in-car, and machine room inspection operating device.				
3	The elevator remains under the control of the hoistway access switch.				
	Automatic Elevators With Attendant Operation With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2			
2	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
3	If the car is on hospital emergency service, it will remain on that operation until removed by the operator and at that point will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately and remain activated until the car is returned to the designated landing.	2.27.5.3			
	Elevators on Phase I and Phase II Operation **Prevention of Operation and Disabling Not Allowed** With the elevator on normal operation, verify the following:	2.27.3.1.6.1(l) 2.27.3.1.6.1(m) 2.27.3.3.6			
1	Activate means other than those specified in this Code to remove elevators from normal operation (card key access, etc.), and verify that Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate input for devices that measure loads, and verify that the elevator is not prevented from operating at or below the capacity that is required.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.	2.27.3.3.6			

Table B-3

Acceptance Checklist for Firefighters' Service (A17.1-2004/B44-04): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2004/ B44-04	Pass	Fail	N/A
	Hydraulic Elevators				
1	Where the car is responding to low oil protection, plunger follower guide protection, or auxiliary power lowering and Phase I operation is activated, verify that the car descends to the designated level. If the car is incapable of reaching the recall level, then verify that it descends to an available landing, opens its doors, and recloses the doors within 15 s and the door open button remains operative.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s and the door open button remains operative.	3.27.2			
3	With the car on Phase II operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can only answer to landings below its location.	3.27.4			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist will be. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a mechanism for inspectors to be consistent when completing acceptance testing of elevators equipped with firefighters' emergency operation.				
	Emergency Signaling Devices	**2.27.1**			
1	There is a help button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The help button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "HELP" is optional.	2.27.1.1.3(b) 2.26.12.4			
3	The help button is no higher than 1 220 mm (48 in.) from the floor.	2.27.1.1.3(a)			
4	A visual indication on the same panel as the help push button illuminates when communication is established and extinguishes when communication is terminated. The visual indication must also be identified with a phone symbol.	2.27.1.1.3(c) 2.26.12.4			
5	If the site is not staffed 24 h, the call is automatically directed within 30 s to a location staffed by authorized personnel. Automated answering systems are not acceptable.	[2.27.1.1.2/ 2.27.1.1.3(h)]			
6	Authorized personnel who answer the call can identify the location and elevator number.	2.27.1.1.3(d)			
7	The call can only be terminated by authorized personnel outside the elevator.	2.27.1.1.3(f)			
8	Ensure that audible alarms (where provided) and communications are functional with loss of normal power.	2.27.1.1.5			
9	On freight elevators, the audible signal must sound when an emergency stop (A17.1/B44, requirement 2.26.2.5) is operated (A17.1/B44, requirement 2.26.1.2). If the rise is over 30m (100 ft), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
10	Where the rise is 18 m (60 ft) or more, there should be a two-way communication means from within the building to call into each individual car.	2.27.1.1.4			
11	Where the rise is 18 m (60 ft) or more, this communication means overrides any other communication to outside of the building.	2.27.1.1.4(a)			
12	Where the rise is 18 m (60 ft) or more, communication can only be disconnected from outside the car within the building.	2.27.1.1.4(b)			
13	Where the rise is 18 m (60 ft) or more, the visual indicator illuminates when communication is established and extinguishes when the call is terminated.	2.27.1.1.4(c)			
14	Where the rise is 18 m (60 ft) or more, permanently posted and protected operating instructions are incorporated with or adjacent to the communication station outside the car [minimum letter height of 3 mm (0.125 in.)]. The instructions shall conform to A17.1/B44, requirement 2.27.7.3.	2.27.1.1.4(d) 2.27.7.3			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
	Keys and Key Switches	**2.27.8**			
1	Ensure that there is an FEO-K1 key for each Phase I, Phase II, and standby power selection switch in the building.	2.27.8			
2	An FEO-K1 key is used for Phase I and Phase II operations (the firefighters' operation panel in the car if it does not open automatically) and standby power for all elevators in the building.	2.27.8			
3	Keys are available only to emergency, authorized, and elevator personnel.	2.2.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
	Phase I Key Switch and Instructions	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	Operating instructions should be with or adjacent to the fire recall switch; only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.				
2	The switch should be labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order.	2.27.3.1.1(b)			
3	The switch should be provided at the designated level for the group.	2.27.3.1.1(a)			
4	The switch should be located in the lobby, within sight of the elevators for that group, and readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position but can be removed in the other positions.	2.27.3.1.3			
6	The position of any recall switch can only be changed by turning the key deliberately. (The switch is not spring loaded.)	2.27.3.1.1			
7	The second switch, if present, must be at the building fire control station and labeled "FIRE RECALL"; it can only be a two-position switch marked "OFF" and "ON."	2.27.3.1.2			
8	In jurisdictions enforcing the NBCC, a symbol showing a red fire hat on a contrasting background that is a minimum 50 mm (2 in.) in height shall be located on the firefighters' elevator entrance frame or adjacent to it at the recall level.	2.27.7.4			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

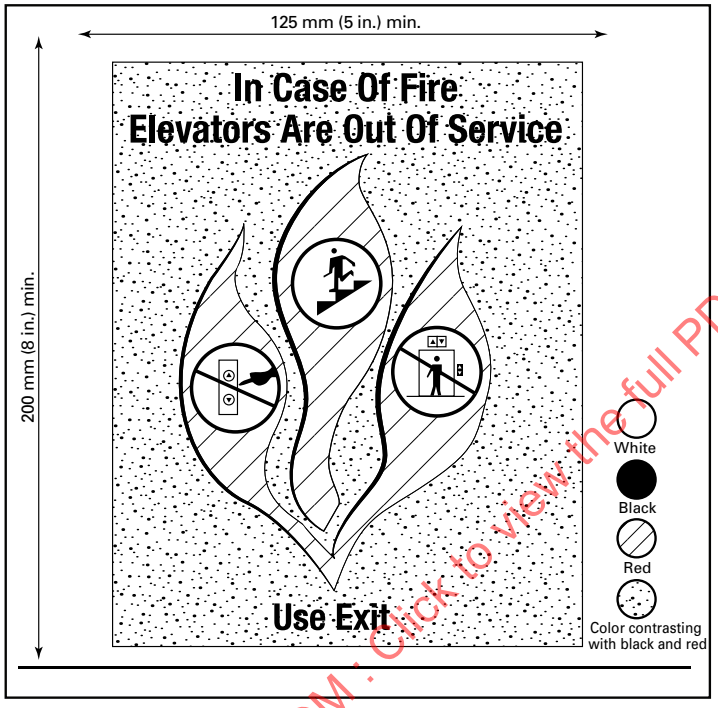
Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
9	When required by the building code, the sign shown below shall be posted next to hall call fixtures. 	2.27.9			
	Phase I Operation While Running Place several floor calls in the car. While traveling away from the recall level, have a person at the three-position Phase I recall switch place it in the "ON" position. Where a remote switch is provided, ensure that the three-position Phase I recall switch is in the "OFF" position, and use the same procedure with a person at the two-position remote Phase I switch. Determine the following:	2.27.3			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	The in-car stop switch or emergency stop switch is inoperative.	2.27.3.1.6(c)			
3	Call register lights and directional lanterns are extinguished and inoperative.	2.27.3.1.6(f)			
4	Position indicators, where provided, are inoperative, except in the car, on the designated level, and in the central control station.	2.27.3.1.6(f)			
5	All car door open buttons are rendered inoperative as soon as car motion begins.	2.27.3.1.6(i)			
6	When the car stops to reverse direction, the door open button will not open the doors.	2.27.3.1.6(i)			
7	Car call buttons are inoperative.	2.27.3.1.6(f)			
8	The car returns to the designated level and parks with power-operated doors open.	2.27.3.1.6(a)			
9	The visual and audible signals operate. The audible signal stays on for at least 5 s after the doors close, and the visual signal stays on until the car is restored to automatic operation.	2.27.3.1.6(h)			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
10	Where an auxiliary power supply, other than emergency or standby power, or normal power is provided and not capable of moving the car to the recall level, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until the normal, emergency, or standby power supply becomes available	2.27.3.1.6(n)			
11	The in-car FEO panel cover opens automatically when at the recall level (if automatic unlocking is provided).	2.27.3.3.7			
	Phase I Operation With Doors Open Place the Phase I switch in the "OFF" position, and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position, and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
2	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to 3.5 J (2.5 ft-lb). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch (A17.1/B44, requirement 2.26.2.5) or in-car stop switch (A17.1/B44, requirement 2.26.2.21) is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			
4	The in-car door open button is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
	Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing Place the Phase I switch in the "OFF" position, and run the car to any floor. Activate the emergency stop switch (A17.1/B44, requirement 2.26.2.5) or the in-car stop switch (A17.1/B44, requirement 2.26.2.21). With the doors open, have the Phase I switch turned to the "ON" position.	**2.27.3.1.6**			
1	Verify that the doors do not close.				
2	Return the emergency stop switch or in-car stop switch to the "RUN" position, and verify that the doors close promptly and the car moves to the designated level.	2.27.3.1.6(d)			
	Stop Switches and Door Buttons While on Phase I operation, verify the following:	**[2.27.3.1.6(c)/ 2.27.3.3.3.1(m)/ 2.27.3.1.6(g)]**			
1	Stop switches other than those inside the car, as well as the stop switch in the firefighters' operation panel, remain operative.	2.27.3.1.6(c) 2.27.3.3.1(m)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
	Fire-Alarm-Initiating Device and Operation	**2.27.3**			
1	In jurisdictions not enforcing the NBCC, verify that there is a fire-alarm-initiating device (FAID) in each elevator lobby, machine room, control space, or control room and in the hoistway if sprinklers are installed in the hoistway; in jurisdictions enforcing the NBCC, verify that there is a smoke detector or building FAID in each elevator lobby and in the machine room.	[2.27.3.2.1/ 2.27.3.2.2]			
2	With the car(s) on normal operation, have the input for designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
4	With the car(s) on normal operation, have the input for alternate level return activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Car(s) should only respond to the first fire alarm input.	2.27.3.2.5			
6	Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated level, unless the machine room is on the designated level, then return the elevator to the alternate level.	2.27.3.2.3(b)			
7	With the car(s) on normal operation, have the input for the machine/control room, control space, or hoistway FAID activated, and verify that both visual signals in the car illuminate intermittently.	2.27.3.2.6			
8	Have the input for the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
	Alternate Recall Level Have the car returned to the alternate level by activating the FAID at the designated level with the doors open.				
1	If a two-position key switch is provided at the building fire control station, place it in the "ON" position, and verify that the elevator remains at the alternate landing.	2.27.3.1.2 2.27.3.1.6(j)			
2	Turn both the Phase I switch and the additional Phase I switch at the building fire control station (when provided) to the "ON" position, and verify that the car returns to the designated level.	2.27.3.1.6(j)			
3	Ensure that the elevator remains at the designated level if the Phase I key switch is turned to the "OFF" position from the "ON" position, or the Phase I key switch is turned to "RESET," or the additional Phase I key switch at the building fire control station (if provided) is turned to the "OFF" position, regardless of the state of the fire alarm signal.	2.27.3.2.5			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
4	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset and the additional Phase I switch at the building fire control center (when provided) must be turned to "OFF," and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
	Phase II In-Car Switch and Instructions	[2.27.8/2.27.3.3]			
1	Check that instructions are incorporated with or adjacent to the switch and are visible only when the cover is open. **FIRE OPERATION** **When**  **flashing, exit elevator** **To operate car** — **Insert fire key, and turn to "ON"; Enter floor selection** **To cancel floor selection** — **Press "CALL CANCEL" button** **To close door** — **Press and hold "CLOSE" button** **To open door** — **Press and hold "OPEN" button** **To hold car at floor** — **With doors open, turn key to "HOLD"** **For emergency stop** — **Use "STOP" switch** **To automatically return to recall floor** — **Turn key to "OFF"** For manually operated doors, "PUSH DOOR" or "PULL DOOR UP" may be included in the instructions above. Special instructions as necessary for vertically sliding doors are also allowed.	2.27.7.2			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

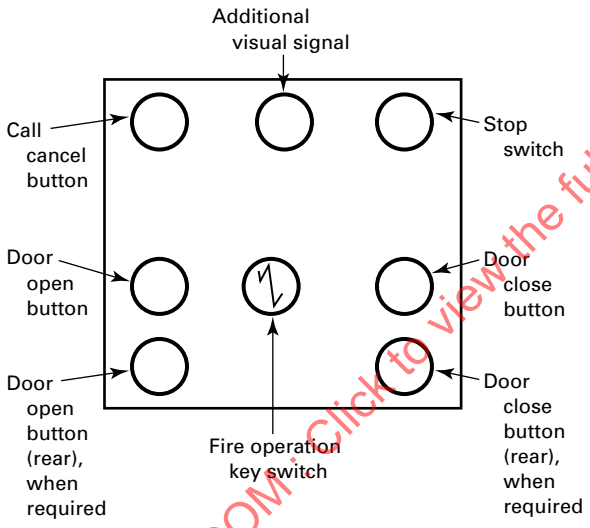
Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
2	FEO panel *(a)* The panel is located at the top of the operating station with buttons and switches not more than 1 800 mm above the floor. *(b)* The panel cover is marked "FIREFIGHTERS' OPERATION" in red letters at least 10 mm high. *(c)* The panel key (where the panel doesn't unlock automatically) is the same as the Phase I and Phase II keys. *(d)* The panel cannot be closed with the key in the Phase II operation switch. *(e)* The panel is self-locking. *(f)* The following switches and buttons are provided and laid out as follows:  				
3	The key can only be removed in the "OFF" or "HOLD" position.	2.27.3.3			
4	The key switch is labeled "FIRE OPERATION" [min. 5 mm (0.25 in.) lettering] and is marked "OFF," "HOLD," and "ON," in that order.	2.27.3.3			
5	An additional visual signal is provided behind the panel.	2.27.3.3.8			
6	The door open, door close, and call cancel buttons are at least 19 mm (0.75 in.) at the smallest dimension and are labeled. (Symbols are not acceptable.)	2.27.3.3.1(c) 2.27.3.3.7			
	Monthly Test (for Jurisdictions Not Enforcing the NBCC)	**8.6.10.1**			
	The monthly test log is completed.				
	Phase II Operation With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car, and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators and position indicators at the designated landing and fire control station are operative, and landing position indicators are inoperative at all other landings and locations.	2.27.3.3.1(b) 2.27.3.3.1(g)			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button; if the button is released before the doors are in the normal open position, the doors will close without delay.	2.27.3.3.1(d)			
5	If two entrances can be opened and closed at the same landing, separate door open and door close buttons are provided in the firefighters' operation panel for each entrance.	2.27.3.3.1(d)			
6	All door reopening devices are inoperative (except the door open button); full-speed closing is permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled and when it is activated, it will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection means are provided and functional for all landings without restrictions, or floor selection means for all floors are provided behind the firefighters' operation panel, and the buttons are at least 19 mm (0.75 in.) in their smallest dimension.	2.27.3.3.1(i)			
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
10	A stop switch provided behind the firefighters' operation panel (A17.1/B44, requirement 2.26.2.33) switch is red, manually opened and closed, and marked "STOP," with "STOP" and "RUN" positions marked as well. If the switch is of a button type, its smallest dimension is 19 mm. (Any type of switch is acceptable, as long as a firefighter wearing protective gloves can operate it.)	2.27.3.3.1(m)			
11	Operation of the stop switch in the firefighters' operation panel cancels all calls and stops the car. After the stop switch in the firefighters' operation panel is restored to the "RUN" position, the car does not move except for the leveling operation, until a car call is registered.	2.27.3.3.1(m)			
12	If an auxiliary power supply, other than emergency or standby power, or normal power is provided and not capable of moving the car to all landings, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until the normal, emergency, or standby power supply becomes available	2.27.3.1.6(n)			
	Phase II Switch in the "HOLD" Position	**2.27.3.3.2**			
1	Place the Phase II switch in the "HOLD" position and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call buttons are inoperative.	2.27.3.3.2			
3	If the elevator is equipped with manually operated doors, with the key in the "HOLD" position, car calls cannot be registered, and the car will not move.	2.27.3.3.2			
	Phase II Switch in the "OFF" Position and Doors Closing **Horizontal Sliding Doors** With the elevator away from the recall level and Phase I operation in effect, place the Phase II switch in the "OFF" position, and verify the following:	**2.27.3.3**			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated recall landing.	2.27.3.3.3(a)			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button is operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the doors are closed, the doors will reopen.	2.27.3.3.3(a)			
6	With the car stopped and doors closed or the car in motion, and if the Phase II switch is turned to the "OFF" position, the car returns to the recall level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(m) but remains on Phase II operation.				
	Removal From Phase II Operation	**2.27.3.3**			
1	With the doors closed and the Phase II switch turned to the "OFF" position, the car returns to the recall level (designated or alternate as originally recalled to) but remains on Phase II operation.	2.27.3.3.4			
2	The elevator can only be removed from Phase II operation when it is at the designated level and the doors are open with the Phase II switch in the "OFF" position.	2.27.3.3.5			
	Power Disconnects Open	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation. The elevator is permitted to reestablish its position by moving to the next floor in the direction of the recall level.	2.27.3.4(a)			
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	Upon restoration of power, an elevator on Phase II operation with the key in the "OFF" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level.	2.27.3.4(b)			
4	Upon restoration of power, an elevator on Phase II operation with the key in the "HOLD" position does not move, except within a leveling zone. If the doors are not fully closed and the car is in a leveling zone, the doors shall open.	2.27.3.4(d)			
5	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position does not move, except within a leveling zone, until a car call is entered. Doors will only move with constant-pressure operation of a door open or door close button.	2.27.3.4(d)			
6	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level and only after a car call is registered.	2.27.3.4(d)			
	Inspection and Hoistway Access Operation While operating from the top of the car, have the Phase I key switch placed in the "ON" position, and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of the car top, in-car, pit (if provided), and machine room inspection operating device.				
3	The hoistway access switch remains functional.				

