

NFPA 101®

Life Safety Code®

1997 Edition



National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

NFPA License Agreement

This document is copyrighted by the National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101 USA.
All rights reserved.

NFPA grants you a license as follows: The right to download an electronic file of this NFPA document for temporary storage on one computer for purposes of viewing and/or printing one copy of the NFPA document for individual use. Neither the electronic file nor the hard copy print may be reproduced in any way. In addition, the electronic file may not be distributed elsewhere over computer networks or otherwise. The hard copy print may only be used personally or distributed to other employees for their internal use within your organization.

Copyright ©
National Fire Protection Association, Inc.
One Batterymarch Park
Quincy, Massachusetts 02269

IMPORTANT NOTICE ABOUT THIS DOCUMENT

NFPA codes and standards, of which the document contained herein is one, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in its codes and standards.

The NFPA disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making this document available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of this document. Nor does the NFPA list, certify, test or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the requirements of this document shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

NOTICES

All questions or other communications relating to this document and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA documents during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

Users of this document should be aware that this document may be amended from time to time through the issuance of Tentative Interim Amendments, and that an official NFPA document at any point in time consists of the current edition of the document together with any Tentative Interim Amendments then in effect. In order to determine whether this document is the current edition and whether it has been amended through the issuance of Tentative Interim Amendments, consult appropriate NFPA publications such as the *National Fire Codes*® Subscription Service, visit the NFPA website at www.nfpa.org, or contact the NFPA at the address listed above.

A statement, written or oral, that is not processed in accordance with Section 16 of the Regulations Governing Committee Projects shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

The NFPA does not take any position with respect to the validity of any patent rights asserted in connection with any items which are mentioned in or are the subject of this document, and the NFPA disclaims liability of the infringement of any patent resulting from the use of or reliance on this document. Users of this document are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Users of this document should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of this document, intend to urge action that is not in compliance with applicable laws, and this document may not be construed as doing so.

Licensing Policy

This document is copyrighted by the National Fire Protection Association (NFPA). By making this document available for use and adoption by public authorities and others, the NFPA does not waive any rights in copyright to this document.

1. Adoption by Reference – Public authorities and others are urged to reference this document in laws, ordinances, regulations, administrative orders, or similar instruments. Any deletions, additions, and changes desired by the adopting authority must be noted separately. Those using this method are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. The term “adoption by reference” means the citing of title and publishing information only.

2. Adoption by Transcription – **A.** Public authorities with lawmaking or rule-making powers only, upon written notice to the NFPA (Attention: Secretary, Standards Council), will be granted a royalty-free license to print and republish this document in whole or in part, with changes and additions, if any, noted separately, in laws, ordinances, regulations, administrative orders, or similar instruments having the force of law, provided that: (1) due notice of NFPA’s copyright is contained in each law and in each copy thereof; and (2) that such printing and republication is limited to numbers sufficient to satisfy the jurisdiction’s lawmaking or rule-making process. **B.** Once this NFPA Code or Standard has been adopted into law, all printings of this document by public authorities with lawmaking or rule-making powers or any other persons desiring to reproduce this document or its contents as adopted by the jurisdiction in whole or in part, in any form, upon written request to NFPA (Attention: Secretary, Standards Council), will be granted a nonexclusive license to print, republish, and vend this document in whole or in part, with changes and additions, if any, noted separately, provided that due notice of NFPA’s copyright is contained in each copy. Such license shall be granted only upon agreement to pay NFPA a royalty. This royalty is required to provide funds for the research and development necessary to continue the work of NFPA and its volunteers in continually updating and revising NFPA standards. Under certain circumstances, public authorities with lawmaking or rule-making powers may apply for and may receive a special royalty where the public interest will be served thereby.

3. Scope of License Grant – The terms and conditions set forth above do not extend to the index of this document.

(For further explanation, see the Policy Concerning the Adoption, Printing, and Publication of NFPA Documents, which is available upon request from the NFPA.)

Copyright © 1997 NFPA, All Rights Reserved

NFPA 101® Life Safety Code®

1997 Edition

This 1997 edition of the *Life Safety Code*® was adopted by the National Fire Protection Association, Inc., at its Fall Meeting held November 18–20, 1996, in Nashville, TN. It was issued by the Standards Council on January 17, 1997, with an effective date of February 7, 1997, and supersedes all previous editions.

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the previous edition.

This edition of NFPA 101® has been submitted to ANSI for approval.

Origin and Development of NFPA 101

The *Life Safety Code* had its origin in the work of the Committee on Safety to Life of the National Fire Protection Association, which was appointed in 1913. In 1912 a pamphlet titled, “Exit Drills in Factories, Schools, Department Stores and Theaters,” was published following its presentation by the late Committee member R. H. Newbern at the 1911 Annual Meeting of the Association. Although the pamphlet’s publication antedated the organization of the Committee, it was considered a Committee publication. For the first few years of its existence, the Committee devoted its attention to a study of the notable fires involving loss of life and in analyzing the causes of this loss of life. This work led to the preparation of standards for the construction of stairways, fire escapes, etc., for fire drills in various occupancies, and for the construction and arrangement of exit facilities for factories, schools, and other occupancies. These reports were adopted by the National Fire Protection Association and published in pamphlet form as “Outside Stairs for Fire Exits” (1916) and “Safeguarding Factory Workers from Fire” (1918). These pamphlets served as a groundwork for the present *Code*. These pamphlets were widely circulated and put into general use.

In 1921 the Committee was enlarged to include representatives of certain interested groups not previously participating in the standards’ development. The Committee then began to further develop and integrate previous Committee publications to provide a comprehensive guide to exits and related features of life safety from fire in all classes of occupancy. Known as the *Building Exits Code*, various drafts were published, circulated, and discussed over a period of years, and the first edition of the *Building Exits Code* was published by the National Fire Protection Association in 1927. Thereafter the Committee continued its deliberations, adding new material on features not originally covered and revising various details in the light of fire experience and practical experience in the use of the *Code*. New editions were published in 1929, 1934, 1936, 1938, 1939, 1942, and 1946 to incorporate the amendments adopted by the National Fire Protection Association.

National attention was focused on the importance of adequate exits and related fire safety features after the Cocoanut Grove Night Club fire in Boston in 1942 in which 492 lives were lost. Public attention to exit matters was further stimulated by the series of hotel fires in 1946 (LaSalle, Chicago — 61 dead; Canfield, Dubuque — 19 dead; and the Winecoff, Atlanta — 119 dead). The *Building Exits Code* thereafter was used to an increasing extent for regulatory purposes. However, the *Code* was not written in language suitable for adoption into law, as it had been drafted as a reference document and contained advisory provisions that were useful to building designers but inappropriate for legal use. This led to a decision by the Committee to re-edit the entire *Code*, limiting the body of the text to requirements suitable for mandatory application and placing advisory and explanatory material in notes. The re-editing expanded *Code* provisions to cover additional occupancies and building features to produce a complete document. The *Code* expansion was carried on concurrently with development of the 1948, 1949, 1951, and 1952 editions. The results were incorporated in the 1956 edition and further refined in subsequent editions dated 1957, 1958, 1959, 1960, 1961, and 1963.

In 1955, NFPA 101B, on nursing homes, and NFPA 101C, on interior finish, were published. NFPA 101C was revised in 1956. These publications have since been withdrawn.

In 1963 the Safety to Life Committee was restructured to include only those having very broad knowledge of fire matters and representing all interested factions. The Committee served as a review and correlating committee for seven Sectional Committees whose personnel included members having a special knowledge and interest in various portions of the *Code*.

Under the revised structure, the Sectional Committees, through the Safety to Life Committee, prepared the 1966 edition of the *Code*, which was a complete revision of the 1963 edition. The *Code* title was changed from *Building Exits Code* to the *Code for Safety to Life from Fire in Buildings and Structures*, the text was put into enforceable “code language,” and all explanatory notes were placed in an appendix.

The *Code* was placed on a three-year revision schedule, with new editions adopted in 1967, 1970, 1973, and 1976.

In 1977 the Committee on Safety to Life was reorganized as a Technical Committee with an Executive Committee and standing subcommittees responsible for various chapters and sections. The 1981 edition contained major editorial changes including reorganization within the occupancy chapters to make them parallel to each other, and the splitting of requirements for new and existing buildings into separate chapters. New chapters on detention and correctional facilities were added, as well as new sections for ambulatory health care centers.

The 1985 edition contained a new Chapter 21 on residential board and care occupancies with related Appendixes F and G, a new Appendix D on alternative calculations for stair width, and Appendix E — a Fire Safety Evaluation System (FSES) for detention and correctional facilities.

The 1988 edition contained a major change in the method of determining egress capacity with the deletion of the traditional units of exit width and the substitution of a straight linear approach to calculating egress capacity. Appendixes C through G were moved from NFPA 101 into a new document, NFPA 101M.

The 1991 edition contained numerous new requirements for mandatory sprinklers in new health care facilities, hotels, apartment buildings, lodging and room houses, and board and care facilities, as well as mandatory sprinkler requirements for existing high-rise hotels and apartment buildings. The requirements for board and care facilities were split into two chapters: Chapter 22 for new and Chapter 23 for existing.

The 1994 edition contained new requirements for accessible means of egress, areas of refuge, and ramps, putting the *Code* in substantial agreement with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

The 1997 edition relocates the material on day-care occupancies from Chapters 10 and 11, Educational Occupancies, to new Chapters 30 and 31. The operating features requirements, previously contained in Chapter 31, have been interspersed throughout the *Code*, as applicable.

To the User

The following comments are offered to assist in the use of the *Life Safety Code*. Additional help on using the *Life Safety Code* can be obtained by attending one of the seminars NFPA conducts on the *Life Safety Code* or by using the *Life Safety Code Handbook* 7th edition, available from NFPA. Further information on these seminars is available through the Division of Continuing Education of NFPA.

The *Code* is essentially comprised of five major parts. The first part consists of Chapters 1 through 7; these are often referred to as the base chapters or fundamental chapters. The next part consists of Chapters 8 through 31, which are the occupancy chapters. The third part consists of Chapter 32, on special structures and high-rise buildings. The fourth part is Chapter 33, on mandatory referenced publications, and the fifth and last part consists of Appendixes A and B, which contain useful additional information.

A thorough understanding of Chapters 1 through 7 is necessary to use the *Code* effectively, as these chapters provide the building blocks upon which the occupancy chapters have based their requirements. It should be noted that many of the provisions of Chapters 1 through 7 are mandatory for all occupancies. Some provisions are mandated only when referenced by a specific occupancy, while others are exempted for specific occupancies. Often, in one of the base chapters, especially in Chapter 5, the term “where permitted by Chapters 8 through 31” appears. When this appears, that provision can be used only where specifically allowed by an occupancy chapter. For example, the provisions of 5-2.1.6.1 on delayed egress locks are allowed only when permitted by Chapters 8 through 31. Permission to use the delayed egress lock is normally found in the “2.2” subsection of each occupancy chapter. For example, 8-2.2.2.4 specifically allows the use of delayed egress locks in new assembly occupancies. If this permission is not found in an occupancy chapter, the delayed egress lock cannot be used. Similar types of restricted permission are found for such items as security grilles, double cylinder locks, selected stairway re-entry, revolving doors, atriums, etc. In other locations in the base chapters the term “unless prohibited by Chapters 8 through 31” is used. In this case, the provision is allowed in all occupancies unless specifically prohibited by an occupancy chapter.

Metric units of measurement in this *Code* are in accordance with the modernized metric system known as the International System of Units (SI). The unit liter, which is outside of but recognized by SI, is commonly used and is therefore used in this *Code*. In this *Code*, values for measurements are followed by an equivalent in SI units. The first stated value is regarded as the requirement because the given equivalent value may be approximate.

