ASME 17.2.3-1998

INSPECTORS' MANUAL FOR ESCALATORS AND MOVING WALKS

Includes Inspection Procedures for Escalators and Moving Walks

An American National Standard

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
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ASME issues written replies to inquiries concerning interpretations of technical aspects of this Manual. The interpretations will be included with the edition.

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FOREWORD

[97b]

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 (presently known as the American National Standards Institute, Inc.) 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 to cover the inspection of escalators, and new Appendices were added to cover 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. 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 edition including the 1972 supplement to the Code, and to update the inspection procedures. A new Part was also added to cover the inspection of moving walks.

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 on 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 abreast of 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 Appendix E which were expanded to include routine and periodic inspections and tests in addition to acceptance inspections and tests.

The eighth edition included revisions in the 1986 and 1987 supplements as well as other revisions listed in the Summary of Changes section.

In 1989, the Inspectors' Manual Committee polled the inspection community to determine what portions of the Manual were most effective and the direction that should be taken to meet the need of the inspector. 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 is to be published in three volumes: A17.2.1, Electric Elevators; A17.2.2, Hydraulic Elevators; and A17.2.3, Escalators and Moving Walks. Each volume addresses inspection procedures for assuring compliance with the A17.1 Code since 1955 and the A17.3 Code. It is the Committee's plan to publish additional manuals to address inspection of other equipments such as roped hydraulic elevators, dumbwaiters, side-

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walk 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 requested to review equipment installed prior to the 1955 edition of A17.1. ASME A17.2.3 includes inspection and testing procedures for assuring compliance with some requirements in pre-1955 editions of A17.1. [96a]

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.

[96a] [97b] [98]

Editions and Supplements		Approved	Issued
First Edition	ASA A17.2–1937	July 1937	...
Second Edition	ASA A17.2–1945	October 22, 1945	...
Third Edition	ASA A17.2–1960	August 10, 1960	...
Addenda	ASA A17.2a–1965	July 29, 1965	...
Supplement	USAS A17.2b–1967	July 7, 1967	...
Fourth Edition	ANSI A17.2–1973	May 29, 1973	...
Fifth Edition	ANSI A17.2–1979	February 18, 1979	May 15, 1979
Supplement	ANSI A17.2a–1980	August 11, 1980	September 15, 1980
Supplement	ANSI 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
Eighth Edition	ASME/ANSI A17.2–1988	August 25, 1988	October 31, 1988
Addenda	ASME/ANSI A17.2a–1989	November 10, 1989	December 31, 1989
Addenda	ASME/ANSI A17.2b–1990	October 8, 1990	January 21, 1991
First Edition	ASME A17.2.3–1994	August 19, 1994	October 21, 1994
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PREFACE

[96a] FORM AND ARRANGEMENT

The Inspectors' Manual is being published in three separate volumes: A17.2.1, Electric Elevators; A17.2.2, Hydraulic Elevators; and A17.2.3, Escalators and Moving Walks. Each book addresses how-to inspection guidelines, techniques, and cautionary notes in a logical sequence. Subsections are arranged to focus on routine inspection requirements, followed by periodic (annual and five year) and acceptance criteria. Appropriate references to the latest edition of the Code in effect at the time of this Manual's publication are listed at the end of each subsection. The referenced numbers may not be the same in earlier editions. This Manual is organized as follows: Part I — External Inspection and Test of Escalators; Part II — Internal Inspection and Test of Escalators; Part III — External Inspection and Test of Moving Walks; and Part IV — Internal Inspection and Test of Moving Walks. Each inspection location is further subdivided as follows:

—.— Item to be inspected
—.—.1 Routine inspection
—.—.2 Periodic inspection
—.—.3 Acceptance inspection
—.—.4 Code references

NOTE: This Manual addresses the requirements of A17.1–1955 and later editions and latest edition of A17.3. Some requirements in earlier editions of A17.1 are also addressed. The inspector is referred to the particular edition of the A17.1 Code which applies for requirements prior to 1955.

The Inspectors' Manual has included the pertinent requirement from prior editions of A17.1 which 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 Appendices which are included in this document have been approved by the A17 Committee, but are not part of this American National Standard.

Where editorial corrections have been made they are identified by [ED].

REQUIREMENTS FOR EXISTING INSTALLATIONS

Elevators and escalators in jurisdictions which have adopted the Safety Code for Existing Elevators and Escalators, ASME A17.3, and installations that have been altered in accordance with Part XII of the Safety Code for Elevators and Escalators, ANSI/ASME A17.1d–1986 and later editions must, as a minimum, conform with the requirements identified in this Manual as "A17.3." If an existing installation does not meet the requirements of the 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 A17.1, Part XII and the entire installation must conform to the requirements of A17.3. The alteration requirements in A17.1, Part XII may be more stringent than the requirements of A17.3. The equipment must conform to the more stringent of the two.

METRIC (SI) UNITS

This edition of the Manual contains metric (SI) units as well as customary units. The SI units in the text have been directly (soft) converted from the customary units. The tables and graphs have not been converted; however, the applicable conversion factors are included for each table and graph. Further information on the use of SI units is contained in ASTM E 380 — Metric Practice Guide and ASME Guide SI–1, Orientation and Guide for Use of SI (Metric) Units.

Current committee policy is to neither encourage nor discourage steps toward metrication, but to have standards published with information in the form which will best serve the needs of Manual users. It is not the intent of the Manual to favor a design in SI units over one made in customary units, or conversely. In converting to SI units, an effort has been made to maintain the precision of the original values so that the accuracy of the converted values

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ABBREVIATIONS USED IN THIS CODE

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
ft/min	foot per minute	m^2	square meter
ft/sec	foot per second	m^3	cubic meter
ft	foot	mA	milliampere
ftc	footcandle	m/s	meter per second
ft^2	square foot	m/s^2	meter per second per second
ft^3	cubic foot	mm	millimeter
ft/sec^2	foot per second per second	mm^2	square millimeter
hr	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	sec	second
kg	kilogram	V	volt
kPa	kilopascal		

NOTE:
*Abbreviations conform to Abbreviations for Use on Drawings and in Text, ANSI/ASME Y1.1.

is neither exaggerated nor understated. Therefore, if there is a difference in the dimensions or the results of calculations between the two systems of units, the customary units govern.

DEFINITIONS

For definitions of specific terms used in this Manual, see Section 3 of the ASME A17.1 Code.

ASME ELEVATOR PUBLICATIONS

This Manual is one of the numerous codes and standards which have been or are being developed and published by The American Society of Mechanical Engineers. The following publications are of special interest to users of this Manual:

ASME A17.1 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, material lifts and dumbwaiters with automatic transfer devices, wheelchair lifts, and stairway chairlifts.

ASME A17.2.1 Inspectors' Manual for Electric Elevators. This Manual gives detailed procedures for the inspection and testing of electric elevators conforming to the requirements of this Code and for the testing and inspection of electric elevators installed prior to the adoption of this edition of the Code. Subsections are arranged to focus on routine inspection requirements, followed by periodic (annual and five year) and acceptance criteria. Included are pertinent requirements from A17.1–1955 and later editions, which differ from the latest edition of A17.1.

ASME A17.2.2 Inspectors' Manual for Hydraulic Elevators. This Manual gives detailed procedures for the inspection and testing of hydraulic elevators conforming to the requirements of this Code and for the testing and inspection of hydraulic elevators installed prior to the adoption of this edition of the Code. Subsections are arranged to focus on routine inspection requirements, followed by periodic (annual and five year) and acceptance criteria. Included are pertinent requirements from A17.1–1955 and later editions, which differ from the latest edition of A17.1.

Inspection Checklists. The checklist forms shown in each book are published in convenient size pads.

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. While many of these requirements will also increase the degree of safety for the elevator mechanic and inspector, this area has not been addressed at this time.

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ASME A17.4 Guide for Emergency Evacuation of Passengers from Elevators. 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.

CAN/CSA B44.1/ASME A17.5. This Standard covers driving machine controllers, logic controllers, operating devices, and accessories there to, for starting, stopping, regulating, controlling, or protecting electric motors, generators, or other equipment for elevators, escalators, moving walks, dumbwaiters, and elevating devices for wheelchair lifts and stairway chairlifts.

Published Interpretations. Interpretations of the various A17 standards are published periodically.

Interpretations of A17.1 and 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, interpretations are published with each new edition and supplement of the applicable standard. A compilation of Interpretations Nos. 2–13 (June 1979–May 1989) has also been published by ASME.

Handbook on A17.1 Safety Code. This Handbook augments the A17.1 Code with commentary, diagrams, and illustrations that are intended to explain the requirements of the A17.1 Code.

The commentary contained in the Handbook is the opinion of the author and has not been approved by the A17 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 A17.1 Code. It also includes requirements for the accreditation of organizations which certify inspectors and inspection supervisors as meeting the QEI criteria.

CORRESPONDENCE WITH A17 COMMITTEE

ASME codes and standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this and other ASME A17 codes and standards may interact with the Committee by requesting interpretations, proposing revisions, and attending committee meetings. Correspondence should be addressed to:

Secretary, A17 Main Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, New York 10016-5990

Proposing Revisions. Revisions are made periodically to the Manual to incorporate changes which appear necessary or desirable, as demonstrated by the experience gained from the application of the procedures, and in order to conform to developments in elevator technology. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Manual. Such proposals should be as specific as possible: citing the Item number(s), the proposed wording, and a detailed description of the reasons for the proposal including any pertinent documentation.

Requesting Interpretations. On request, the A17 Committee will render an interpretation of any requirement of the Manual. Interpretations can only be rendered in response to a written request sent to the Secretary of the Main Committee.

The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submits his request utilizing the following format:

Subject: Cite the applicable Item number(s) and a concise description.

Edition: Cite the applicable edition and supplement of the Manual for which the interpretation is being requested.

Question: Phrase the question as a request for an interpretation of a specific item suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings which are necessary to explain the question; however, they should not contain proprietary names or information.

Requests which are not in this format will be rewritten in this format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information which might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME committee or subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The A17 Main Committee and the various Working Committees regularly hold meetings, all of which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the Main Committee.

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ASME A17.2.3–1998
SUMMARY OF CHANGES

ASME A17.2.3–1998 incorporates the revisions and editorial changes made in A17.2.3a–1996 and A17.2.3b–1997 Addenda, as well as additional revisions and editorial changes. The revisions which were published in the 1996 and 1997 Addenda are identified by the revision designators [96a] and [97b], respectively. Those revisions which are appearing for the first time are identified by [98]. Changes made to correct errors, as well as other new editorial changes, are identified by [ED].

Revision designators will remain on the pages up to the publication of the next edition of the Manual. The [ED] designators will appear only when the editorial changes are introduced. The following is a summary of the latest revisions and changes.

Page	*Location*	*Change*
iv	Foreword	List of past editions updated
v–ix	Committee Roster	Revised
xi	Contents	Updated for Edition
5	1.2.3	Subparagraphs (a) and (c) editorially revised
8	1.3.3	Editorially revised
9	1.5.1	First sentence editorially revised
12	1.9.1	Subsubparagraphs (b)(3) and (b)(6) editorially revised
15	1.10.1(a)	Revised in its entirety
19	1.17	First sentence of fifth paragraph editorially revised
23	2.1.2	First sentence editorially revised
	2.1.3	First sentence editorially revised
24	2.4.2	First sentence editorially revised
25	2.4.2(d)	(1) Third paragraph revised
		(2) Fourth paragraph added
28, 29	2.13.2	Third paragraph added
	2.13.4	A17.1 references revised
31	3.2.3(c)	First sentence editorially revised
33	3.3.3	First sentence editorially revised
36	3.5.1	First sentence editorially revised
	3.5.3	First sentence editorially revised
37	3.9.1	(1) Subparagraph (b) editorially revised
		(2) Subsubparagraphs (b)(2) and (b)(6) editorially revised
44	4.3.2	First sentence editorially revised

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Page	*Location*	*Change*
44, 45	4.4.2	Eighth paragraph revised
	4.4.2(b)	(1) Last sentence in third paragraph added (2) Fourth paragraph added
47	4.12.3(b)(4)	Third sentence editorially revised
48	4.13.2	Last paragraph added
	4.13.4	A17.1 references revised

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INTRODUCTION

SCOPE

Equipment Covered

This Manual covers recommended inspection and testing procedures for escalators and moving walks required to conform to the Safety Code for Elevators and Escalators A17.1–1955 and later editions and the Safety Code for Existing Elevators and Escalators, A17.3.

Effective Date

This edition and subsequent addenda to this Manual are effective as of the date listed in the front of the document.

Note: This Inspectors' Manual may not reflect the latest requirement in the current A17.1 and A17.3 Codes.

APPLICATION

This Manual is intended to serve only as a guide for qualified inspectors performing inspections and tests. It is not intended to serve as a basis for government regulations. The acceptance inspection and testing procedures apply only to the extent that they conform with the latest edition of the A17.1 Code. The routine and periodic inspection and testing procedures apply only to the extent that they conform with the applicable Code requirements which were in effect at the time of installation or alteration. The inspection and testing procedures do not take into account local regulations which may differ.

This Manual utilizes the following format to describe the appropriate inspection and test:

Routine: the examination and operation of equipment at specified intervals by an inspector to check for compliance with the applicable Code requirements.

Periodic: routine inspection and tests plus additional detailed examination and operation of equipment at specified intervals witnessed by an inspector to check for compliance with the applicable Code requirements. For escalators and moving walks all periodic inspections and tests are yearly.

Acceptance: the initial inspection and tests of new or altered equipment to check for compliance with the applicable Code requirements.

Where no inspection procedure is specified for routine inspections, it indicates that the Code requirements need no explanation. This does not indicate that no inspection of the specified item is required. The item is to be inspected for compliance with the applicable Code requirements.

Where, as an example, the periodic inspection has no specified inspections, the inspections specified under routine are to be utilized for the periodic inspection. If, as an example, the acceptance inspection has a test procedure which differs from the test procedure specified under periodic, the acceptance test procedure should be followed for acceptance inspection and the periodic test procedure should be followed for periodic inspections. Any portion of the periodic procedures not modified by the acceptance procedures must be performed during the acceptance inspection and test.

This Manual contains inspection procedures for compliance with the applicable Code only. Rule 1000.2 of A17.1 reads in part "the inspection and test required by this Part are to determine that the equipment conforms with the applicable Code requirements at the time of installation and any alteration." This Manual contains no recommendations that exceed the requirements of A17.1 Rule 1000.2 and A17.3.

To facilitate making inspections and tests, a sample checklist can be found in an Appendix to this Manual. The checklist Item numbers correspond to the Item numbers in this Manual. The checklist also contains appropriate A17.1 and A17.3 references for each Item.

QUALIFICATIONS OF INSPECTORS

Inspectors and inspection supervisors are required by A17.1 Rule 1000.1 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 In-

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spectors, ASME QEI-1 and be recognized by the authority having jurisdiction.

NOTE: The Elevator Industry Field Employees' Safety Handbook is available from Elevator World, P.O. Box 6507, Mobile, Alabama 36606.

PERSONAL SAFETY

Inspectors are cautioned that many potential hazards exist in the inspection of escalators and moving walks.

The inspector should be suitably clothed before starting the inspection. Loose clothing, particularly neckties, should not be worn. Keep buttons buttoned. The power supply line disconnect switch should be opened, locked, and tagged when it is desired to prevent movement of the escalator or moving walk or when inspecting electrical parts.

Before starting an inspection, the inspector should first determine that the operating device, emergency stop switch, and any other safety devices are in proper working order and in the proper position for inspection.

The inspectors should be constantly alert for moving objects. Prior to entering either the upper or lower pits, or truss, disconnect the electric power from the driving machine and brake by opening the stop switch or mainline disconnect switch.

WARNING

The lock and tag out procedure specified in the Elevator Industry Field Employees Safety Handbook and required by OSHA should be implemented prior to entering the interior of an escalator or moving walk, inspecting any moving part or if any part of your person will be in close proximity to a moving part.

Prior to removing the unit from service for inspection, both ends of the escalator or moving walk must be safely barricaded. Extreme caution should be taken when mounting and riding an escalator or moving walk that has a step removed. The removed step or pallet should be in front of the inspector at all times.

When standing on the escalator or moving walk, prior to starting the unit, grasp the handrail and brace for any thrust. Whenever possible, run the unit in the up direction. Close inspections should not be attempted until the unit is stopped, power is removed from the driving machine and brake, and the main line switch is properly tagged and locked out.

For additional safe practices, see "Safety Precautions" outlined in the applicable Items in this Manual and the Elevator Industry Field Employees' Safety Handbook.

DUTIES OF INSPECTORS

The duties of inspectors are:

(a) when making 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 or periodic inspections and tests of existing installations, to determine that the equipment conforms to the applicable Code or regulation, has not been altered except in conformity with the applicable code or regulations, and performs in accordance with those requirements;

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

It is not the function or duty of inspectors to make any repairs or adjustments to the equipment.