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
	Automatic Elevators With Attendant Operation With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator not at the designated level will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			
2	If the car is at the designated level, Phase I operation is active without delay.	2.27.5.2(a)			
3	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
4	If a car is on hospital emergency service, it will remain on that operation until removed by the operator, and at that point will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately. It is permitted to provide a means in the car to manually silence the audible signal 5 s after its activation. The audible signal is reactivated when the doors open.	2.27.5.3			
5	When an elevator is on Phase I or Phase II operation, it cannot be put into hospital service.	2.27.5.3			
	Elevators on Phase I and Phase II Operation **Prevention of Operation and Disabling Not Allowed** With the elevator on normal operation, verify the following:	**2.27.3.1.6.1(l)** **2.27.3.1.6.1(m)** **2.27.3.3.6**			
1	Activate means other than those specified in this Code to remove elevators from normal operation (card key access, etc.), and verify that the Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate an input for devices that measure loads, and verify that the elevator is not prevented from operating at or below the capacity that is required.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.	2.27.3.3.6			
	Hydraulic Elevators				
1	Where a car is responding to low oil protection, plunger follower guide protection, or auxiliary power lowering and Phase I operation is activated, verify that the car descends to the recall level. If the car is incapable of reaching the recall level, then verify that it descends to an available landing, opens its doors, and recloses the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.2			
3	With the car(s) on Phase II operation, verify that when low oil protection, plunger follower guide protection, or auxiliary power lowering is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can only answer to landings below its location.	3.27.4			
	Multicompartment Elevators For multicompartment elevators, verify the following:				
1	The recall switch is at the designated level that the upper compartment serves.	2.27.3.5.1			

Table B-4

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2007/B44-07): Automatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
2	The upper compartment also houses the firefighters' panel. Behind the panel, there is an additional two-position switch labeled "LOWER CAR LOCKOUT," with "OFF" and "ON" positions marked.	2.27.3.5.2 2.27.3.5.4			
3	There is a means to display the entire floor area of the lower compartment. In the upper compartment, the display is activated only when Phase I or Phase II operation is in effect.	2.27.3.5.3			
4	The "LOWER CAR LOCKOUT" switch is not functional unless Phase II operation is in effect.	2.27.3.5.4(a)			
5	Placing the "LOWER CAR LOCKOUT" switch in the "ON" position initiates closing of the lower compartment doors with reduced kinetic energy and disables all door reopening devices in the lower compartment.	2.27.3.5.4(b)			
6	Placing the "LOWER CAR LOCKOUT" switch in the "OFF" position with the car at a landing opens the lower compartment doors.	2.27.3.5.4(c)			
	Elevators in Seismic Zone 2 and Higher Activate the seismic switch while the car is on Phase I operation and again while it is on Phase II operation. Activate the counterweight displacement switch while the car is on Phase I operation and again while it is on Phase II operation.				
1	When the seismic switch is activated when the car is on Phase I operation, the car shall move to the nearest available landing, open its doors, and shut down. If the car is on Phase II operation, the same sequence shall apply. However, the door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
2	When the counterweight displacement switch is activated when a car is on Phase I operation, it shall initiate an emergency stop and then move away from the counterweight at a speed of not more than 0.75 m/s (150 ft/min) and stop at the nearest available floor, open its doors, and shut down. If the car is on Phase II operation, the same sequence shall apply. However, the door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
3	Elevators standing at a floor when a seismic operation is initiated shall remain at the floor and open their doors. If the car(s) are on Phase II operation, the door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
4	If a seismic operation is initiated prior to Phase I or Phase II operation, the car cannot be operated by the Phase I or Phase II key switches.				
5	Resetting seismic operation results in cars returning to their prior mode of operation.				

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist will be. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a mechanism for inspectors to be consistent when completing acceptance testing of elevators equipped with firefighters' emergency operation. Where checkout procedures are required and are not currently addressed in A17.2, the person or firm installing or maintaining the equipment should provide a written checkout procedure.				
	Emergency Signaling Devices	**2.27.1**			
1	There is a "PHONE" button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The "PHONE" button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "PHONE" is optional.	2.27.1.1.3(b) 2.26.12.1			
3	The "PHONE" button is no higher than 1 220 mm (48 in.) from the floor.	2.27.1.1.3(a)			
4	A visual indication on the same panel as the "PHONE" push button illuminates when communication is established and extinguishes when communication is terminated.	2.27.1.1.3(c)			
5	Two-way communications shall be directed to a location staffed by authorized personnel. If the call is not acknowledged within 45 s, the call shall be automatically directed to an alternate on- or off-site location. Automated answering systems are not acceptable.	2.27.1.1.2(a) 2.27.1.1.2(b) 2.27.1.1.3(h)			
6	Authorized personnel who answer the call can identify the location and elevator number, and that assistance is required.	2.27.1.1.3(d)			
7	After call acknowledgment signals are sent, two-way voice communications are available between the car and authorized personnel.	2.27.1.1.3(e)			
8	The call can only be terminated by authorized personnel outside the elevator.	2.27.1.1.3(f)			
9	Where the rise is 18 m (60 ft) or more, there should be two-way communication means from within the building to call into each individual car.	2.27.1.1.4			
10	Where the rise is 18 m (60 ft) or more, this communication means overrides any other communication to outside of the building.	2.27.1.1.4(a)			
11	Where the rise is 18 m (60 ft) or more, communication can only be disconnected from outside the car within the building.	2.27.1.1.4(b)			
12	Where the rise is 18 m (60 ft) or more, a visual indicator illuminates when communication is established and extinguishes when the call is terminated.	2.27.1.1.4(c)			
13	Where the rise is 18 m (60 ft) or more, permanently posted and protected operating instructions are incorporated with or adjacent to the communication station outside the car [minimum letter height of 3 mm (0.125 in.)]. The instructions shall conform to A17.1/B44, requirement 2.27.7.3.	2.27.1.1.4(d) 2.27.7.3			
14	Ensure that audible alarms (where provided) and communications are functional with loss of normal power.	2.27.1.1.5			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
15	There should be a means to verify that the two-way communication system provided is monitored at least daily.	2.27.1.1.6(a)			
16	If the verification means in A17.1/B44, requirement 2.27.1.1.6(a) detects a failure in the telephone line or equivalent, audible and illuminated visual signals are provided for each group of elevators controlled by a fire recall switch.	2.27.1.1.6(b)			
17	The visual signal is located at the designated landing in the vicinity of the fire recall switch and is visible to elevator users.	2.27.1.1.6(b)(1)(-a)			
18	The visual signal is labeled "ELEVATOR COMMUNICATIONS FAILURE" in red letters a minimum 5 mm (0.25 in.) high.	2.27.1.1.6(b)(1)(-b)			
19	The visual signal illuminates intermittently when activated.	2.27.1.1.6(b)(1)(-c)			
20	The visual signal continues to illuminate intermittently until the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(1)(-d)			
21	The audible signal is 10 dB above ambient but shall not exceed 80 dB measured at the designated landing "EMERGENCY RECALL" switch.	2.27.1.1.6(b)(2)(-a)			
22	The audible signal sounds at least once every 30 s with a minimum duration of $\frac{1}{2}$ s when activated.	2.27.1.1.6(b)(2)(-b)			
23	The audible signal continues to sound until silenced by authorized personnel or the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(2)(-c)			
24	The means to silence the audible signal is accessible only to authorized personnel. When silenced, the signal remains silent unless activated by the next verification.	2.27.1.1.6(b)(3) 2.27.1.1.6(a)			
25	On freight elevators, an audible signal must sound when an emergency stop (A17.1/B44, requirement 2.26.2.5) is operated (A17.1/B44, requirement 2.27.1.2). If the rise is over 30 m (100 ft), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
	Keys and Key Switches	**2.27.8**			
1	Ensure that there is an FEO-K1 key for each Phase I, Phase II, and standby power selection switch in the building.	2.27.8			
2	An FEO-K1 key is used for Phase I and Phase II operation (the firefighters' operation panel in the car if it does not open automatically) and standby power for all elevators in the building.	2.27.8			
3	Keys are available only to elevator, emergency, and authorized personnel.	2.27.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
	Phase I Key Switch and Instructions	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	Operating instructions are with or adjacent to the fire recall switch; only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.				
2	The switch is labeled "FIRE RECALL" and is marked "RESET," "OFF," and "ON," in that order.	2.27.3.1.1(b)			
3	The switch is provided at the designated level for the group.	2.27.3.1.1(a)			
4	The switch is located in the lobby, within sight of the elevators for that group and readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position, but can be removed in the other positions.	2.27.3.1.3			
6	The position of any recall switch can only be changed by turning the key deliberately. (The switch is not spring loaded.)	2.27.3.1.1			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

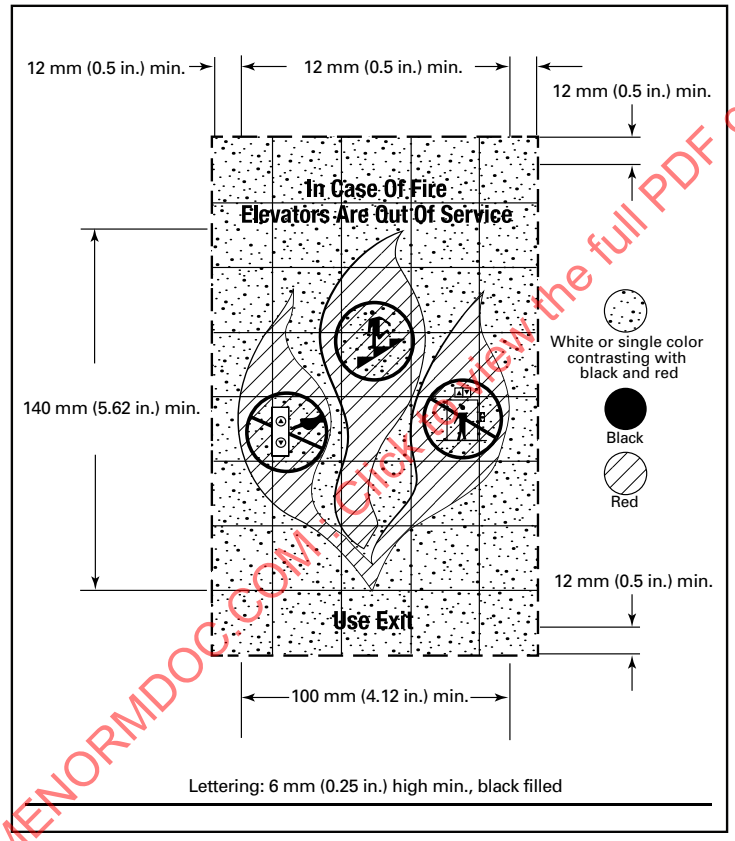
Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
7	The second switch, if present, must be at the building fire control station labeled "FIRE RECALL" and must be a two-position switch marked "OFF" and "ON."	2.27.3.1.2			
8	In jurisdictions enforcing the NBCC, a symbol showing a red fire hat on a contrasting background a minimum 50 mm (2 in.) in height shall be located on the "firefighters' elevator" entrance frame or adjacent to it at the recall level.	2.27.7.4 2.27.3.1.6(h)			
9	When required by the building code, the sign shown below shall be posted next to hall call fixtures.  	2.27.9			
	Phase I Operation While Running Place several floor calls in the car. While traveling away from the recall level, have a person at the designated level place the three-position Phase I recall switch in the "ON" position. Where a remote switch is provided, ensure that the three-position Phase I recall switch is in the "OFF" position, and use the same procedure with a person at the two-position remote Phase I switch. Determine the following:	**2.27.3**			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	The in-car stop switch (A17.1/B44, requirement 2.26.2.21) or emergency stop switch (A17.1/B44, requirement 2.26.2.5) is inoperative.	2.27.3.1.6(c)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
3	In the car, floor selection means are rendered inoperative.	2.27.3.1.6(f)(1)(-a)			
4	In the car, call register lights and car lanterns are extinguished and inoperative.	2.27.3.1.6(f)(1)(-b)			
5	In the car, position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(1)(-c)			
6	At the building fire control station, the position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(2)(-a)			
7	At the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(3)(-a)			
8	At the designated level, position indicators and car direction indicators, where provided, are operative.	2.27.3.1.6(f)(3)(-b)			
9	At all landings, except the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-a)			
10	At all landings, except the designated level, position indicators and car direction indicators, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-b)			
11	All car door open buttons are rendered inoperative as soon as car motion begins.	2.27.3.1.6(i)			
12	When the car stops to reverse direction, door open buttons will not open doors.	2.27.3.1.6(i)			
13	The car returns to the designated level and parks with power-operated doors open.	2.27.3.1.6(a)			
14	The visual and audible signals operate. The audible signal stays on for at least 5 s after the doors close, and the visual signal stays on until the car is restored to automatic operation.	2.27.3.1.6(h)			
15	Where an auxiliary power supply, other than emergency or standby power, or normal power is provided and not capable of moving the car to the recall level, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
16	The in-car FEO panel cover opens automatically when the car is at the recall level (if automatic unlocking is provided).	2.27.3.3.7			
	Phase I Operation With Doors Open Place the Phase I switch in the "OFF" position, and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position, and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
2	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to 3.5 J (2½ ft-lb). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch (A17.1/B44, requirement 2.26.2.5) or in-car stop switch (A17.1/B44, requirement 2.26.2.21) is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
4	The in-car door open button(s) are rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			
	Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing Place the Phase I switch in the "OFF" position, and run the car to any floor. Activate the emergency stop switch (A17.1/B44, requirement 2.26.2.5) or the in-car stop switch (A17.1/B44, requirement 2.26.2.21). With the doors open, have the Phase I switch turned to the "ON" position.				
1	Verify that the doors do not close.				
2	The in-car door open button(s) are rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(d)			
	Stop Switches and Door Buttons While on Phase I operation, verify the following:	**[2.27.3.1.6(c)/ 2.27.3.3.3.1(m)/ 2.27.3.1.6(g)]**			
1	Stop switches other than those inside the car, as well as the stop switch in the firefighters' operation panel, remain operative.	2.27.3.1.6(c) 2.27.3.3.1(m)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			
	Fire-Alarm-Initiating Device and Operation	**2.27.3**			
1	In jurisdictions not enforcing the NBCC, verify that there is a fire-alarm-initiating device (FAID) at each floor served by the elevator, associated machine room, machinery space containing a motor controller or electric drive machine, control space, and control room and in the hoistway if sprinklers are installed in the hoistway. In jurisdictions enforcing the NBCC, verify that smoke detectors, or heat detectors in environments not suitable for smoke detectors (FAIDs), used to initiate Phase I emergency recall operation are installed at each floor served by the elevator, in the associated elevator machine room, in the machinery space containing a motor controller or electric drive machine, in the control space, and in the control room.	[2.27.3.2.1/ 2.27.3.2.2]			
2	With the car(s) on normal operation, have the input for designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
4	With the car(s) on normal operation, have the input for alternate level return activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Car(s) should only respond to the first fire alarm input.	2.27.3.2.5			
6	Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated level, unless the machine room is on the designated level, in which case the elevator should return to the alternate level.	2.27.3.2.3(b)			
7	With the car(s) on normal operation, have the input for the machine/control room, control space, or hoistway FAID activated, and verify that both visual signals in the car illuminate intermittently.	2.27.3.2.6			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
8	Have the input for the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall shall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
	Alternate Recall Level With the car returned to the alternate level by the FAID at the designated level and the doors open				
1	If a two-position key switch is provided at the building fire control station, place it in the "ON" position, and verify that the elevator remains at the alternate landing.	2.27.3.1.2 2.27.3.1.6(j)			
2	Turn both the Phase I switch and the additional Phase I switch at the building fire control station (when provided) to the "ON" position, and verify that the car returns to the designated level.	2.27.3.1.6(j)			
3	Ensure that the elevator remains at the designated level if *(a)* the Phase I key switch is turned to the "OFF" position from the "ON" position or *(b)* the Phase I key switch is turned to "RESET" or *(c)* the additional Phase I key switch at the building fire control station (if provided) is turned to the "OFF" position, regardless of the state of the fire alarm signal.	2.27.3.2.5			
4	To reset an operation initiated from a fire alarm system, the fire alarm signal must be reset, the additional Phase I switch at the building fire control center (when provided) must be turned to "OFF," and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
	Phase II In-Car Switch and Instructions	[2.27.8/2.27.3.3]			
1	Check that instructions are incorporated with or adjacent to the switch and visible only when the cover is open. **FIRE OPERATION** **When**  **flashing, exit elevator** **To operate car** — **Insert fire key, and turn to "ON"** **Enter floor selection** **To cancel floor selection** — **Press "CALL CANCEL" button** **To close door** — **Press and hold "CLOSE" button** **To open door** — **Press and hold "OPEN" button** **To hold car at floor** — **With doors open, turn key to "HOLD"** **For emergency stop** — **Use "STOP" switch** **To automatically return to recall floor** — **Turn key to "OFF"** For manually operated doors, "PUSH DOOR" or "PULL DOOR UP" may be included in the instructions above. Special instructions as necessary for vertically sliding doors are also allowed.	2.27.7.2			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