Technical Correlating Committee on Safety to Life

J. Kenneth Richardson, *Chair*

Nat'l Research Council of Canada, Ontario, Canada [RT]

Ron Coté, *Nonvoting Secretary*

Nat'l Fire Protection Assn., MA

John F. Behrens, Huntington Beach, CA [E]

Rep. Council of American Bldg. Officials

John L. Bryan, Frederick, MD [SE]

Richard W. Bukowski, U.S. Nat'l Inst. of Standards and Technology, MD [RT]

Rep. TC Nat'l Fire Alarm Code

Lee J. Dosedlo, Underwriters Laboratories Inc., IL [RT]

Gene B. Endthoff, Nat'l Fire Sprinkler Assn., IL [M]

Thomas W. Jaeger, Gage-Babcock & Assoc. Inc., VA [U]

Rep. American Health Care Assn.

Ronald K. Mengel, Pittway Systems Technology Group, IL [M]

Rep. Nat'l Electrical Mfrs. Assn.

Kirby W. Perry, Kirby W. Perry Architects & Assoc. Inc., TX [SE]

Rep. American Inst. of Architects

Lawrence G. Perry, Bldg. Owners & Managers Assn. Int'l, MD [U]

James R. Quiter, Rolf Jensen & Assoc., Inc., CA [SE]

Walter Smittle III, West Virginia State Fire Marshal, WV [E]

Rep. Fire Marshals Assn. of North America

Gregory W. Thomas, Liberty Mutual Insurance Co., NY [I]

Rep. The Alliance of American Insurers

Alternates

Alastair J. M. Aikman, Nat'l Research Council of Canada, Ontario, Canada [RT]

(Alt. to J. K. Richardson)

Frederick C. Bradley, Gage-Babcock & Assoc. Inc., GA [U]

(Alt. to T. W. Jaeger)

J. Thomas Carter, Chloride Systems, NC [M]

(Alt. to R. K. Mengel)

L. Darl Cross, West Virginia State Fire Marshals Office, WV [E]

(Alt. to W. Smittle)

James C. Dinegar, Bldg. Owners & Managers Assn. Int'l, DC [U]

(Alt. to L. G. Perry)

Glenn A. Erickson, Hastings, MN [E]

(Alt. to J. F. Behrens)

Russell P. Fleming, Nat'l Fire Sprinkler Assn., NY [M]

(Alt. to G. B. Endthoff)

Daniel Madrzykowski, U.S. Nat'l Inst. of Standards and Technology, MD [RT]

(Alt. to R. W. Bukowski)

Robert J. Pollock, Underwriters Laboratories Inc., IL [RT]

(Alt. to L. J. Dosedlo)

Martin H. Reiss, Rolf Jensen & Assoc., Inc., MA [SE]

(Alt. to J. R. Quiter)

Michael D. Tomy, Heery Int'l Inc., GA [SE]

(Alt. to K. W. Perry)

Nonvoting

Wayne G. (Chip) Carson, Chair SAF-HEA, Carson Assoc., Inc., VA

John G. Degenkolb, Chair SAF-TEN, Carson City, NV

Philip C. Favro, Chair SAF-BCF, Favro Assoc., CA

William Hiotaky, Chair SAF-MER, The Taubman Co., MI

Richard A. Hudnut, Chair SAF-DET, Builders Hardware Mfrs. Assn., NY

Joseph M. Jardin, Chair SAF-RES, New York City Fire Dept., NY

Rolf H. Jensen, Rolf Jensen & Assoc., Inc., IL

Rep. TC Automatic Sprinklers

William E. Koffel, Jr., Chair SAF-MEA, Koffel Assoc. Inc., MD

Gerald E. Lingenfelter, Chair SAF-FUR, American Insurance Services Group Inc., NY

Ron Coté, Staff Liaison

John W. McCormick, Chair SAF-FIR, Rolf Jensen & Assoc., Inc., NJ

Jonas L. Morehart, Punta Gorda, FL

(Member Emeritus)

Harold E. Nelson, Chair SAF-ALS, Hughes Assoc. Inc., MD

Richard R. Osman, Chair SAF-BSF, Schirmer Engr Corp., IL

Thomas V. Rodante, Chair SAF-IND, Caltex Services Corp., TX

John A. Sharpy, Chair SAF-AXE, Lawrence Livermore Nat'l Laboratory, CA

John M. Watts, Jr., Chair SAF-FUN, Fire Safety Inst., VT

Committee Scope: This Committee shall have primary responsibility for documents on the protection of human life from fire and other circumstances capable of producing similar consequences and for the nonemergency and emergency movement of people.

Technical Committee on Assembly and Educational Occupancies

(Chapters 8 through 11, Chapters 30 and 31, and associated portions of Appendix A)

John A. Sharry, *Chair*

Lawrence Livermore Nat'l Laboratory, CA [C]

Ron Coté, *Nonvoting Secretary*

Nat'l Fire Protection Assn., MA

Weston E. Bacon, Jr., Bacon Hedland Mgmt., IL [U]
Rep. Nat'l Assn. of Exposition Managers

Scott R. Bartlett, Simplex Time Recorder Co.,
NH [M]
Rep. Nat'l Electrical Mfrs. Assn.

William Conner, Jerit-Boys Inc., IL [SE]
Rep. American Society of Theater Consultants

Randall W. A. Davidson, Risk Int'l & Assoc., CA [U]
Rep. U.S. Inst. for Theatre Technology

John G. Degenkolb, Carson City, NV [U]
Rep. Alliance of Motion Picture & Television
Producers

Bhola Dhume, New Orleans Dept. of Safety & Per-
mits, LA [E]
Rep. Southern Bldg. Code Congress Int'l Inc.

Gene B. Endthoff, Nat'l Fire Sprinkler Assn., IL [M]
Rep. Nat'l Fire Sprinkler Assn.

Robert D. Fiedler, Lincoln Bureau of Fire Preven-
tion, NE [E]

William E. Fitch, Omega Point Laboratories Inc.,
TX [RT]

Jerrold Gorrell, Phoenix Civic Plaza, AZ [U]
Rep. American Society of Safety Engr

Alfred J. Hogan, Reedy Creek Improvement Dis-
trict, Walt Disney World, FL [E]

John K. Landry, USF&G Insurance Co., MD [I]
Rep. American Insurance Services Group

Richard F. Lattey, Liberty Mutual Insurance Group,
MA [I]
Rep. The Alliance of American Insurers

Robert J. Little, Church of Jesus Christ of Latter-Day
Saints, UT [U]

Jeffrey A. Maddox, Rolf Jensen & Assoc., Inc.,
CA [SE]

Robert D. McAninch, Prestonburg Community Col-
lege, KY [U]

Gregory R. Miller, Code Consultants Inc., MO [U]
Rep. Nat'l Assn. of Theatre Owners

John Morris, Loss Control Services, CA [SE]
Rep. TC Cultural Resources

Jake Pauls, Bldg. Use & Safety Inst., MD [SE]

Frank Poe, City of Dallas, TX [U]

Rep. Int'l Assn. of Auditorium Managers

Philip R. Sherman, Sherman Inc., MA [SE]

Catherine L. Stashak, Des Plaines Fire Dept., IL [E]

David L. Sutter, Hussey Seating Co., ME [M]

Rep. Nat'l School Supply & Equipment Assn.

Henry Teague, Rosser Fabrap, GA [SE]

Paul L. Wertheimer, Crowd Mgmt. Strategies,
IL [SE]

Alternates

Robert D. Barnes, Wheaton, IL [SE]
(Alt. to J. Morris)

David Degenkolb, Degenkolb Engr, NV [U]
(Alt. to J. G. Degenkolb)

Victor L. Dubrowski, Code Consultants Inc.,
MO [SE]
(Alt. to G. R. Miller)

Lance J. Ewing, School District of Philadelphia,
PA [U]
(Alt. to J. Gorrell)

Ron Coté, Staff Liaison

Vern L. Martindale, Church of Jesus Christ of Latter-
Day Saints, UT [U]

(Alt. to R. J. Little)

Leslie Strull, Rolf Jensen & Assoc., Inc., IL [SE]
(Alt. to J. A. Maddox)

Harold E. "Chip" Ulich, Herberger Theater Center,
AZ [U]
(Alt. to R. W. A. Davidson)

Daniel R. Victor, Interkal, Inc., MI [M]
(Alt. to D. L. Sutter)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences, and on the nonemergency and emergency movement of people, in assembly and educational occupancies.

Technical Committee on Board and Care Facilities

(Chapters 22 and 23, and associated portions of Appendix A)

Philip C. Favro, *Chair*

Favro Assoc., CA [SE]

Greg Austin, Gentex Corp., MI [M]

Rep. Nat'l Electrical Mfrs. Assn.

James R. Bell, Marriott Corp., DC [U]

Rep. American Hotel & Motel Assn.

Warren D. Bonisch, Schirmer Engr Corp., TX [SE]

L. Darl Cross, West Virginia State Fire Marshals Office, WV [E]

Rep. Fire Marshals Assn. of North America

Mary Ellen Early, Florida Assn. of Homes for the Aging, FL [U]

Rep. American Assn. of Homes for the Aging

Stephen E. Embry, Brown, Todd & Heyburn, KY [SE]

Thomas W. Gardner, Gage-Babcock & Assoc., VA [U]

Rep. American Health Care Assn.

Norman E. Groner, Santa Cruz, CA [SE]

Kenneth E. Isman, Nat'l Fire Sprinkler Assn., NY [M]

Philip R. Jose, U.S. Dept. of Veterans Affairs, NY [U]

David Ray Kiely, Community Resource Center of Sullivan County, NY [U]
Rep. American Network of Community Options & Resources

James K. Lathrop, Koffel Assoc., CT [SE]

Bernard M. Levin, Rockville, MD [SE]

Paul E. Patty, Underwriters Laboratories Inc., IL [RT]

Francis G. Reuer, U.S. Dept. of Health & Human Services Health Care Financing Admin., CO [E]

Peter Sajevec, Snelling Park Place, MN [U]

Rep. Assn. of Residential Resources in Minnesota

Gerald L. Schappe, Texas Dept. of Mental Health & Mental Retardation, TX [E]

Alternates

Kerry M. Bell, Underwriters Laboratories Inc., IL [RT]

(Alt. to P. E. Patty)

Harry L. Bradley, Maryland State Fire Marshals Office, MD [E]

(Alt. to L. D. Cross)

Gene B. Endthoff, Nat'l Fire Sprinkler Assn., IL [M]

(Alt. to K. E. Isman)

Joni Fritz, American Network of Community Options & Resources, VA [U]

(Alt. to D. R. Kiely)

Harold E. Nelson, Hughes Assoc. Inc., MD [SE]

(Alt. to B. M. Levin)

Daniel J. Schoeps, U.S. Dept. of Veterans Affairs, DC [U]

(Alt. to P. R. Jose)

James F. Woodford, Simplex Time Recorder Co., MA [M]

(Alt. to G. Austin)

Mayer D. Zimmerman, U.S. Dept. of Health & Human Services Health Care Financing Admin., MD [E]

(Alt. to F. G. Reuer)

Robert E. Solomon, Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances producing similar consequences, and on the emergency movement of people, in residential board and care facilities.