ARRANGEMENT FOR INSPECTION

The inspecting authority or the inspector should request the owner or his agent to 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 cleaned such portions of the equipment to facilitate visual inspections prior to the inspection as required. The inspector should be accompanied by a person familiar with the operation of the equipment to assist him during his inspections.

CAUTION

The escalator and moving walk must always be taken out of service and barricades erected at both ends prior to beginning inspection.

RECOMMENDED EQUIPMENT

(a) Routine Inspection and Tests. The following equipment is recommended:

(1) flashlight with a nonconductive case;

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

(3) set of thickness gages, depth gages;

(4) small hammer, preferably a ¼ lb (0.11 kg) ball peen;

(5) chalk or crayon;

(6) small metal mirror;

(7) safety hat (nonconductive);

(8) copy of the latest applicable Codes and Standards (i.e., A17.1, A17.3, ANSI/NFPA 70, etc.);

(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 checklist as contained in this Manual;

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

(13) other items such as an eraser, kitchen spatula, etc;

(14) telescoping pointer with an alligator clip.

(b) Periodic and Acceptance Inspections and Tests. In addition to the equipment specified for routine inspections, the following should be provided by the owner or contractor:

(1) stop watch;

(2) 50 ft (15 m) nonconductive tape;

(3) tachometer, which reads directly in ft/min;

(4) meter, to check grounding continuity, correct phasing and verification of voltages;

(5) level, 30 deg./60 deg. triangle, and protractor or angle finder;

(6) barricades for both top and bottom;

(7) plumb line;

(8) torque wrench;

(9) suitable light meter for measuring light level in ftc (lx);

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

(11) Test weights for Items 1.7.3, 3.7.3, and 4.12.3.

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PART I
EXTERNAL INSPECTION AND TEST OF ESCALATORS — TOP AND BOTTOM EXTERNAL INSPECTION

ITEM 1.1
GENERAL FIRE PROTECTION

1.1.1 Routine

Examine the sides and undersides of the escalator trusses and machinery spaces enclosure for damage to fire-resistive materials.

Check that guards are in place for openings provided for ventilation of the driving machine and control equipment spaces. Enclosure in 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. Prior to A17.1–1981, A17.1 gave requirements for protection of floor opening 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 the Life Safety Code NFPA-101 for the protection requirement at each location.

1.1.2 Periodic

1.1.3 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.

[97b] **1.1.4 References**

A17.1 — Sections 800 and 801; and Rule 1009.2a.

ITEM 1.2
GEOMETRY

1.2.1 Routine

Inspect for evidence of change to the geometry of the balustrades and if change has been made, inspect as outlined in Item 1.2.3.

If an escalator is relocated or a new escalator is installed in existing trusses, it must comply with the current Code requirements. See Figs. 1.2(a), (b), and (c) for dimension requirements of existing escalators.

Verify that the overhead clearance is in compliance with local codes.

1.2.2 Periodic

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 to A17.1–1981 editions the width should not change abruptly nor more than 8% of the greatest width, and the maximum angle of change should not be more than 15% in the line of travel.

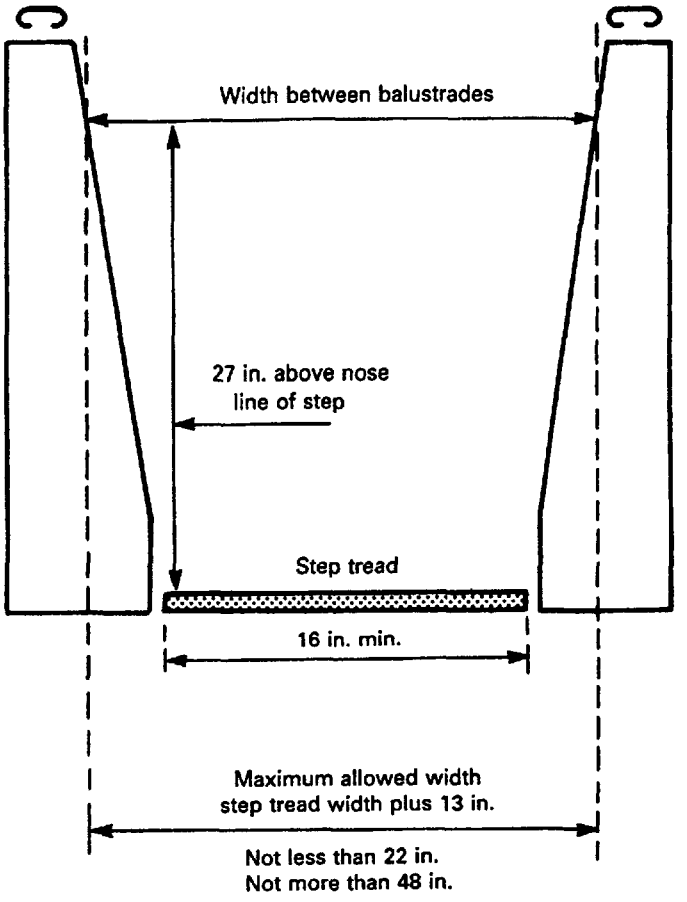
1.2.3 Acceptance

(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 Fig. 1.2.3. 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. [ED]

(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 [ED]

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.2(a) DIMENSIONS FOR EXISTING ESCALATORS
(For Escalators Installed Under A17.1–1955 and A17.1–1960 Editions)

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 utilizing a machinist level and ruler [see Fig. 1.2(c)]. Measure the slope of the deck perpendicular to the line of travel utilizing a machinist level and protractor.

(e) Drop a plumb line to the edges of the steps and measure the distance between the centerline of the handrails to the edge of the steps.

[97b] **1.2.4 References**

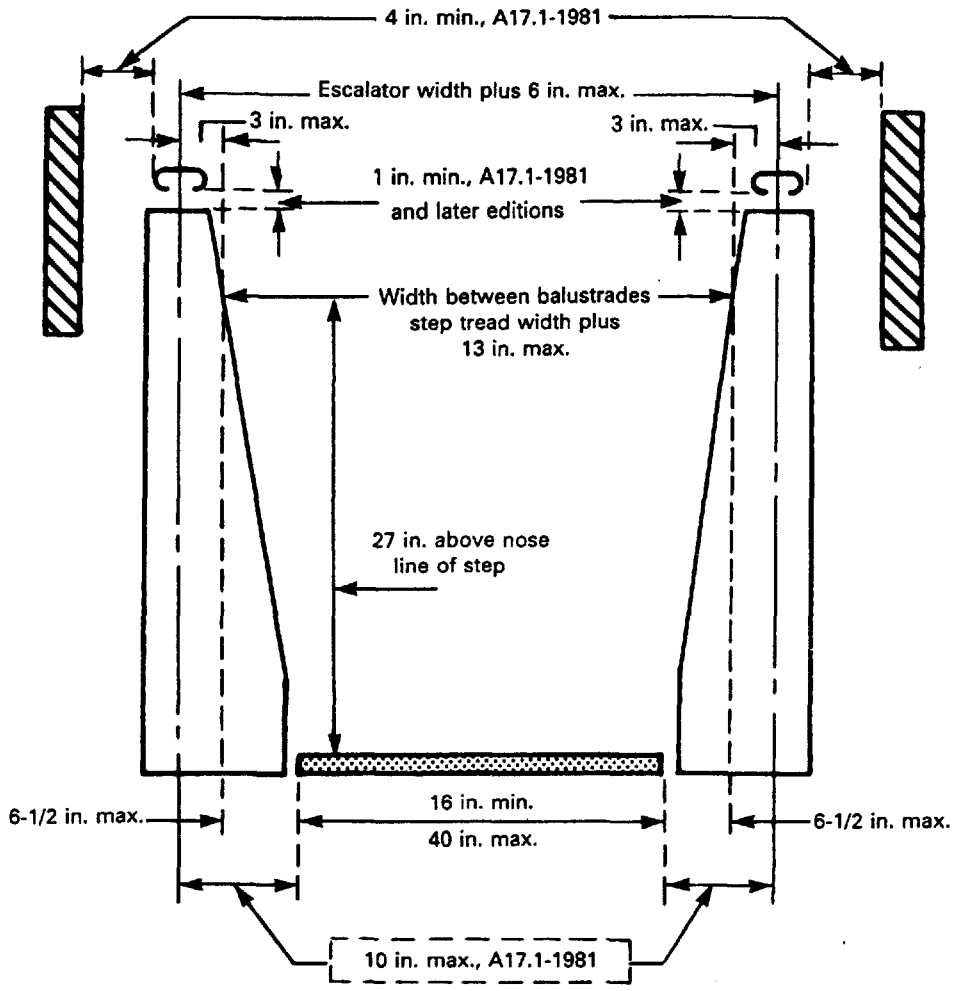
A17.1 — Rules 802.1, 802.2, 802.3d, 1009.2b, 1009.2g, and 1207.5; and Appendix D.

ITEM 1.3 HANDRAILS

1.3.1 Routine

(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

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.2(b) DIMENSIONS FOR EXISTING ESCALATORS
(For Escalators Installed Under A17.1–1965 Through 1981)

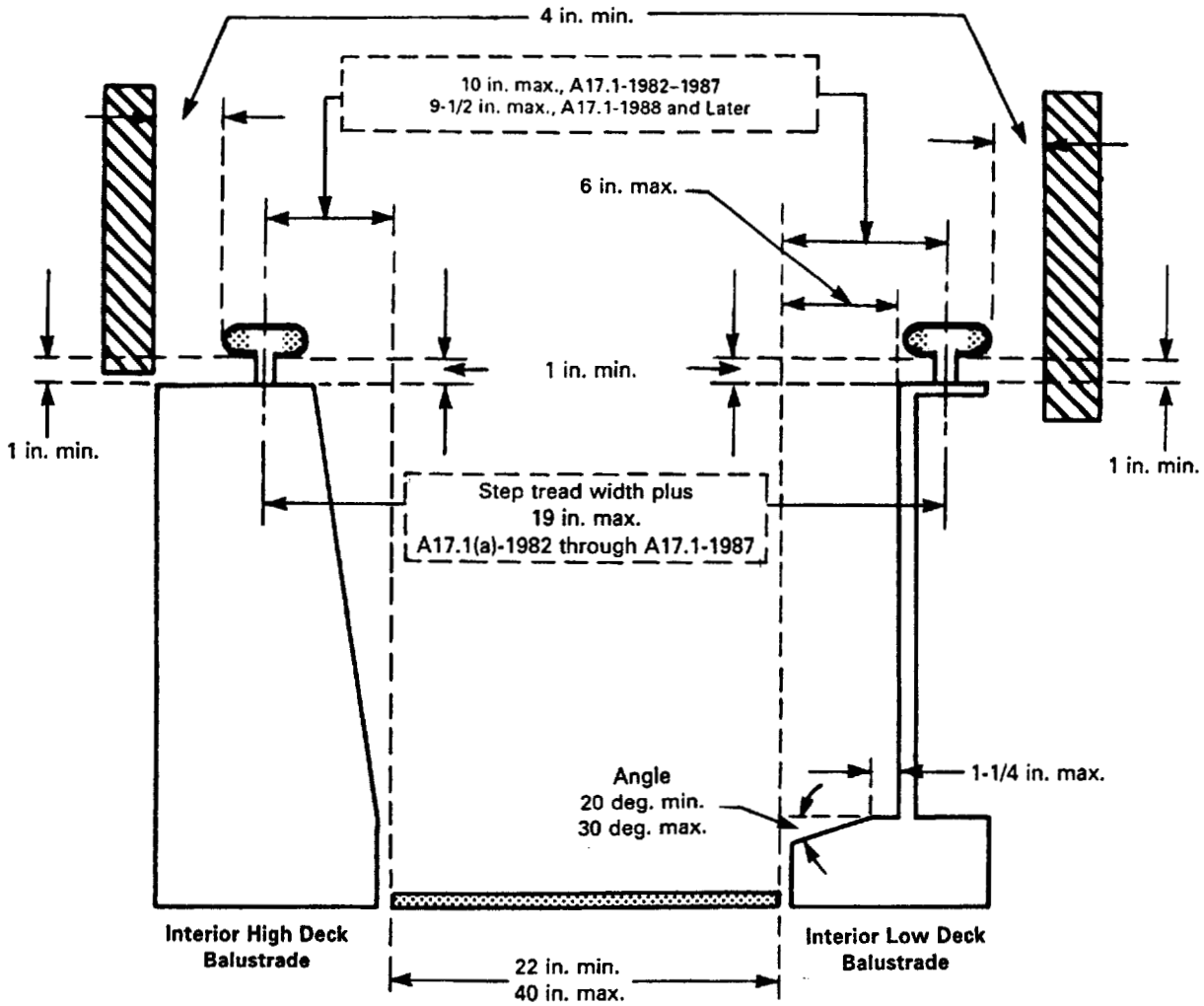
of the handrails should be close enough to the handrail stand to prevent any fingers from getting between the handrail and the handrail stand. Any rust or rubber filings present on the balustrade deck indicates that an internal inspection of the handrail system may be warranted.

(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 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

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GENERAL NOTE:
1 in. = 25.4 mm

[96a] **FIG. 1.2(c) RELATIONSHIP OF ESCALATOR PARTS**
(A17.1a–1982 and Later Editions)

may indicate the need for further inspection. Listen for noise that may indicate wear of the turn around rollers, or other parts.

1.3.2 Periodic

[ED] **1.3.3 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.

1.3.4 References

A17.1 — Rules 802.2, 802.4, 1008.2m, and 1009.2c; and Appendix D.
A17.3 — Paragraphs 5.1.5 and 5.1.6.

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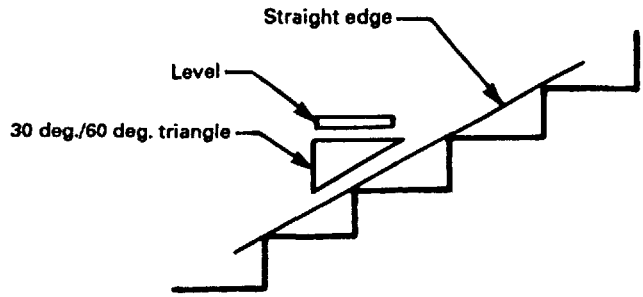


FIG. 1.2.3 CHECKING INCLINE

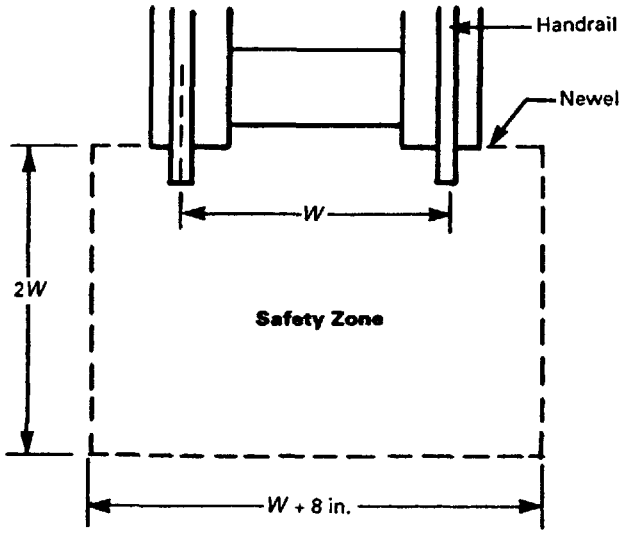


FIG. 1.4.1 SAFETY ZONE

ITEM 1.4
ENTRANCE AND EGRESS ENDS

1.4.1 Routine

(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 ¼ 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 the A17.1a–1988 and later editions and A17.3, a safety zone should be maintained free of obstacles (see Fig. 1.4.1). These Code dimensions are minimums and traffic patterns may require larger distances.

(c) While standing on the unit, verify that the landing and combplates provide a secure foothold and outdoor units should provide a secure foothold when wet.

1.4.2 Periodic

1.4.3 Acceptance

Verify that vertical headroom clearance of 7 ft (2.13 m) is provided and that the required safety zone is present.

1.4.4 References

A17.1 — Rules 802.6 and 802.12.
A17.3 — Paragraphs 5.5.3 and 5.5.4.

ITEM 1.5
LIGHTING

1.5.1 Routine [ED]

Check whether the lighting at the landing plate is adequate. Note any lamps that are not operating and their affect on the escalator lighting. For escalators installed under A17.1–1987 and later editions and A17.3, lighting must be of uniform intensity and not contrast materially with the surrounding area.

For escalators installed under A17.1–1955 through 1971, the minimum intensity was 2 ftc (22 lx). A17.1–1979 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 A17.3, the minimum intensity of 5 ftc (54 lx) is required. For escalators installed under the A17.1–1977 and later editions, verify that green demarcation lights are present below the steps at both landings and are on when the escalator is in operation.

1.5.2 Periodic

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1.5.3 Acceptance

Check whether the light level is adequate and uniform by placing a light meter on the steps and read it while the escalator is operating. Take care not to cast a body shadow on the meter. Note whether the lighting level on the escalator contrasts materially with that of the surrounding area by visual observation.

[97b] **1.5.4 References**

A17.1 — Rules 806.2, 805.7, and 1009.2d.
A17.3 — Paragraphs 2.2.3 and 5.4.