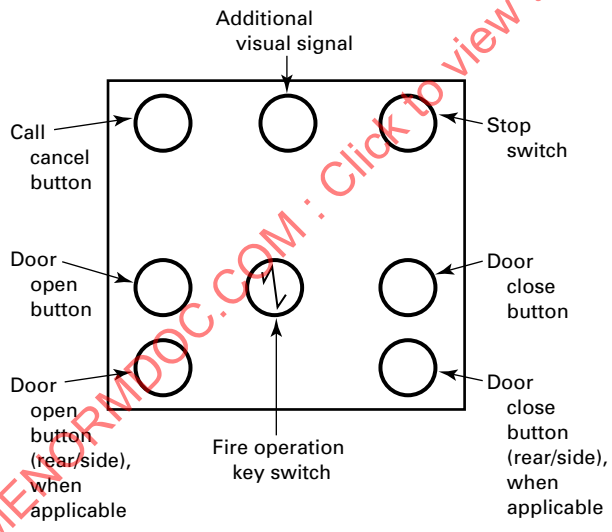
Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
2	FEO panel *(a)* The panel is located at the top of the operating station with buttons and switches more than 1 220 mm (48 in.) above the floor and less than 1 830 mm (72 in.) above the floor. *(b)* The panel is on the same vertical centerline as a floor selection means that provides access to all floors served by the elevator. *(c)* The panel and the floor selection means are located on the wall of the car containing the door that opens to the lobby where the fire recall switch is located or immediately adjacent to that wall on a side wall. *(d)* The panel cover is marked "FIREFIGHTERS' OPERATION" in red letters at least 10 mm (0.4 in.) high. *(e)* The panel key (where the panel doesn't unlock automatically) is the same as the Phase I and Phase II keys. *(f)* The panel key is rotated clockwise to allow the panel to be opened. *(g)* When open, the cover does not restrict access to the buttons or switches or obstruct the view of the instructions. *(h)* The panel cannot be closed with the key in the Phase II operation switch. *(i)* The panel is self-locking. *(j)* The following switches and buttons are provided and laid out as below:  GENERAL NOTES: (a) Switches and buttons show only location, not labeling. (b) Not to scale.	2.27.3.3.7			
3	The key can only be removed in the "OFF" or "HOLD" position.	2.27.3.3			
4	The key switch is labeled "FIRE OPERATION" [minimum 5 mm (0.25 in.) lettering] and is marked "OFF," "HOLD," and "ON," in that order.	2.27.3.3			
5	An additional visual signal is provided behind the panel.	2.27.3.3.8			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
6	The door open, door close, and call cancel buttons are at least 19 mm (0.75 in.) at the smallest dimension and are labeled. (Symbols are not acceptable.) Buttons labeled "REAR DOOR CLOSE" and "REAR DOOR OPEN" shall be provided if a rear entrance is provided. Buttons labeled "SIDE DOOR CLOSE" and "SIDE DOOR OPEN" shall be provided if a side entrance is provided.	2.27.3.3.1(c) 2.27.3.3.7			
	Monthly Test (for Jurisdictions Not Enforcing the NBCC) Not required for acceptance test.	**8.6.10.1**			
	The monthly test log is completed.				
	Phase II Operation With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car, and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators and position indicators at the designated landing and fire control station are operative; landing position indicators are inoperative at all other landings and locations.	2.27.3.3.1(b) 2.27.3.3.1(g)			
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button; if the button is released before the doors are in the normal open position, the doors will close without delay.	2.27.3.3.1(d)			
5	If more than one entrance can be opened and closed at the same landing, separate door open and door close buttons are provided in the firefighters' operation panel for each entrance.	2.27.3.3.1(d) 2.27.3.3.7			
6	All door reopening devices are inoperative (except the door open button); full-speed closing shall be permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled, and when activated will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection means are provided and functional for all landings without restrictions, or floor selection means for all floors are provided behind the firefighters' operation panel. The buttons are at least 19 mm (0.75 in.) in their smallest dimension.	2.27.3.3.1(i)			
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
10	A stop switch is provided behind the firefighters' operation panel. The switch is red, is manually opened and closed, and is marked "STOP," with "STOP" and "RUN" positions marked as well. If the switch is a button type, its smallest dimension is 19 mm. (Any type of switch is acceptable, as long as a firefighter wearing protective gloves can operate it.)	2.26.2.33 2.27.3.3.1(m)			
11	Operation of the stop switch in the firefighters' operation panel cancels all calls and stops the car. After the stop switch in the firefighters' operation panel is restored to the "RUN" position, the car does not move except for the leveling operation, until a car call is registered.	2.27.3.3.1(m)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
12	If an auxiliary power supply, other than emergency or standby power, or normal power is provided and not capable of moving the car to all landings, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
	Phase II Switch in the "HOLD" Position	**2.27.3.3.2**			
1	Place the Phase II switch in the "HOLD" position, and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call means are inoperative.	2.27.3.3.2			
3	If the elevator is equipped with manually operated doors, with the key in the "HOLD" position, car calls cannot be registered, and the car will not move.	2.27.3.3.2			
	Phase II Switch in the "OFF" Position and Doors Closing **Horizontal Sliding Doors** With the elevator away from the recall level and Phase I operation in effect, place the Phase II switch in the "OFF" position, and verify the following:	**2.27.3.3**			
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.3(a)			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button remains operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the doors are closed, the doors will reopen.	2.27.3.3.3(a)			
6	With the car stopped and doors closed or the car in motion, if the Phase II switch is turned to the "OFF" position, the car returns to the recall level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(m) but remains on Phase II operation.				
	Removal From Phase II Operation	**2.27.3.3**			
1	With the doors closed and the Phase II switch turned to the "OFF" position, the car returns to the recall level (designated or alternate as originally recalled to), but remains on Phase II operation.	2.27.3.3.4			
2	The elevator can only be removed from Phase II operation when it is at the designated level and doors are open with the Phase II switch in the "OFF" position.	2.27.3.3.5			
	Power Disconnects Open	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation. The elevator is permitted to reestablish its position by moving to the next floor in the direction of the recall level.	2.27.3.4(a)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	Upon restoration of power, an elevator on Phase II operation with the key in the "OFF" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level.	2.27.3.4(b)			
4	Upon restoration of power, an elevator on Phase II operation with the key in the "HOLD" position does not move, except within a leveling zone. If the doors are not fully closed and the car is in a leveling zone, the doors shall open.	2.27.3.4(d)			
5	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position does not move, except within a leveling zone, until a car call is entered. Doors will only move with constant-pressure operation of a door open or door close button.	2.27.3.4(d)			
6	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level and only after a car call is registered.	2.27.3.4(d)			
	Inspection and Hoistway Access Operation While operating from the top of the car, have the Phase I key switch placed in the "ON" position, and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of the car top, in-car, pit (if provided), and machine room inspection operating device.				
3	The hoistway access switch remains functional.				
	Automatic Elevators With Attendant Operation With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator not at the designated level will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			
2	If the car is at the designated level, Phase I operation is active without delay.	2.27.5.2(a)			
3	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
4	If the car is on hospital emergency service, it will remain on that operation until removed by the operator, when it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately. It is permitted to provide a means in the car to manually silence the audible signal 5 s after its activation. The audible signal is reactivated when the doors open.	2.27.5.3			
5	When an elevator is on Phase I or Phase II operation, it cannot be put into hospital service.	2.27.5.3			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
	Elevators on Phase I and Phase II Operation **Prevention of Operation and Disabling Not Allowed** Test to demonstrate that security operations, load weighing, and landing side wiring problems will not disable the elevator.				
1	Activate means other than those specified in this Code to remove elevators from normal operation (card key access, etc.), and verify that Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate the input for devices that measure loads, and verify that the elevator is not prevented from operating at or below the capacity that is required in A17.1/B44, requirement 2.16.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation.	2.27.3.3.6			
	Hydraulic Elevators				
1	Where a car is responding to low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown and Phase I operation is activated, verify that the car returns to the recall level. If the car is incapable of reaching the recall level, then it should descend to an available landing, open its doors, and reclose the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.2			
3	While on Phase I recall operation at the recall level, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, the doors close within 15 s, the door open buttons remain operative, and the visual signal illuminates intermittently.	3.27.3			
4	With the car(s) on Phase II operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can accept calls only to landings below its location in compliance with Phase II emergency in-car operation.	3.27.4			
	Multicompartment Elevators For multicompartment elevators, verify the following:				
1	The recall switch is at the designated level that the upper compartment serves.	2.27.3.5.1			
2	The upper compartment also houses the firefighters' panel. Behind the panel, there is an additional two-position switch labeled "LOWER CAR LOCKOUT," with "OFF" and "ON" positions marked.	2.27.3.5.2 2.27.3.5.4			
3	There is a means to display the entire floor area of the lower compartment. In the upper compartment, the display is activated only when Phase I or Phase II operation is in effect.	2.27.3.5.3			
4	The "LOWER CAR LOCKOUT" switch is not functional unless Phase II operation is in effect.	2.27.3.5.4(a)			
5	Placing the "LOWER CAR LOCKOUT" switch in the "ON" position initiates closing of the lower compartment doors with reduced kinetic energy and disables all door reopening devices in the lower compartment.	2.27.3.5.4(b)			

Table B-5

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2010/ B44-10	Pass	Fail	N/A
6	Placing the "LOWER CAR LOCKOUT" switch in the "OFF" position with the car at a landing opens the lower compartment doors.	2.27.3.5.4(c)			
	Elevators in Seismic Zone 2 and Higher (Does Not Apply to Hydraulic Elevators) Activate the seismic switch while the cars are on Phase I operation and again while they are on Phase II operation.				
1	When the seismic switch is activated when the cars are on Phase I operation, they shall move to the nearest available landing, open their doors, and shut down. If the cars are on Phase II operation, the same sequence shall apply. However, the door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
2	When the counterweight displacement switch is activated when the cars are on Phase I operation, the cars shall initiate an emergency stop and then move away from the counterweight at a speed of not more than 0.75 m/s (150 ft/min) and stop at the nearest available floor, open their doors, and shut down. If the cars are on Phase II operation, the same sequence shall apply. However, the door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
3	Elevators standing at a floor when a seismic operation is initiated shall remain at the floor and open their doors. If the car(s) are on Phase II operation, door operation shall conform to A17.1/B44, requirement 2.27.3.3.				
4	If a seismic operation is initiated prior to Phase I or Phase II operation, the cars cannot be operated by the Phase I or Phase II key switches.				
5	Resetting seismic operation results in cars returning to their prior mode of operation.				
	Additional Requirements for Nonautomatic Elevators Check for additional features required for nonautomatic elevators having firefighters' emergency operation.				
1	When a fire recall switch is on, ensure that the visual signal in the car displays "FIRE RECALL — RETURN TO _____." [Insert the level to which the car should be returned (designated or alternate level).] The audible and visual signals shall be activated as long as Phase I emergency recall is in effect.	2.27.4.1			
2	Where an additional fire recall switch is provided, it shall not affect the visual signal if the designated level FAID has been activated.	2.27.4.1			
3	For elevators with manually operated doors, the instructions (A17.1/B44, requirement 2.27.7.2) for opening and closing the doors shall be permitted to be replaced with short phrases, such as "PUSH DOOR" or "PULL DOOR UP."	2.27.7.2(a)			
4	For elevators with vertically sliding doors, the instructions (A17.1/B44, requirement 2.27.7.1) for returning the car to the recall level shall be permitted to include instructions for closing the door.	2.27.7.2(b)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist will be. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a mechanism for inspectors to be consistent when completing acceptance testing of elevators equipped with firefighters' emergency operation. Where checkout procedures are required and are not currently addressed in A17.2, the person or firm installing or maintaining the equipment should provide a written checkout procedure.				
A.	**Emergency Signaling Devices** Ensure or verify the following:	**2.27.1**			
1	There is a phone button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The phone button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "PHONE" is optional.	2.27.1.1.3(b) 2.26.12.1			
3	The phone button is no higher than 1 220 mm (48 in.) from the floor.	2.27.1.1.3(a)			
4	The visual indication on the same panel as the phone push button illuminates when communication is established and extinguishes when communication is terminated.	2.27.1.1.3(c)			
5	Verify that the two-way communications are directed to a location staffed by authorized personnel and if the call is not acknowledged within 45 s, it is automatically directed to an alternate on- or off-site location. Automated answering systems are not acceptable.	2.27.1.1.2(a) 2.27.1.1.2(b) 2.27.1.1.3(h)			
6	Ensure that authorized personnel who answer the call can identify the location and elevator number, and that assistance is required.	2.27.1.1.3(d)			
7	Ensure that after call acknowledgment signals are sent, two-way voice communications are available between the car and authorized personnel.	2.27.1.1.3(e)			
8	Ensure that the call can only be terminated by authorized personnel outside the elevator or a timed termination occurs. A timed termination by the two-way communication means in the elevator, with the ability to extend the call by authorized personnel, is permitted if voice notification is sent a minimum of 3 min after communication has been established. Upon notification, authorized personnel have the ability to extend the call; automatic disconnection is permitted if the means to extend are not enacted within 20 s of the voice notification.	2.27.1.1.3(f)			
9	Ensure that where the rise is 18 m (60 ft) or more, there is a two-way communication means from within the building to call into each individual car.	2.27.1.1.4			
10	Ensure that where the rise is 18 m (60 ft) or more, this communication means overrides any other communication to outside of the building.	2.27.1.1.4(a)			
11	Ensure that where the rise is 18 m (60 ft) or more, communication can only be disconnected from outside the car within the building or a timed termination occurs. See Item 8 above.	2.27.1.1.4(b)			
12	Ensure that where the rise is 18 m (60 ft) or more, the visual indicator illuminates when communication is established and extinguishes when the call is terminated.	2.27.1.1.4(c)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
13	Ensure that where the rise is 18 m (60 ft) or more, permanently posted and protected operating instructions are incorporated with or adjacent to the communication station outside the car [min. letter height 3 mm (0.125 in.)]. Verify that the instructions shall conform to A17.1/B44, requirement 2.27.7.3.	2.27.1.1.4(d) 2.27.7.3			
14	Ensure that audible alarms (where provided) and communications are functional with loss of normal power.	2.27.1.1.5			
15	The means to verify the two-way communication system provided is monitored at least daily. Verification of the communication means does not require activation of the two-way communication links.	2.27.1.1.6(a)			
16	If the verification means in A17.1/B44, requirement 2.27.1.1.6(a) detects a failure in the telephone line or equivalent, an audible signal and an illuminated visual signal are provided for each group of elevators controlled by a fire recall switch.	2.27.1.1.6(b)			
17	The visual signal is located at the designated landing in the vicinity of the fire recall switch and is visible to elevator users.	2.27.1.1.6(b)(1)(-a)			
18	The visual signal is labeled "ELEVATOR COMMUNICATIONS FAILURE" in red letters minimum 5 mm (0.25 in.) high.	2.27.1.1.6(b)(1)(-b)			
19	The visual signal illuminates intermittently when activated.	2.27.1.1.6(b)(1)(-c)			
20	The visual signal continues to illuminate intermittently until the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(1)(-d)			
21	The audible signal is 10 dB above ambient but shall not exceed 80 dB measured at the designated landing "EMERGENCY RECALL" switch.	2.27.1.1.6(b)(2)(-a)			
22	The audible signal sounds at least once every 30 s with a minimum duration of ½ s when activated.	2.27.1.1.6(b)(2)(-b)			
23	The audible signal continues to sound until it is silenced by authorized personnel, or the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(2)(-c)			
24	The means to silence the audible signal is accessible only to authorized personnel. When silenced, the signal remains silent for a period of no less than 12 h unless activated by the next failed verification.	2.27.1.1.6(b)(3) 2.27.1.1.6(a)			
25	The verification means in A17.1/B44, requirement 2.27.1.1.6(a) continues to monitor the operability of the telephone line or equivalent means of communication while the telephone line or equivalent means of communication is not functional on a continuous basis or periodically with intervals of not more than 5 min. When the verification means determines that the operability of the telephone line or equivalent means of communication has been restored after being nonfunctional, the audible signal is silenced unless the signal has already been silenced in accordance with A17.1/B44, requirement 2.27.1.1.6(b)(3), and the illuminated visual signal is extinguished.	2.27.1.1.6(b)(4)			
26	On freight elevators, an audible signal must sound when emergency stop (A17.1/B44, requirement 2.26.2.5) is operated (A17.1/B44, requirement 2.27.1.2). If the rise is over 30 m (100 ft), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
B.	**Keys and Key Switches** Ensure or verify the following:	**2.27.8**			
1	There is an FEO-K1 key for each Phase I, Phase II, and standby power selection switch in the building.	2.27.8			
2	An FEO-K1 key is used for Phase I and Phase II operation (the firefighters' operation panel in the car if it does not open automatically) and standby power for all elevators in the building.	2.27.8			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
3	Keys are available only to elevator, emergency, and authorized personnel.	2.27.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
C.	**Phase I Key Switch and Instructions** Verify that	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	Operating instructions shall be incorporated with or adjacent to the fire recall switch; only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.				
2	The switch should be labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order, with "OFF" in the center position. The letters of "FIRE RECALL" are a minimum 5 mm (0.25 in.) high. Text is either red on a background that contrasts with red, or a color that contrasts with red on a red background.	2.27.3.1.1(b)			
3	The switch should be provided at the designated level for the group.	2.27.3.1.1(a)			
4	The switch should be located in the lobby, within sight of the elevators for that group, and readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position, but can be removed in the other positions.	2.27.3.1.3			
6	The position of any recall switch can only be changed by turning the key deliberately. (The switch is not spring loaded.)	2.27.3.1.1			
7	The second switch, if present, must be at the building fire command center, be labeled "FIRE RECALL," and be a two-position switch marked "OFF" and "ON."	2.27.3.1.2			
8	In jurisdictions enforcing the NBCC, a symbol showing a red fire hat on a contrasting background a minimum 50 mm (2 in.) in height shall be located on the firefighters' elevator entrance frame or adjacent to it at the recall level.	2.27.7.4 2.27.3.1.6(h)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