Technical Committee on Building Service and Fire Protection Equipment

(Chapter 7 and associated portions of Appendix A)

Richard R. Osman, *Chair*

Schirmer Engr Corp., IL [SE]

Harry L. Bradley, Maryland State Fire Marshals Office, MD [E]

Rep. Fire Marshals Assn. of North America

Pat D. Brock, Oklahoma State University, OK [SE]

Edward A. Donoghue, Edward A Donoghue Assoc., Inc., NY [M]

Rep. Nat'l Elevator Industry Inc.

Joseph M. Jardin, New York City Fire Dept., NY [C]

Rep. NFPA Fire Service Section

Ronald H. Kirby, Simplex Time Recorder Co., MA [M]

Rep. Nat'l Electrical Mfrs. Assn.

David P. Klein, U.S. Dept. of Veterans Affairs, MD [U]

Richard L. Klinker, Klinker & Assoc., Inc., MD [SE]

Roger L. McDaniel, Florida Dept. of Corrections, FL [U]

L. L. (Larry) Neibauer, Automatic Fire Alarm Assn., FL [M]

Rep. Automatic Fire Alarm Assn., Inc.

Martin H. Reiss, Rolf Jensen & Assoc., Inc., MA [SE]

John T. Wandell, Town of Palm Beach Fire/Rescue, FL [E]

Alternates

Ronald S. Berger, SJS Signal & Communication Corp., NJ [M]
(Alt. to L. L. Neibauer)

Greg Gottlieb, Hauppauge Fire District, NY [C]
(Alt. to J. M. Jardin)

Claudia Hagood, Klinker & Assoc., Inc., MD [SE]
(Alt. to R. L. Klinker)

Kenneth E. Isman, Nat'l Fire Sprinkler Assn., NY [M]
(Voting Alt. to NFSA Rep.)

Robert E. Solomon, Staff Liaison

Rolf H. Jensen, Rolf Jensen & Assoc., Inc., IL [SE]
(Alt. to M. H. Reiss)

Peter A. Larrimer, U.S. Dept. of Veterans Affairs, PA [U]
(Alt. to D. P. Klein)

Eugene A. LaValle, Sentrol, Inc., GA [M]
(Alt. to R. H. Kirby)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences and on the emergency movement of people.

Technical Committee on Detention and Correctional Occupancies

(Chapters 14 and 15, and associated portions of Appendix A)

Richard A. Hudnut, *Chair*
Builders Hardware Mfrs. Assn., NY [M]

Ron Coté, *Nonvoting Secretary*
Nat'l Fire Protection Assn., MA

James R. Ambrose, Code Consultants Inc., MO [SE]

Francis C. Barbaro, Hampden County Sheriff's Dept., MA [U]

Michael DiMascio, Solutions Engr Inc., MA [SE]

Edward Larry Earles, U.S. Federal Bureau of Prisons, DC [U]

Randy Gaw, Correctional Service of Canada, Ontario, Canada [E]

Larry Harrison, Illinois State Fire Marshals Office, IL [E]

Joseph G. Lesniak, Door & Hardware Inst., VA [M]

Alfred J. Longhitano, Gage-Babcock & Assoc. Inc., NY [SE]

Roger L. McDaniel, Dept. of Corrections, FL [U]

Robert McNeely, Honeywell, Inc., IL [M]
Rep. Nat'l Electrical Mfrs. Assn.

E. Eugene Miller, Washington, DC [SE]

A. N. Moser, Jr., Nat'l Sheriffs' Assn., VA [U]

Kenneth J. Schwartz, Rolf Jensen & Assoc., Inc., IL [SE]

Wayne S. Smith, Texas Commission on Fire Protection Regions, TX [E]

Rep. Fire Marshals Assn. of North America

Sharon M. Stone, Koffel Assoc. Inc., MD [SE]

Charles A. Whitehead, Lexington County, SC [U]
Rep. American Society of Safety Engr

Alternates

Vincent T. Fitzpatrick, Rolf Jensen & Assoc., Inc., VA [SE]
(Alt. to K. J. Schwartz)

David A. Gilda, Builders Hardware Mfrs. Assn., CT [M]
(Alt. to R. A. Hudnut)

A. Larry Iseminger, Jr., Maryland State Fire Marshals Office, MD [E]
(Alt. to W. S. Smith)

Kenneth E. Isman, Nat'l Fire Sprinkler Assn., NY [M]
(Voting Alt. to NFSA Rep.)

Thomas W. Jaeger, Gage-Babcock & Assoc. Inc., VA [SE]
(Alt. to A. J. Longhitano)

Ron Coté, Staff Liaison

William E. Koffel, Jr., Koffel Assoc. Inc., MD [SE]
(Alt. to S. M. Stone)

Richard R. McDaniel, Illinois State Fire Marshals Office, IL [E]
(Alt. to L. Harrison)

Winn F. Peeples, Florida Dept. of Corrections, FL [U]
(Alt. to R. L. McDaniel)

Robert R. Perry, Robert Perry Assoc., Inc., IL [M]
(Alt. to J. G. Lesniak)

Steven E. Rawson, Simplex Time Recorder Co., MA [M]
(Alt. to R. McNeely)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences, and on the emergency movement of people in detention and correctional occupancies.

Technical Committee on Fire Protection Features

(Sections 6-1 through 6-4 and associated portions of Appendix A)

John W. McCormick, *Chair*
Rolf Jensen & Assoc., Inc., NJ [SE]

Carl F. Baldassarra, Schirmer Engr Corp., IL [SE]
John F. Bender, Office of Maryland State Fire Marshals Office, MD [E]
Rep. Fire Marshals Assn. of North America
Robert M. Berhinig, Underwriters Laboratories Inc., IL [RT]
Edward K. Budnick, Hughes Assoc. Inc., MD [SE]
Gregory J. Cahanin, St. Petersburg, FL [U]
Rep. Louisiana State Fireman's Assn.
Raman B. Chauhan, Nat'l Research Council of Canada, Ontario, Canada [RT]
Thomas G. Daly, Hilton Hotels Corp., CA [U]
Rep. NFPA Lodging Industry Section
Robert E. Davis, Air Movement & Control Assn., IL [M]
John G. Degenkolb, Carson City, NV [U]
Rep. Alliance of Motion Picture & Television Producers
Steven Di Pilla, CIGNA Loss Control Services, NJ [I]
Rep. American Insurance Services Group, Inc.
Brian L. Eklow, Alexander and Alexander, Inc., IL [I]

Gene B. Endthoff, Nat'l Fire Sprinkler Assn., IL [M]
Ralph Gerdes, Ralph Gerdes Consultants, IN [SE]
Dale D. Hasty, Cerberus Pyrotechnics, MO [M]
Rep. Fire Suppression Systems Assn.
Tod L. Jilg, Hoechst Celanese Corp., NC [M]
Rep. American Fiber Mfrs. Assn.
Craig H. Kampmier, Kent County Memorial Hospital, RI [U]
Donald L. King, Steelcraft Mfg. Co., OH [M]
Rep. Steel Door Inst.
Marshall A. Klein, Marshall A. Klein & Assoc., Inc., MD [SE]
Richard F. Lattey, Liberty Mutual Insurance Group, MA [I]
Rep. The Alliance of American Insurers
Joseph J. Messersmith, Jr., Portland Cement Assn., VA [M]
Sharon M. Stone, Koffel Assoc. Inc., MD [SE]
Kenneth Wood, Illinois State Fire Marshals Office, IL [E]

Alternates

Robert H. Barker, American Fiber Mfrs. Assn., DC [M]
(Alt. to T. L. Jilg)
Kenneth E. Bland, American Forest & Paper Assn., DC [M]
(Voting Alt. to AFPA Rep.)
Delbert F. Boring, Jr., American Iron & Steel Inst., OH [M]
(Voting Alt. to AISI Rep.)
David Cook, Ralph Gerdes Consultants, IN [SE]
(Alt. to R. Gerdes)
David Degenkolb, Degenkolb Engr, NV [U]
(Alt. to J. G. Degenkolb)

John F. Devlin, Schirmer Engr Corp., VA [SE]
(Alt. to C. F. Baldassarra)
Douglas R. Freels, HSB Professional Loss Control, TN [I]
(Voting Alt. to HSB PLC Rep.)
Mark Kluver, Portland Cement Assn., CA [M]
(Alt. to J. J. Messersmith)
William E. Koffel, Jr., Koffel Assoc. Inc., MD [SE]
(Alt. to S. M. Stone)
Jeffrey A. Maddox, Rolf Jensen & Assoc., Inc., CA [SE]
(Alt. to J. W. McCormick)

Nonvoting

Michael Earl Dillon, Dillon Consulting Engr, Inc., CA
Rep. TC on Air Conditioning

Walter P. Sterling, Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences and on the emergency movement of people.

Technical Committee on Fundamentals

(Chapters 1, 2, 3, 4, and 33, and associated portions of Appendix A)

John M. Watts, Jr., *Chair*
Fire Safety Inst., VT [SE]

Ron Côté, *Nonvoting Secretary*
Nat'l Fire Protection Assn., MA

James R. Beyreis, Underwriters Laboratories Inc.,
IL [RT]

Wayne G. (Chip) Carson, Carson Assoc., Inc.,
VA [SE]

David P. Klein, U.S. Dept. of Veterans Affairs,
MD [U]

James K. Lathrop, Koffel Assoc., CT [SE]

James C. Norris, Union Carbide, PA [M]

Walter Smittle, III, West Virginia State Fire Marshals
Office, WV [E]

Rep. Fire Marshals Assn. of North America

Joy Woodward, Int'l Conference of Bldg. Officials,
CA [E]

Alternate

Eugene A. Cable, U.S. Dept. of Veterans Affairs,
NY [U]
(Alt. to D. P. Klein)

Nonvoting

Carol Caldwell, Caldwell Consulting, Ltd.,
New Zealand

Ron Côté, Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents on the basic objectives, requirements, and definitions for protection of human life from fire and other circumstances capable of producing similar consequences and on the nonemergency and emergency movement of people.

Technical Committee on Furnishings and Contents

(Section 6-5 and associated portions of Appendix A)

Gerald E. Lingenfelter, *Chair*
American Insurance Services Group Inc., NY [I]

Ron Côté, *Nonvoting Secretary*
Nat'l Fire Protection Assn., MA

Alastair J. M. Aikman, Nat'l Research Council of
Canada, Ontario, Canada [RT]

Vytenis Babrauskas, Fire Science & Technology Inc.,
MD [SE]

John A. Blair, The DuPont Co., DE [M]

Richard W. Bukowski, U.S. Nat'l Inst. of Standards
& Technology, MD [RT]

Eugene A. Cable, U.S. Dept. of Veterans Affairs, NY
[U]

Frederic B. Clarke, Benjamin/Clarke Assoc., Inc.,
MD [SE]

Paul Dillon, Southern College of Technology, GA [M]
Rep. Sleep Products Safety Council

William E. Fitch, Omega Point Laboratories Inc.,
TX [RT]

Marcelo M. Hirschler, GBH Int'l, CA [SE]

Alfred J. Hogan, Reedy Creek Improvement Dis-
trict, Walt Disney World, FL [E]

E. Ken McIntosh, The Carpet and Rug Inst, GA [M]

T. Hugh Talley, Hugh Talley Co., TN [M]
Rep. American Furniture Mfrs. Assn.

James J. Urban, Underwriters Laboratories Inc., IL
[RT]

Kay M. Villa, American Textile Mfrs. Inst., DC [M]

Alternates

Donald W. Belles, Donald W. Belles & Assoc., Inc.,
TN [M]

(Alt. to E. K. McIntosh)

Raman B. Chauhan, Nat'l Research Council, On-
tario, Canada [M]

(Alt. to A. J. M. Aikman)

Ron Coté, Staff Liaison

Thomas J. Ohlemiller, Nat'l Inst. of Standards and
Technology, MD [RT]

(Alt. to R. W. Bukowski)

James V. Ryan, Potomac, MD [SE] (Alt. to F. B.
Clarke)

Committee Scope: This Committee shall have primary responsibility for documents on limiting the impact of furnishings and building contents effect on protection of human life from fire and other circumstances capable of producing similar consequences and on the emergency movement of people.