ITEM 1.6
CAUTION SIGNS

[97b] **1.6.1 Routine**

For escalators installed under A17.1–1981 and later editions and escalators which are required to comply with A17.3, verify that the required caution signs are located at both landings.

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.

1.6.2 Periodic

1.6.3 Acceptance

[97b] **1.6.4 References**

A17.1 — Rule 805.9; and Fig. 805.9a.
A17.3 — Paragraph 5.3.11.

ITEM 1.7
COMBPLATE

1.7.1 Routine

Inspect the comb for missing teeth and proper mesh with each step tread (see Fig. 1.7.1). 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 to the A17.1–1986 and later editions, the comb surfaces must contrast visibly by color, pattern, or texture.

1.7.2 Periodic [97b]

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 the unit will not start until 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 the unit will not start until manually reset.

(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 the unit will not start until manually reset. Repeat this test for the opposite side.

1.7.3 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 Fig. 1.7.3).

1.7.4 References [97b]

A17.1 — Rules 802.6, 805.3n, 807.3, 1008.2r, and 1009.2e.
A17.3 — Paragraph 5.1.9.

ITEM 1.8
DECK BARRICADE

1.8.1 Routine

For low deck escalators installed under the A17.1c–1986 and later editions, check to see that deck barricades are firmly in place and in good condition. When the outer deck width exceeds 5 in. (127 mm) at each end, the barrier must extend to 4 in. (102 mm) below the handrail top. See Fig. 1.8.1.

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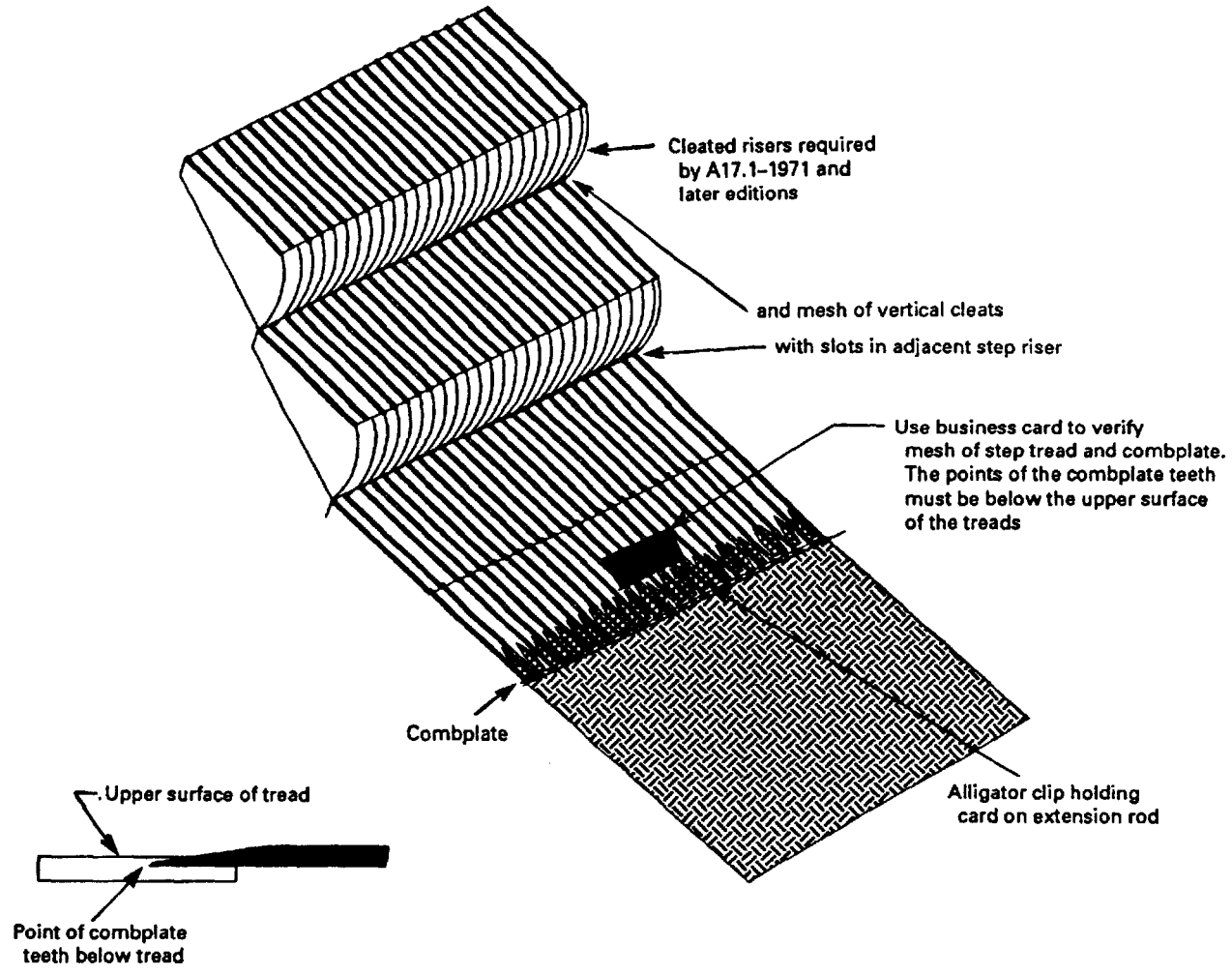


FIG. 1.7.1 CHECKING STEP/COMBPLATE MESH

[96a] **1.8.2 Periodic**

For escalators installed under A17.1a–1988 and A17.3, verify that glass and plastic replacement panels meet the requirements of ANSI Z97.1.

[96a] **1.8.3 Acceptance**

All glass or plastic (glazing material) must be legibly and permanently marked "American National Standard Z97.1" or the characters "ANSI Z97.1" and shall be marked also with the manufacturer's distinctive mark or designation.

1.8.4 References

A17.1 — Rules 802.3i and 1009.2f.

ITEM 1.9
STEPS AND UPTHRUST DEVICE

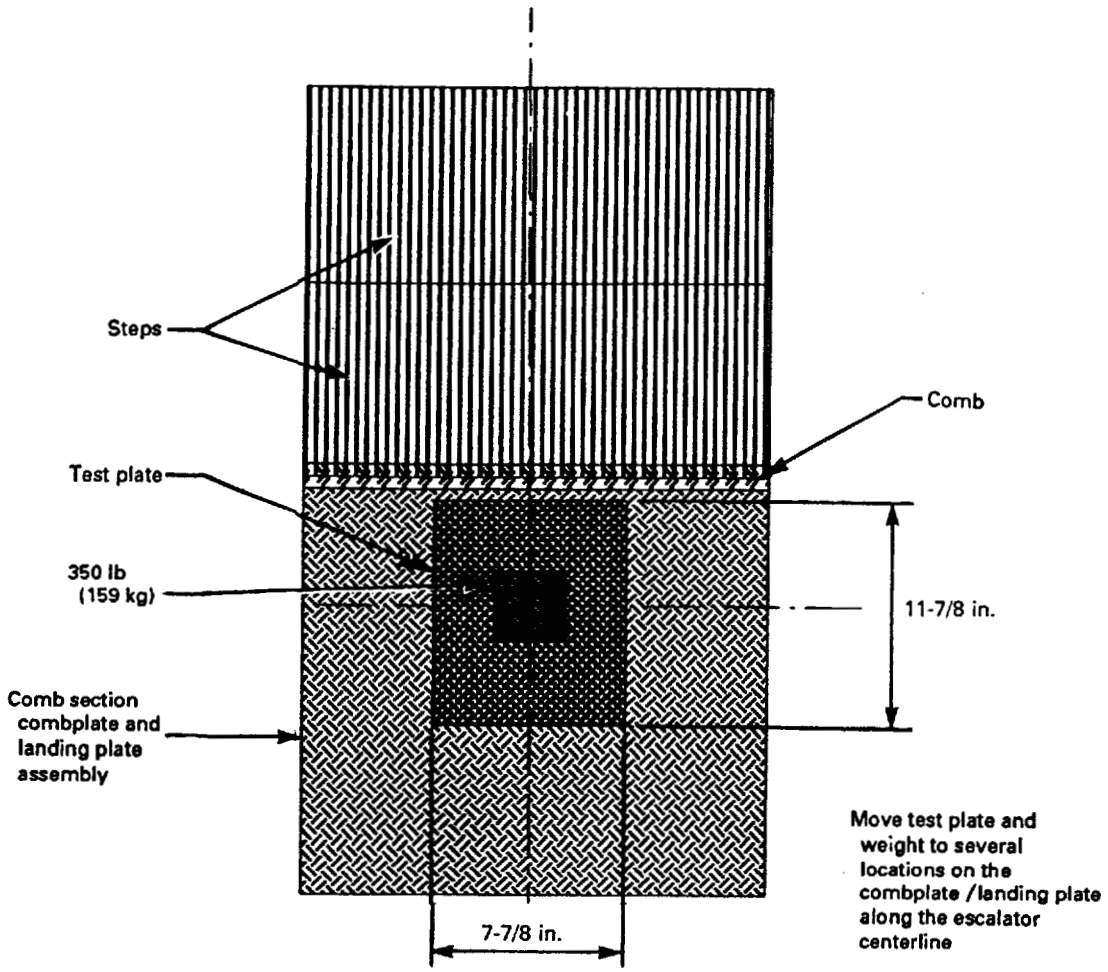
1.9.1 Routine

(a) Mark one of the steps with chalk, then run the escalator through one complete revolution. Check that each step is present, clean, 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.

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.7.3 TEST OF COMBPLATE/LANDING PLATE ASSEMBLY

(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 gauge 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. At least every tenth step should be checked. 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, or business card, between steps and riser while the escalator is moving in the up direction. The check should be made across the entire width. [See Figs. 1.9.1(2)(a) and (b).]

(3) Use a level to check if the steps are horizontal. [ED]

(4) The tread surface should be slotted in the direction parallel to the travel so that they mesh with the combplate teeth. Verify that a cleat is formed adjacent to the skirt panel on each side of the step (see Fig. 1.9).

(5) The cleats in the step tread surfaces should not be damaged, broken, or worn. 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 indicates that the drive and support system should be examined to discover the source or cause. [ED]

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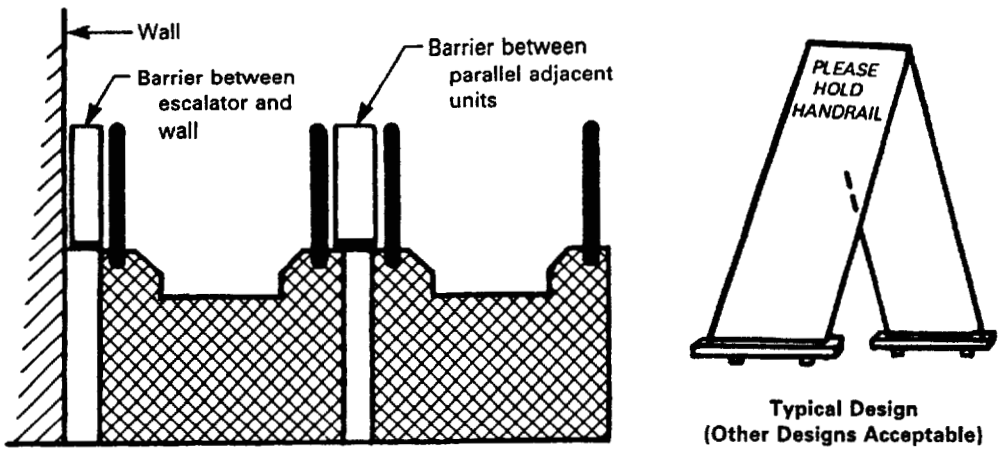


FIG. 1.8.1 DECK BARRICADE

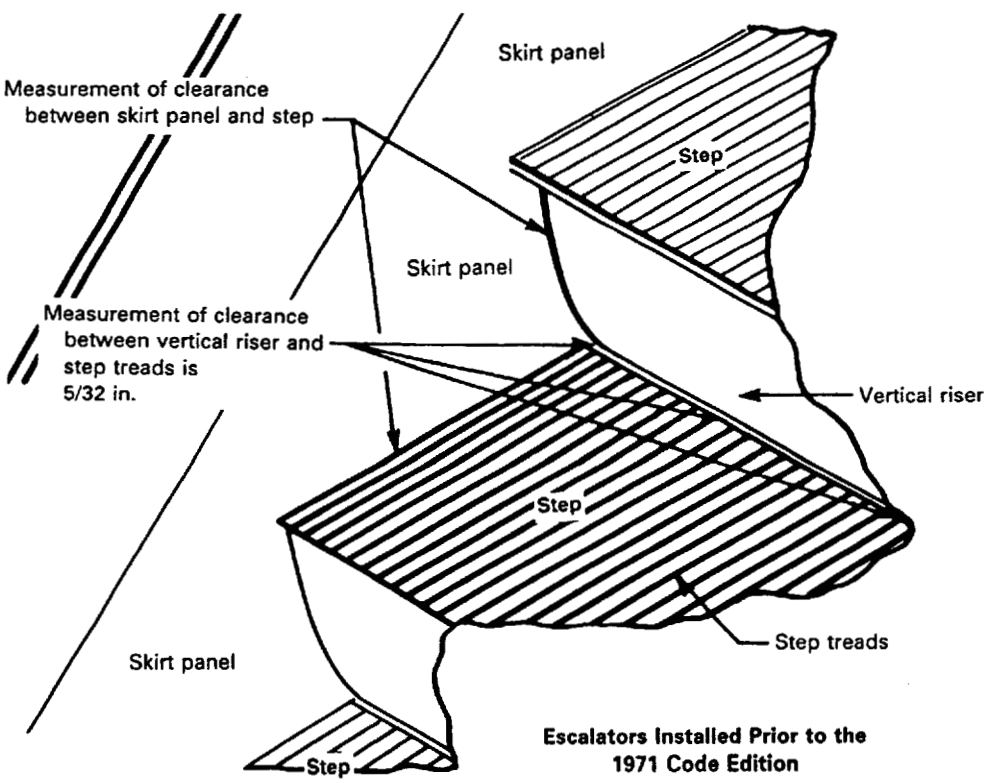


FIG. 1.9.1(2)(a) SMOOTH RISER

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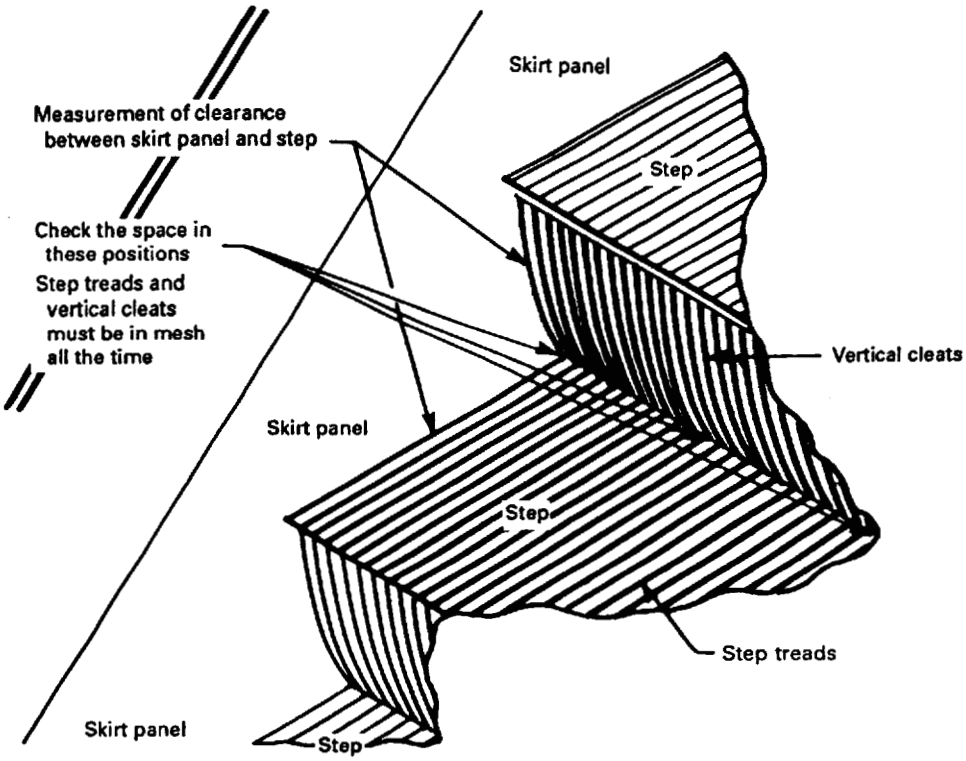
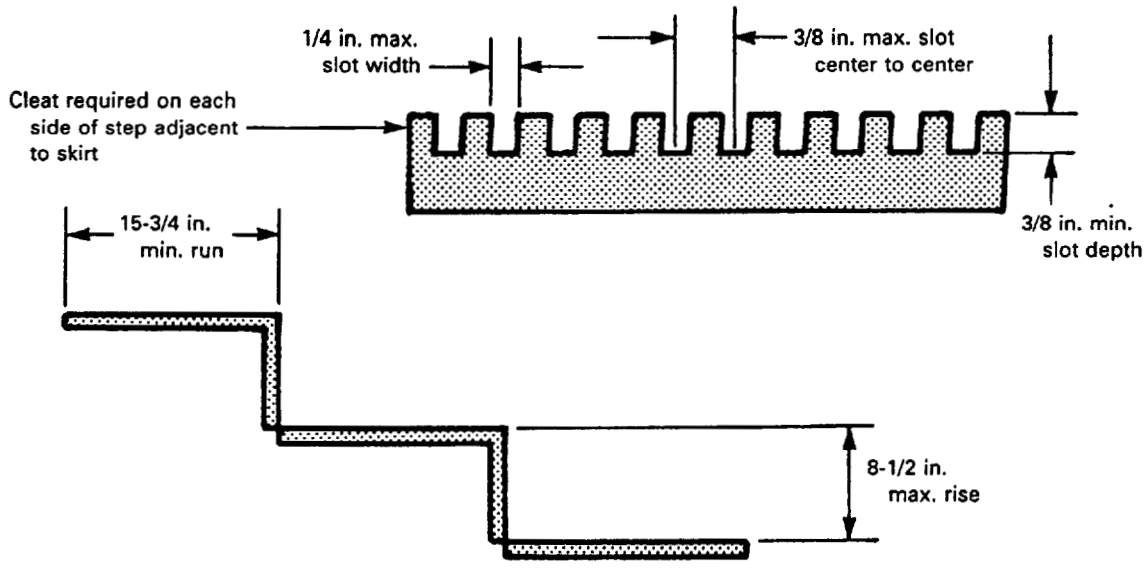