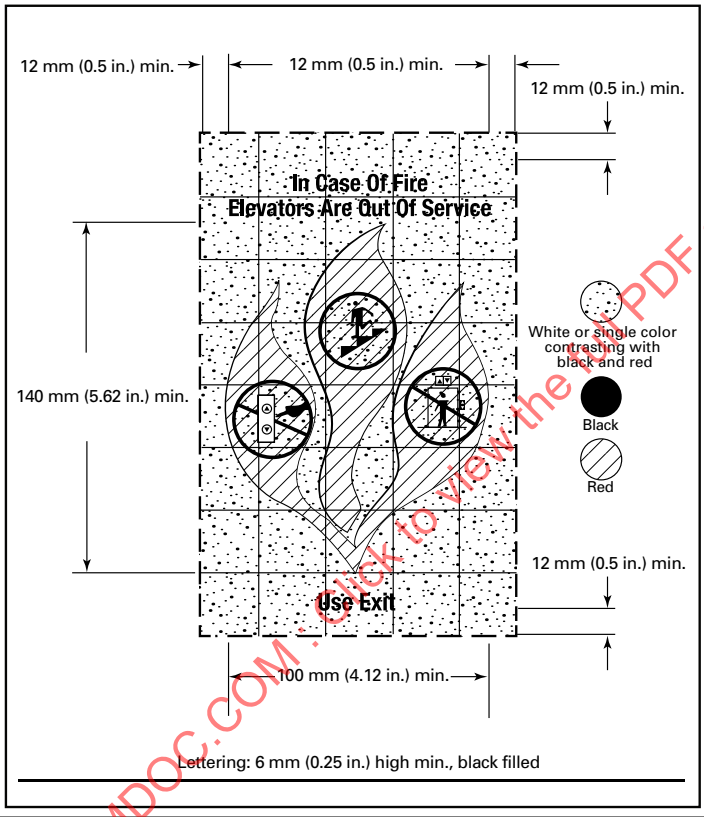
Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
9	When required by the building code, the sign shown below shall be posted next to hall call fixtures. (NOTE: Fire Service access elevators are not permitted to have this pictograph.) (IBC 3007) 	2.27.9			
D.	**Phase I Operation While Running** Place several floor calls in the car. While traveling away from the recall level, have a person at the designated level place the three-position Phase I recall switch in the "ON" position. Where a remote switch is provided, ensure that the three-position Phase I recall switch is in the "OFF" position, and use the same procedure with a person at the two-position remote Phase I switch. Determine the following:	2.27.3			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	The in-car stop switch (A17.1/B44, requirement 2.26.2.21) or emergency stop switch (A17.1/B44, requirement 2.26.2.5) is inoperative.	2.27.3.1.6(c)			
3	In the car, floor selection means are rendered inoperative.	2.27.3.1.6(f)(1)(-a)			
4	In the car, call register lights and car lanterns are extinguished and inoperative.	2.27.3.1.6(f)(1)(-b)			
5	In the car, position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(1)(-c)			
6	At the building fire command center, the position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(2)(-a)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
7	At the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(3)(-a)			
8	At the designated level, position indicators and car direction indicators, where provided, are operative.	2.27.3.1.6(f)(3)(-b)			
9	At all landings, except the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-a)			
10	At all landings, except the designated level, position indicators and car direction indicators, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-b)			
11	All car door open buttons are rendered inoperative as soon as car motion begins.	2.27.3.1.6(f)			
12	When the car stops to reverse direction, door open buttons will not open the doors.	2.27.3.1.6(i)			
13	The car returns to the designated level and parks with power-operated doors open. Where more than one entrance can be opened at the designated level, only the door serving the lobby where the fire recall switch is located will open automatically. In-car door open buttons remain operative, and any other door is opened by means of the door open button. The door must initiate reclosing within 15 s of reaching the door open position.	2.27.3.1.6(a)			
14	The visual and audible signals operate. The audible signal stays on for at least 5 s after the doors close, and the visual signal stays on until the car is restored to automatic operation.	2.27.3.1.6(h)			
15	Where an auxiliary power supply, other than emergency or standby power, or normal power is provided and is not capable of moving the car to the recall level, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
16	The in-car FEO panel cover opens automatically when at the recall level (if automatic unlocking is provided).	2.27.3.3.7			
E.	**Phase I Operation With Doors Open** Place the Phase I switch in the "OFF" position, and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position, and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
2	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to 3.5 J (2½ ft-lb). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch (A17.1/B44, requirement 2.26.2.5) or in-car stop switch (A17.1/B44, requirement 2.26.2.21) is rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(c)			
4	In-car door open buttons are rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
F.	**Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing** Place the Phase I switch in the "OFF" position, and run the car to any floor. Activate the emergency stop switch (A17.1/B44, requirement 2.26.2.5) or the in-car stop switch (A17.1/B44, requirement 2.26.2.21). With the doors open, have the Phase I switch turned to the "ON" position.				
1	Verify that the doors do not close.				
2	Return the emergency stop switch or in-car stop switch to the "RUN" position, and verify that the doors close promptly and the car moves to the designated level.	2.27.3.1.6(d)			
G.	**Stop Switches and Door Buttons** While on Phase I operation, verify the following:	**[2.27.3.1.6(c)/ 2.27.3.3.3.1(m)/ 2.27.3.1.6(g)]**			
1	In-car keyed (A17.1/B44, requirement 2.26.2.21) and emergency stop (A17.1/B44, requirement 2.26.2.5) switches in the car shall remain inoperative. All other stop switches, including the stop switch (A17.1/B44, requirement 2.26.2.33) in the firefighters' operation panel, shall remain operative.	2.27.3.1.6(c)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			
H.	**Fire-Alarm-Initiating Device and Operation**	**2.27.3**			
1	In jurisdictions not enforcing the NBCC, verify that there is a smoke detector or other automatic fire detector in environments not suitable for smoke detectors [fire-alarm-initiating device (FAID)] at each elevator lobby served by the elevator, in the associated machine room, in the machinery space containing a motor controller or electric drive machine, in the control space, or in the control room and in the hoistway if sprinklers are installed in the hoistway. NOTE: The IBC requires that when any FAID in the building is activated, fire service access elevators recall. Currently, A17.1/B44 does not recognize this in requirement 2.27.3. (See A17.1/B44, requirement 2.27.3.1.4.) In jurisdictions enforcing the NBCC, verify that smoke detectors, or heat detectors in environments not suitable for smoke detectors (FAIDs), used to initiate Phase I emergency recall operation are installed at each elevator lobby served by the elevator, in the associated elevator machine room, in the machinery space containing a motor controller or electric drive machine, in the control space, or in the control room and in the hoistway, when sprinklers are located in the hoistway. NOTE (A17.1/B44, requirement 2.27.3.2.2): Smoke and heat detectors (FAIDs) are referred to as fire detectors in the NBCC. Pull stations are not deemed to be fire detectors.	[2.27.3.2.1/ 2.27.3.2.2]			
2	For Acceptance Test: With the car on normal operation, have the FAID for the designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level. For Periodic Test: With the car on normal operation, have the input for the designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2010/B44-10): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2007/ B44-07	Pass	Fail	N/A
4	For Acceptance Test: With the car on normal operation, have the FAID for the alternate level recall activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level. For Periodic Test: With the car on normal operation, have the input for the alternate level recall activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Ensure that the recall level is determined by the first activated FAID for that group. If the cars are recalled to the designated level by the fire recall switch, the recall level must remain the designated level.	2.27.3.2.5			
6	For Acceptance Test: Activate the machine room FAID input, and verify Phase I operation and that allcars return to the designated level unless the machine room is at the designated level, in which case the elevator returns to the alternate level. For Periodic Test: Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated level unless the machine room is at the designated level, in which case the elevator returns to the alternate level.	2.27.3.2.3(b)			
7	For Acceptance Test: With the car(s) on normal operation, have the input for the hoistway, machine room, control room, control space or a machinery space containing a motor controller or driving machine fire-alarm-initiating device activated, and verify that both visual signals in the car illuminate intermittently. For Periodic Test: With the car(s) on normal operation, have the input for the hoistway, machine room, control room, control space or a machinery space containing a motor controller or driving machine fire-alarm-initiating device activated, and verify that both visual signals in the car illuminate intermittently.	2.27.3.2.6			
8	For Acceptance Test: Have the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall cause the cars to return to the upper recall level. For Periodic Test: Have the input for the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
9	Ensure that in jurisdictions not enforcing the NBCC, listed relays or other listed appliances as specified in NFPA 72 for connection to the fire alarm system are provided and installed in compliance with NFPA 72, are used to initiate Phase I emergency recall operation, and are located outside of any room or space requiring Group 1 security.	2.27.3.2.7			
I.	**Alternate Recall Level** With the car returned to the alternate level by the FAID at the designated level and the doors open				

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
1	If a two-position key switch is provided at the building fire command center, place it in the "ON" position, and verify that the elevator remains at the alternate landing.	2.27.3.1.2 2.27.3.1.6(j)			
2	Turn both the Phase I switch and the additional Phase I switch at the building fire command center (when provided) to the "ON" position, and verify that the car returns to the designated level.	2.27.3.1.6(j)			
3	Ensure that elevators remain at the designated level if *(a)* the Phase I key switch is turned to the "OFF" position from the "ON" position or *(b)* the Phase I key switch is turned to "RESET" or *(c)* the additional Phase I key switch at the building fire command center (if provided) is turned to the "OFF" position, regardless of the state of the fire alarm signal.	2.27.3.2.5			
4	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset. The additional Phase I switch at the building fire command center (when provided) must be turned to "OFF," and then the three-position Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
J.	Phase II In-Car Switch and Instructions	[2.27.8/2.27.3.3]			
1	Check that instructions are incorporated with or adjacent to the switch and are visible only when the cover is open. **FIRE OPERATION** **When**  **flashing, exit elevator** **To operate car** — **Insert fire key, and turn to "ON"** **Enter floor selection** **To cancel floor selection** — **Press "CALL CANCEL" button** **To close door** — **Press and hold "CLOSE" button** **To open door** — **Press and hold "OPEN" button** **To hold car at floor** — **With doors open, turn key to "HOLD"** **For emergency stop** — **Use "STOP" switch** **To automatically return to recall floor** — **Turn key to "OFF"** For manually operated doors, "PUSH DOOR" or "PULL DOOR UP" may be included in the instructions above. Special instructions as necessary for vertically sliding doors are also allowed.	2.27.7.2			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

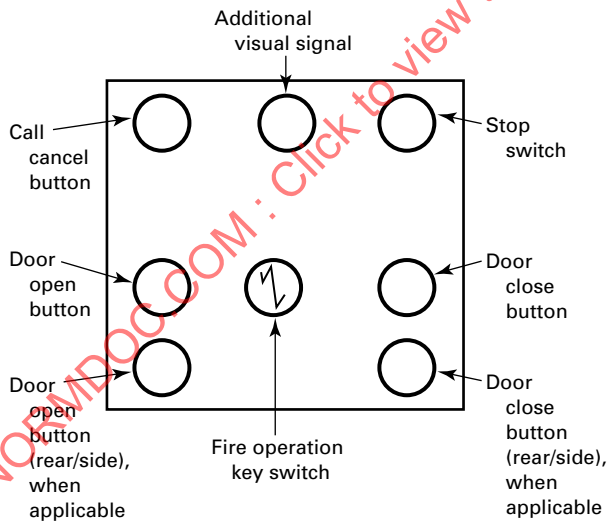
Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
2	FEO panel *(a)* The panel is located at the top of the operating station with buttons and switches more than 1 220 mm (48 in.) above the floor and less than 1 830 mm (72 in.) above the floor. *(b)* The panel is on the same vertical centerline as a floor selection means that provides access to all floors served by the elevator. *(c)* The panel and the floor selection means are located on the wall of the car containing the door that opens to the lobby where the fire recall switch is located or immediately adjacent to that wall on a side wall. *(d)* The panel cover is marked "FIREFIGHTERS' OPERATION" in red letters at least 10 mm (0.4 in.) high. *(e)* The panel key (where the panel doesn't unlock automatically) is the same as the Phase I and Phase II keys. *(f)* The panel key is rotated clockwise to allow the panel to be opened. *(g)* When the panel is open, the cover does not restrict access to the buttons or switches or obstruct the view of the instructions. *(h)* The panel cannot be closed with the key in the Phase II operation switch. *(i)* The panel is self-locking. *(j)* The following switches and buttons are provided and laid out as below:  GENERAL NOTES: (a) Switches and buttons show only location, not labeling. (b) Not to scale.	2.27.3.3.7			
3	The key can only be removed in the "OFF" and "HOLD" positions.	2.27.3.3			
4	The key switch is labeled "FIRE OPERATION" [min. 5 mm (0.25 in.) high lettering] and is marked "OFF," "HOLD," and "ON," in that order. Ensure that the text on the label for the "FIRE OPERATION" lettering is either red on a background that contrasts with red, or a color that contrasts with red on a red background.	2.27.3.3			
5	An additional visual signal is provided behind the panel.	2.27.3.3.8			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
6	The door open, door close, and call cancel buttons are at least 19 mm (0.75 in.) at the smallest dimension and are labeled. (Symbols are not acceptable.) Buttons labeled "REAR DOOR CLOSE" and "REAR DOOR OPEN" are provided if a rear entrance is provided. Buttons labeled "SIDE DOOR CLOSE" and "SIDE DOOR OPEN" are provided if a side entrance is provided.	2.27.3.3.1(c) 2.27.3.3.7			
K.	**Monthly Test (for Jurisdictions Not Enforcing the NBCC)** Not required for acceptance test.	**8.6.10.1**			
	The monthly test log is completed.				
L.	**Phase II Operation** With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car, and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators and position indicators at the designated landing and fire control station are operative, and landing position indicators are inoperative at all other landings and locations.	2.27.3.3.1(b) 2.27.3.3.1(g)			
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button; if the button is released before the door is in the normal open position, the door will close without delay.	2.27.3.3.1(d)			
5	If more than one entrance can be opened and closed at the same landing, separate door open and door close buttons are provided in the firefighters' operation panel for each entrance.	2.27.3.3.1(d) 2.27.3.3.7			
6	All door reopening devices are inoperative (except the door open button); full-speed closing shall be permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled, and when activated, it will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection means are provided and are functional for all landings without restrictions, or floor selection means for all floors are provided behind the firefighters' operation panel, and the buttons are at least 19 mm (0.75 in.) in their smallest dimension.	2.27.3.3.1(i)			
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
10	A stop switch is provided behind the firefighters' operation panel. The switch is red, manually opened and closed, marked "STOP," and has "STOP" and "RUN" positions marked as well. If the switch is a button type, its smallest dimension is 19 mm (0.75 in.). (Any type of switch is acceptable, as long as a firefighter wearing protective gloves can operate it.)	2.26.2.33 2.27.3.3.1(m)			
11	Operation of the stop switch in the firefighters' operation panel cancels all calls and stops the car. After the stop switch in the firefighters' operation panel is restored to the "RUN" position, the car does not move except for the leveling operation, until a car call is registered.	2.27.3.3.1(m)			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
12	If an auxiliary power supply, other than emergency or standby power, or normal power is provided and is not capable of moving the car to all landings, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
M.	**Phase II Switch in the "HOLD" Position With Doors Open**	**2.27.3.3.2**			
1	Place the Phase II switch in the "HOLD" position, and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call means are inoperative.	2.27.3.3.2			
3	If the elevator is equipped with manually operated doors, with the key in the "HOLD" position, car calls cannot be registered, and the car will not move.	2.27.3.3.2			
4	If the normal power supply, emergency power supply, and standby power are not available and the elevator is equipped with an alternate source of power, and the fire operation switch in the car is in the "HOLD" position, the visual signal [A17.1/B44, requirement 2.27.3.1.6(h)] illuminates intermittently.	2.27.3.3.2			
N.	**Phase II Switch in the "OFF" Position and Doors Closing** **Horizontal Sliding Doors** With the elevator away from the recall level and Phase I operation in effect, place the Phase II switch in the "OFF" position, and verify the following:	**2.27.3.3**			
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I–type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.3(a)			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button remains operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the doors are closed, the doors will reopen.	2.27.3.3.3(a)			
6	With the car stopped and the doors closed, or the car in motion and the Phase II switch turned to the "OFF" position, the car returns to the recall level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(n).				