Technical Committee on Health Care Occupancies

(Chapters 12 and 13, and associated portions of Appendix A)

Wayne G. (Chip) Carson, *Chair*

Carson Assoc., Inc., VA [SE]

Ron Coté, *Nonvoting Secretary*

Nat'l Fire Protection Assn., MA

Arthur Bergantz, Code Consultants Inc., MO [SE]

William N. Brooks, Brinjac, Kambic & Assoc., PA [SE]

Kenneth E. Bush, Maryland State Fire Marshals Of-
fice, MD [E]

Rep. Fire Marshals Assn. of North America

Michael Crowley, Rolf Jensen & Assoc., Inc., TX [SE]

Kenneth S. Faulstich, U.S. Dept. of Veterans Affairs,
DC [U]

John E. Fishbeck, Joint Commission on Accredita-
tion of Healthcare Orgs., IL [E]

Curt Fogel, Phico Insurance Co., ND [I]

Edwin S. Green, MEHTA Assoc., KY [U]

Rep. Federation of American Health Systems

Thomas W. Jaeger, Gage-Babcock & Assoc. Inc.,
VA [U]

Rep. American Health Care Assn.

William E. Koffel, Jr., Koffel Assoc. Inc., MD [U]

Rep. American Hospital Assn.

Ronald K. Mengel, Pittway Systems Technology
Group, IL [M]

Rep. Nat'l Electrical Mfrs. Assn.

Daniel J. O'Connor, Schirmer Engr Corp., IL [SE]

Kirby W. Perry, Kirby W. Perry Architects & Assoc.
Inc., TX [SE]

Rep. American Inst. of Architects

Peter P. Petresky, Pennsylvania Dept. of Health,
PA [E]

Rep. Assn. of Health Facility Survey Agencies

David M. Sine, David M Sine & Assoc., TX [U]

Rep. Nat'l Assn. of Psychiatric Health Systems

Richard D. Strub, Vencor Inc., KY [U]

Rep. NFPA Health Care Section

Mayer D. Zimmerman, U.S. Dept. of Health & Hu-
man Services Health Care Financing Administra-
tion, MD [E]

Alternates

James R. Ambrose, Code Consultants Inc., MO [SE]

(Alt. to A. Bergantz)

James H. Antell, Rolf Jensen & Assoc., Inc., IL [SE]

(Alt. to M. Crowley)

David A. de Vries, Schirmer Engr Corp., IL [SE]

(Alt. to D. J. O'Connor)

J. Richard Fruth, Hayes Large Architects, PA [SE]

(Alt. to K. W. Perry)

Ron Coté, Staff Liaison

Edward M. Shedlock, U.S. Dept. of Veterans Affairs,
FL [U]

(Alt. to K. S. Faulstich)

John S. Taylor, St. Vincent's Hospital, AL [U]

(Alt. to R. D. Strub)

Roger J. Wilson, Simplex Time Recorder Co.,
MA [M]

(Alt. to R. K. Mengel)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences, and on the emergency movement of people, in health care occupancies.

Technical Committee on Industrial, Storage and Miscellaneous Occupancies

(Chapters 28, 29, and 32, and associated portions of Appendix A)

Thomas V. Rodante, *Chair*

Caltex Services Corp., TX [U]

Rep. American Petroleum Inst.

Kenneth E. Berg, Moraga, CA [SE]

Donald C. Birchler, FP&C Consultants Inc.,
MO [SE]

Howard M. Bucci, Westinghouse Hanford Co.,
WA [U]

John E. Echternacht, Firesafety Consultants,
TX [SE]

John F. Farney, Jr., Sargent & Lundy Engr, IL [SE]

Larry N. Garrett, General Motors Corp., IN [U]
Rep. NFPA Industrial Fire Protection Section

Bruce W. Hisley, Nat'l Fire Academy FEMA, U.S.
Fire Administration, MD [E]
Rep. Fire Marshals Assn. of North America

Wayne D. Holmes, HSB Professional Loss Control
Inc., CT [I]

Neal W. Krantz, Simplex, MI [M]
Rep. Nat'l Electrical Mfrs. Assn.

Robert L. Smith, Jr., Westinghouse Savannah River
Co., SC [U]

Michael J. Stelzer, ABB Lummus Crest, Inc., TX [SE]
Rep. American Society of Safety Engr

Gregory W. Thomas, Liberty Mutual Insurance Co.,
NY [I]

Rep. The Alliance of American Insurers

Robert Bruce Wallace, Royal Insurance Co., CA [I]
Rep. American Insurance Services Group, Inc.

Alternate

Douglas R. Freels, HSB Professional Loss Control,
TN [I]
(Alt. to W. D. Holmes)

Nonvoting

Glen E. Gardner, U.S. Occupational Safety & Health
Administration, DC

Walter P. Sterling, Staff Liaison

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences, and on the emergency movement of people, in industrial and storage occupancies, special structures, windowless and underground buildings, and high-rise buildings.

Technical Committee on Means of Egress

(Chapter 5 and associated portions of Appendix A)

William E. Koffel, Jr., *Chair*

Koffel Assoc. Inc., MD [SE]

Ron Coté, *Nonvoting Secretary*

Nat'l Fire Protection Assn., MA

Alastair J. M. Aikman, Nat'l Research Council of
Canada, Ontario, Canada [RT]

John L. Barrios, Tampa Dept. Business & Commu-
nity Development, FL [E]
Rep. Southern Bldg. Code Congress Int'l Inc.

John L. Bryan, Frederick, MD [SE]

Kenneth E. Bush, Maryland State Fire Marshals
Office, MD [E]
Rep. Fire Marshals Assn. of North America

David A. de Vries, Schirmer Engr Corp., IL [SE]

Joshua W. Elvove, U.S. Dept. of Veterans Affairs,
CA [U]

Gene B. Endthoff, Nat'l Fire Sprinkler Assn., IL [M]

Philip C. Favro, Philip C. Favro Assoc., CA [SE]

David W. Frable, U.S. General Services Administra-
tion, IL [U]

Billy G. Helton, Lithonia Emergency Systems, GA [M]
Rep. Nat'l Electrical Mfrs. Assn.

John J. Hodgens, New York City Fire Dept., NY [E]

Richard A. Hudnut, Builders Hardware Mfrs. Assn.,
NY [M]

Joseph G. Lesniak, Door & Hardware Inst., VA [M]

Daniel Madrzykowski, U.S. Nat'l Inst. of Standards
& Technology, MD [RT]

Lawrence J. McGinty, U.S. Central Intelligence
Agency, DC [U]

Wayne Menuz, Underwriters Laboratories Inc.,
CA [RT]
Harold E. Nelson, Hughes Assoc. Inc., MD [SE]
Gene V. Paolucci, Yasuda Fire & Marine Insurance
Co. of America, NY [I]
 Rep. American Insurance Services Group, Inc.
Glenn Rosecrans, Diamond-Star Motors, IL [U]
 Rep. NFPA Industrial Fire Protection Section
Theresa J. Rosenberg, North Carolina Dept. of
Insurance, NC [I]
Leslie Strull, Rolf Jensen & Assoc., Inc., IL [SE]

Michael D. Tomy, Heery Int'l. Inc., GA [SE]
 Rep. American Inst. of Architects
Joseph H. Versteeg, Connecticut Dept. of Public
Safety, CT [E]
David L. Wismer, City of Philadelphia/Dept. of
Licenses & Inspections, PA [E]
 Rep. Bldg. Officials & Code Administrators Int'l,
Inc.
Jay Woodward, Int'l Conference of Bldg. Officials,
CA [E]
Brad Z. Zelch, Pfizer U.S. Pharmaceuticals, CT [U]

Alternates

Steven J. Altamura, Underwriters Laboratories Inc.,
NY [RT]
 (Alt. to W. Menuz)
John R. Battles, Southern Bldg. Code Congress
Int'l, AL [E]
 (Alt. to J. L. Barrios)
Charles H. Berry, U.S. Dept. of Veterans Affairs,
MD [U]
 (Alt. to J. W. Elvove)
Warren D. Bonisch, Schirmer Engr Corp., TX [SE]
 (Alt. to D. A. de Vries)
Raman B. Chauhan, Nat'l Research Council,
Ontario, Canada [RT]
 (Alt. to A. J. M. Aikman)
Paul Christensen, Prescolite, CA [M]
 (Alt. to B. G. Helton)
David A. Gilda, Builders Hardware Mfrs. Assn.,
CT [M]
 (Alt. to R. A. Hudnut)
Ron Coté, Staff Liaison

Kenneth E. Isman, Nat'l Fire Sprinkler Assn., NY [M]
 (Alt. to G. B. Endthoff)
John H. Klote, U.S. Nat'l Inst. of Standards &
Technology, MD [RT]
 (Alt. to D. Madrzykowski)
James K. Lathrop, Koffel Assoc., CT [SE]
 (Alt. to W. E. Koffel)
R. T. Leicht, CIGNA Loss Control Services Inc.,
DE [I]
 (Alt. to G. V. Paolucci)
James A. Milke, University of Maryland, MD [SE]
 (Alt. to J. L. Bryan)
James R. Quiter, Rolf Jensen & Assoc., Inc., CA [SE]
 (Alt. to L. Strull)
Eric Rosenbaum, Hughes Assoc. Inc., MD [SE]
 (Alt. to H. E. Nelson)
Roy W. Schwarzenberg, U.S. Central Intelligence
Agency, DC [U]
 (Alt. to L. J. McGinty)

Committee Scope: This Committee shall have primary responsibility for documents on the general requirements for safe egress for protection of human life from fire and other circumstances capable of producing similar consequences and on the nonemergency and emergency movement of people.

Technical Committee on Mercantile and Business Occupancies

(Chapters 24 through 27 and associated portions of Appendix A)

William Hiotaky, *Chair*
The Taubman Co., MI [U]

Raymond E. Arntson, University of Minnesota,
MN [U]
 Rep. American Society of Safety Engr
David M. Banwarth, Prince George's County Fire
Dept., MD [E]
Kenneth E. Bland, American Forest & Paper Assn.,
DC [M]
E. Joseph Bocci, U.S. Dept. of the Interior, DC [U]
Kenneth E. Bush, Maryland State Fire Marshals
Office, MD [E]
 Rep. Fire Marshals Assn. of North America
Daniel J. Gauvin, Simplex Time Recorder Co.,
MA [M]
 Rep. Nat'l Electrical Mfrs. Assn.
Richard F. Lattey, Liberty Mutual Insurance Group,
MA [I]
 Rep. The Alliance of American Insurers

Daniel Madrzykowski, U.S. Nat'l Inst. of Standards
& Technology, MD [RT]
Brian L. Marburger, Kemper Nat'l Insurance Cos.,
IL [I]
 Rep. American Insurance Services Group, Inc.
Richard R. Osman, Schirmer Engr Corp., IL [SE]
Lawrence G. Perry, Bldg. Owners & Managers Assn.
Int'l, MD [U]
Ed Schultz, Code Consultants Inc., MO [SE]
R. Christopher Snack, ISO Commercial Risk
Services, Inc., NJ [I]
William J. Tames, Tames, VanRickle & Assoc.,
CA [U]
 Rep. Home Depot

Alternates

Carl F. Baldassarra, Schirmer Engr Corp.,
IL [SE]
(Alt. to R. R. Osman)

Delbert F. Boring, Jr., American Iron & Steel Inst.,
OH [M]
(Voting Alt. to AISI Rep.)