FIG. 1.9.1(2)(b) CLEATED RISER



GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.9 ESCALATOR STEP TREAD
(A17.1–1955 through A17.1–1990, Rule 802.5)

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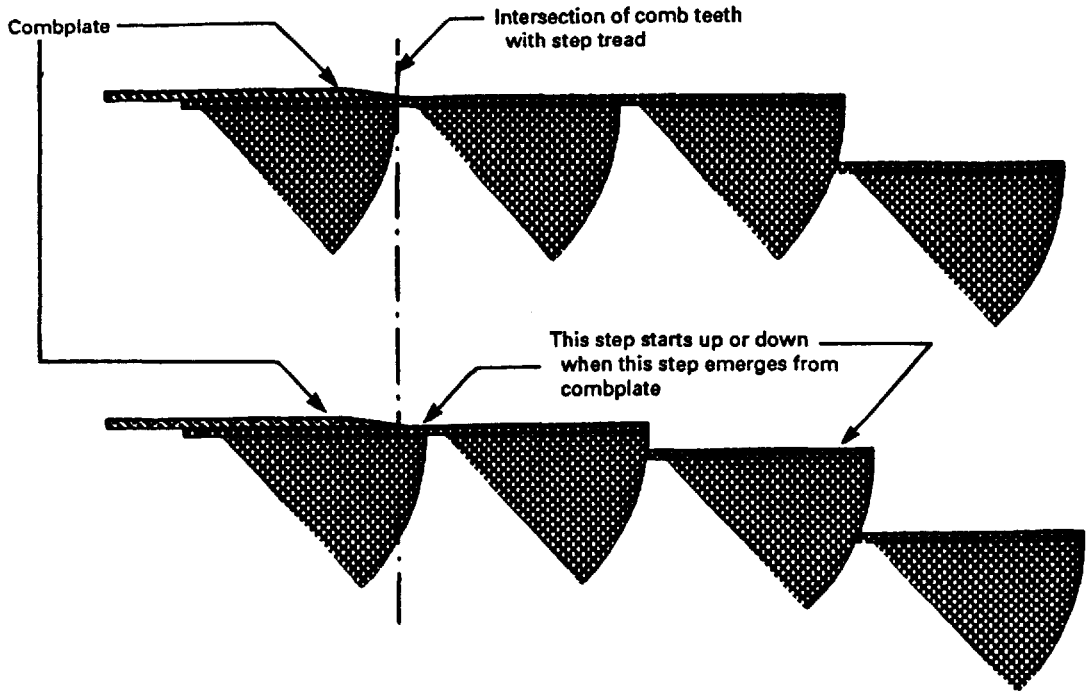


FIG. 1.9.3 EXAMPLE OF TWO FLAT STEPS [96a]

1.9.2 Periodic

For escalators installed under A17.1–1980 and later editions and those required to comply with A17.3, have the operation of the step upthrust device tested 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, it should be checked more closely during the internal inspection described in Item 2.9.2 and a meter should be used to verify that the safety circuit is opened when the upthrust device operates.

Escalators required to comply with A17.3 that have smooth risers, test the operation of the upthrust 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 pair of pliers gripping on both sides at the front of the step tread.

[96a] ### 1.9.3 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 Fig. 1.9.3 for flat step configuration identification.

1.9.4 References [96a] [97b]

A17.1 — Section 3; and Rules 802.5, 802.6e, 802.9d, 805.3i, 1008.2i, and 1105.1.

A17.3 — Paragraphs 5.1.7 and 5.1.8.

ITEM 1.10
OPERATING DEVICES

1.10.1 Routine

(a) Starting Switches. Verify that a key operated switch, located so that the steps are within sight, is the only means of starting the escalator. A17.1-1937 and later editions require the use of a key to start an escalator. However, A17.1-1988 and later editions and A17.3 specifically prohibit the 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 step. Where the escalator can be operated in both directions, check the switch operation in both directions. Where there is more than one key operated starting switch, the function and location of all switches shall be checked. [98]

(b) Operate the emergency stop switches/buttons

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and verify that the escalator stops. Also, verify that the stop switch cannot start the escalator. If automatic starting devices are provided (pre-1988), check 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) A17.1–1955: 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 landing of each escalator and shall be protected from accidental contact.

(2) A17.1–1960: Emergency stop button or other type of manually operated switches having a red button or handle shall be accessibly located at or near the top and bottom landing of each escalator, and shall be protected against accidental operation.

(3) A17.1–1965 added: An escalator stop button with an unlocked cover over it that can be readily lifted or pushed aside shall be considered accessible.

(4) A17.1–1979 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) A17.1–1983 and later editions required a readily moveable 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, and for low deck balustrades it must be below the handrail height. Remote stop switches were prohibited under A17.1–1983 and later editions.

(6) A17.3: An accessible red stop button marked "Emergency Stop" must be used.

(c) For escalators operated in tandem, A17.1–1981 and later editions and A17.3, 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 assure that the units run in the same direction.

1.10.2 Periodic

1.10.3 Acceptance

[97b] **1.10.4 References**

A17.1 — Rules 805.1, 805.2, and 805.3a.
A17.3 — Paragraphs 5.3.1, 5.3.2, and 5.3.10.

ITEM 1.11
SKIRT OBSTRUCTION DEVICE

1.11.1 Routine [96a]

Test the skirt obstruction device for escalators installed under A17.1–1971 and later editions and A17.3, by having the person performing the test manually trip the skirt obstruction device switches on each side of steps at each landing while the escalator is running. This can be done by placing an object such as a wooden stick between the steps and the skirt as the step moves by the switch (see Fig. 1.11). If the switch activation requires displacement of the skirt panel, a soft hand-held rubber eraser can be used to displace the panel by holding it so that it will be drawn between the panel and skirt. A rubber kitchen spatula may also be used for this. A soft material should always be used to prevent damage to the equipment. Kicking the panel does not verify proper operation of the skirt switch. All four switches should be tested.

For escalators installed under A17.1–1983 and later editions the maximum stopping distance should not exceed the distance from the location of the switch to the combplate for any load up to the rated load.

Escalators installed under A17.1–1971 through 1978 editions 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.

1.11.2 Periodic

1.11.3 Acceptance

1.11.4 References [97b]

A17.1 — Rule 805.3f.
A17.3 — Paragraph 5.3.7.

ITEM 1.12 [97b]
HANDRAIL-SPEED MONITORING DEVICE

1.12.1 Routine

For escalators installed under A17.1a–1988 and later editions, grab the handrail and attempt to stall it. If it stalls, an alarm must activate immediately, and after not more than 15 sec power must be removed from the driving machine and brake. If it is not possible to hold the handrail in the stalled position for 15 sec, the test of removing power from

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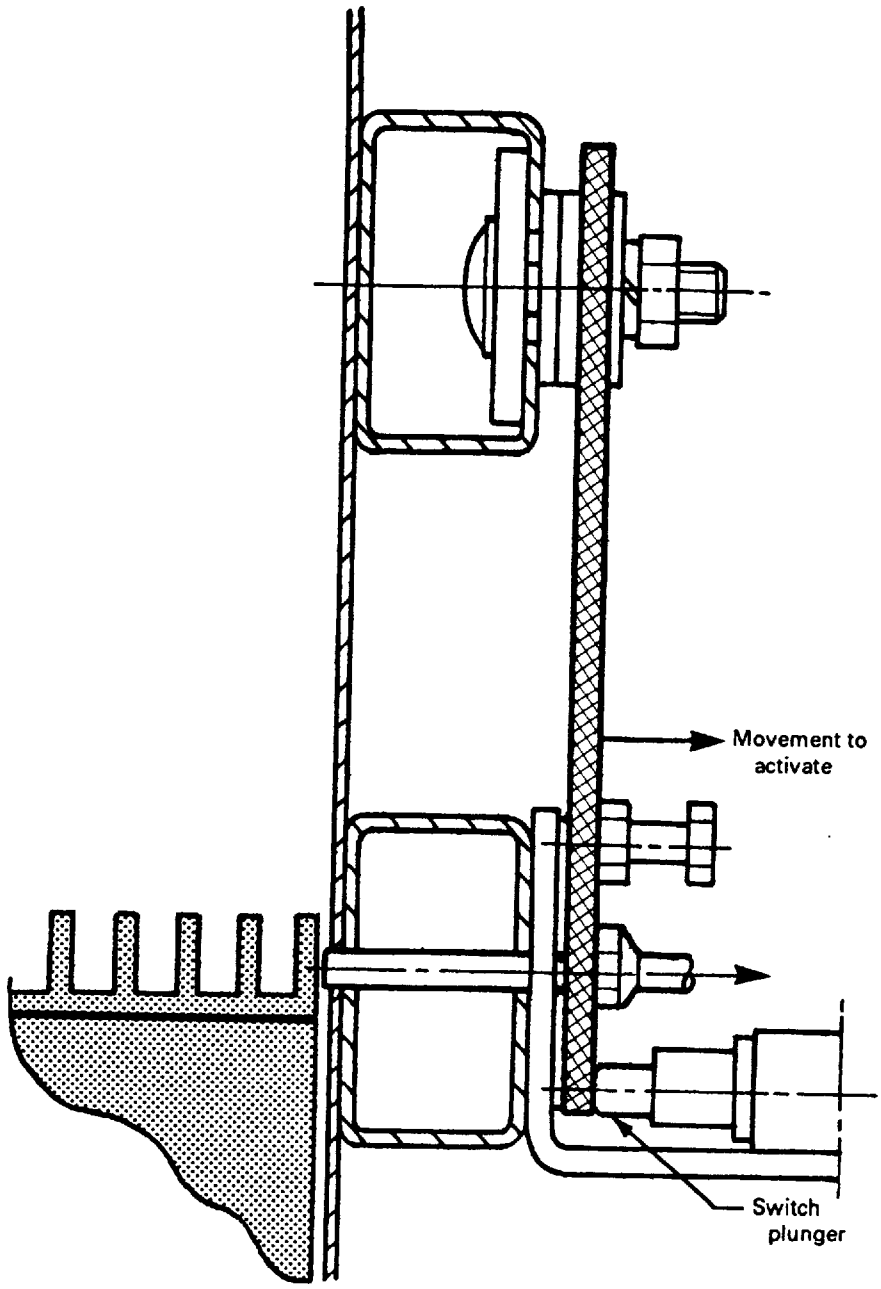


FIG. 1.11 TYPICAL SKIRT OBSTRUCTION DEVICE

the drive machine can be made during the internal inspection (see Item 2.13.2).

1.12.2 Periodic

1.12.3 Acceptance

[97b] **1.12.4 References**

A17.1 — Rules 805.4 and 1008.2m.

ITEM 1.13 [97b]
ROLLING SHUTTER DEVICE

1.13.1 Routine

Where rolling shutters are provided to protect floor openings, check that when the shutters begin to close power is removed from the driving machine and brake, and remains off until the shutter is fully retracted. If the shutter is power operated, the build-

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ing code may require a pressure sensitive leading edge to reverse direction and/or stop it when it strikes an object.

1.13.2 Periodic

1.13.3 Acceptance

[97b] **1.13.4 References**

A17.1 — Rule 805.3g.
A17.3 — Paragraph 5.3.8.

ITEM 1.14
SPEED

1.14.1 Routine

For escalators with DC motors, perform a speed test.

1.14.2 Periodic

1.14.3 Acceptance

Verify that the no load speed of the escalator does not exceed 125 ft/min (0.64 m/s) in both directions as follows:

(a) Use a tachometer to record the handrail speed by running the tachometer wheel along the deck, skirt, or other stationary flat object when riding the escalator.

(b) Use a stop watch 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 ft/min (m/sec).

[97b] **1.14.4 References**

A17.1 — Rules 803.1, 805.3b, 1008.2o, and 1009.2o.

ITEM 1.15
BALUSTRADES

1.15.1 Routine

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 the A17.1–1982 and later editions and 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.

On high deck escalators installed under A17.1–1981 and later editions and A17.3, check that anti-slide devices are in place and secure (see Fig. 1.15.1).

1.15.2 Periodic

1.15.3 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, should meet the requirements of the ANSI Z97.1. The glass or plastic (glazing material) must be legibly and permanently marked "American National Standard Z97.1" or the characters "ANSI Z97.1" and must also be marked with the manufacturer's distinctive mark or designation.

1.15.4 References

A17.1 — Rules 802.3 and 1009.2g; and Appendix D.
A17.3 — Paragraph 5.1.1.

ITEM 1.16
CEILING INTERSECTION GUARDS

1.16.1 Routine

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 was restricted to high decks for escalators installed under A17.1–1982 and later editions and A17.3 (see Fig. 1.16.3).

On low decks for escalators installed under A17.1–1982 and later editions and A17.3, where the centerline of the handrail is 14 in. (356 mm) or less from the ceiling or soffit, guards are also required.

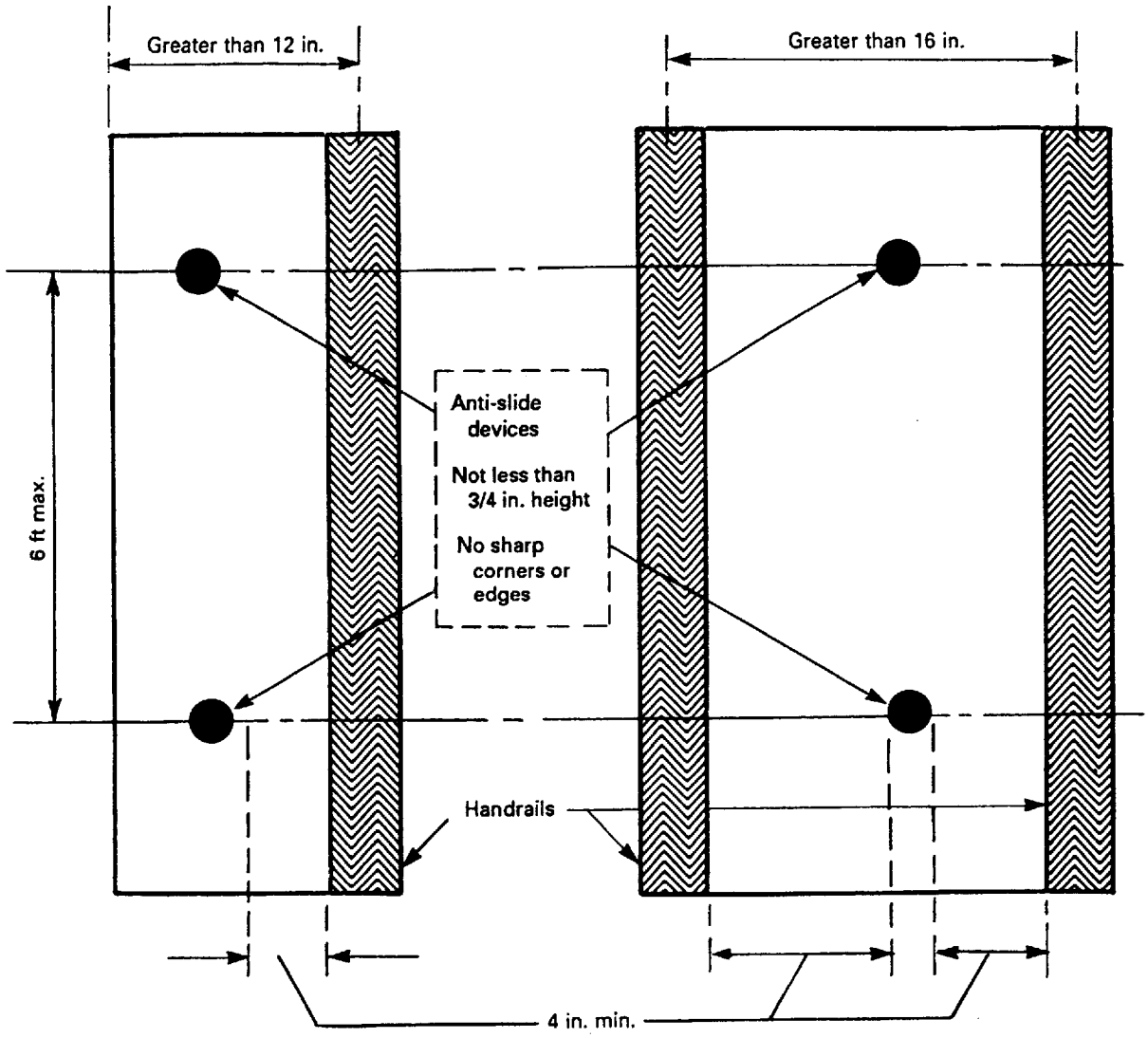
Inspect the guards for damage and secure attachment.