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
O.	**Removal From Phase II Operation**	**2.27.3.3**			
1	With the doors closed and the Phase II switch turned to the "OFF" position, the car returns to the recall level (designated or alternate as originally recalled to). If the normal power supply, emergency power supply, and standby power supply are not available and the elevator is equipped with an alternate source of power that can move the car to a floor, and the fire operation switch in the car is in the "OFF" position, verify the following: *(a)* the visual signal illuminates intermittently *(b)* the doors open and initiate closing within 15 s *(c)* the door open button remains operative *(d)* the car remains stopped until power is restored	2.27.3.3.4			
2	The elevator can only be removed from Phase II operation when it is at the designated level and doors are open with the Phase II switch in the "OFF" position.	2.27.3.3.5			
P.	**Power Disconnects Open** Ensure or verify the following:	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation. The elevator is permitted to reestablish its position by moving to the next floor in the direction of the recall level.	2.27.3.4(a)			
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	Upon restoration of power, an elevator on Phase II operation with the key in the "OFF" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level.	2.27.3.4(b)			
4	Upon restoration of power, an elevator on Phase II operation with the key in the "HOLD" position does not move, except within a leveling zone. If the doors are not fully closed and the car is in a leveling zone, the doors open.	2.27.3.4(d)			
5	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position does not move, except within a leveling zone, until a car call is entered. Doors will only move with constant-pressure operation of a door open or door close button.	2.27.3.4(d)			
6	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level and only after a car call is registered.	2.27.3.4(d)			
Q.	**Inspection and Hoistway Access Operation** While operating from the top of the car, have the Phase I key switch placed in the "ON" position, and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of car top, in-car, pit access (if provided), machine room, or any other inspection operating device.				

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
3	The hoistway access switch remains functional.				
R.	**Automatic Elevators With Attendant Operation** With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator not at the designated level will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			
2	If the car is at the designated level, Phase I operation is active without delay.	2.27.5.2(a)			
3	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
4	If the car is on hospital emergency service, it will remain on that operation until it is removed by the operator, when it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately. It is permitted to provide a means in the car to manually silence the audible signal 5 s after its activation. The audible signal is reactivated when the doors open.	2.27.5.3			
5	When elevators are on Phase I or Phase II operation, they cannot be put into hospital service.	2.27.5.3			
S.	**Elevators on Phase I and Phase II Operation** **Prevention of Operation and Disabling Not Allowed** Test to demonstrate that security operations, load weighing, and landing side wiring problems will not disable the elevator.				
1	Activate means other than those specified in this Code to remove elevators from normal operation (card key access, etc.), and verify that Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate the input for devices that measure loads, and verify that the elevator is not prevented from operating at or below the capacity that is required in A17.1/ B44, requirement 2.16.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation. It is suggested that the company performing the test provide a written procedure for this test in order to prevent potential damage to the equipment.	2.27.3.3.6			
T.	**Hydraulic Elevators**				
1	Where the car is responding to low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown and Phase I operation is activated, verify that the car returns to the recall level. If the car is incapable of reaching the recall level, then it should descend to an available landing, open its doors, and reclose the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.2			

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
3	While on Phase I recall operation at the recall level, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, the doors close within 15 s, door open buttons remain operative, and the visual signal illuminates intermittently.	3.27.3			
4	With the cars on Phase II operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can accept calls only to landings below its location in compliance with Phase II emergency in-car operation.	3.27.4			
U.	**Multicompartment Elevators** For multicompartment elevators, verify the following:				
1	The recall switch is at the designated level that the upper compartment serves.	2.27.3.5.1			
2	The upper compartment also houses the firefighters' panel. Behind the panel, there is an additional two-position switch labeled "LOWER CAR LOCKOUT" with "OFF" and "ON" positions marked.	2.27.3.5.2 2.27.3.5.4			
3	There is a means to display the entire floor area of the lower compartment. In the upper compartment, the display is activated only when Phase I or Phase II operation is in effect.	2.27.3.5.3			
4	The "LOWER CAR LOCKOUT" switch is not functional unless Phase II operation is in effect.	2.27.3.5.4(a)			
5	Placing the "LOWER CAR LOCKOUT" switch in the "ON" position initiates closing of the lower compartment doors with reduced kinetic energy and disables all door reopening devices in the lower compartment.	2.27.3.5.4(b)			
6	Placing the "LOWER CAR LOCKOUT" switch in the "OFF" position with the car at a landing opens the lower compartment doors.	2.27.3.5.4(c)			
V.	**Elevators in Seismic Zone 2 and Higher (Does Not Apply to Hydraulic Elevators)** Activate the seismic switch while the cars are on Phase I operation and again while they are on Phase II operation.				
1	When the seismic switch is activated when the cars are on Phase I operation, the cars shall move to the nearest available landing, open their doors, and shut down. If the cars are on Phase II operation, the same sequence applies. However, the door operation conforms to A17.1/B44, requirement 2.27.3.3.				
2	When the counterweight displacement switch is activated when the cars are on Phase I operation, the cars initiate an emergency stop and then move away from the counterweight at a speed of not more than 0.75 m/s (150 ft/min) and stop at the nearest available floor, open their doors, and shut down. If the cars are on Phase II operation, the same sequence applies. However, ensure the door operation conforms to A17.1/B44, requirement 2.27.3.3.				
3	Elevators standing at a floor when a seismic operation is initiated remain at the floor and open their doors. If the cars are on Phase II operation, door operation conforms to A17.1/B44, requirement 2.27.3.3.				
4	If a seismic operation is initiated prior to Phase I or Phase II operation, the cars cannot be operated by the Phase I or Phase II key switch.				
5	Resetting the seismic operation results in cars returning to their prior mode of operation.				

Table B-6

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2013/B44-13): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2013/ B44-13	Pass	Fail	N/A
W.	**Additional Requirements for Nonautomatic Elevators** Check for additional features required for nonautomatic elevators having firefighters' emergency operation. Verify the following:				
1	When a fire recall switch is on, ensure that the visual signal in the car displays "FIRE RECALL — RETURN TO _____." [Insert level to which the car should be returned (designated or alternate level).] The audible and visual signals shall be activated as long as Phase I emergency recall is in effect.	2.27.4.1			
2	Where an additional fire recall switch is provided, it does not affect the visual signal if the designated level FAID has been activated.	2.27.4.1			
3	For elevators with manually operated doors, the instructions (A17.1/B44, requirement 2.27.7.2) for opening and closing the doors are permitted to be replaced with short phrases, such as "PUSH DOOR" or "PULL DOOR UP."	2.27.7.2(a)			
4	For elevators with vertically sliding doors, the instructions (A17.1/B44, requirement 2.27.7.1) for returning the car to the recall level are permitted to include instructions for closing the door.	2.27.7.2(b)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

ELEVATOR ID No.:_____ BUILDING:_____
ADDRESS: _____ DATE: _____
INSPECTED BY: _____ INSPECTOR ID No.: _____
SIGNATURE: _____

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
	Acceptance Test Checklist NOTE: The acceptance checklist is more detailed than the periodic inspection checklist will be. It is expected that the periodic inspection will confirm that the operation has been maintained in working order. The checklist is to provide a mechanism for inspectors to be consistent when completing acceptance testing of elevators equipped with firefighters' emergency operation. Where checkout procedures are required and are not currently addressed in A17.2, the person or firm installing or maintaining the equipment should provide a written checkout procedure.				
A.	**Emergency Signaling Devices** Ensure or verify the following:	**2.27.1**			
1	There is a phone button in the car station panel or adjacent to it.	2.27.1.1.3(b)			
2	The phone button must have a tactile (raised) phone symbol on or adjacent to it. Identification of the button with the word "PHONE" is optional.	2.27.1.1.3(b) 2.26.12.1			
3	The phone button is no higher than 1 220 mm (48 in.) from the floor.	2.27.1.1.3(a)			
4	The visual indication on the same panel as the phone push button illuminates when communication is established and extinguishes when communication is terminated.	2.27.1.1.3(c)			
5	Verify that the two-way communications are directed to a location staffed by authorized personnel and if the call is not acknowledged within 45 s, it is automatically directed to an alternate on- or off-site location. Automated answering systems are not acceptable.	2.27.1.1.2(a) 2.27.1.1.2(b) 2.27.1.1.3(h)			
6	Ensure that authorized personnel who answer the call can identify the location and elevator number, and that assistance is required.	2.27.1.1.3(d)			
7	Ensure that after call acknowledgment signals are sent, two-way voice communications are available between the car and authorized personnel.	2.27.1.1.3(e)			
8	Ensure that the call can only be terminated by authorized personnel outside the elevator or a timed termination occurs. A timed termination by the two-way communication means in the elevator, with the ability to extend the call by authorized personnel, is permitted if voice notification is sent a minimum of 3 min after communication has been established. Upon notification, authorized personnel have the ability to extend the call; automatic disconnection is permitted if the means to extend are not enacted within 20 s of the voice notification.	2.27.1.1.3(f)			
9	Ensure that where the rise is 18 m (60 ft) or more, there is a two-way communication means from within the building to call into each individual car.	2.27.1.1.4			
10	Ensure that where the rise is 18 m (60 ft) or more, this communication means overrides any other communication to outside of the building.	2.27.1.1.4(a)			
11	Ensure that where the rise is 18 m (60 ft) or more, communication can only be disconnected from outside the car within the building or a timed termination occurs. See Item 8 above.	2.27.1.1.4(b)			
12	Ensure that where the rise is 18 m (60 ft) or more, the visual indicator illuminates when communication is established and extinguishes when the call is terminated.	2.27.1.1.4(c)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
13	Ensure that where the rise is 18 m (60 ft) or more, permanently posted and protected operating instructions are incorporated with or adjacent to the communication station outside the car [min. letter height 3 mm (0.125 in.)]. Verify that the instructions shall conform to A17.1/B44, requirement 2.27.7.3.	2.27.1.1.4(d) 2.27.7.3			
14	Ensure that audible alarms (where provided) and communications are functional with loss of normal power.	2.27.1.1.5			
15	The means to verify the two-way communication system provided is monitored at least daily. Verification of the communication means does not require activation of the two-way communication links.	2.27.1.1.6(a)			
16	If the verification means in A17.1/B44, requirement 2.27.1.1.6(a) detects a failure in the telephone line or equivalent, an audible signal and an illuminated visual signal are provided for each group of elevators controlled by a fire recall switch.	2.27.1.1.6(b)			
17	The visual signal is located at the designated landing in the vicinity of the fire recall switch and is visible to elevator users.	2.27.1.1.6(b)(1)(-a)			
18	The visual signal is labeled "ELEVATOR COMMUNICATIONS FAILURE" in red letters minimum 5 mm (0.25 in.) high.	2.27.1.1.6(b)(1)(-b)			
19	The visual signal illuminates intermittently when activated.	2.27.1.1.6(b)(1)(-c)			
20	The visual signal continues to illuminate intermittently until the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(1)(-d)			
21	The audible signal is 10 dB above ambient but shall not exceed 80 dB measured at the designated landing "EMERGENCY RECALL" switch.	2.27.1.1.6(b)(2)(-a)			
22	The audible signal sounds at least once every 30 s with a minimum duration of ½ s when activated.	2.27.1.1.6(b)(2)(-b)			
23	The audible signal continues to sound until it is silenced by authorized personnel, or the telephone line or equivalent means of communication is functional.	2.27.1.1.6(b)(2)(-c)			
24	The means to silence the audible signal is accessible only to authorized personnel. When silenced, the signal remains silent for a period of no less than 12 h unless activated by the next failed verification.	2.27.1.1.6(b)(3) 2.27.1.1.6(a)			
25	The verification means in A17.1/B44, requirement 2.27.1.1.6(a) continues to monitor the operability of the telephone line or equivalent means of communication while the telephone line or equivalent means of communication is not functional on a continuous basis or periodically with intervals of not more than 5 min. When the verification means determines that the operability of the telephone line or equivalent means of communication has been restored after being nonfunctional, the audible signal is silenced unless the signal has already been silenced in accordance with A17.1/B44, requirement 2.27.1.1.6(b)(3), and the illuminated visual signal is extinguished.	2.27.1.1.6(b)(4)			
26	On freight elevators, an audible signal must sound when emergency stop (A17.1/B44, requirement 2.26.2.5) is operated (A17.1/B44, requirement 2.27.1.2). If the rise is over 30 m (100 ft), there should be one audible device on each car individually and one at the designated landing.	2.27.1.2(d)(1) 2.27.1.2(d)(2)			
B.	**Keys and Key Switches** Ensure or verify the following:	**2.27.8**			
1	There is an FEO-K1 key for each Phase I, Phase II, and standby power selection switch in the building.	2.27.8			
2	An FEO-K1 key is used for Phase I and Phase II operation (the firefighters' operation panel in the car if it does not open automatically) and standby power for all elevators in the building.	2.27.8			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
3	Keys are available only to elevator, emergency, and authorized personnel.	2.27.8			
4	The keys shall be Group 3 security (see A17.1/B44, requirement 8.1).	2.27.8			
C.	**Phase I Key Switch and Instructions** Verify that	**[2.27.3.1/2.27.7/ 2.27.8]**			
1	Operating instructions shall be incorporated with or adjacent to the fire recall switch; only wording identified in A17.1/B44, requirement 2.27.7.1 is acceptable.				
2	The switch should be labeled "FIRE RECALL" and marked "RESET," "OFF," and "ON," in that order, with "OFF" in the center position. The letters of "FIRE RECALL" are a minimum 5 mm (0.25 in.) high. Text is either red on a background that contrasts with red, or a color that contrasts with red on a red background.	2.27.3.1.1(b)			
3	The switch should be provided at the designated level for the group.	2.27.3.1.1(a)			
4	The switch should be located in the lobby, within sight of the elevators for that group, and readily accessible.	2.27.3.1.1(c)			
5	The key cannot be removed in the "RESET" position, but can be removed in the other positions.	2.27.3.1.3			
6	The position of any recall switch can only be changed by turning the key deliberately. (The switch is not spring loaded.)	2.27.3.1.1			
7	The second switch, if present, must be at the building fire command center, be labeled "FIRE RECALL," and be a two-position switch marked "OFF" and "ON."	2.27.3.1.2			
8	In jurisdictions enforcing the NBCC, a symbol showing a red fire hat on a contrasting background a minimum 50 mm (2 in.) in height shall be located on the firefighters' elevator entrance frame or adjacent to it at the recall level.	2.27.7.4 2.27.3.1.6(h)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