Walter P. Sterling, Staff Liaison

James C. Dinegar, Bldg. Owners & Managers Assn.
Int'l, DC [U]
(Alt. to L. G. Perry)

Douglas R. Freels, HSB Professional Loss Control,
TN [I]
(Voting Alt. to HSB PLC Rep.)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances capable of producing similar consequences, and for the emergency movement of people, in mercantile and business occupancies.

Technical Committee on Residential Occupancies

(Chapters 16 through 21 and associated portions of Appendix A)

Joseph M. Jardin, *Chair*

New York City Fire Dept., NY [C]
Rep. NFPA Fire Service Section

Carl F. Baldassarra, Schirmer Engr Corp., IL [SE]

Harry L. Bradley, Maryland State Fire Marshals
Office, MD [E]
Rep. Fire Marshals Assn. of North America

Ronald M. Brave, Snow Country Development LLC,
CO [IM]
Rep. Nat'l Assn. of Home Builders

Richard W. Bukowski, U.S. Nat'l Inst. of Standards
and Technology, MD [RT]

Peter G. Christie, TAA Ltd., MD [SE]

Thomas G. Daly, Hilton Hotels Corp., CA [U]
Rep. NFPA Lodging Industry Section

William R. DesPres, Royal Insurance, NC [I]
Rep. American Insurance Services Group, Inc.

Sam W. Francis, American Forest & Paper Assn.,
PA [M]

Ralph Gerdes, Ralph Gerdes Consultants, IN [SE]

Kenneth E. Isman, Nat'l Fire Sprinkler Assn.,
NY [M]

Robert Kelly, Washington County, OR [E]

Gerald R. Kirby, Marriott Corp., DC [U]

Rep. American Hotel & Motel Assn.

Marshall A. Klein, Marshall A. Klein & Assoc., Inc.,
MD [SE]

James K. Lathrop, Koffel Assoc., CT [SE]

Joseph J. Messersmith, Jr., Portland Cement Assn.,
VA [M]

Ronald G. Nickson, Nat'l Multi Housing Council,
DC [U]

Michael A. O'Hara, MountainStar Enterprises,
MN [SE]

Erin A. M. Oneisom, U.S. Air Force, Civil Eng. Sup-
port Agency, FL [U]

Peter Puhlick, University of Connecticut, CT [U]

Vincent E. Sbarra, Gage-Babcock & Assoc., Inc.,
NY [SE]

Tom Skoby, Aetna Life & Casualty, IL [I]

Rep. American Society of Safety Engr

T. Hugh Talley, Hugh Talley Co., TN [M]

Rep. American Furniture Mfrs. Assn.

Alternates

James R. Bell, Marriott Corp. DC [U]
(Alt. to G. R. Kirby)

Kenneth E. Bland, American Forest & Paper Assn.,
DC [M]
(Alt. to S. W. Francis)

David Cook, Ralph Gerdes Consultants, IN [SE]
(Alt. to R. Gerdes)

Russell P. Fleming, Nat'l Fire Sprinkler Assn., NY [M]
(Alt. to K. E. Isman)

Greg Gottlieb, Hauppauge Fire District, NY [C]
(Alt. to J. M. Jardin)

Merideth L. Howard, CIGNA Loss Control Services,
CA [I]
(Alt. to W. R. DesPres)

Robert E. Solomon, Staff Liaison

Robert Howe, Vermont Dept. of Labor & Industry,
VT [E]

(Alt. to H. L. Bradley)

Robert J. James, MountainStar Enterprises, Ltd.,
MN [SE]

(Alt. to M. A. O'Hara)

Ronald H. Kirby, Simplex Time Recorder Co.,
MA [M]

(Voting Alt. to NEMA Rep.)

Mark Kluver, Portland Cement Assn., CA [M]

(Alt. to J. J. Messersmith)

Alfred J. Longhitano, Gage-Babcock & Assoc. Inc.,
NY [SE]

(Alt. to V. E. Sbarra)

Committee Scope: This Committee shall have primary responsibility for documents on protection of human life from fire and other circumstances producing similar consequences, and on the emergency movement of people, in hotels, dormitories, apartments, lodging and rooming houses, and one- and two-family dwellings.

These lists represent the membership at the time each Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of the book.

Contents

Chapter 1 General	101- 17	Section 7-6	Fire Detection, Alarm, and Communication Systems.	101- 60
Section 1-1 Title	101- 17	Section 7-7	Automatic Sprinklers and Other Extinguishing Equipment.	101- 62
Section 1-2 Scope	101- 17	Chapter 8 New Assembly Occupancies		101- 64
Section 1-3 Application.	101- 17	Section 8-1	General Requirements	101- 64
Section 1-4 Purpose	101- 18	Section 8-2	Means of Egress Requirements.	101- 66
Section 1-5 Assumption	101- 18	Section 8-3	Protection	101- 71
Section 1-6 Equivalency	101- 18	Section 8-4	Special Provisions.	101- 72
Section 1-7 Fire Exit Drills	101- 18	Section 8-5	Building Services	101- 77
Section 1-8 Units	101- 18	Section 8-6	Reserved	101- 77
Chapter 2 Fundamental Requirements	101- 19	Section 8-7	Operating Features	101- 77
Chapter 3 Definitions	101- 20	Chapter 9 Existing Assembly Occupancies		101- 81
Section 3-1 General.	101- 20	Section 9-1	General Requirements	101- 81
Section 3-2 Definitions	101- 20	Section 9-2	Means of Egress Requirements.	101- 83
Chapter 4 Classification of Occupancy and Hazard of Contents	101- 24	Section 9-3	Protection	101- 88
Section 4-1 Classification of Occupancy	101- 24	Section 9-4	Special Provisions.	101- 89
Section 4-2 Hazard of Contents.	101- 25	Section 9-5	Building Services	101- 93
Chapter 5 Means of Egress	101- 26	Section 9-6	Reserved	101- 93
Section 5-1 General.	101- 26	Section 9-7	Operating Features	101- 93
Section 5-2 Means of Egress Components	101- 27	Chapter 10 New Educational Occupancies		101- 97
Section 5-3 Capacity of Means of Egress	101- 43	Section 10-1	General Requirements	101- 97
Section 5-4 Number of Means of Egress	101- 44	Section 10-2	Means of Egress Requirements.	101- 98
Section 5-5 Arrangement of Means of Egress.	101- 44	Section 10-3	Protection	101- 99
Section 5-6 Measurement of Travel Distance to Exits	101- 46	Section 10-4	Special Provisions.	101-101
Section 5-7 Discharge from Exits.	101- 46	Section 10-5	Building Services	101-101
Section 5-8 Illumination of Means of Egress	101- 47	Section 10-6	Reserved	101-101
Section 5-9 Emergency Lighting	101- 47	Section 10-7	Operating Features	101-101
Section 5-10 Marking of Means of Egress	101- 48	Chapter 11 Existing Educational Occupancies		101-103
Section 5-11 Special Provisions for Occupancies with High Hazard Contents	101- 49	Section 11-1	General Requirements	101-103
Section 5-12 Mechanical Equipment Rooms, Boiler Rooms, and Furnace Rooms	101- 50	Section 11-2	Means of Egress Requirements.	101-103
Chapter 6 Features of Fire Protection	101- 51	Section 11-3	Protection	101-105
Section 6-1 General.	101- 51	Section 11-4	Special Provisions.	101-107
Section 6-2 Construction and Compartmentation	101- 51	Section 11-5	Building Services	101-107
Section 6-3 Smoke Barriers	101- 54	Section 11-6	Reserved	101-107
Section 6-4 Special Hazard Protection	101- 55	Section 11-7	Operating Features	101-107
Section 6-5 Interior Finish	101- 56	Chapter 12 New Health Care Occupancies		101-109
Section 6-6 Furnishings, Contents, Decorations, and Treated Finishes	101- 58	Section 12-1	General Requirements	101-109
Chapter 7 Building Service and Fire Protection Equipment	101- 59	Section 12-2	Means of Egress Requirements.	101-111
Section 7-1 Utilities	101- 59	Section 12-3	Protection	101-113
Section 7-2 Heating, Ventilating, and Air Conditioning	101- 59	Section 12-4	Special Provisions.	101-117
Section 7-3 Smoke Control.	101- 59	Section 12-5	Building Services	101-117
Section 7-4 Elevators, Escalators, and Conveyors	101- 59	Section 12-6	New Ambulatory Health Care Facilities.	101-117
Section 7-5 Rubbish Chutes, Incinerators, and Laundry Chutes	101- 59	Section 12-7	Operating Features	101-120
		Chapter 13 Existing Health Care Occupancies		101-122
		Section 13-1	General Requirements	101-122
		Section 13-2	Means of Egress Requirements.	101-124
		Section 13-3	Protection	101-126
		Section 13-4	Special Provisions.	101-131
		Section 13-5	Building Services	101-131
		Section 13-6	Existing Ambulatory Health Care Facilities.	101-131
		Section 13-7	Operating Features	101-133

Chapter 14 New Detention and Correctional Occupancies	101-136	Section 20-4 Reserved	101-173
Section 14-1 General Requirements	101-136	Section 20-5 Building Services	101-173
Section 14-2 Means of Egress Requirements	101-137	Chapter 21 One- and Two-Family Dwellings	101-174
Section 14-3 Protection	101-139	Section 21-1 General Requirements	101-174
Section 14-4 Special Provisions	101-141	Section 21-2 Means of Escape Requirements	101-174
Section 14-5 Building Services	101-142	Section 21-3 Protection	101-175
Section 14-6 Reserved	101-143	Section 21-4 Reserved	101-175
Section 14-7 Operating Features	101-143	Section 21-5 Building Services	101-175
Chapter 15 Existing Detention and Correctional Occupancies	101-144	Chapter 22 New Residential Board and Care Occupancies	101-176
Section 15-1 General Requirements	101-144	Section 22-1 General Requirements	101-176
Section 15-2 Means of Egress Requirements	101-145	Section 22-2 Small Facilities	101-177
Section 15-3 Protection	101-147	Section 22-3 Large Facilities	101-179
Section 15-4 Special Provisions	101-150	Section 22-4 Suitability of an Apartment Building to House a Board and Care Occupancy	101-183
Section 15-5 Building Services	101-151	Section 22-5 Reserved	101-183
Section 15-6 Reserved	101-151	Section 22-6 Reserved	101-183
Section 15-7 Operating Features	101-151	Section 22-7 Operating Features	101-183
Chapter 16 New Hotels and Dormitories	101-153	Chapter 23 Existing Residential Board and Care Occupancies	101-185
Section 16-1 General Requirements	101-153	Section 23-1 General Requirements	101-185
Section 16-2 Means of Egress Requirements	101-153	Section 23-2 Small Facilities	101-186
Section 16-3 Protection	101-154	Section 23-3 Large Facilities	101-189
Section 16-4 Special Provisions	101-156	Section 23-4 Suitability of an Apartment Building to House a Board and Care Occupancy	101-193
Section 16-5 Building Services	101-156	Section 23-5 Reserved	101-193
Section 16-6 Reserved	101-156	Section 23-6 Reserved	101-193
Section 16-7 Operating Features	101-156	Section 23-7 Operating Features	101-193
Chapter 17 Existing Hotels and Dormitories	101-158	Chapter 24 New Mercantile Occupancies	101-195
Section 17-1 General Requirements	101-158	Section 24-1 General Requirements	101-195
Section 17-2 Means of Egress Requirements	101-158	Section 24-2 Means of Egress Requirements	101-196
Section 17-3 Protection	101-159	Section 24-3 Protection	101-198
Section 17-4 Special Provisions	101-161	Section 24-4 Special Provisions	101-199
Section 17-5 Building Services	101-161	Section 24-5 Building Services	101-201
Section 17-6 Reserved	101-162	Section 24-6 Reserved	101-201
Section 17-7 Operating Features	101-162	Section 24-7 Operating Features	101-201
Chapter 18 New Apartment Buildings	101-163	Chapter 25 Existing Mercantile Occupancies	101-202
Section 18-1 General Requirements	101-163	Section 25-1 General Requirements	101-202
Section 18-2 Means of Egress Requirements	101-163	Section 25-2 Means of Egress Requirements	101-203
Section 18-3 Protection	101-164	Section 25-3 Protection	101-205
Section 18-4 Special Provisions	101-166	Section 25-4 Special Provisions	101-206
Section 18-5 Building Services	101-166	Section 25-5 Building Services	101-208
Section 18-6 Reserved	101-166	Section 25-6 Reserved	101-208
Section 18-7 Operating Features	101-166	Section 25-7 Operating Features	101-208
Chapter 19 Existing Apartment Buildings	101-167	Chapter 26 New Business Occupancies	101-209
Section 19-1 General Requirements	101-167	Section 26-1 General Requirements	101-209
Section 19-2 Means of Egress Requirements	101-167	Section 26-2 Means Of Egress Requirements	101-209
Section 19-3 Protection	101-169	Section 26-3 Protection	101-211
Section 19-4 Special Provisions	101-171	Section 26-4 Special Provisions	101-212
Section 19-5 Building Services	101-171	Section 26-5 Building Services	101-212
Section 19-6 Reserved	101-171	Section 26-6 Reserved	101-212
Section 19-7 Operating Features	101-171	Section 26-7 Operating Features	101-212
Chapter 20 Lodging or Rooming Houses	101-172		
Section 20-1 General Requirements	101-172		
Section 20-2 Means of Escape Requirements	101-172		
Section 20-3 Protection	101-172		