1.16.2 Periodic

1.16.3 Acceptance

Verify that ceiling and soffit guards are correct size, in place, and secure.

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.15.1 HIGH DECK BALUSTRADE ANTI-SLIDE DEVICES

1.16.4 References

A17.1 — Rule 802.3g; and Appendix D.
A17.3 — Paragraph 5.1.3.

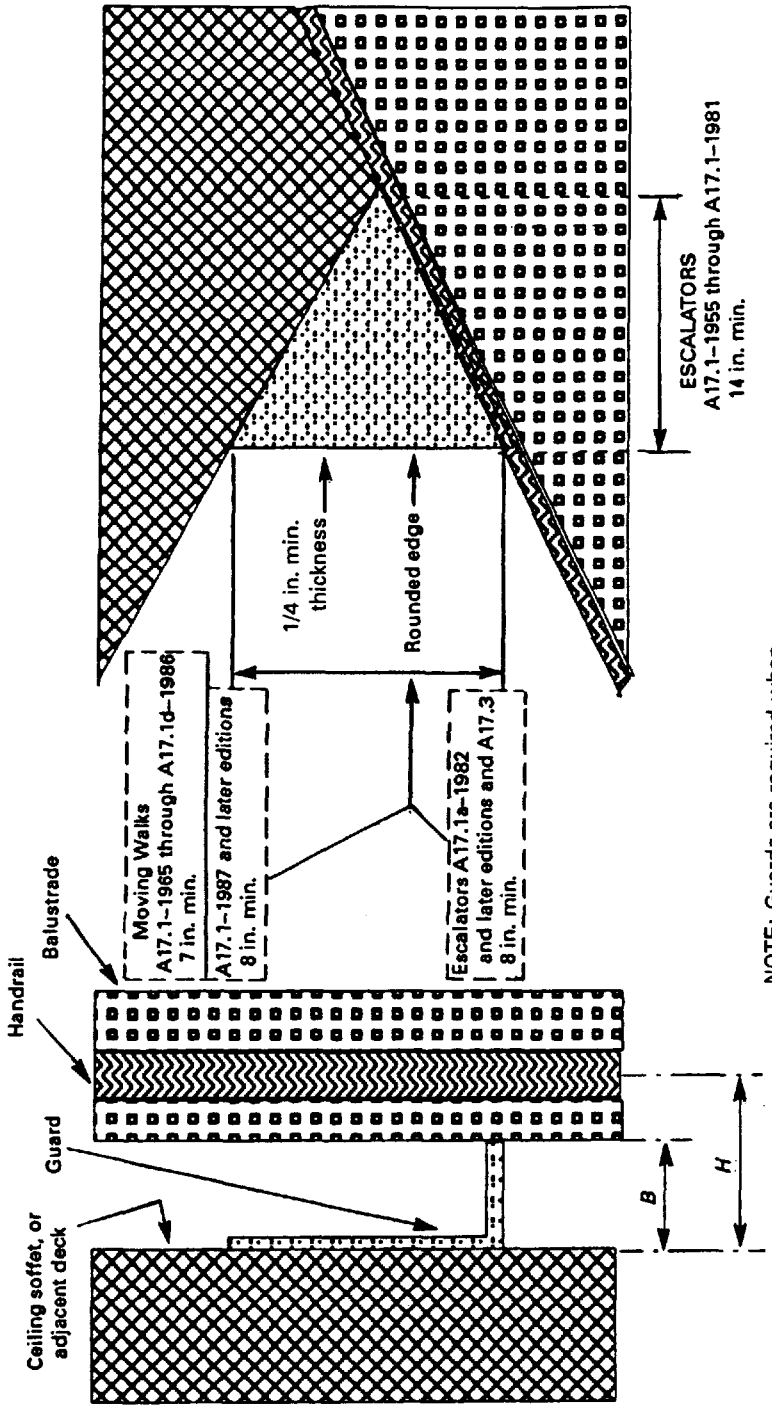
ITEM 1.17
SKIRT PANELS

1.17.1 Routine [ED]

Check the clearance between the skirt panel and the step using a thickness gauge 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 Fig. 1.17.1):

(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

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NOTE: Guards are required when

ESCALATORS
B is 12 in. or less, A17.1-1978 and later and A17.3
H is 24 in. or less, A17.1-1955 and later and A17.3
On low deck balustrades where *H* is 14 in. or less, A17.1a-1982 and later and A17.3

MOVING WALKS
B is 12 in. or less, A17.1-1981 and later
H is 24 in. or less, A17.1-1965 and later
On low deck balustrades where *H* is 14 in. or less, A17.1-1987 and later

GENERAL NOTE:
1 in. = 25.4 mm

FIG. 1.16.3 CEILING OR SOFFIT GUARD
(Rules 802.3g and 902.3g)

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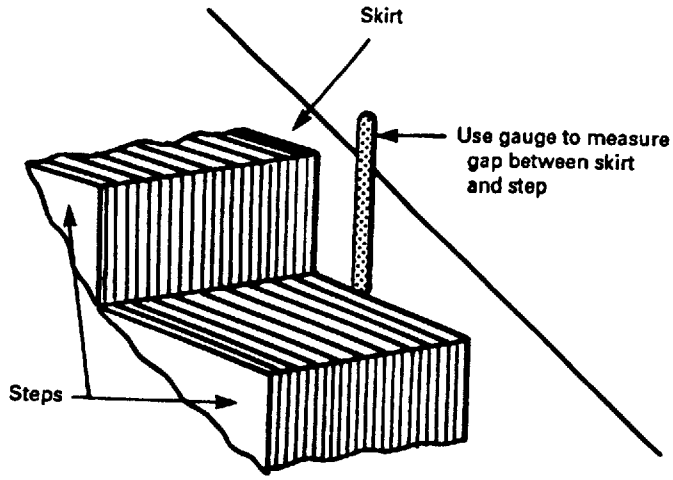


FIG. 1.17.1 MEASURING GAP BETWEEN STEP AND SKIRT

obstruction devices are installed at the lower entrance for escalators installed under the A17.1–1965 through A17.1(d)–1970.

(b) A17.1–1971 through A17.1–1979 editions: not more than $^3/_8$ in. (9.5 mm) on each side.

(c) A17.1–1980 and later editions and A17.3: not more than $^3/_{16}$ in. (4.8 mm) on each side.

For escalators installed under A17.1a–1982 and later editions, 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 and 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.

1.17.2 Periodic

1.17.3 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.

1.17.4 References

A17.1 — Rules 802.3e, 802.3f, and 1206.6b.

A17.3 — Paragraph 5.1.2.

ITEM 1.18
OUTDOOR PROTECTION

1.18.1 Routine

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.

1.18.2 Periodic

Heaters are required for escalators installed under A17.1a–1988 and later editions only if steps are subject to snow or freezing rain. Check that heaters are operational. Heaters may be located inside the unit (see Item 2.3.2).

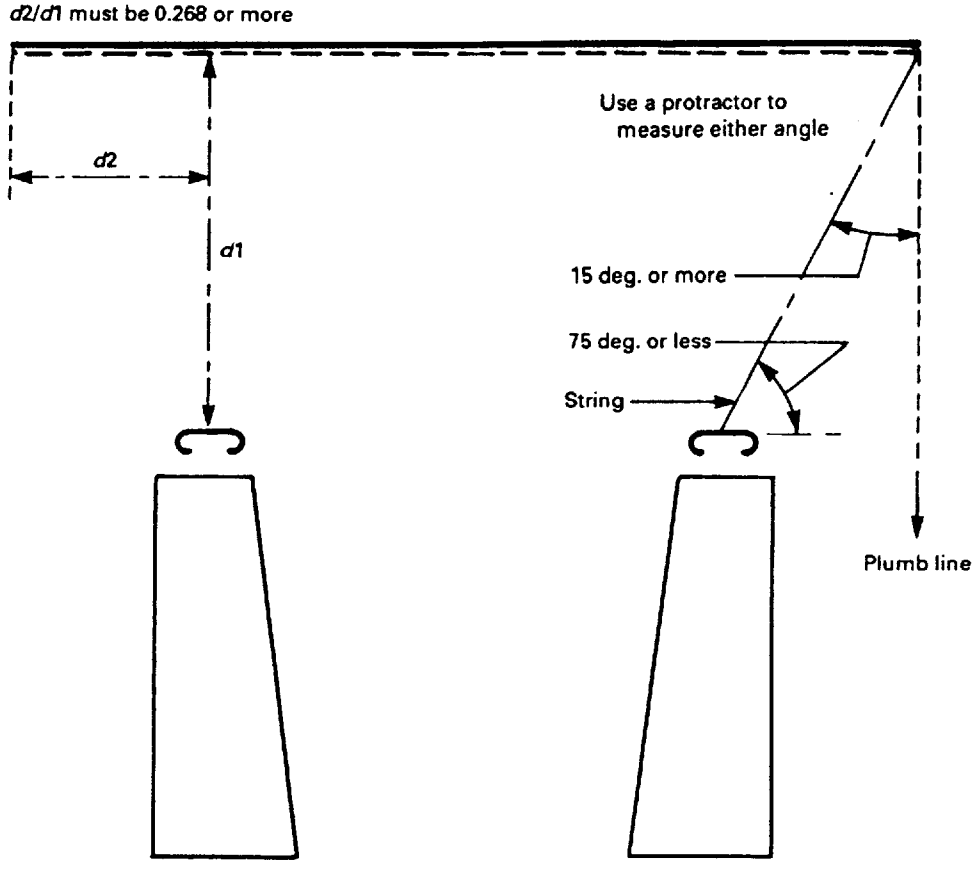
1.18.3 Acceptance

(a) 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 Fig. 1.18.

1.18.4 References [97b]

A17.1 — Section 807; and Rules 1008.2p and 1009.2i.

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Two Methods for Checking Compliance with Rule 807.2 Cover Requirement

FIG. 1.18 ESCALATOR COVER OVERLAP

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PART II
INTERNAL INSPECTION AND TEST OF ESCALATOR

CAUTION
(See Precautions in the Introduction)

The main line switch must always be open, tagged, and locked out before persons enter the truss or machine area of an escalator.

ITEM 2.1
MACHINERY SPACE ACCESS, LIGHTING, RECEPTACLE, AND CONDITION

2.1.1 Routine

[ED] **2.1.2 Periodic**

Confirm that means of access is secure. 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 remote machine space check that lighting at floor level is at least 10 ftc (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 machine space. No lubricant or solvent with a flashpoint less than 110°F (43°C) shall be stored in such space. Water should not have accumulated on the floor of the space. For escalators installed under A17.1–1977 and later editions 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 compromises its fire resistance or allows physical contact with moving parts.

[ED] **2.1.3 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 opening uncovered 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 removeable in the locked position.

If fire shutters are required by the local building code, verify that they are present at ventilation openings and operate correctly. Verify that demarcation lights are located within 16 in. (406 mm) of the combplate, and properly installed, see Item 1.5.1. Verify that the 15 A, 120 V duplex receptacle is properly located in machine rooms, under access plates and machine areas in the incline, are functional and that the light control for remote machine rooms is within easy reach of the access.

2.1.4 References [97b]

A17.1 — Section 806; and Rules 801.1, 805.7, 1008.2a, 1009.2j, and 1206.6a.

ITEM 2.2
STOP SWITCH

2.2.1 Routine

Test the operation of machine space stop switch(es) by placing them in the stop position. Then, make sure that everyone is clear and attempt to start the escalator with the key switch.

2.2.2 Periodic

2.2.3 Acceptance

Check that stop switches are properly installed, correctly labeled, and operate correctly in all machine spaces or other spaces where access to the interior

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is provided. Where the mainline disconnect switch is located, a separate stop switch is not required.

[97b] **2.2.4 References**

A17.1 — Rules 210.2, 805.3e, 1008.2b, and 1009.2k.

ITEM 2.3
CONTROLLER AND WIRING

2.3.1 Routine

For remote machine rooms inspect as outlined in Item 2.3.2.

2.3.2 Periodic

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, properly rated 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 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 Item 1.18.2), verify that they are operational. For escalators installed under A17.1–1965 through 1985, verify that the circuit breakers will not be automatically opened by the fire alarm.

2.3.3 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 machines operated. Inspect all wiring enclosure raceways conduit, electrical metallic tubing, metal wireways, junction boxes for condition, workmanship, and fastening.

Visually inspect condition of weatherproof electrical enclosure where required on outdoor units. Verify that use of flexible conduit, armored cable, and flexible leads comply with the Code requirements.

[97b] **2.3.4 References**

A17.1 — Section 806; and Rules 807.2, 1008.2c, and 1009.2l.

ANSI/NFPA 70 — Sections 620-3, 620-4, and 620-21.

ITEM 2.4
DRIVE MACHINE AND BRAKE

2.4.1 Routine

2.4.2 Periodic [ED]

Verify that the driving machine is properly secured, lubricated, clean, and in good condition. Visually check the driving machine fastenings and bearing caps to verify that they are tight.

Verify that the driving 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 driving 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 mechanically applied brake is present and automatically applied when power is interrupted. It is to be located on the driving machine for units installed under A17.1–1955 through A17.1a–1957 editions. Earlier and later editions allowed the brake to be on the main drive shaft.

For escalators installed under A17.1–1983 and later editions, verify that the driving machine brake is located on the gear reducer of 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 1983 and later editions and A17.3, the brake may be magnetically applied using a ceramic permanent magnet. Visually inspect the condition of the brake pads, drums, and discs.

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If the driving machine brake is separated from the main drive shaft by a chain used to connect the driving machine to the main drive shaft, check for 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:

(a) A17.1–1955 did not require this brake to be electrically released.

(b) A17.1–1965 through A17.1–1971 did not require that the brake be electrically released type if an electrically released brake was provided on the driving machine.

(c) A17.1–1978 required this brake to be mechanically applied and capable of stopping a down running escalator with rated load.

[98] *(d)* A17.1b–1983 and later editions required that both machine and main drive shaft brakes be mechanically or magnetically applied (ceramic permanent magnet) and to stop the down running escalator at a rate not to exceed 3 ft/sec^2 (0.91 m/s^2).

Visually inspect all mechanisms for condition and operation.

Verify that escalators installed under A17.1b–1983 and later editions have a nameplate that specifies the required brake torque. Escalators installed under A17.1a–1988 and later editions, require that the nameplate 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 is required to specify the range of brake torque and whether it is measured as breakaway or dynamic.

Have the torque tested to verify that the torque complies. The main drive shaft brake (where a chain is used to connect the driving machine and brake to the main drive shaft) should also be torque tested for escalators installed under A17.1–1983 and later editions.

The torque wrench should have a current calibration certificate traceable to the National Bureau of Standards and have a range of at least 25% higher than the required torque.

2.4.3 Acceptance

2.4.4 References

A17.1 — Section 804; and Rule 1008.2d.
A17.3 — Section 5.2.

ITEM 2.5
SPEED GOVERNOR

2.5.1 Routine

2.5.2 Periodic

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 driving machine. For escalators installed under A17.1–1990 and later editions, verify that the escalator cannot be started by the starting switch until the device is manually reset.

2.5.3 Acceptance

When an overspeed governor is required, (non AC Squirrel cage induction motor), 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.

2.5.4 References [97b]

A17.1 — Rules 805.3b, 1008.2e, and 1009.2l.
A17.3 — Paragraphs 5.3.3 and 5.3.5.

ITEM 2.6
BROKEN DRIVE CHAIN AND DISCONNECTED MOTOR SAFETY DEVICE

2.6.1 Routine

2.6.2 Periodic

If the driving 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 parts. 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 starting switch until the device is manually reset.

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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 starting switch until the device is manually reset.

2.6.3 Acceptance

[97b] **2.6.4 References**

A17.1 — Rules 804.3b, 805.3d, 805.3j, and 1008.2f.
A17.3 — Paragraphs 5.3.5 and 5.3.6.