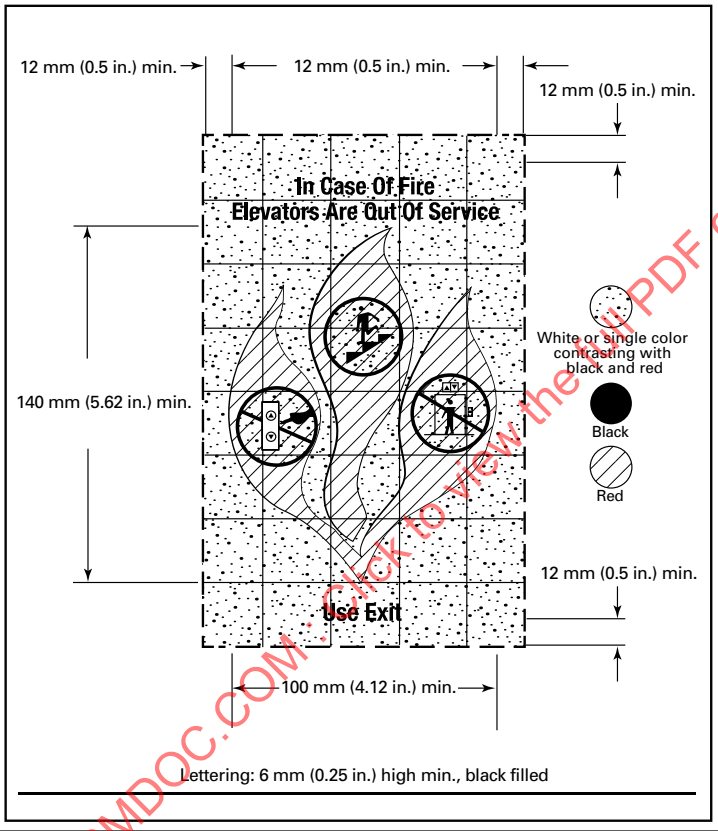
Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
9	When required by the building code, the sign shown below shall be posted next to hall call fixtures. (NOTE: Fire Service access elevators are not permitted to have this pictograph.) (IBC 3007) 	2.27.9			
D.	**Phase I Operation While Running** Place several floor calls in the car. While traveling away from the recall level, have a person at the designated level place the three-position Phase I recall switch in the "ON" position. Where a remote switch is provided, ensure that the three-position Phase I recall switch is in the "OFF" position, and use the same procedure with a person at the two-position remote Phase I switch. Determine the following:	2.27.3			
1	The car stops and reverses without opening the doors.	2.27.3.1.6(b)			
2	When provided, the in-car stop switch (A17.1/B44, requirement 2.26.2.21) or emergency stop switch (A17.1/B44, requirement 2.26.2.5) shall not be made ineffective.	2.27.3.1.6(c)			
3	In the car, floor selection means are rendered inoperative.	2.27.3.1.6(f)(1)(-a)			
4	In the car, call register lights and car lanterns are extinguished and inoperative.	2.27.3.1.6(f)(1)(-b)			
5	In the car, position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(1)(-c)			
6	At the building fire command center, the position indicators and car direction indicators, where provided, remain operative.	2.27.3.1.6(f)(2)(-a)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
7	At the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(3)(-a)			
8	At the designated level, position indicators and car direction indicators, where provided, are operative.	2.27.3.1.6(f)(3)(-b)			
9	At all landings, except the designated level, hall call registered lights and hall lanterns, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-a)			
10	At all landings, except the designated level, position indicators and car direction indicators, where provided, are extinguished and remain inoperative.	2.27.3.1.6(f)(4)(-b)			
11	All car door open buttons are rendered inoperative as soon as car motion begins.	2.27.3.1.6(f)			
12	When the car stops to reverse direction, the door open buttons will not open the doors.	2.27.3.1.6(i)			
13	The car returns to the designated level and parks with power-operated doors open. Where more than one entrance can be opened at the designated level, only the door serving the lobby where the fire recall switch is located will open automatically. In-car door open buttons remain operative, and any other door is opened by means of the door open button. The door must initiate reclosing within 15 s of reaching the door open position.	2.27.3.1.6(a)			
14	The visual and audible signals operate. The audible signal stays on for at least 5 s after the doors close, and the visual signal stays on until the car is restored to automatic operation.	2.27.3.1.6(h)			
15	Where an auxiliary power supply, other than emergency or standby power, or normal power is provided and is not capable of moving the car to the recall level, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
16	The in-car FEO panel cover opens automatically when at the recall level (if automatic unlocking is provided).	2.27.3.3.7			
E.	**Phase I Operation With Doors Open** Place the Phase I switch in the "OFF" position, and run the car to any floor. With the doors open, have the Phase I switch turned to the "ON" position, and check the following:	**2.27.3.1.6**			
1	Door reopening devices sensitive to smoke or flame are inoperative immediately.	2.27.3.1.6(e)			
2	If door reopening devices are rendered inoperative, the closing speed is reduced so that the kinetic energy is reduced to 3.5 J (2½ ft-lb). (To verify the closing time, refer to the data plate required by A17.1/B44, requirement 2.13.4.2.4.)	2.27.3.1.6(e)			
3	The emergency stop switch (A17.1/B44, requirement 2.26.2.5) or in-car stop switch (A17.1/B44, requirement 2.26.2.21) remains operative at all times when the car moves away from the landing.	2.27.3.1.6(c)			
4	The in-car door open buttons are rendered inoperative as soon as the car moves away from the landing.	2.27.3.1.6(i)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
F.	**Emergency Stop Switch and/or In-Car Stop Switch and Doors Closing** Place the Phase I switch in the "OFF" position, and run the car to any floor. Activate the emergency stop switch (A17.1/B44, requirement 2.26.2.5) or the in-car stop switch (A17.1/B44, requirement 2.26.2.21). With the doors open, have the Phase I switch turned to the "ON" position.				
1	Verify that the doors do not close.	2.27.3.1.6(d)			
2	Return the emergency stop switch or in-car stop switch to the "RUN" position, and verify that the doors close promptly and the car moves to the designated level.	2.27.3.1.6(d)			
G.	**Stop Switches and Door Buttons** While on Phase I operation, verify the following:	**[2.27.3.1.6(c)/ 2.27.3.3.3.1(m)/ 2.27.3.1.6(g)]**			
1	In-car keyed (A17.1/B44, requirement 2.26.2.21) and emergency stop (A17.1/B44, requirement 2.26.2.5) switches in the car shall remain operative. All other stop switches, including the stop switch (A17.1/B44, requirement 2.26.2.33) in the firefighters' operation panel, shall remain operative.	2.27.3.1.6(c)			
2	For a vertical sliding door, the corridor door open and door close buttons remain operative.	2.27.3.1.6(g)			
H.	**Fire-Alarm-Initiating Device and Operation**	**2.27.3**			
1	In jurisdictions not enforcing the NBCC, verify that there is a smoke detector or other automatic fire detectors in environments not suitable for smoke detectors [fire-alarm-initiating devices (FAIDs)] *(a)* at each elevator lobby served by the elevator *(b)* in the associated machine room, machinery space containing a motor controller or electric drive machine, control space, or control room *(c)* in the hoistway if sprinklers are installed in the hoistway. NOTE [A17.1/B44, requirement 2.27.3.2.1(b)]: A machinery space containing a motor controller or drive machine located in the elevator hoistway, or a control space located in the elevator hoistway, requires a FAID regardless of the presence of sprinklers. NOTE: The IBC requires that when any FAID in the building is activated, fire service access elevators recall. Currently, A17.1/B44 does not recognize this in requirement 2.27.3. (See A17.1/B44, requirement 2.27.3.1.4.)	2.27.3.2.1			
	In jurisdictions enforcing the NBCC, verify that smoke detectors, or heat detectors in environments not suitable for smoke detectors (FAIDs), used to initiate Phase I emergency recall operation are installed (a) at each elevator lobby served by the elevator (b) in the associated elevator machine room, machinery space containing a motor controller or electric drive machine, control space, or control room (c) in the hoistway, when sprinklers are located in the hoistway. NOTE (A17.1/B44, requirement 2.27.3.2.2): Smoke and heat detectors (FAIDs) are referred to as fire detectors in the NBCC. Pull stations are not deemed to be fire detectors. NOTE [A17.1/B44, requirement 2.27.3.2.2(b)]: A machinery space containing a motor controller or drive machine located in the elevator hoistway, or a control space located in the elevator hoistway, requires a FAID regardless of the presence of sprinklers.	2.27.3.2.2			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
2	For Acceptance Test: With the car(s) on normal operation, have the FAID for the designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level. For Periodic Test: With the car(s) on normal operation, have the input for the designated level recall activated, and verify that the elevator commences Phase I operation and all cars return to the designated level.	2.27.3.2.3			
3	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset, and then the Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
4	For Acceptance Test: With the car(s) on normal operation, have the FAID for the alternate level recall activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level. For Periodic Test: With the car(s) on normal operation, have the input for the alternate level recall activated, and verify that the elevator commences Phase I operation and all cars return to the alternate level.	2.27.3.2.4			
5	Ensure that the recall level is determined by the first activated FAID for that group. If the cars are recalled to the designated level by the fire recall switches, the recall level must remain the designated level.	2.27.3.2.5			
6	For Acceptance Test: Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated level unless the machine room is at the designated level, in which case the elevator returns to the alternate level. For Periodic Test: Activate the machine room FAID input, and verify Phase I operation and that all cars return to the designated level unless the machine room is at the designated level, in which case the elevator returns to the alternate level.	2.27.3.2.3(b)			
7	For Acceptance Test: With the car(s) on normal operation, have the input for the machine room, machinery space containing a motor controller or drive machine, control room, control space, or hoistway FAID activated, and verify that the visual signals in the car illuminate intermittently. For Periodic Test: With the car(s) on normal operation, have the input for the machine room, machinery space containing a motor controller or drive machine, control room, control space, or hoistway FAID activated, and verify that the visual signals in the car illuminate intermittently.	2.27.3.2.6			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
8	For Acceptance Test: Have the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall cause the cars to return to the upper recall level. For Periodic Test: Have the input for the FAID in the hoistway, if present, activated, and verify that all cars return to the designated landing, except that FAIDs installed at or below the lowest landing of recall cause the cars to return to the upper recall level.	2.27.3.2.3(c)			
9	Ensure that in jurisdictions not enforcing the NBCC, listed relays or other listed appliances as specified in NFPA 72 for connection to the fire alarm system are provided and installed in compliance with NFPA 72, are used to initiate Phase I emergency recall operation, and are located outside of any room or space requiring Group 1 security.	2.27.3.2.7			
I.	**Alternate Recall Level** With the car returned to the alternate level by the FAID at the designated level and the doors open				
1	If a two-position key switch is provided at the building fire command center, place it in the "ON" position, and verify that the elevator remains at the alternate landing.	2.27.3.1.2 2.27.3.1.6(j)			
2	Turn both the Phase I switch and the additional Phase I switch at the building fire command center (when provided) to the "ON" position, and verify that the car returns to the designated level.	2.27.3.1.6(j)			
3	Ensure that the elevator remain at the designated level if *(a)* the Phase I key switch is turned to the "OFF" position from the "ON" position or *(b)* the Phase I key switch is turned to "RESET" or *(c)* the additional Phase I key switch at the building fire command center (if provided) is turned to the "OFF" position, regardless of the state of the fire alarm signal.	2.27.3.2.5			
4	To reset an operation initiated from the fire alarm system, the fire alarm signal must be reset. The additional Phase I switch at the building fire command center (when provided) must be turned to "OFF," and then the three-position Phase I switch must be cycled to "RESET" momentarily, and then to "OFF."	2.27.3.1.6(k)			
J.	**Phase II In-Car Switch and Instructions**	**[2.27.8/2.27.3.3]**			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
1	Check that instructions are incorporated with or adjacent to the switch and are visible only when the cover is open. **FIRE OPERATION** **When**  **flashing, exit elevator** **To operate car** — **Insert fire key, and turn to "ON"** **Enter floor selection** **To cancel floor selection** — **Press "CALL CANCEL" button** **To close door** — **Press and hold "CLOSE" button** **To open door** — **Press and hold "OPEN" button** **To hold car at floor** — **With doors open, turn key to "HOLD"** **For emergency stop** — **Use "STOP" switch** **To automatically return to recall floor** — **Turn key to "OFF"** For manually operated doors, "PUSH DOOR" or "PULL DOOR UP" may be included in the instructions above. Special instructions as necessary for vertically sliding doors are also allowed.	2.27.7.2			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