Chapter 27 Existing Business Occupancies	101-213	Section 30-3 Protection	101-228
Section 27-1 General Requirements	101-213	Section 30-4 Special Provisions	101-228
Section 27-2 Means of Egress Requirements	101-213	Section 30-5 Building Services	101-229
Section 27-3 Protection	101-215	Section 30-6 Day-Care Homes	101-229
Section 27-4 Special Provisions	101-216	Section 30-7 Operating Features	101-231
Section 27-5 Building Services	101-216	Chapter 31 Existing Day-Care Occupancies	101-232
Section 27-6 Reserved	101-216	Section 31-1 General Requirements	101-232
Section 27-7 Operating Features	101-216	Section 31-2 Means of Egress Requirements	101-233
Chapter 28 Industrial Occupancies	101-217	Section 31-3 Protection	101-234
Section 28-1 General Requirements	101-217	Section 31-4 Special Provisions	101-235
Section 28-2 Means of Egress Requirements	101-217	Section 31-5 Building Services	101-235
Section 28-3 Protection	101-219	Section 31-6 Day-Care Homes	101-236
Section 28-4 Special Provisions	101-220	Section 31-7 Operating Features	101-238
Section 28-5 Building Services	101-220	Chapter 32 Special Structures and High-Rise	
Section 28-6 Special Provisions for Aircraft		Buildings	101-239
Servicing Hangars	101-220	Section 32-1 General Requirements	101-239
Chapter 29 Storage Occupancies	101-221	Section 32-2 Open Structures	101-239
Section 29-1 General Requirements	101-221	Section 32-3 Towers	101-239
Section 29-2 Means of Egress Requirements	101-221	Section 32-4 Water Surrounded Structures	101-240
Section 29-3 Protection	101-222	Section 32-5 Piers	101-241
Section 29-4 Special Provisions	101-223	Section 32-6 Vehicles And Vessels	101-241
Section 29-5 Building Services	101-223	Section 32-7 Underground and Windowless	
Section 29-6 Special Provisions for Aircraft		Structures	101-241
Storage Hangars	101-223	Section 32-8 High-Rise Buildings	101-242
Section 29-7 Special Provisions for Grain or		Chapter 33 Referenced Publications	101-243
Other Bulk Storage Elevators	101-223	Appendix A	101-245
Section 29-8 Special Provisions for		Appendix B	101-307
Parking Structures	101-223	Index	101-310
Chapter 30 New Day-Care Occupancies	101-226		
Section 30-1 General Requirements	101-226		
Section 30-2 Means of Egress Requirements	101-227		

NOTICE

Following issuance of this 1997 edition of NFPA 101®, *Life Safety Code*®, by the NFPA Standards Council, certain appeals were filed with the NFPA Board of Directors.

The appeals request the following:

1. That 6-2.3.2.3.1 be revised to require the hose stream test to be performed as part of the fire testing of 20-min. fire door assemblies if those assemblies include vision panels.
2. That 21-2.5.1 be revised to retain the provisions of the

1994 edition that permitted stairs — new and existing — within dwelling units to have a maximum riser height of 8 in. (20.3 cm) and a minimum tread depth of 9 in. (22.9 cm).

NFPA will announce the disposition of the appeals when they have been determined. Anyone wishing to receive the dispositions of the appeals should notify in writing the Secretary — Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA, 02269-9101.

NFPA 101®

Code for Safety to Life from Fire in Buildings and Structures

1997 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Appendix A.

Information on referenced publications can be found in Chapter 33 and Appendix B.

CHAPTER 1* GENERAL

SECTION 1-1 TITLE

1-1.1 Title. NFPA 101®, *Code for Safety to Life from Fire in Buildings and Structures*, shall be known as the *Life Safety Code*, is cited as such, and shall be referred to herein as “this *Code*” or “the *Code*.”

SECTION 1-2 SCOPE

1-2.1 This *Code* addresses life safety from fire. Its provisions will also aid life safety in similar emergencies.

1-2.2* The *Code* addresses those construction, protection, and occupancy features necessary to minimize danger to life from fire, including smoke, fumes, or panic.

1-2.3 The *Code* identifies the minimum criteria for the design of egress facilities so as to permit prompt escape of occupants from buildings or, where desirable, into safe areas within buildings.

1-2.4 The *Code* recognizes that life safety is more than a matter of egress and, accordingly, deals with other considerations that are essential to life safety.

1-2.5 Vehicles, vessels, or other similar conveyances, as defined in Section 32-6, shall be treated as a building.

1-2.6 The *Code* does not attempt to address all those general fire prevention or building construction features that are normally a function of fire prevention and building codes.

1-2.7 The prevention of personal injuries incurred by an individual's own negligence, and the preservation of property from loss by fire have not been considered as the basis for any of the provisions of this *Code*.

SECTION 1-3* APPLICATION

1-3.1 New and Existing Buildings. The *Code* applies to both new construction and existing buildings. In various chapters there are specific provisions for existing buildings that might differ from those for new construction.

1-3.2 Time Allowed for Compliance. A limited but reasonable time shall be allowed for compliance with any part of this *Code* for existing buildings commensurate with the magnitude of expenditure, disruption of services, and degree of hazard.

1-3.3 Authority Having Jurisdiction. The authority having jurisdiction shall determine the adequacy of means of egress and other measures for life safety from fire in accordance with the provisions of this *Code*.

1-3.4* Modification of Requirements for Existing Buildings. The requirements for existing buildings shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction, but only where it is clearly evident that a reasonable degree of safety is provided.

1-3.5 Referenced Publications. Existing buildings or installations that do not comply with the provisions of the referenced standards contained in this document (*see Chapter 33*) shall be permitted to be continued in service provided the lack of conformity with these standards does not present a serious hazard to the occupants as determined by the authority having jurisdiction.

1-3.6 Additions. Additions shall conform to the provisions for new construction.

1-3.7* Modernization or Renovation. Any alteration or any installation of new equipment shall be accomplished as nearly as practicable with the requirements for new construction. Only the altered, renovated, or modernized portion of an existing building, system, or individual component shall be required to meet the provisions of this *Code* applicable to new construction. If the alteration, renovation, or modernization adversely impacts required life safety features, additional upgrading shall be required. Existing life safety features that do not meet the requirements for new buildings, but exceed the requirements for existing buildings, shall not be diminished further. In no case shall the resulting life safety features be less than those required for existing buildings.

1-3.8 Priority of Chapter Requirements. Where specific requirements contained in Chapters 8 through 32 differ from general requirements contained in Chapters 1 through 7, the requirements of Chapters 8 through 32 shall govern.

1-3.9 Provisions in Excess of Code Requirements. Nothing in this *Code* shall be construed to prohibit a better type of building construction, additional means of egress, or otherwise safer conditions than those specified by the minimum requirements of this *Code*.

1-3.10 Conditions for Occupancy. No new construction or existing building shall be occupied in whole or in part in violation of the provisions of this *Code*.

Exception: Buildings shall be permitted to remain in use, provided that

- (a) *A plan of correction has been approved, and*
- (b) *The occupancy classification remains the same, and*
- (c) *No serious life safety hazard exists as judged by the authority having jurisdiction.*

1-3.11 Construction, Repair, and Improvement Operations.

1-3.11.1* Buildings or portions of buildings shall be permitted to be occupied during construction, repair, alterations, or additions only if all required means of egress and all required fire protection features are in place and continuously maintained for the portion occupied.

1-3.11.2* In buildings under construction, adequate escape facilities shall be maintained at all times for the use of construction workers. Escape facilities shall consist of doors, walkways, stairs, ramps, fire escapes, ladders, or other approved means or devices arranged in accordance with the general principles of the *Code* insofar as they can reasonably be applied to buildings under construction.

1-3.11.3 Flammable or explosive substances or equipment for repairs or alterations shall be permitted in a building of normally low or ordinary hazard classification while the building is occupied only if the condition of use and safeguards provided do not create any additional danger or impediment to egress beyond the normally permissible conditions in the building.

1-3.12* Changes of Occupancy. In any building or structure, whether necessitating a physical alteration or not, a change from one occupancy classification to another, or from one occupancy subclassification to another subclassification of the same occupancy, shall be permitted only if such structure, building, or portion thereof conforms with the requirements of this *Code* applying to new construction for the proposed new use.

Exception: Where specifically permitted elsewhere in the Code, existing construction features shall be permitted to be continued in use in conversions.

1-3.13 Maintenance and Testing.

1-3.13.1 Whenever or wherever any device, equipment, system, condition, arrangement, level of protection, or any other feature is required for compliance with the provisions of this *Code*, such device, equipment, system, condition, arrangement, level of protection, or other feature shall thereafter be continuously maintained in accordance with applicable NFPA requirements or as directed by the authority having jurisdiction.

1-3.13.2* Existing life safety features such as, but not limited to, automatic sprinklers, fire alarm systems, standpipes, and horizontal exits, if not required by the *Code*, either shall be maintained or removed.

1-3.13.3 Equipment requiring periodic testing or operation to ensure its maintenance shall be tested or operated as specified elsewhere in this *Code* or as directed by the authority having jurisdiction.

1-3.13.4 Maintenance and testing shall be under the supervision of a responsible person who shall ensure that testing and maintenance are made at specified intervals in accordance with applicable NFPA standards or as directed by the authority having jurisdiction.

SECTION 1-4 PURPOSE

1-4.1 The purpose of this *Code* is to provide minimum requirements, with due regard to function, for the design, operation, and maintenance of buildings and structures for safety to life from fire. Its provisions will also aid life safety in similar emergencies.