ITEM 2.7
REVERSAL STOP SWITCH

2.7.1 Routine

2.7.2 Periodic

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 driving 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 starting switch until the device is manually reset.

2.7.3 Acceptance

[97b] **2.7.4 References**

A17.1 — Rules 805.3h and 1008.2g.
A17.3 — Paragraphs 5.3.5 and 5.3.9.

[97b] ## ITEM 2.8
BROKEN STEP CHAIN DEVICE

2.8.1 Routine

2.8.2 Periodic

Manually operate the broken step chain devices to verify that each will interrupt power to the driving 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 starting switch until the device is manually reset.

2.8.3 Acceptance

2.8.4 References [97b]

A17.1 — Rules 805.3c and 1008.2h.
A17.3 — Paragraphs 5.3.4 and 5.3.5.

ITEM 2.9
STEP UPTHRUST DEVICE

2.9.1 Routine

2.9.2 Periodic

The operation of the upthrust device was tested during the external inspection and test in Item 1.9.2. While the steps are removed (Item 2.12.2), manually move the mechanism and visually inspect the components of the upthrust device. Visually examine the upthrust tabs on each step for damage, alignment, and attachment (see Fig. 2.9).

2.9.3 Acceptance

2.9.4 References [97b]

A17.1 — Rules 805.3i and 1008.2i.
A17.3 — Paragraph 5.1.7.

ITEM 2.10
MISSING STEP DEVICE

2.10.1 Routine

2.10.2 Periodic

For escalators installed under A17.1–1989 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 starting switch until the device is manually reset.

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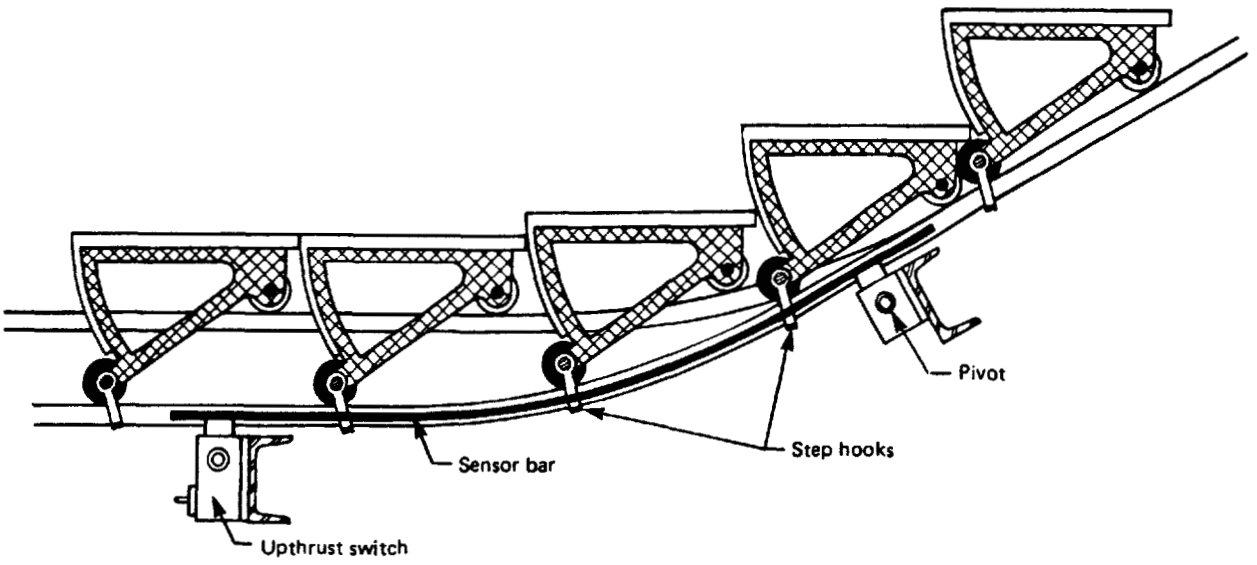


FIG. 2.9 TYPICAL STEP UPTHRUST DEVICE

2.10.3 Acceptance

[97b] **2.10.4 References**

A17.1 — Rules 805.5 and 1008.2j.

ITEM 2.11
STEP LEVEL DEVICE

2.11.1 Routine

2.11.2 Periodic

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 it is in place and able to function. Have the switch manually operated to verify that it will open the safety circuit and stop the escalator.

For escalators installed under A17.1–1990 and later editions, verify that the escalator cannot be started by the starting switch until the device is manually reset.

2.11.3 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.

[97b] **2.11.4 References**

A17.1 — Rules 805.3k, 1008.2k, and 1009.2n.

ITEM 2.12
STEPS, STEP CHAINS, AND TRUSSES

2.12.1 Routine

2.12.2 Periodic

Take appropriate safety precautions before opening incline. (See Personnel Safety in the Foreword).

Have at least half of the steps removed, then move the remaining steps to the upper half of the escalator (see Fig. 2.12.2). 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 2.1).

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 Item 2.4.2 for 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

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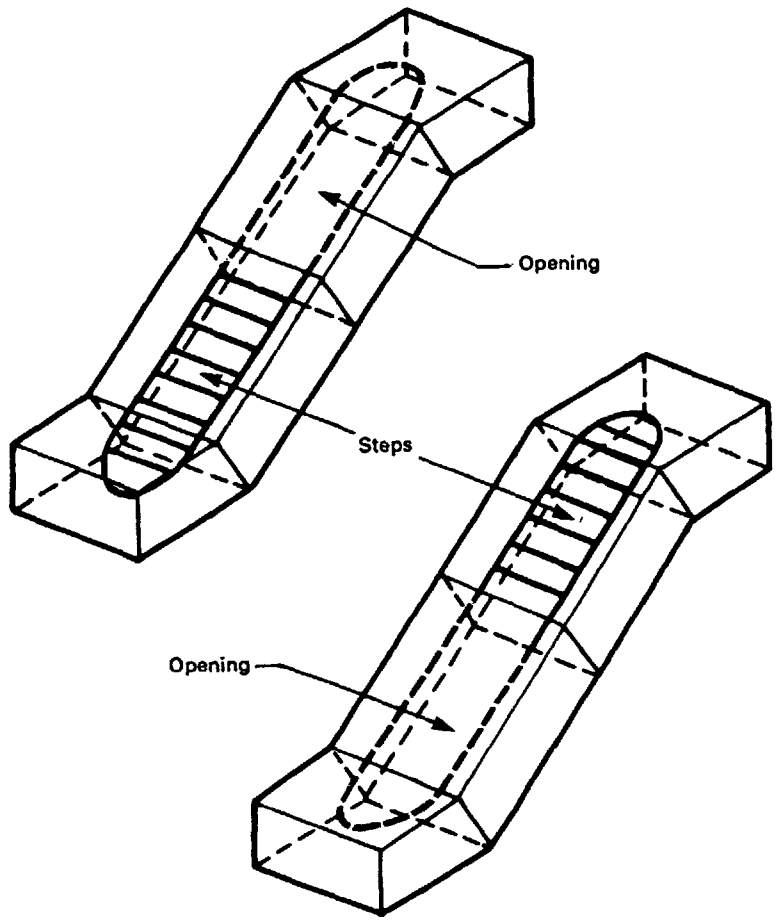


FIG. 2.12.2 POSITIONING OF STEPS FOR INSPECTION OF TRUSS

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 Fig. 2.12.2).

Inspect each of the steps for evidence of structural damage, condition of the step rollers and upthrust tabs and material. Verify that the step tread material is non-combustible or that the undersides are properly covered with fire-resistive material.

2.12.3 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.

2.12.4 References [97b]

A17.1 — Rules 801.1, 802.7, 802.8, 802.11, 806.3, 1008.2l, 1009.2o, and 1206.6.

ITEM 2.13 HANDRAILS

2.13.1 Routine

2.13.2 Periodic [98]

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 indicates wear.

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For escalators installed under A17.1a–1988 and later editions, test the operation of the stopped handrail device by having the handrail motion sensor mechanically disconnected while operating the escalator and verify that the alarm sounds immediately and the escalator stops within 15 sec (see Item 1.12.1).

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.

2.13.3 Acceptance

[97b] [98]

2.13.4 References

A17.1 — Rules 802.4, 802.11, 805.4, 805.1t, 1008.2m, 1008.2q, and 1009.2c.

ITEM 2.14
CODE DATA PLATE

2.14.1 Routine

[96a]

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

2.14.3 Acceptance

2.14.4 References

A17.1 — Rules 808, 908, and 1200.6.

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PART III
EXTERNAL INSPECTION AND TEST OF MOVING WALKS — ENTRANCE AND EXIT EXTERNAL INSPECTION

ITEM 3.1
GENERAL FIRE PROTECTION

3.1.1 Routine

Examine the sides and undersides of the moving walk trusses and machinery spaces enclosure for damage to fire-resistive materials.

Check that guards are in place for openings provided for ventilation of the driving machine and control equipment spaces. Enclosure in 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, A17.1 gave requirements for protection of floor opening 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 the Life Safety Code NFPA-101 for the protection requirement at each location.

3.1.2 Periodic

3.1.3 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.

[97b] **3.1.4 References**

A17.1 — Sections 900 and 901; and Rule 1009.2a.

ITEM 3.2
GEOMETRY

3.2.1 Routine

Inspect for evidence of change to the geometry of the balustrades and if change has been made, inspect as outlined in Item 3.2.3.

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 Figs. 3.2(a) and (b) for dimension requirements of existing moving walks.

Verify that the overhead clearance is in compliance with local codes.

3.2.2 Periodic

3.2.3 Acceptance

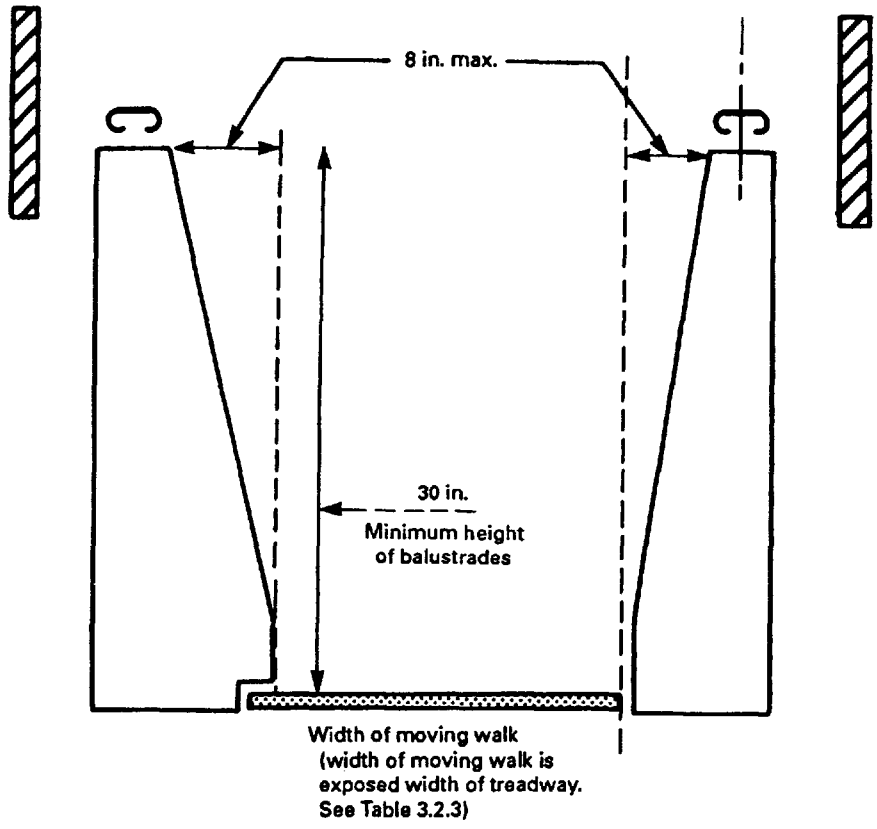
(a) Measure the slope of the treadway at the centerline using a level and protractor or an angle finder at each incline (if any). See Fig. 3.2.3.

(b) Measure the width of the treadway at a right angle transverse to the direction of travel. See Tables 3.2.3(a), (b), and (c) 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. [ED]

(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 utilizing

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.2(a) MOVING WALK GEOMETRY
(For Moving Walks Installed Under A17.1–1965 Through A17.1–1980)

a machinist level and ruler [see Fig. 3.2(b)]. Measure the slope of the deck perpendicular to the line of travel utilizing a machinist level and protractor.

[97b] **3.2.4 References**

A17.1 — Rules 902.1, 902.2, 902.3d, 1009.2b, 1009.2g, and 1208.5; and Appendix D.

ITEM 3.3
HANDRAILS

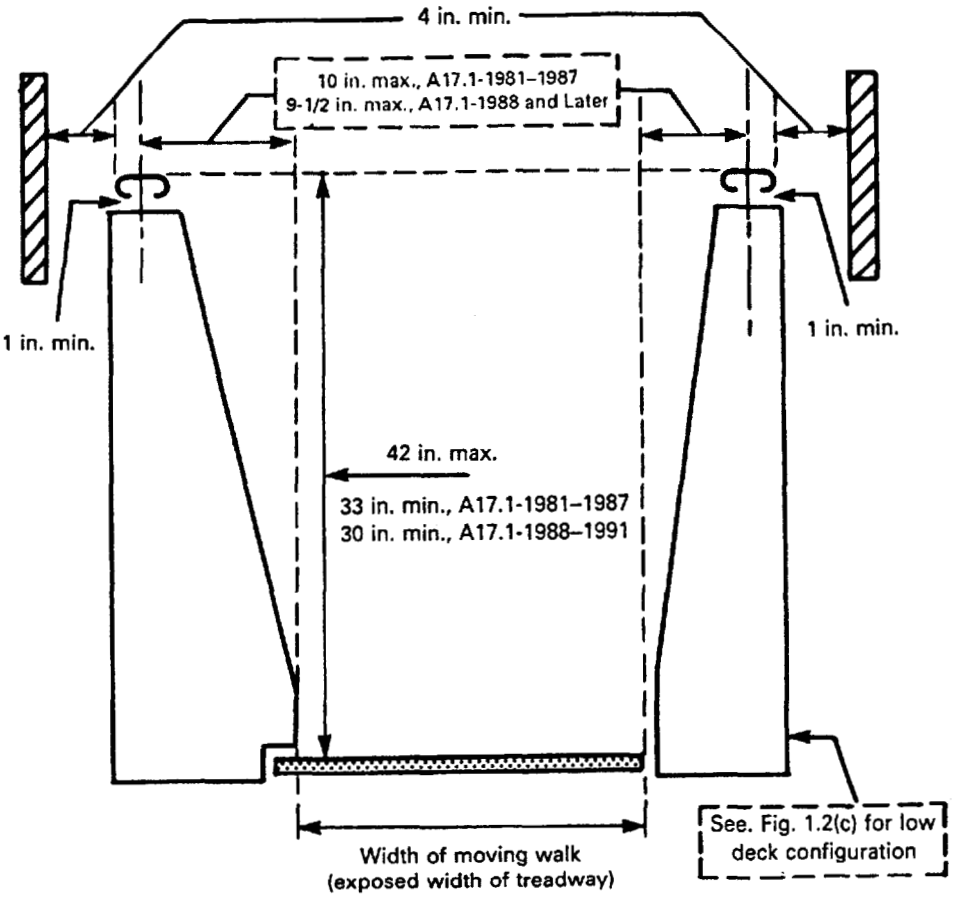
3.3.1 Routine

(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 any fingers from getting between the handrail and the handrail stand. Any rust or rubber filings present on the balustrade deck indicates 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.

(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 indicate a need for adjustment. During this ride observe any unusual

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.2(b) MOVING WALK GEOMETRY
(For Moving Walks Installed Under A17.1–1981 Through A17.1a–1991)

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 turn around rollers, or other parts.

(e) Moving walks installed under A17.1–1981 through A17.1–1987 editions 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 or less. Moving walks installed under A17.1–1965 through A17.1–1979 did not require a moving handrail if the slope was 3 deg. or less, and the speed was 70 ft/min 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.

3.3.2 Periodic

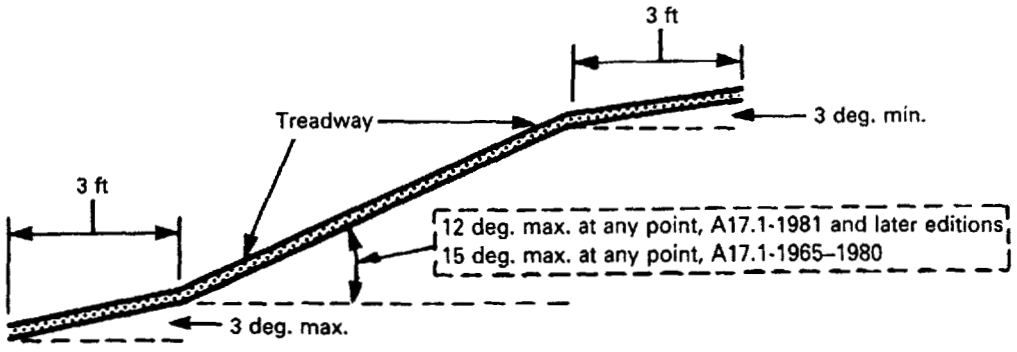
3.3.3 Acceptance [ED]

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 Fig. 3.3.3).