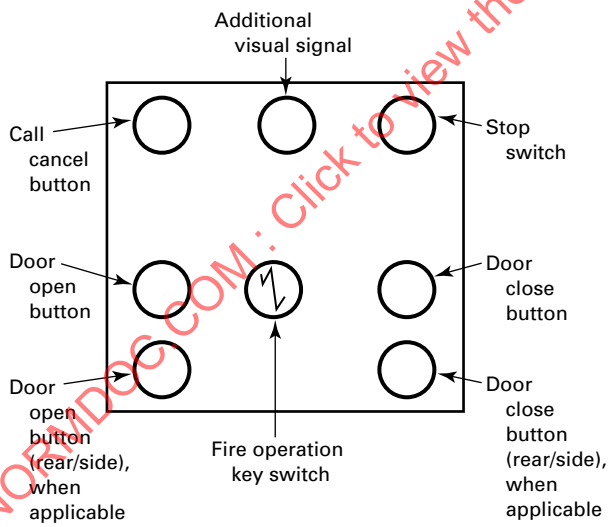
Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
2	FEO panel *(a)* The panel is on the same vertical centerline as a floor selection means that provides access to all floors served by the elevator. *(b)* The panel and the floor selection means are located on the wall of the car containing the door that opens to the lobby where the fire recall switch is located or immediately adjacent to that wall on a side wall. The panel cover is marked "FIREFIGHTERS' OPERATION" in red letters at least 10 mm (0.4 in.) high. The panel key (where the panel doesn't unlock automatically) is the same as the Phase I and Phase II keys. The panel key is rotated clockwise to allow the panel to be opened. When the panel is open, the cover does not restrict access to the buttons or switches or obstruct the view of the instructions. The panel is located at the top of the operating station with buttons and switches more than 1 220 mm (48 in.) above the floor and less than 1 830 mm (72 in.) above the floor. The panel cannot be closed with the key in the Phase II operation switch. The panel is self-locking. When required as part of the fire department communication system, a phone jack shall be permitted to be installed in the firefighters' operation panel below the level of the fire operation switch. The following switches and buttons are provided and laid out as below:  GENERAL NOTES: (a) Switches and buttons show only location, not labeling. (b) Not to scale.	2.27.3.3.7			
3	The key can only be removed in the "OFF" and "HOLD" positions.	2.27.3.3			
4	The key switch is labeled "FIRE OPERATION" [min. 5 mm (0.25 in.) high lettering] and is marked "OFF," "HOLD," and "ON," in that order. Ensure that the text on the label for the "FIRE OPERATION" lettering is either red on a background that contrasts with red, or a color that contrasts with red on a red background.	2.27.3.3			
5	An additional visual signal is provided behind the panel. The entire circular or square area shown in A17.1/B44, Figure 2.27.3.1.6(h) shall be illuminated. This additional signal shall be activated and deactivated whenever the visual signal in A17.1/B44, requirement 2.27.3.1.6(h) is activated and deactivated.	2.27.3.3.8			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
6	The door open, door close, and call cancel buttons are at least 19 mm (0.75 in.) at the smallest dimension and are labeled. (Symbols are not acceptable.) Buttons labeled "REAR DOOR CLOSE" and "REAR DOOR OPEN" are provided if a rear entrance is provided. Buttons labeled "SIDE DOOR CLOSE" and "SIDE DOOR OPEN" are provided if a side entrance is provided.	2.27.3.3.1(c) 2.27.3.3.7			
K.	**Monthly Test (for Jurisdictions Not Enforcing the NBCC)** Not required for acceptance test.	**8.6.10.1**			
	The monthly test log is completed.				
L.	**Phase II Operation** With Phase I operation activated and the car at the designated or alternate landing, place the Phase II key switch in the "ON" position. Operate the car, and check the following:	**2.27.3.3.1**			
1	The elevator can be operated only from the car buttons and will not respond to corridor calls.	2.27.3.3.1(a)			
2	All corridor call buttons, door open and door close buttons, and directional lanterns are inoperative. Car position indicators and position indicators at the designated landing and fire control station are operative, and landing position indicators are inoperative at all other landings and locations.	2.27.3.3.1(b) 2.27.3.3.1(g)			
3	Open doors can be closed only by continuous-pressure means. If the means is released before the door is fully closed, horizontal sliding doors will reopen, and vertical sliding doors will stop, or stop and reopen.	2.27.3.3.1(e)			
4	The door can only be opened by continuous pressure on the door open button; if the button is released before the door is in the normal open position, the door will close without delay.	2.27.3.3.1(d)			
5	If more than one entrance can be opened and closed at the same landing, separate door open and door close buttons are provided in the firefighters' operation panel for each entrance.	2.27.3.3.1(d) 2.27.3.3.7			
6	All door reopening devices are inoperative (except the door open button); full-speed closing shall be permitted.	2.27.3.3.1(g)			
7	The call cancel button is labeled, and when activated, it will cancel all calls and cause the car to stop at or before the next available landing.	2.27.3.3.1(h)			
8	Floor selection means are provided and are functional for all landings without restrictions, or floor selection means for all floors are provided behind the firefighters' operation panel, and the buttons are at least 19 mm (0.75 in.) in their smallest dimension.	2.27.3.3.1(i)			
9	A moving car will stop at the next landing with a car call registered and remaining car calls will be canceled.	2.27.3.3.1(j)			
10	A stop switch is provided behind the firefighters' operation panel. The switch is red, manually opened and closed, marked "STOP," and has "STOP" and "RUN" positions marked as well. If the switch is a button type, its smallest dimension is 19 mm (0.75 in.). (Any type of switch is acceptable, as long as a firefighter wearing protective gloves can operate it.)	2.26.2.33 2.27.3.3.1(m)			
11	Operation of the stop switch in the firefighters' operation panel cancels all calls and stops the car. After the stop switch in the firefighters' operation panel is restored to the "RUN" position, the car does not move except for the leveling operation, until a car call is registered.	2.27.3.3.1(m)			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
12	If an auxiliary power supply, other than emergency or standby power, or normal power is provided and is not capable of moving the car to all landings, then *(a)* the visual signal extinguishes *(b)* if the car is not at a landing, it moves to the closest landing that it is capable of reaching *(c)* power-operated horizontally or vertically sliding doors with automatic closing open and then initiate closing within 15 s *(d)* the door open button remains operative *(e)* the car does not move until normal, emergency, or standby power becomes available	2.27.3.1.6(n)			
M.	**Phase II Switch in the "HOLD" Position With Doors Open**	**2.27.3.3.2**			
1	Place the Phase II switch in the "HOLD" position, and remove the key. Verify that the car remains at the landing and the door close button is inoperative.	2.27.3.3.2			
2	Verify that the car call means are inoperative.	2.27.3.3.2			
3	If the elevator is equipped with manually operated doors, with the key in the "HOLD" position, car calls cannot be registered, and the car will not move.	2.27.3.3.2			
4	If the normal power supply, emergency power supply, and standby power are not available and the elevator is equipped with an alternate source of power, and the fire operation switch in the car is in the "HOLD" position, the visual signal [A17.1/B44, requirement 2.27.3.1.6(h)] illuminates intermittently.	2.27.3.3.2			
N.	**Phase II Switch in the "OFF" Position and Doors Closing** **Horizontal Sliding Doors** With the elevator away from the recall level and Phase I operation in effect, place the Phase II switch in the "OFF" position, and verify the following:	**2.27.3.3**			
1	The doors close automatically.	2.27.3.3.3(a)			
2	The car reverts to a Phase I type return on completion of door closing and reverts to Phase I operation when the doors open at the designated landing.	2.27.3.3.3(a)			
3	The door reopening device is inoperative, and full-speed closing is permitted.	2.27.3.3.3(a)			
4	The door open button remains operative.	2.27.3.3.3(a)			
5	If the Phase II switch is turned to "ON" or "HOLD" before the doors are closed, the doors will reopen.	2.27.3.3.3(a)			
6	With the car stopped and the doors closed, or the car in motion and the Phase II switch turned to the "OFF" position, the car returns to the recall level in conformance with A17.1/B44, requirements 2.27.3.1.6(a) through 2.27.3.1.6(n).				

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
O.	**Removal From Phase II Operation**	**2.27.3.3**			
1	With the doors closed and the Phase II switch turned to the "OFF" position, the car returns to the recall level (designated or alternate as originally recalled to). If the normal power supply, emergency power supply, and standby power supply are not available and the elevator is equipped with an alternate source of power that can move the car to a floor, and the fire operation switch in the car is in the "OFF" position, verify the following: *(a)* the visual signal illuminates intermittently *(b)* the doors open and initiate closing within 15 s *(c)* the door open button remains operative *(d)* the car remains stopped until power is restored	2.27.3.3.4			
2	The elevator can only be removed from Phase II operation when it is at the designated level and doors are open with the Phase II switch in the "OFF" position.	2.27.3.3.5			
P.	**Power Disconnects Open** Ensure or verify the following:	**2.27.3.4**			
1	With the elevator on Phase I operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase I operation. The elevator is permitted to reestablish its position by moving to the next floor in the direction of the recall level.	2.27.3.4(a)			
2	With the elevator on Phase II operation, have the mainline power interrupted and restored to verify that the elevator will remain on Phase II operation.	2.27.3.4			
3	Upon restoration of power, an elevator on Phase II operation with the key in the "OFF" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level.	2.27.3.4(b)			
4	Upon restoration of power, an elevator on Phase II operation with the key in the "HOLD" position does not move, except within a leveling zone. If the doors are not fully closed and the car is in a leveling zone, the doors open.	2.27.3.4(d)			
5	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position does not move, except within a leveling zone, until a car call is entered. Doors will only move with constant-pressure operation of a door open or door close button.	2.27.3.4(d)			
6	Upon restoration of power, an elevator on Phase II operation with the key in the "ON" position is permitted to reestablish its position only by moving to the next floor in the direction of the recall level and only after a car call is registered.	2.27.3.4(d)			
Q.	**Inspection and Hoistway Access Operation** While operating from the top of the car, have the Phase I key switch placed in the "ON" position, and verify the following:	**2.27.6**			
1	An audible signal sounds.				
2	The elevator remains under the control of car top, in-car, pit access (if provided), machine room, or any other inspection operating device.				

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
3	The hoistway access switch remains functional.				
R.	**Automatic Elevators With Attendant Operation** With the elevator on attendant operation, stop at a floor and have the Phase I switch placed in the "ON" position. Verify the following:	**2.27.5.2**			
1	The audible and visual signals operate and a parked elevator not at the designated level will automatically go on Phase I operation after a time delay between 10 s and 30 s.	2.27.5.2(a)			
2	If the car is at the designated level, Phase I operation is active without delay.	2.27.5.2(a)			
3	A moving car on attendant operation will commence Phase I operation without delay.	2.27.5.2(b)			
4	If the car is on hospital emergency service, it will remain on that operation until it is removed by the operator, when it will revert to Phase I operation. The audible and visual signals in the car shall be activated immediately. It is permitted to provide a means in the car to manually silence the audible signal 5 s after its activation. The audible signal is reactivated when the doors open.	2.27.5.3			
5	When the elevators are on Phase I or Phase II operation, they cannot be put into hospital service.	2.27.5.3			
S.	**Elevators on Phase I and Phase II Operation** **Prevention of Operation and Disabling Not Allowed** Test to demonstrate that security operations, load weighing, and landing side wiring problems will not disable the elevator.				
1	Activate means other than those specified in this Code to remove elevators from normal operation (card key access, etc.), and verify that Phase I emergency recall operation is not prevented and all floors served by the elevator are accessible during Phase II operation.	2.27.3.1.6(l)			
2	Activate the input for devices that measure loads, and verify that the elevator is not prevented from operating at or below the capacity that is required in A17.1/B44, requirement 2.16.	2.27.3.1.6(m)			
3	Verify that an accidental ground or short circuit in equipment on the landing side will not disable Phase II operation. It is suggested that the company performing the test provide a written procedure for this test in order to prevent potential damage to the equipment.	2.27.3.3.6			
T.	**Hydraulic Elevators**				
1	Where the car is responding to low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown and Phase I operation is activated, verify that the car returns to the recall level. If the car is incapable of reaching the recall level, then it should descend to an available landing, open its doors, and reclose the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.1			
2	While on Phase I recall operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated with the car above the recall level, the car will return to the recall level, and where the car is below the recall level, it descends to an available landing, opens its doors, and recloses the doors within 15 s, and the door open button remains operative. The visual signal extinguishes.	3.27.2			

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
3	While on Phase I recall operation at the recall level, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, the doors close within 15 s, door open buttons remain operative, and the visual signal illuminates intermittently.	3.27.3			
4	With the cars on Phase II operation, verify that when low oil protection, plunger follower guide protection, auxiliary power lowering, or oil tank temperature shutdown is activated, a traveling car stops and cancels all calls, the visual signal in the car illuminates intermittently, and the car can accept calls only to landings below its location in compliance with Phase II emergency in-car operation.	3.27.4			
U.	**Multicompartment Elevators** For multicompartment elevators, verify the following:				
1	The recall switch is at the designated level that the upper compartment serves.	2.27.3.5.1			
2	The upper compartment also houses the firefighters' panel. Behind the panel, there is an additional two-position switch labeled "LOWER CAR LOCKOUT" with "OFF" and "ON" positions marked.	2.27.3.5.2 2.27.3.5.4			
3	There is a means to display the entire floor area of the lower compartment. In the upper compartment, the display is activated only when Phase I or Phase II operation is in effect.	2.27.3.5.3			
4	The "LOWER CAR LOCKOUT" switch is not functional unless Phase II operation is in effect.	2.27.3.5.4(a)			
5	Placing the "LOWER CAR LOCKOUT" switch in the "ON" position initiates closing of the lower compartment doors with reduced kinetic energy and disables all door reopening devices in the lower compartment.	2.27.3.5.4(b)			
6	Placing the "LOWER CAR LOCKOUT" switch in the "OFF" position with the car at a landing opens the lower compartment doors.	2.27.3.5.4(c)			
V.	**Elevators in Seismic Zone 2 and Higher (Does Not Apply to Hydraulic Elevators)** Activate the seismic switch while the cars are on Phase I operation and again while they are on Phase II operation.				
1	When the seismic switch is activated when the cars are on Phase I operation, the cars shall move to the nearest available landing, open their doors, and shut down. If the cars are on Phase II operation, the same sequence applies. However, the door operation conforms to A17.1/B44, requirement 2.27.3.3.				
2	When the counterweight displacement switch is activated when the cars are on Phase I operation, the cars initiate an emergency stop and then move away from the counterweight at a speed of not more than 0.75 m/s (150 ft/min) and stop at the nearest available floor, open their doors, and shut down. If the cars are on Phase II operation, the same sequence applies. However, ensure the door operation conforms to A17.1/B44, requirementt 2.27.3.3.				
3	Elevators standing at a floor when a seismic operation is initiated remain at the floor and open their doors. If the cars are on Phase II operation, door operation conforms to A17.1/B44, requirement 2.27.3.3.				
4	If a seismic operation is initiated prior to Phase I or Phase II operation, the cars cannot be operated by the Phase I or Phase II key switch.				
5	Resetting the seismic operation results in cars returning to their prior mode of operation.				

Table B-7

Acceptance Checklist for Firefighters' Operation and Emergency Signaling Devices (A17.1-2016/B44-16): Automatic and Nonautomatic Elevators (Cont'd)

GENERAL NOTE: Pass = meets requirement; Fail = does not meet requirement; N/A = not applicable.

Item	Check	A17.1-2016/ B44-16	Pass	Fail	N/A
W.	**Additional Requirements for Nonautomatic Elevators** Check for additional features required for nonautomatic elevators having firefighters' emergency operation. Verify the following:				
1	When a fire recall switch is on, ensure that the visual signal in the car displays "FIRE RECALL — RETURN TO _____." [Insert level to which the car should be returned (designated or alternate level).] The audible and visual signals shall be activated as long as Phase I emergency recall is in effect.	2.27.4.1			
2	Where an additional fire recall switch is provided, it does not affect the visual signal if the designated level FAID has been activated.	2.27.4.1			
3	For elevators with manually operated doors, the instructions (A17.1/B44, requirement 2.27.7.2) for opening and closing the doors are permitted to be replaced with short phrases, such as "PUSH DOOR" or "PULL DOOR UP."	2.27.7.2(a)			
4	For elevators with vertically sliding doors, the instructions (A17.1/B44, requirement 2.27.7.1) for returning the car to the recall level are permitted to include instructions for closing the door.	2.27.7.2(b)			

NONMANDATORY APPENDIX C
GUIDELINES FOR CSA B44.1/ASME A17.5-2004

C-1 GENERAL

This Appendix is intended to present a list of examples of elevator and escalator electrical equipment that require listing, approval, or certification. Primarily, this list gives examples of what equipment is subject to CSA B44.1/ASME A17.5 certification. As a secondary function, this list also gives examples of what equipment may be listed/certified and labeled/marked to another acceptable standard, and what equipment is not within the scope of CSA B44.1/ASME A17.5.

When determining which electrical equipment and devices must be labeled/marked for compliance with CSA B44.1/ASME A17.5, keep in mind the following guidelines:

(a) This list is to serve as a guideline and is not complete, as it may not include devices that are new technology or those that have not been envisioned.

(b) All electrical equipment and devices must be listed/certified to at least one safety standard. For example, if a limit switch is labeled/marked as complying with another standard, then it does not have to (but may) be labeled/marked as complying with CSA B44.1/ASME A17.5.

(c) Devices that are rated for connection to extra-low-voltage Class 2 supply circuits are not within the scope of CSA B44.1/ASME A17.5. Note that exclusion is dependent on the power supply being both extra low voltage (not more than 30 V rms or 42.4 V peak) and Class 2 (as defined by the applicable electrical code). One method of verifying this exclusion is to check the certification documentation. Another method is to verify that the transformer or power supply is marked as being a Class 2 device. Note that if the transformer or power supply is located inside the device enclosure [e.g., in the car operating panel (COP)], then it would not qualify under the exception.

(d) An individual component or device is not required to be labeled/marked if it was certified as part of an assembly that is labeled/marked. Taken to its extreme, this could mean that all the various control electrical devices could be included under one certification for the entire control system. In this case, the certification documentation is the best method for determining which devices must be labeled/marked.

(e) The labeling/marking only signifies that the device complies with CSA B44.1/ASME A17.5. ASME A17.1/CSA B44 may have additional requirements that the device has to meet (e.g., switches covered by ASME A17.1/CSA B44, requirement 2.26.2 are required to have contacts that are positively opened mechanically and whose opening is not "solely dependent on springs"), which are not covered by the labeling/marking.

(f) Devices that are not totally enclosed (e.g., interlocks) are not required to be listed for compliance with CSA B44.1/ASME A17.5.

(g) A device can be labeled/marked by different certifying organizations. It is the responsibility of the authority having jurisdiction (AHJ) to determine the acceptability of any certifying organization.

NOTE: Controllers, i.e., motion/motor/operation, are defined in ASME A17.1/CSA B44, Section 1.3, as follows:

(a) controller, motion: an operative unit comprising a device or group of devices for actuating the moving member.

(b) controller, motor: the operative units of a motion control system comprising the starter devices and power conversion equipment required to drive an electric motor.

(c) controller, operation: an operative unit comprising a device or group of devices for actuating the motion control.

C-2 GUIDELINES FOR ELECTRICAL DEVICES REQUIRING LABELING/MARKING

(a) Motor Controllers and Motion Controllers: Starter/Control Panel for Door Motor or Machine Motor. This equipment may contain silicon-controlled rectifiers (SCRs), insulated-gate bipolar transistors (IGBTs), transistors, diodes, transformers, contactors, resistors, capacitors, fuses, wiring, bus bars, printed circuit boards, etc. These components are certified to the requirements of pertinent standards or are specifically evaluated for their intended use and are not required to be labeled/marked as long as the assembly is certified and labeled/marked.