1-4.2* An objective of this *Code* is to protect the occupants not intimate with the initial fire development from loss of life and to improve the survivability of those who are intimate with the fire development.

1-4.3* Protection of occupants is achieved by the combination of prevention, protection, egress, and other features with due regard to the capabilities and reliability of the features involved.

1-4.4 The *Code* endeavors to avoid requirements that might involve unreasonable hardships or unnecessary inconvenience

or interference with the normal use and occupancy of a building, but provides for fire safety consistent with the public interest.

SECTION 1-5 ASSUMPTION

1-5.1 The protection methods assume a single fire source.

SECTION 1-6 EQUIVALENCY

1-6.1* Nothing in this *Code* is intended to prevent the use of calculation methods, test methods, systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety as alternatives to those prescribed by this *Code*, provided technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

1-6.2* Alternative systems, methods, or devices approved as equivalent by the authority having jurisdiction shall be recognized as being in compliance with this *Code*.

SECTION 1-7* FIRE EXIT DRILLS

1-7.1 Fire exit drills conforming to the provisions of this *Code* shall be conducted regularly in occupancies where specified by the provisions of Chapters 8 through 32, or by appropriate action of the authority having jurisdiction. Drills shall be designed in cooperation with the local authorities.

1-7.2* Fire exit drills, where required by the authority having jurisdiction, shall be held with sufficient frequency to familiarize occupants with the drill procedure and to have the conduct of the drill a matter of established routine. Drills shall include suitable procedures to ensure that all persons in the building or all persons subject to the drill actually participate.

1-7.3 Responsibility for the planning and conduct of drills shall be assigned only to competent persons qualified to exercise leadership.

1-7.4 In the conduct of drills, emphasis shall be placed on orderly evacuation under proper discipline rather than on speed.

1-7.5* Drills shall be held at expected and unexpected times and under varying conditions to simulate the unusual conditions that occur in the case of fire.

SECTION 1-8 UNITS

1-8.1 Metric units of measurement in this *Code* are in accordance with the modernized metric system known as the International System of Units (SI).

1-8.2 If a value for measurement as given in this *Code* is followed by an equivalent value in other units, the first stated shall be regarded as the requirement. A given equivalent value may be approximate.

1-8.3 The conversion procedure for the SI units has been to multiply the quantity by the conversion factor and then round the result to the appropriate number of significant digits.

CHAPTER 2 FUNDAMENTAL REQUIREMENTS

2-1* Every building or structure, new or old, designed for human occupancy shall be provided with means of egress and other safeguards sufficient to permit the prompt escape of occupants or shall furnish other means to provide a reasonable degree of safety for occupants. The design of means of egress and other safeguards shall be such that reliance for safety to life will not depend solely on any single safeguard; additional safeguards shall be provided for life safety in case any single safeguard is ineffective due to human or mechanical failure.

2-2 Every building or structure shall be constructed, arranged, equipped, maintained, and operated to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes, or resulting panic during the period of time reasonably necessary for escape from the building or structure or for that period of time needed to defend in place.

2-3 Every building or structure shall be provided with means of egress and other safeguards of kinds, numbers, locations, and capacities appropriate to the individual building or structure, with due regard to the character of the occupancy, the capabilities of the occupants, the number of persons exposed, the fire protection available, the height and type of construction of the building or structure, and other factors necessary to provide all occupants with a reasonable degree of safety.

2-4 In every building or structure, means of egress shall be arranged and maintained to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. No lock or fastening shall be installed to prevent free escape from the inside of any building. Means of egress shall be accessible to the extent necessary to ensure reasonable safety for occupants having impaired mobility.

Exception: Locks shall be permitted in mental health, detention, or correctional facilities where supervisory personnel are continually on duty and effective provisions are made to remove occupants in case of fire or other emergency.

2-5 Every exit shall be clearly visible, or the route to reach every exit shall be conspicuously indicated in such a manner

that every occupant of every building or structure who is physically and mentally capable will readily know the direction of escape from any point. Each means of egress, in its entirety, shall be arranged or marked so that the way to a place of safety is indicated in a clear manner. Any doorway or passageway that is not an exit or a way to reach an exit, but is capable of being confused with an exit, shall be arranged or marked to prevent occupant confusion with acceptable exits. Every effort shall be taken to avoid occupants mistakenly traveling into dead-end spaces in a fire emergency.

2-6 Where artificial illumination is required in a building or structure, egress facilities shall be included in the lighting design in an adequate and reliable manner.

2-7 In every building or structure of such size, arrangement, or occupancy that a fire itself might not provide adequate occupant warning, fire alarm facilities shall be provided where necessary to warn occupants of the existence of fire. Fire alarms alert occupants to initiate emergency procedures and facilitate the orderly conduct of fire exit drills.

2-8 Two means of egress, as a minimum, shall be provided in every building or structure, section, and area where size, occupancy, and arrangement endanger occupants attempting to use a single means of egress that is blocked by fire or smoke. The two means of egress shall be arranged to minimize the possibility that both might be rendered impassable by the same emergency condition.

2-9 Every exit stair, exit ramp, and other vertical opening between floors of a building shall be suitably enclosed or protected, as necessary, to afford reasonable safety to occupants while using means of egress and to prevent spread of fire, smoke, or fumes through vertical openings from floor to floor before occupants have entered exits.

2-10* Compliance with this *Code* shall not be construed as eliminating or reducing the necessity for other provisions for safety of persons using a structure under normal occupancy conditions. Also, no provision of the *Code* shall be construed as requiring or permitting any condition that might be hazardous under normal occupancy conditions.

CHAPTER 3 DEFINITIONS

SECTION 3-1 GENERAL

3-1.1 The following terms, for the purposes of this *Code*, shall have the meanings given in this chapter, if not otherwise modified for a specific occupancy.

3-1.2 Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

3-1.3 Where terms are not defined in this chapter, they shall have their ordinarily accepted meanings or such as the context implies.

SECTION 3-2 DEFINITIONS

Accessible Area of Refuge. An area of refuge that complies with the accessible route requirements of CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

Accessible Means of Egress. A path of travel, usable by a person with a severe mobility impairment, that leads to a public way or an area of refuge.

Addition. An extension or increase in floor area or height of a building or structure.

Aisle Accessway. (See Section 8-1 or 9-1.)

Ambulatory Health Care Center. (See Section 12-1 or 13-1.)

Anchor Store. (See Section 24-1 or 25-1.)

Apartment Building. (See Section 18-1 or 19-1.)

Approved.* Acceptable to the authority having jurisdiction.

Area. (See Floor Area.)

Area of Refuge. (See 5-1.2.)

Assembly Occupancy. (See Section 4-1 and Section 8-1 or 9-1.)

Atrium. A floor opening or series of floor openings connecting two or more stories that is covered at the top of the series of openings and is used for purposes other than an enclosed stairway; elevator hoistway; escalator opening; or utility shaft used for plumbing, electrical, air conditioning, or communication facilities.

Authority Having Jurisdiction.* The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

Automatic. Providing a function without the necessity of human intervention.

Birth Center.* A facility where low risk births are planned to occur following normal, uncomplicated pregnancy, providing professional midwifery care to women during pregnancy, birth, and postpartum.

Bleachers. A grandstand where the seats are not provided with backrests.

Board and Care. (See Section 22-1 or 23-1.)

Building. Any structure used or intended for supporting or sheltering any use or occupancy. The term building shall

be construed as if followed by the words "or portions thereof." (See also *Structure*.)

Building, Existing.* Any structure erected or officially authorized prior to the effective date of the adoption of this edition of the *Code* by the agency or jurisdiction.

Business Occupancy. (See Section 4-1.)

Combustible. Capable of undergoing combustion.

Combustion. A chemical process that involves oxidation sufficient to produce light or heat.

Common Atmosphere (Educational Occupancies). (See Section 10-1 or 11-1.)

Common Path of Travel. That portion of exit access that must be traversed before two separate and distinct paths of travel to two exits are available. Paths that merge are common paths of travel. Common path of travel is measured in the same manner as travel distance but terminates at that point where two separate and distinct routes become available.

Complete Smoke Detection System. (See 7-6.2.7.)

Correctional Occupancy. (See Section 4-1.)

Court. An open, uncovered, unoccupied space, unobstructed to the sky, bounded on three or more sides by exterior building walls.

Court, Enclosed. A court bounded on all sides by the exterior walls of a building or exterior walls and lot lines on which walls are allowable.

Covered Mall. (See Section 24-1 or 25-1.)

Critical Radiant Flux. The level of incident radiant heat energy on a floor covering system at the most distant flameout point as determined by the test procedure of NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*. The unit of measurement of critical radiant flux is watts per square centimeter (W/sq cm).

Day-Care Home. (See Section 30-1 or 31-1.)

Day-Care Occupancy. (See Section 4-1 and Section 30-1 or 31-1.)

Detention Occupancy. (See Section 4-1.)

Direct Exit. (See Section 14-1 or 15-1.)

Dormitory. (See Section 16-1 or 17-1.)

Draft Stop. A continuous membrane used to subdivide a concealed space to restrict the passage of smoke, heat, and flames.

Dwelling Unit. A single unit, providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

Educational Occupancy. (See Section 4-1 and Section 10-1 or 11-1.)

Evacuation Capability. (See Section 22-1 or 23-1.)

Exhibit. (See Section 8-1 or 9-1.)

Exhibitor. (See Section 8-1 or 9-1.)

Existing.* That which is already in existence on the date when this edition of the *Code* goes into effect.

Exit. That portion of a means of egress that is separated from all other spaces of the building or structure by construction or equipment as required in 5-1.3.2.1 to provide a protected way of travel to the exit discharge. Exits include exterior exit doors, exit passageways, horizontal exits, separated exit stairs, and separated exit ramps.

Exit Access. That portion of a means of egress that leads to an exit.

Exit Discharge. That portion of a means of egress between the termination of an exit and a public way.

Exposition. (See Section 8-1 or 9-1.)

Exposition Facility. (See Section 8-1 or 9-1.)

Festival Seating. That form of audience/spectator accommodation in which no seating, other than a floor or ground surface, is provided for the audience/spectators gathered to observe some performance.

Fire Barrier. A continuous membrane, either vertical or horizontal, such as a wall or floor assembly that is designed and constructed with a specified fire resistance rating to limit the spread of fire and that also will restrict the movement of smoke. Such barriers might have protected openings. (See 6-2.3.)

Fire Barrier Wall. A wall, other than a fire wall, having a fire resistance rating.

Fire Compartment.* A space, within a building, that is enclosed by fire barriers on all sides, including the top and bottom. (See 6-2.2.)

Fire Protection Rating. The designation indicating the duration of the fire test exposure to which a fire door assembly or fire window assembly was exposed and successfully met all the acceptance criteria as determined in accordance with NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, or NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*, respectively.

Fire Resistance Rating. The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as established in accordance with the test procedures of NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*.

Flame Spread. The propagation of flame over a surface. (See Section 6-5.)

Flexible Plan Educational Building. (See Section 10-1 or 11-1.)

Floor Area, Gross. The floor area within the inside perimeter of the outside walls of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, or other features. Where the term "area" is used elsewhere in this *Code*, it shall be understood to be gross area unless otherwise specified.

Floor Area, Net. Net floor area shall be the actual occupied area, not including accessory unoccupied areas or thickness of walls.

Flow Time. (See Section 8-1 or 9-1.)

Fly Gallery. (See Section 8-1 or 9-1.)

General Industrial Occupancy. (See Section 28-1.)

Gridiron. (See Section 8-1 or 9-1.)

Gross Leasable Area. (See Section 24-1 or 25-1.)