3.3.4 References

A17.1 — Rules 902.2, 902.4, 1008.2m, and 1009.2c; and Appendix D.

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.2.3 MAXIMUM TREADWAY ANGLE

TABLE 3.2.3(a)
TREADWAY WIDTH
(A17.1–1965 THROUGH A17.1–1970)

Maximum Treadway Slope at any Point on Treadway, deg.	Maximum Moving Walk Treadway Width, in.,	
	140 ft/min Max. Treadway Speed	Above 140 ft/min to 180 ft/min Treadway Speed
0 to 3	Unlimited	40
Above 3 to 5	110	40
Above 5 to 8	78	40
Above 8 to 12	40	. . .
Above 12 to 15	40	. . .

GENERAL NOTE:
1 deg. = 1.75 E — 02 radian
1 in. = 25.4 mm

TABLE 3.2.3(b)
TREADWAY WIDTH
(A17.1–1971 AND LATER EDITIONS)

Max. Treadway Slope at any Point, 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*	Unrestricted	60	40
4* to 8	40	40	40
8 to 12**	40	40	Not Permitted

*5 deg. for units installed under A17.1–1971 through A17.1–1978.
** 15 deg. for units installed prior to A17.1–1981.

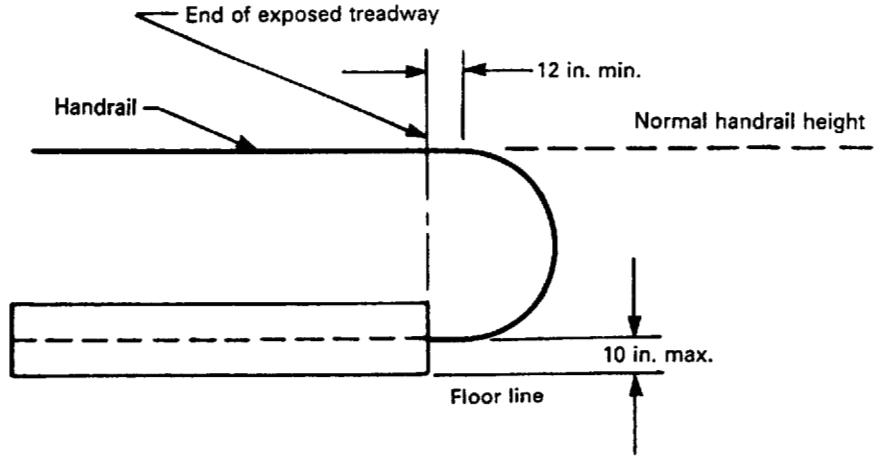
GENERAL NOTE:
1 deg. = 1.75 E — 02 radian
1 in. = 25.4 mm

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TABLE 3.2.3(c)
MINIMUM TREADWAY WIDTH

A17.1–1980 and Prior Editions	A17.1–1981 and Later Editions
16 in.	22 in.

GENERAL NOTE:
1 deg. = 1.75 E - 02 radians
1 in. = 25.4 mm



GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.3.3 MOVING WALK HANDRAIL EXTENSION
(A17.1–1971 and Later Editions)

ITEM 3.4
ENTRANCE AND EGRESS ENDS

3.4.1 Routine

(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 ¼ 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 through A17.1–1987 editions 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 the A17.1a–1988 and later editions a safety zone should be maintained free of obstacles (see Fig. 1.4.1). These Code dimensions are minimums and 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 wet.

3.4.2 Periodic

3.4.3 Acceptance

Verify that vertical headroom clearance of 7 ft (2.13 m) is provided and that the required safety zone is present.

3.4.4 References [97b]

A17.1 — Rules 902.8, 907.3, and 902.16.

ITEM 3.5
LIGHTING

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[ED] **3.5.1 Routine**

Check whether the lighting at the landing plate is adequate. Note any lamps that are not operating and their affect on the moving walk lighting. For moving walks installed under A17.1–1965 and later editions lighting must be a minimum of 5 ftc (54 lx), of uniform intensity, and must not materially contrast with the surrounding area.

3.5.2 Periodic

[ED] **3.5.3 Acceptance**

Check that the light level is adequate and uniform by placing a light meter on the treadways and read it while the moving walk is operating. Take care not to cast a body shadow on the meter. Note whether the lighting level on the moving walk contrasts materially with that of the surrounding area by visual observation and the need for eye adjustment when riding the moving walk.

3.5.4 References

A17.1 — Rules 906.2 and 1009.2d.

ITEM 3.6
CAUTION SIGNS

3.6.1 Routine

For moving walks installed under A17.1–1981 and later editions, verify that the required caution signs are located at both entrances.

3.6.2 Periodic

3.6.3 Acceptance

[97b] **3.6.4 References**

A17.1 — Rule 905.8; and Fig. 805.9a.

ITEM 3.7
COMBPLATES

3.7.1 Routine

Inspect the comb for missing teeth and proper mesh with each treadway tread (see Fig. 1.7.1). Verify proper mesh with each treadway tread by holding a sheet of stiff paper or 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, the comb surfaces must contrast visibly by color, pattern, or texture.

3.7.2 Periodic [97b]

For units installed under A17.1b–1992 and later editions, have the 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 the unit will not start until 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 the unit will not start until manually reset.

(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 the unit will not start until manually reset. Repeat this test for the opposite side.

3.7.3 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 Fig. 1.7.3).

3.7.4 References [97b]

A17.1 — Rules 902.8, 905.3k, 907.3, 1008.2r, and 1009.2e.

ITEM 3.8
DECK BARRICADES

3.8.1 Routine [97b]

For low deck moving walks installed under the A17.1a–1988 and later editions, check to see that

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deck barricades, when required, are firmly in place and in good condition.

[97b] **3.8.2 Periodic**

For moving walks installed under A17.1b–1989 and later editions, verify that replacement panels meet the requirements of ANSI Z97.1.

[97b] **3.8.3 Acceptance**

All glass or plastic (glazing material) must be legibly and permanently marked "American National Standard Z97.1" or with the characters "ANSI Z97.1" and also shall be marked with the manufacturer's distinctive mark or designation.

3.8.4 References

A17.1 — Rules 902.3h and 1009.2f.

ITEM 3.9
TREADWAYS

3.9.1 Routine

(a) Mark treadways with chalk then run the moving walk through one complete revolution. Check that each treadway is continuous, unbroken, clean, free of debris, and that the treads are in good condition.

[ED] *(b)* Check at least every tenth pallet or a distance of approximately $1/10$ 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, and vertically. While standing on the treadway, a shift of weight should not cause the treadway to strike the skirt panels.

[ED] *(2)* Note the type of treadway and record for further inspection.

belt type — The treadway consists of an integral belt of uniform width and thickness, made or spliced in one continuous piece forming a loop.

pallet type — the treadway consists of closely coupled meshing pallets, or small platforms. This is similar to an escalator step without a riser.

belt pallet type — for moving walks installed under A17.1–1987 and prior 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.

(3) Alternate cleats on adjacent pallets should mesh so that no continuous transverse gap exist between pallets. Mesh can be verified by trying to fit a thin piece of stiff paper or business card between treadways while the moving walk is moving in the up direction. The check should be made across the entire width (see Fig. 1.7.1).

(4) The tread surface should be slotted in the direction parallel to the travel so that they mesh with the combplate teeth. Verify that a cleat is formed adjacent to the skirt panel on each side of the treadway (see Fig. 3.9).

(5) 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.

(6) A jerking motion on the treadways and excessive noise in the machinery space indicates that the drive and support system should be examined to discover the source or cause. [ED]

(7) 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.

3.9.2 Periodic

3.9.3 Acceptance

Review fatigue test and certification for the Code compliance.

3.9.4 References [97b]

A17.1 — Rules 902.5, 902.6, 902.9, 902.11, and 1105.1.

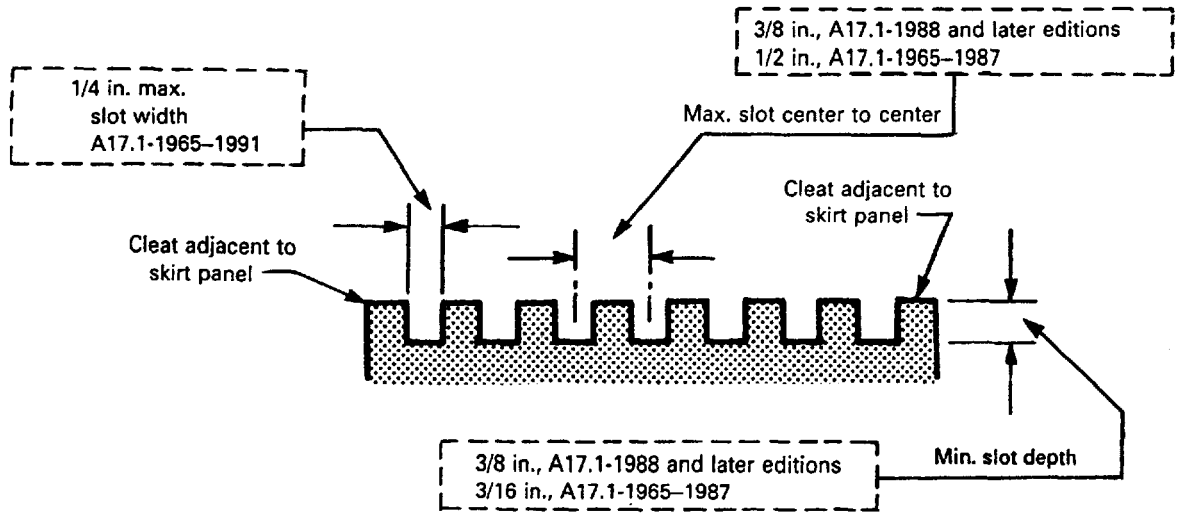
ITEM 3.10
OPERATING DEVICES

3.10.1 Routine [96a]

(a) Starting Switches. 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.

(b) 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 (pre-1988), verify that they will not function after the stop switch is operated. Verify proper labeling and signal where

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.9 MOVING WALK TREADWAY SLOTS

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 accessibly located at or near the top and bottom landing of each moving walk, and shall be protected against operation by accident.

(2) A17.1a–1988 and later editions required a readily moveable self closing transparent cover and an 80 dBA signal when the cover is moved. The cover should be marked "Emergency Stop." The location of the button should be in the upper right quadrant when facing the moving walk at each end for high deck balustrades, and for low deck balustrades it must be below the handrail height. Remote stop switches were prohibited and handles were not allowed.

(c) For moving walks operated in tandem, A17.1a–1988 and later editions, 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 assure that the units run in the same direction.

3.10.2 Periodic

3.10.3 Acceptance

3.10.4 References [97b]

A17.1 — Rules 905.1, 905.2, and 905.3a.

ITEM 3.11
(RESERVED)

ITEM 3.12 [97b]
HANDRAIL-SPEED MONITORING DEVICE

3.12.1 Routine

For moving walks installed under A17.1b–1989 and later editions, grab the handrail and attempt to stall it. If it stalls, an alarm must activate immediately and after not more than 15 sec power must be removed from the driving machine and brake. It is not possible to hold the handrail in the stalled position for 15 sec, the test of removing power for the drive machine can be made during the internal inspection (see Item 4.13.2).

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3.12.2 Periodic

3.12.3 Acceptance

[97b] **3.12.4 References**

A17.1 — Rules 905.4 and 1008.2m.

[97b] **ITEM 3.13**
ROLLING SHUTTER DEVICE

3.13.1 Routine

Where rolling shutters are provided to protect floor openings, check that when the shutters begin to close, the power is removed from the driving machine and brake, and 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.

3.13.2 Periodic

3.13.3 Acceptance

[97b] **3.13.4 References**

A17.1 — Rule 905.3f.

ITEM 3.14
SPEED

3.14.1 Routine

For moving walks with DC motors, perform a speed test.

3.14.2 Periodic

3.14.3 Acceptance

Calculate the no load speed of the moving walk in both directions as follows:

(a) Use a tachometer to record the handrail speed by running the tachometer wheel along the deck, skirt, or other stationary flat object when riding the moving walk.

(b) Use a stop watch 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 ft/min (m/sec).

Refer to Tables 3.14(a), (b), and (c) for allowable speeds of existing equipment.

3.14.4 References [97b]

A17.1 — Rules 903.1, 905.3b, 1008.2o, and 1009.2o.

ITEM 3.15
BALUSTRADES

3.15.1 Routine

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 the A17.1a–1988 and later editions, 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.

3.15.2 Periodic

3.15.3 Acceptance

Verify that the balustrades meet the material, strength, and dimensional requirements.

Glass or plastic, if used, should meet the requirements of the ANSI Z97.1. The glass or plastic (glazing material) must be legibly and permanently marked "American National Standard Z97.1" or the characters "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.

3.15.4 References

A17.1 — Rules 902.3 and 1009.2g; and Appendix D.

ITEM 3.16
CEILING INTERSECTION GUARDS

3.16.1 Routine

Moving walks installed under A17.1–1981 and later editions where the clearance of the exterior deck and

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TABLE 3.14(a)
TREADWAY SPEED
(1981 AND LATER CODE EDITIONS)

Max. Treadway Slope at any Point on Treadway, deg.	Maximum Treadway Speed, ft/min
0 to 8	180
Above 8 to 12	140

GENERAL NOTE:
1 deg. = 1.76 E – 02 radian
1 ft/min = 5.08 E – 03 m/s

TABLE 3.14(b)
TREADWAY SPEED
(1965 THROUGH 1980 CODE EDITIONS)

Max. Treadway Slope at Point of Entrance or Exit, deg.	Maximum Treadway Speed, ft/min
0 to 3	180
Above 3 to 5	160
Above 5 to 8	140
Above 8 to 12	130
Above 12 to 15	125

GENERAL NOTE:
1 deg. = 1.75 E – 02 radian
1 ft/min = 5.08 E – 03 m/s

TABLE 3.14(c)
TREADWAY SPEED

Max. Treadway Slope at any Point on Treadway, deg.	Max. Treadway Speed, ft/min
0 to 8	180
Above 8 to 15	140

GENERAL NOTE:
1 deg. = 1.75 E – 02 radian
1 ft/min = 5.08 E – 03 m/s

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. On low decks for moving walks installed under A17.1–1987 and later editions, 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.

3.16.2 Periodic

3.16.3 Acceptance

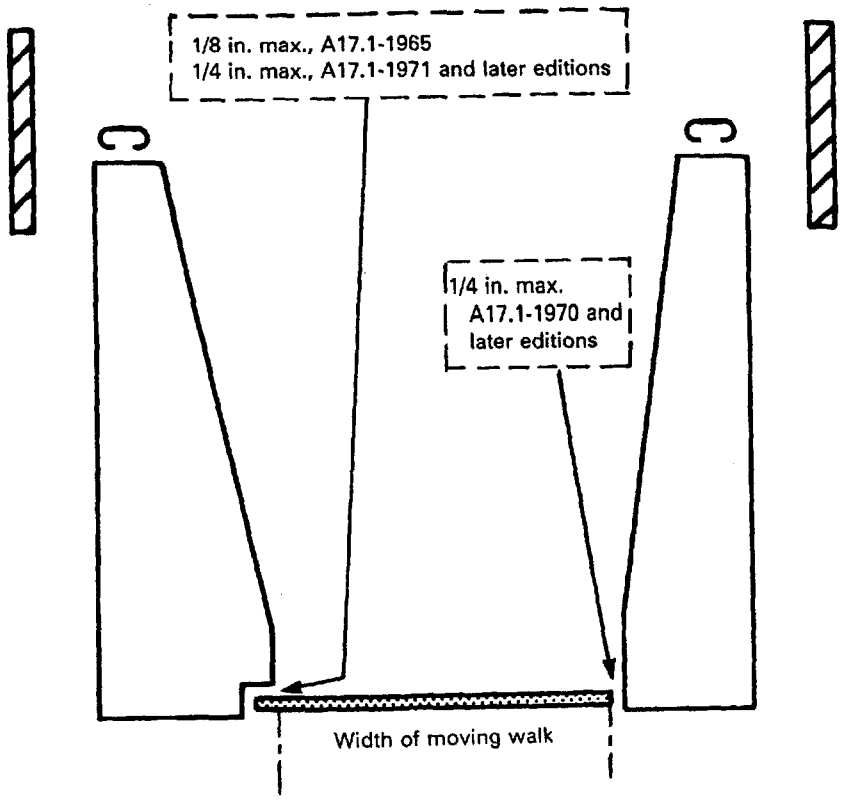
Verify that guards are correct size, in place and secure, and conform to dimensional requirements (see Fig. 1.16.3).

3.16.4 References

A17.1 — Rule 902.3g; and Appendix D.