(b) Operation Controllers

(1) control systems (e.g., car controller) (may contain motion controllers and/or motor controllers)

(2) supervisory and management systems (e.g., group controller, dispatcher)

(c) Operating Devices

(1) car operating panel (COP)

(2) hall button/firefighters' service panel/box

(3) top-of-car inspection station
(4) hoistway access switch assembly (including enclosure)

(d) *Other Electrical Equipment*
(1) hoistway limit switches
(2) pit stop switches
(3) buffer switches
(4) brakes
(5) seismic switches
(6) electrical protective devices (as defined in ASME A17.1/CSA B44, requirement 2.26.2)
(7) encoders
(8) position reference subsystems (tape reader, etc.)
(9) position switches
(10) hall lantern/position indicator panel/box
(11) firefighters' operation switches (Phase I and Phase II)
(12) standby power selection switches

NOTE: All equipment in this list must be certified to CSA B44.1/ASME A17.5 if not listed/certified and labeled/marked to another product safety standard.

(e) *Devices and Subsystems Not Within the Scope of CSA B44.1/ASME A17.5*
(1) motors
(2) motor-generator sets
(3) valves (CSA C22.2 No. 139 and TIL D18A if rated for use in hydraulic elevator controllers)
(4) disconnects (CSA C22.2 No. 4 for Canada and UL 98 for the United States)
(5) all devices in Class 2 supply circuits. Note that Class 2 circuits have requirements in addition to the low voltage rating (30 V rms or 42.4 V peak) and require the product to be so listed/certified and labeled/marked.
(6) receptacles (CSA C22.2 No. 42 for Canada and UL 498 for the United States)
(7) traveling cables and junction boxes
(8) auxiliary lighting (CSA C22.2 No. 141)

NOTE: Additional ASME A17.1/CSA B44 requirements apply for elevator car emergency lighting.

(9) gate switches[1]
(10) hoistway or car door interlocks[1]
(11) combination hoistway door lock and contacts[1]

NOTE: This equipment and/or these devices are not within the scope of CSA B44.1/ASME A17.5 and are required to be listed/certified and labeled/marked to another product safety standard.

[1] Door gate switches and interlocks: These require testing, certification, and marking as defined in ASME A17.1a-2002/CSA B44-02, requirements 2.12.4, 2.11.14.1(b) (jurisdictions enforcing the NBCC), and 8.3.3, or CAN/CSA B44-94, Clause 11.5 (Canadian jurisdictions only).

NONMANDATORY APPENDIX D
(23) CHECKLISTS FOR ELECTRIC AND HYDRAULIC ELEVATORS, ESCALATORS, AND MOVING WALKS

D-1 CHECKLISTS BASED ON ASME A17.1-2013/ CSA B44-13

See Tables D-1-1 through D-1-3.

D-2 CHECKLISTS BASED ON ASME A17.1-2019/ CSA B44-19 and ASME A17.2-2020

See Tables D-2-1 through D-2-3.

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 1 Inside the Car								
1.1	Door reopening device	8.10.2.2.1(a)	8.10.2.3.2(a) 8.10.2.3.2(o) [8.7.2.10.1] 8.10.2.3.2(q) [8.7.2.16.3]		8.11.2.1.1(a)	8.6.1.2 8.6.1.3 8.6.3.8 8.6.4.13.1(c)	2.13.5	
1.2	Stop switches	8.10.2.2.1(b)			8.11.2.1.1(b)	8.6.3.7	2.26.2.5 2.26.2.7 2.26.2.8 2.26.2.21 2.26.2.24	
1.3	Operating control devices	8.10.2.2.1(c)	8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.3] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(o) [8.7.2.10.1] 8.10.2.3.2(s) [8.7.2.27.4]		8.11.2.1.1(c)	8.6.3.7 8.6.3.14	2.26.1	
1.4	Sills and car floor	8.10.2.2.1(d)			8.11.2.1.1(d)		2.5.1.4 2.5.1.5 2.11.5 2.11.10.2 2.11.10.3 2.11.11.1 2.11.12.1 2.11.13.1 2.15.16 2.26.2.20	ANSI/ICC A117.1
1.5	Car lighting and receptacles	8.10.2.2.1(e)			8.11.2.1.1(e)		2.14.7	NFPA 70 or CSA C22.1, as applicable
1.6	Car emergency signal and communication devices	8.10.2.2.1(f)		8.6.4.19.15	8.11.2.1.1(f)	8.6.1.7 8.6.4.15	2.11.1.3 2.27.1	
1.7	Car door or gate	8.10.2.2.1(g)	8.10.2.3.2(q) [8.7.2.16.3] 8.10.2.3.2(u)		8.11.2.1.1(g)		2.5.1.5.3 2.13.2.1 2.14.4 2.14.5 2.14.6	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 1 Inside the Car (Cont'd)								
1.8	Door closing force	8.10.2.2.1(h)	8.10.2.3.2(a) 8.10.2.3.2(o) [8.7.2.10.1]	8.6.4.19.8	8.11.2.1.1(h)	8.6.1.7	2.13.4.2.3 2.13.4.2.4	
1.9	Power closing of doors or gates	8.10.2.2.1(i)	8.10.2.3.2(a) 8.10.2.3.2(o) [8.7.2.10.1] 8.10.2.3.2(q) [8.7.2.16.3] 8.10.2.3.2(u) [8.7.2.27.4(b)]	8.6.4.19.8	8.11.2.1.1(i)	8.6.1.7 8.6.4.13.1 8.6.4.13.2	2.13.3.1 2.13.4.2.1 2.13.4.2.2	
1.10	Power opening of doors or gates	8.10.2.2.1(j)	8.10.2.3.2(a) 8.10.2.3.2(o) [8.7.2.10.1] 8.10.2.3.2(q) [8.7.2.16.3] 8.10.2.3.2(s) [8.7.2.27.4] 8.10.2.3.2(u) [8.7.2.27.4(b)]	8.6.4.20.7 8.6.4.20.9	8.11.2.1.1(j)	8.6.1.7 8.6.4.13.1	2.13.2.1	
1.11	Car vision panels and glass car doors	8.10.2.2.1(k)	8.10.2.3.2(u)		8.11.2.1.1(k)	8.6.4.13(d)	2.14.2.5 2.14.2.6 2.14.5.9	ANSI Z97.1 16 CFR Part 1201
1.12	Car enclosure	8.10.2.2.1(l)	8.10.2.3.2(d) 8.10.2.3.2(q) [8.7.2.16.3] 8.10.2.3.2(s) [8.7.2.27.4]		8.11.2.1.1(l)		2.14.1.9 2.14.2.1 2.14.3.1 2.16.2.2 2.16.4 2.29.1 8.4.4	
1.13	Emergency exit	8.10.2.2.1(m)			8.11.2.1.1(m)		2.14.1.5 2.14.1.10 8.4.4.1	
1.14	Ventilation	8.10.2.2.1(n)			8.11.2.1.1(n)		2.14.2.3 2.14.3.3	
1.15	Signs and operating device symbols	8.10.2.2.1(o)			8.11.2.1.1(o)	8.6.1.6.7	2.26.12	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 1 Inside the Car (Cont'd)								
1.16	Rated load, platform area, and data plate	8.10.2.2.1(p)	8.10.2.3.2(d) [8.7.2.15.2] 8.10.2.3.2(g) 8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.4] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(p) 8.10.2.3.2(q)		8.11.2.1.1(p)		2.16.1 through 2.16.3 2.16.5 2.16.7	
1.17	Standby power operation	8.10.2.2.1(q)	8.10.2.3.2(d) [8.7.2.15.2] 8.10.2.3.2(g) 8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.4] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(l) [8.7.2.28] 8.10.2.3.2(q) through 8.10.2.3.2(s) [8.7.2.25.1] [8.7.2.27.4]	8.6.4.19.7	8.11.2.1.1(q)	8.6.1.7	2.16.8 2.27.2	
1.18	Restricted opening of car or hoistway doors	8.10.2.2.1(r)	8.10.2.3.2(o) [8.7.2.10.1]	8.6.4.19.16	8.11.2.1.1(r)	8.6.1.7	2.14.5.7	
1.19	Car ride	8.10.2.2.1(s)	8.10.2.3.2(b) [8.7.2.24] 8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.3] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(u) [8.7.2.27.4(b)]		8.11.2.1.1(s)		2.15.2 2.23 2.23.6	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 1 Inside the Car (Cont'd)								
N/A	Door monitoring systems	8.10.2.2.1(t)	8.10.2.3.2(o) [8.7.2.10.1] 8.10.2.3.2(s) [8.7.2.27.4]		8.11.2.1.1(t)	8.6.1.7 8.6.4.13	2.26.5	
N/A	Stopping accuracy	8.10.2.2.1(u)		8.6.4.20.8	8.11.2.1.1(u)	8.6.4.16	2.26.11	ANSI/ICC A117.1
N/A	Machinery space/control space	8.10.2.2.1(v)			8.11.2.1.1(v)	8.6.4.8	2.7.1 2.7.2.2 2.7.2.4 2.7.3 2.7.4 2.7.6.2 2.7.6.3 2.7.9 2.8.1 through 2.8.5	
N/A	Working areas in the car	8.10.2.2.1(w)			8.11.2.1.1(w)	8.6.10.6 8.6.10.7	2.7.5.1 2.7.5.1.1 2.26.2.34	
N/A	Equipment access panel electrical device	8.10.2.2.1(x)			8.11.2.1.1(x)		2.7.5.1.4 2.14.2.2(g) 2.26.2.35	
1.20	Earthquake inspection and tests (seismic risk zone 2 or greater)	8.10.2.2.1(y)					8.4.4.1	
Part 2 Machine Room								
N/A	Location of rooms/spaces	8.10.2.2.2(a)					2.7.6.1 2.7.6.2	
N/A	Location of equipment	8.10.2.2.2(b)					2.7.6.3	
N/A	Equipment exposure to weather	8.10.2.2.2(c)			8.11.2.1.2(a)		2.7.6.6	
2.1	Access to machinery space	8.10.2.2.2(d)			8.11.2.1.2(b)		2.7.1.1 2.7.3.1 2.7.3.4	
2.2	Headroom	8.10.2.2.2(e)			8.11.2.1.2(c)		2.7.4	
N/A	Means necessary for tests	8.10.2.2.2(f)			8.11.2.1.2(d)		2.7.6.4	
N/A	Inspection and test panel	8.10.2.2.2(g)			8.11.2.1.2(e)		2.7.6.5	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 2 Machine Room (Cont'd)								
2.3	Lighting and receptacles	8.10.2.2.2(h)			8.11.2.1.2(f)		2.7.9.1	NFPA 70 or CSA C22.1, as applicable
2.4	Machinery space	8.10.2.2.2(i)	8.10.2.3.2(i) [8.7.2.25.2]		8.11.2.1.2(g)	8.6.1.6.5 8.6.4.8	2.1.3 2.7.1 2.7.1.3 2.8.1	
2.5	Housekeeping	8.10.2.2.2(j)			8.11.2.1.2(h)		2.8.1	
2.6	Ventilation	8.10.2.2.2(k)			8.11.2.1.2(i)		2.7.9.2	
2.7	Fire extinguisher	8.10.2.2.2(l)			8.11.2.1.2(j)	8.6.1.6.5		
2.8	Pipes, wiring, and ducts	8.10.2.2.2(m)			8.11.2.1.2(k)		2.8	
2.9	Guarding of exposed auxiliary equipment	8.10.2.2.2(n)	8.10.2.3.2(i) [8.7.2.25.2]		8.11.2.1.2(l)		2.10.1	
2.10	Numbering of elevators, machines, controllers, and disconnect switches	8.10.2.2.2(o)	8.10.2.3.2(r) [8.7.2.25.1]		8.11.2.1.2(m)		2.29.1(a) through 2.29.1(f)	NFPA 70 or CSA C22.1, as applicable
N/A	Maintenance path and maintenance clearances	8.10.2.2.2(p)			8.11.2.1.2(n)		2.7.2	NFPA 70 or CSA C22.1, as applicable
N/A	Stop switch	8.10.2.2.2(q)			8.11.2.1.2(o)		2.7.3.5 2.26.2.24	NFPA 70 or CSA C22.1, as applicable
2.11	Disconnecting means and control	8.10.2.2.2(r)	8.10.2.3.2(s) [8.7.2.27.4]		8.11.2.1.2(p)		2.26.4.1	NFPA 70 or CSA C22.1, as applicable
2.12	Controller wiring, fuses, grounding, etc.	8.10.2.2.2(s)	8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.3] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(s) through 8.10.2.3.2(u) [8.7.2.27.4 through 8.7.2.27.6]		8.11.2.1.2(q)	8.6.1.7	2.26.1 2.26.4.1 2.26.4.2 2.26.6 2.26.7	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 2 Machine Room (Cont'd)								
2.13	Governor, overspeed switch, and seal	8.10.2.2.2(hh)	8.10.2.3.2(e) [8.7.2.18] 8.10.2.3.2(f) [8.7.2.19] 8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.3] [8.7.2.17.1] [8.7.2.17.2]	8.6.4.19.3 8.6.4.20.2	8.11.2.1.2(ff)	8.6.1.7 8.6.2.3 8.6.3.6 8.6.3.9 8.6.4.12	2.7.6.3.4 2.17.15 2.18.1 8.18.3 2.18.4 2.18.6 2.18.9	
2.14	Code data plate	8.10.2.2.2(ll)	[8.7.1.8]		8.11.2.1.2(hh)	8.6.1.5	8.9	
2.15	Static control	8.10.2.2.2(t)	8.10.2.3.2(j) [8.7.2.4] [8.7.2.16.1 through 8.7.2.16.3] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(s) [8.7.2.27.4 through 8.7.2.27.6] 8.10.2.3.2(t)		8.11.2.1.2(r)	8.6.1.7 8.6.1.6.1 8.6.1.6.3 8.6.3.7	2.26.6 2.26.9.1 through 2.26.9.6 2.26.9.8	
2.16	Overhead beam and fastenings	8.10.2.2.2(u)	8.10.2.3.2(i) [8.7.2.25.2] 8.10.2.3.2(r) [8.7.2.25.1]		8.11.2.1.2(s)		2.9.1 2.9.3	
2.17	Drive machine brake	8.10.2.2.2(v)	8.10.2.3.2(d) [8.7.2.15.2] 8.10.2.3.2(g) [8.7.2.16.2 through 8.7.2.16.4] 8.10.2.3.2(h) [8.7.2.25] 8.10.2.3.2(p) through 8.10.2.3.2(s) [8.7.2.25.1] [8.7.2.27.4]	8.6.4.20.4 8.6.4.20.10	8.11.2.1.2(t) 8.11.2.1.8	8.6.1.6.2 8.6.1.7 8.6.4.6	2.24.8.2.2 2.24.8.3 2.24.8.5	

Table D-1-1
Electric Elevator Checklist (Based on ASME A17.1-2013/CSA B44-13) (Cont'd)

ASME A17.2 Item #	Description	Acceptance Tests and Inspections	Alteration Tests and Inspections	Periodic Test	Periodic Inspections	Maintenance, Repairs, and Replacements	ASME A17.1/ CSA B44 Code Requirement	Comments and Related Standards
Part 2 Machine Room (Cont'd)								
2.18	Traction-drive machines	8.10.2.2.2(w)	8.10.2.3.2(d) [8.7.2.15.2] 8.10.2.3.2(g) [8.7.2.16.1 through 8.7.2.16.4] 8.10.2.3.2(i) 8.10.2.3.2(j) [8.7.2.4] [8.7.2.17.1] [8.7.2.17.2] 8.10.2.3.2(p) 8.10.2.3.2(r) [8.7.2.25.1]		8.11.2.1.2(u)	8.6.1.6.2 8.6.1.7	2.24.1 2.24.4 2.24.5 2.24.9	
2.19	Gears, bearings, and flexible couplings	8.10.2.2.2(x)	8.10.2.3.2(d) [8.7.2.15.2] 8.10.2.3.2(g) [8.7.2.16.4] 8.10.2.3.2(r) [8.7.2.25.1]		8.11.2.1.2(v)	8.6.1.6.2	2.24.6 2.24.7 2.24.10	
2.20	Winding drum machine and slack rope device, stop-motion switch, and rope fastening	8.10.2.2.2(y)	8.10.2.3.2(g) [8.7.2.16.4] 8.10.2.3.2(i) 8.10.2.3.2(r) [8.7.2.25.1]	8.6.4.19.4	8.11.2.1.2(w)	8.6.1.7 8.6.4.10	2.20.6 2.20.7 2.24.1 2.24.2.1 2.24.2.2 2.25.3.5 2.26.2.1	
2.21	Belt- or chain-drive machine	8.10.2.2.2(z)	8.10.2.3.2(g) [8.7.2.16.4] 8.10.2.3.2(d) [8.7.2.15.2]		8.11.2.1.2(x)	8.6.3.5	2.24.9	