ITEM 3.17
SKIRT PANELS

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GENERAL NOTE:
1 in. = 25.4 mm

FIG. 3.17.1 TREADWAY CLEARANCES

3.17.1 Routine

Check the clearance between the skirt panel and the treadway using a thickness gauge or by laying a small rule on the side of the treadway to read the distance. The treadways should be checked at several points along its entire travel.

For moving walks installed under A17.1–1971 and later editions, the horizontal clearance between the treadway and skirt panel should 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, 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 Fig. 3.17.1.

3.17.2 Periodic

3.17.3 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. Skirt panels should not deflect more than $\frac{1}{16}$ in. (1.6 mm) under a force of 150 lbf (667 N). Inspect the exposed surface of the panel adjacent to the treadway for smoothness.

3.17.4 References

A17.1 — Rules 902.3e and 902.3f.

ITEM 3.18
OUTDOOR PROTECTION

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3.18.1 Routine

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.

3.18.2 Periodic

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 Item 4.3.2).

3.18.3 Acceptance

(a) 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 Fig. 1.18.

3.18.4 References [97b]

A17.1 — Rules 907, 1008.2p, and 1009.2i.

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PART IV
INTERNAL INSPECTION AND TEST OF MOVING WALKS

CAUTION
(See Precautions in the Introduction)

The main line switch must always be open, tagged and locked out before persons enter the truss or machine area of a moving walk.

ITEM 4.1
MACHINERY SPACE ACCESS, LIGHTING, RECEPTACLE, AND CONDITION

4.1.1 Routine

4.1.2 Periodic

Determine whether means of access is secure. 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 remote machine space check that the lighting is at least 10 ftc (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 no penetrations exist through the sides and undersides of the machinery space and truss that compromises its fire resistance rating or allows contact with moving parts by the public.

For outdoor moving walks installed under A17.1b–1989 check that the pit drains are functional.

[96a] **4.1.3 Acceptance**

Determine whether a reasonable means of access to the interior is provided. Verify that the weight of access plates is in compliance with the Code requirements. Removal of the floor plates over the landing pit constitutes reasonable access if the opening uncovered 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 operate correctly. Verify that the 15 A, 120 V duplex receptacles located in the machine 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.

4.1.4 References [97b]

A17.1 — Section 906; and Rules 901.1, 907.2, 1008.2a, and 1009.2j.

ITEM 4.2
STOP SWITCH

4.2.1 Routine

Test the operation of machine space stop switch(es) by placing them in the stop position, then make sure that everyone is clear and attempt to start the moving walk with the key switch.

4.2.2 Periodic

4.2.3 Acceptance

Check that proper stop switches are installed and operate correctly in all machine spaces or other space where access to the interior is provided. Where the

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mainline disconnect switch is located, a separate stop switch is not required.

[97b] **4.2.4 References**

A17.1 — Rules 905.3e, 1008.2b, and 1009.2k.

ITEM 4.3
CONTROLLER AND WIRING

4.3.1 Routine

Inspect remote machine rooms as outlined in Item 4.3.2.

[ED] **4.3.2 Periodic**

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, properly rated 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 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 Item 3.18.2), verify that they are operational. For moving walks installed under A17.1–1965 through 1985, verify that the circuit breakers will not be automatically opened by the fire alarm.

4.3.3 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 machines operated. Inspect all wiring enclosure raceways conduit, electrical metallic tubing, metal wireways, junction boxes for condition workmanship and fastening. Visually inspect condition of weatherproof electrical enclosure where required on outdoor units. Verify that use of flexible conduit, armored cable, and flexible leads comply with the Code requirements.

[97b] **4.3.4 References**

A17.1 — Section 906; and Rules 907.2, 1008.2c and 1009.2l.

ANSI/NFPA 70 — Sections 620-2, 620-3, 620-11, 620-12, 620-13, and 620-21.

ITEM 4.4
DRIVE MACHINE AND BRAKE

4.4.1 Routine

4.4.2 Periodic [98]

Determine whether the driving machine is properly secured, lubricated, clean, and in good condition. Visually check the driving machine fastenings and bearing caps to verify that they are secure and in place.

Verify that the driving 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 driving 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, 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, 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 mechanically applied 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 driving machine for units installed under A17.1a–1988 and later editions. Earlier editions allowed the brake to be on the drive shaft. For moving walks installed under the A17.1–1981 through A17.1–1987 editions, the brake may be applied to specially attached braking surfaces directly on the treadway.

For moving walks installed under A17.1–1988 and later editions where means other than a continuous shaft, mechanical coupling, or toothed gearing is used to connect the motor to the reduction gear,

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verify that the brake is located on the gear reducer or main drive shaft.

For moving walks installed under A17.1a–1988 and later editions the brake may be magnetically applied using a ceramic permanent magnet. Visually inspect the condition of the brake pads, drums, and discs.

If the driving machine brake is separated from the main drive shaft by a chain, used to connect the driving machine to the main drive shaft and the moving walk is capable of running by gravity with any load, check for presence of a second brake that is required on the main drive shaft. The requirements for this brake are:

(a) A17.1–1965 required this brake to be electrically released unless an electrically released brake was provided on the driving machine.

[96a] *(b)* A17.1a–1988 and later editions required the
[98] brake to be mechanically or magnetically applied (ceramic permanent magnets), and allowed it to be located either on the main drive shaft or a special braking surface attached to the treadway.

For moving walks installed under the A17.1b–1983 and later editions the brake is required to stop horizontal or a down running moving walk at a rate not greater than 3 ft/sec^2 (0.91 m/s^2). Visually inspect all mechanisms for condition and operation.

Verify that moving walks installed under A17.1b–1983 and later editions have a nameplate that specifies the required brake torque. Moving walks installed under A17.1b–1989 and later editions, require that the nameplate 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 is required to specify the range of brake torque and whether it is measured as breakaway or dynamic.

Have the torque tested to verify that the torque complies. The main drive shaft brake (where a chain is used to connect the driving machine and brake to the main drive shaft) should also be torque tested for moving walk installed under A17.1–1983 and later editions. The torque wrench should have a current calibration certificate traceable to the National Bureau of Standards and have a range of at least 25% higher than the required torque.

4.4.3 Acceptance

4.4.4 References

A17.1 — Section 904; and Rule 1008.2d.

ITEM 4.5
SPEED GOVERNOR

4.5.1 Routine

4.5.2 Periodic

Test 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 driving machine. For moving walks installed under A17.1–1990 and later editions, verify that the moving walk cannot be started by the starting switch until the device is manually reset.

4.5.3 Acceptance

When a speed governor is required, verify that the speed governor 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.

4.5.4 References [97b]

A17.1 — Rules 905.3b, 1008.2e, and 1009.2l.

ITEM 4.6
BROKEN DRIVE CHAIN AND DISCONNECTED MOTOR SAFETY DEVICE

4.6.1 Routine

4.6.2 Periodic

If the driving 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 parts. 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

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started by the starting switch until the device is manually reset.

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 starting switch until the device is manually reset.

4.6.3 Acceptance

[97b] **4.6.4 References**

A17.1 — Rules 904.3b, 905.3d, 905.3h, and 1008.2f.

ITEM 4.7
REVERSAL STOP SWITCH

4.7.1 Routine

4.7.2 Periodic

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 driving 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 starting switch until the device is manually reset.

4.7.3 Acceptance

[97b] **4.7.4 References**

A17.1 — Rules 905.3g and 1008.2g.

ITEM 4.8
BROKEN TREADWAY DEVICE

4.8.1 Routine

4.8.2 Periodic

Manually operate the broken treadway devices to verify that each will interrupt power to the driving machine and brake. Visually inspect each device to verify that they are in position to operate and that either will activate when the connecting means breaks between pallets or belt.

For moving walks installed under A17.1–1990 and later editions, verify that the moving walk cannot be started by the starting switch until the device is manually reset.

4.8.3 Acceptance

4.8.4 References [97b]

A17.1 — Rules 905.3c and 1008.2h.

ITEM 4.9
(RESERVED)

ITEM 4.10
MISSING PALLET DEVICE

4.10.1 Routine

4.10.2 Periodic

For moving walks installed under A17.1–1989 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 starting switch until the device is manually reset.

4.10.3 Acceptance

4.10.4 References [97b]

A17.1 — Rules 905.5 and 1008.2j.

ITEM 4.11
PALLET LEVEL DEVICE

4.11.1 Routine

4.11.2 Periodic

For moving walks installed under A17.1–1990 and later editions that are equipped with pallets and trail wheels, visually inspect the pallet level devices at each end and on both sides to verify that it is in

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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 starting switch until the device is manually reset.

4.11.3 Acceptance

Have the devices tested (at both ends and on each side) by mechanically lowering a pallet 1/8 in. (3.2 mm) and operating the moving walk. A smaller roller or adjustment may be used to lower the pallet.

[97b] **4.11.4 References**

A17.1 — Rules 905.3i, 1008.2k, and 1009.2n.

ITEM 4.12
PALLETS, PALLET CHAINS, AND TRUSSES

4.12.1 Routine

4.12.2 Periodic

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 4.1.

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 Item 4.4.2 for 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 opposite end of the moving walk and inspect the other half in the same manner.

4.12.3 Acceptance

(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 gauge or dial indicator depth gauge 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 distances in inches between the roller centers. Ride the moving walk and observe for roller concentricity over the full width of the belt.

(3) Edge Support Belt. When the treadway belt is transversely rigid and is 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 6 in. (152 mm) by 10 in. (254 mm) with the 10 in. dimension in the direction of travel located on the treadway centerline.

(b) Use a straight edge and feeler gauge or dial indicator depth gauge to measure the deflection across the treadway from the center.

The Code allowance of 3 deg. maximum would result in deflection of 0.576 in. (14.6 mm) for a 22 in. (559 mm) width, 1.048 in. (26.6 mm) for 40 in. (1016 mm) width, and 1.572 in. (39.9 mm) for a 60 in. treadway width.

(c) Inspect the center support for localized loading for distance apart [maximum 6 ft (1.789 m)] and distance from the underside of the treadway [maximum 2 in. (51 mm)].

(4) Pallet Type. Inspect the support and wheels [ED] to verify that the pallets cannot be displaced vertically more than 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.

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[97b] **4.12.4 References**

A17.1 — Rules 901.1, 902.9, 902.13, 1008.2l, 1009.2o, and 1206.6.

ITEM 4.13
HANDRAILS

4.13.1 Routine

[98] **4.13.2 Periodic**

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 indicates wear.

For moving walks installed under A17.1a–1989 and later editions, test the operation of the stopped handrail device by having the handrail motion sensor mechanically disconnected while operating the moving walk, and verify that the alarm sounds immediately and the moving walk stops within 15 sec (see Item 3.12.1).

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.

4.13.3 Acceptance

4.13.4 References [97b] [98]

A17.1 — Rules 902.4, 902.13, 905.1q, 905.4, 1008.2m, 1008.2q, and 1009.2c.

ITEM 4.14
CODE DATA PLATE

4.14.1 Routine

Check that the Code Data Plate is installed. This is the Code that is to be used for the inspection and test.

4.14.2 Periodic

4.14.3 Acceptance

4.14.4 References

A17.1 — Rules 808, 908, and 1200.6.

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APPENDIX A
INSPECTION CHECKLIST

[97b]

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CHECKLIST FOR ESCALATORS

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
1	**EXTERNAL**			
1.1	General fire protection	800 801 1009.2a		
1.2	Geometry	802.1 802.2 802.3d 1009.2b 1009.2g 1207.5 Appendix D		
1.3	Handrails	802.2 802.4 1008.2m 1009.2c Appendix D	5.1.5 5.1.6	
1.4	Entrance and egress ends	802.6 802.12	5.5.3 5.5.4	
1.5	Lighting	806.2 805.7 1009.2d	2.2.3 5.4	
1.6	Caution signs	805.9 805.9a	5.3.11	
1.7	Combplate	802.6 805.3n 807.3 1008.2r 1009.2e	5.1.9	
1.8	Deck barricade	802.3i 1009.2f		
1.9	Steps and upthrust device	802.5 802.6e 802.9d 805.3i 1008.2i 1105.1	5.1.7 5.1.8	
1.10	Operating devices	805.1 805.2 805.3a	5.3.1 5.3.2 5.3.10	
1.11	Skirt obstruction devices	805.3f	5.3.7	
1.12	Handrail-speed monitoring device	805.4 1008.2m		
1.13	Rolling shutter device	805.3g	5.3.8	
1.14	Speed	803.1 805.3b 1008.2o 1009.2o		

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CHECKLIST FOR ESCALATORS (CONT'D)

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
1	**EXTERNAL (CONT'D)**			
1.15	Balustrades	802.3 1009.2g Appendix D	5.1.1	
1.16	Ceiling intersection guards	802.3g Appendix D	5.1.3	
1.17	Skirt panels	802.3e 802.3f 1206.6b	5.1.2	
1.18	Outdoor protection	807 1008.2p 1009.2i		
2	**INTERNAL**			
2.1	Machinery space access, lighting, receptacle, and condition	806 801.1 805.7 1008.2a 1009.2j 1206.6a		
2.2	Stop switch	210.2 805.3e 1008.2b 1009.2k		
2.3	Controller and wiring	806 807.2 1008.2c 1009.2l		ANSI/NFPA 70, Sections 620-2, 620-3, 620-4, and 620-21
2.4	Drive machine and brake	804 1008.2d	5.2	
2.5	Speed governor	805.3b 1008.2e 1009.2l	5.3.3 5.3.5	
2.6	Broken drive chain and disconnected motor device	804.3b 805.3d 805.3j 1008.2f	5.3.5 5.3.6	
2.7	Reversal stop switch	805.3h 1008.2g	5.3.5 5.3.9	
2.8	Broken step chain device	805.3c 1008.2h	5.3.4 5.3.5	
2.9	Step upthrust device	805.3i 1008.2i	5.1.7	
2.10	Missing step device	805.5 1008.2j		

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CHECKLIST FOR ESCALATORS (CONT'D)

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
2	**INTERNAL (CONT'D)**			
2.11	Step level device	805.3k 1008.2k 1009.2n		
2.12	Steps, step chains, and trusses	801.1 802.7 802.8 802.11 806.3 1008.2l 1009.2o 1206.6		
2.13	Handrails	802.4 805.4 1008.2m 1009.2c		
2.14	Code data plate	808 908 1200.6		

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CHECKLIST FOR MOVING WALKS

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
3	**EXTERNAL**			
3.1	General fire protection	900 901 1009.2a		
3.2	Geometry	902.1 902.2 902.3d 1009.2b 1009.2g 1208.5 Appendix D		
3.3	Handrails	902.2 902.4 1008.2m 1009.2c Appendix D		
3.4	Entrance and egress ends	902.8 902.16 907.3		
3.5	Lighting	906.2 1009.2d		
3.6	Caution signs	905.8 805.9a		
3.7	Combplates	902.8 905.3k 907.3 1008.2r 1009.2e		
3.8	Deck barricades	902.3h 1009.2f		
3.9	Treadways	902.5 902.6 902.9 902.11 1105.1		
3.10	Operating devices	905.1 905.2 905.3a		
3.11	Reserved			
3.12	Handrail-speed monitoring device	905.4 1008.2m		
3.13	Rolling shutter device	905.3f		
3.14	Speed	903.1 905.3b 1008.2o 1009.2o		

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CHECKLIST FOR MOVING WALKS (CONT'D)

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
3	**EXTERNAL (CONT'D)**			
3.15	Balustrades	902.3 1009.2g Appendix D		
3.16	Ceiling intersection guards	902.3g 1009.2h Appendix D		
3.17	Skirt panels	902.3e 902.3f		
3.18	Outdoor protection	907 1008.2p 1009.2i		
4	**INTERNAL**			
4.1	Machinery space access, lighting, receptacle, and condition	906 901.1 907.2 1008.2a 1009.2j		
4.2	Stop switch	905.3e 1008.2b 1009.2k		
4.3	Controller and wiring	906 907.2 1008.2c 1009.2l		ANSI/NFPA 70, Sections 620-2, 620-3, 620–11 620-12, 620–13, and 620–21
4.4	Drive machine and brake	904 1008.2d		
4.5	Speed governor	905.3b 1008.2e 1009.2l		
4.6	Broken drive chain and disconnected motor safety device	904.3b 905.3d 905.3h 1008.2f		
4.7	Reversal stop switch	905.3g 1008.2g		
4.8	Broken treadway device	905.3c 1008.2h		
4.9	Reserved			
4.10	Missing pallet device	905.5 1008.2j		
4.11	Pallet level device	905.3i 1008.2k 1009.2m		

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CHECKLIST FOR MOVING WALKS (CONT'D)

ITEM	CHECK	A17.1 SECTION/RULE	A17.3 SECTION/PARA.	COMMENTS
4	**INTERNAL (CONT'D)**			
4.12	Pallets, pallet chains, and trusses	901.1 902.9 902.13 1008.2l 1009.2o 1206.6		
4.13	Handrails	902.4 902.13 905.4 1008.2m 1009.2c		
4.14	Code data plate	808 908 1200.6		

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