Guard. A vertical protective barrier erected along exposed edges of stairways, balconies, and similar areas.

Guest Room. (See Section 16-1 or 17-1.)

Guest Suite. (See Section 16-1 or 17-1.)

Handrail. A bar, pipe, or similar member designed to furnish persons with a handhold.

Hazardous Area. Those areas of structures or buildings posing a degree of hazard greater than that normal to the general occupancy of a building or structure, such as those areas used for the storage or use of combustibles or flammables; toxic, noxious, or corrosive materials; or heat-producing appliances. (See Section 22-1 or 23-1.)

Health Care Occupancy. (See Section 4-1.)

High Hazard Industrial Occupancy. (See Section 28-1.)

High-Rise Building.* A building more than 75 ft (23 m) in height. Building height shall be measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.

Horizontal Exit. (See Section 5-1.)

Hospital. (See Section 12-1 or 13-1.)

Hotel. (See Section 16-1 or 17-1.)

Industrial Occupancy. (See Section 4-1.)

Interior Finish. (See Section 6-5.)

Interior Floor Finish. (See Section 6-5.)

Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Life Safety Evaluation. (See Section 8-1 or 9-1.)

Limited Care Facility. (See Section 12-1 or 13-1.)

Limited-Combustible.* As applied to a building construction material, other than interior finish, means a material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 3500 Btu/lb (8.14×10^6 J/kg) and complies with one of the following paragraphs, (a) or (b).

(a) Materials having a structural base of noncombustible material with a surfacing not exceeding a thickness of $\frac{1}{8}$ in. (0.3 cm) that has a flame spread rating not greater than 50.

(b) Materials, in the form and thickness used, other than as described in (a), having neither a flame spread rating greater than 25 nor evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread rating greater than 25 nor evidence of continued progressive combustion.

Materials subject to increase in combustibility or flame spread rating beyond the limits herein established through the effects of age, moisture, or other atmospheric condition shall be considered combustible.

Listed.* Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets identified standards or has been tested and found suitable for a specified purpose.

Living Area. Any normally occupiable space in a residential occupancy, other than sleeping rooms or rooms that are intended for combination sleeping/living, bathrooms, toilet compartments, kitchens, closets, halls, storage or utility spaces, and similar areas.

Load, Live. The weight superimposed by the use and occupancy of the building, not including the wind load, earthquake load, or dead load.

Lodging Home. (See Section 20-1.)

Means of Egress. (See Section 5-1.)

Means of Escape. A way out of a building or structure that does not conform to the strict definition of means of egress but does provide an alternate way out.

Mercantile Occupancy. (See Section 4-1.)

Mezzanine. An intermediate level between the floor and the ceiling of any room or space.

Multipurpose Assembly Occupancy. (See Section 8-1.)

Noncombustible. A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire. Materials, where tested in accordance with ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, and conforming to the criteria contained in Section 7 of the referenced standard shall be considered as noncombustible.

Nursing Home. (See Section 12-1 or 13-1.)

Occupancy. The purpose for which a building or portion thereof is used or intended to be used.

Occupant Load. The total number of persons that might occupy a building or portion thereof at any one time.

Occupiable Story. A story occupied by people on a regular basis. Stories used exclusively for mechanical equipment rooms, elevator penthouses, and similar spaces are not occupiable stories.

One- and Two-Family Dwelling. (See Section 21-1.)

Open-Air Mercantile Operation. (See Section 24-1 or 25-1.)

Open Plan Educational Building. (See Section 10-1 or 11-1.)

Open Structure. (See Section 32-2.)

Outpatient (Ambulatory) Clinic. (See Section 12-1 or 13-1.)

Outside Stair. Outside stairs include stairs where at least one side is open to the outer air. (See 5-2.2.)

Partial Smoke Detection System. (See 7-6.2.9.)

Personal Care. (See Section 22-1 or 23-1.)

Pinrail. (See Section 8-1 or 9-1.)

Place of Assembly. (See *Assembly Occupancy* in Section 4-1.)

Plastic, Cellular or Foamed. A heterogeneous system comprised of at least two phases, one of which is a continuous polymeric organic material, and the second of which is deliberately introduced for the purpose of distributing gas in voids throughout the material, and foamed and unfoamed polymeric or monomeric precursors (prepolymer, if used), plasticizers, fillers, extenders, catalysts, blowing agents, colorants, stabilizers, lubricants, surfactants, pigments, reaction control agents, processing aids, and flame retardants.

Platform. (See Section 8-1 or 9-1.)

Platform, Temporary. (See Section 8-1 or 9-1.)

Plenum. An air compartment or chamber to which one or more ducts are connected and that forms part of an air distribution system.

Point of Safety. (See Section 22-1 or 23-1.)

Proscenium Wall. (See Section 8-1 or 9-1.)

Public Way. Any street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (3 m).

Ramp. A walking surface that has a slope steeper than 1 in 20. (See 5-2.5.)

Resident. (See Section 22-1 or 23-1.)

Residential Board and Care. (See Section 22-1 or 23-1.)

Residential Housing Area. (See Section 14-1 or 15-1.)

Residential Occupancy. (See Section 4-1.)

Rooming House. (See Section 20-1.)

Sally Port (Security Vestibule). (See Section 14-1 or 15-1.)

Self-Closing. Equipped with an approved device that will ensure closing after having been opened.

Separate Atmosphere (Educational Occupancy). (See Section 10-1 or 11-1.)

Separated Exit Ramp. (See Section 5-1, *Exit*.)

Separated Exit Stair. (See Section 5-1, *Exit*.)

Shall. Indicates a mandatory requirement.

Should. Indicates a recommendation or that which is advised but not required.

Smoke Barrier. A continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed to restrict the movement of smoke. A smoke barrier might or might not have a fire resistance rating. Such barriers might have protected openings. (See Section 6-3.)

Smoke Compartment.* A smoke compartment is a space within a building enclosed by smoke barriers on all sides, including the top and bottom. (See Section 6-3.)

Smoke Detector. A device that senses visible or invisible particles of combustion.

Smoke Protected Assembly Seating. (See 8-4.2 or 9-4.2.)

Special Amusement Building. (See Section 8-1 or 9-1.)

Special Purpose Industrial Occupancy. (See Section 28-1.)

Special Structure. (See 4-1.1.)

Staff. (See Section 22-1 or 23-1.)

Stage. (See Section 8-1 or 9-1.)

Stage, Legitimate. (See Section 8-1 or 9-1.)

Stage, Regular. (See Section 8-1 or 9-1.)

Storage Occupancy. (See Section 4-1.)

Store. (See Section 24-1 or 25-1.)

Story. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.

Story of Exit Discharge. (See Section 11-1.)

Street. Any public thoroughfare (street, avenue, boulevard) 30 ft (9.1 m) or more in width that has been dedicated or deeded to the public for public use and is accessible for use by the fire department in fighting fire. Enclosed spaces and tunnels, even though used for vehicular and pedestrian traffic, are not considered as streets for the purposes of the *Code*.

Street Floor. Any story or floor level accessible from the street or from outside the building at ground level with floor level at the main entrance not more than three risers above or below ground level at these points, and arranged and utilized to qualify as the main floor. Where, due to differences in street levels, there are two or more stories accessible from the street, each is a street floor for the purposes of the *Code*. Where there is no floor level within the specified limits for a street floor above or below ground level, the building shall be considered as having no street floor.

Structure. That which is built or constructed. The term "structure" shall be construed as if followed by the words "or portion thereof." (See also *Building*.)

Thermal Barrier. (See Section 22-1 or 23-1.)

Tower. (See Section 32-3.)

Underground Structure. (See Section 32-7.)

Vertical Opening. An opening through a floor or roof.

Water Surrounded Structure. (See Section 32-4.)

Windowless Structure. (See Section 32-7.)

Yard. An open, unoccupied space other than a court, unobstructed from the ground to the sky, except where specifically provided by the *Code*, on the lot on which a building is situated.

CHAPTER 4 CLASSIFICATION OF OCCUPANCY AND HAZARD OF CONTENTS

SECTION 4-1 CLASSIFICATION OF OCCUPANCY

4-1.1 A building or structure shall be classified as follows, subject to the ruling of the authority having jurisdiction in case of question as to proper classification in any individual case. Occupancies in special structures shall conform to the requirements of the specific occupancy Chapters 8 through 31 except as modified by Chapter 32.

4-1.2* Assembly. (*For requirements, see Chapters 8 and 9.*) Assembly occupancies include, but are not limited to, all buildings or portions of buildings used for gathering together 50 or more persons for such purposes as deliberation, worship, entertainment, eating, drinking, amusement, or awaiting transportation. Assembly occupancies also include special amusement buildings regardless of occupant load. (*See 8-4.7 and 9-4.7.*)

Assembly occupancies include the following:

Armories	Libraries
Assembly halls	Mortuary chapels
Auditoriums	Motion picture theaters
Bowling lanes	Museums
Club rooms	Passenger stations and terminals of air, surface, underground, and marine public transportation facilities
College and university classrooms, 50 persons and over	Places of religious worship
Conference rooms	Pool rooms
Courtrooms	Recreation piers
Dance halls	Restaurants
Drinking establishments	Skating rinks
Exhibition halls	Theaters
Gymnasiums	

Occupancy of any room or space for assembly purposes by fewer than 50 persons in a building or other occupancy and incidental to such other occupancy shall be classified as part of the other occupancy and shall be subject to the provisions applicable thereto.

4-1.3* Educational. (*For requirements, see Chapters 10 and 11.*) Educational occupancies include all buildings or portions of buildings used for educational purposes through the twelfth grade by six or more persons for four or more hours per day or more than 12 hours per week.

Educational occupancies include the following:

Academies	Nursery schools
Kindergartens	Schools

Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*.

In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

4-1.4 Health Care. (*For requirements, see Chapters 12 and 13.*) Health care occupancies are those used for purposes such as medical or other treatment or care of persons suffering from physical or mental illness, disease, or infirmity; and for the care of infants, convalescents, or infirm aged persons. Health care occupancies provide sleeping facilities for four or more occupants and are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

Health care occupancies include the following:

Hospitals
Limited care facilities
Nursing homes

Health care occupancies also include ambulatory health care centers. (*See Sections 12-6 and 13-6.*)

4-1.5 Detention and Correctional. (*For requirements, see Chapters 14 and 15.*) Detention and correctional occupancies are used to house individuals under varied degrees of restraint or security and are occupied by persons who are mostly incapable of self-preservation because of security measures not under the occupants' control.

Detention and correctional occupancies include the following:

Adult and juvenile substance abuse centers	Adult local detention facilities
Adult and juvenile work camps	Juvenile community residential centers
Adult community residential centers	Juvenile detention facilities
Adult correctional institutions	Juvenile training schools

Chapters 14 and 15 address the residential housing areas of the detention and correctional occupancy as defined by 14-1.3 and 15-1.3. Other uses within detention and correctional facilities, such as gymnasiums or industries, shall be in accordance with the appropriate chapter of the *Code*. (*See 14-1.2.1 and 15-1.2.1.*)

4-1.6 Residential. (*For requirements, see Chapters 16 through 23.*) Residential occupancies are those occupancies in which sleeping accommodations are provided for normal residential purposes and include all buildings designed to provide sleeping accommodations.

Exception: Those classified under health care or detention and correctional occupancies.

Residential occupancies are treated separately in this *Code* in the following groups:

- Hotels, motels, and dormitories (*Chapters 16 and 17*);
- Apartment buildings (*Chapters 18 and 19*);
- Lodging or rooming houses (*Chapter 20*);
- One- and two-family dwellings (*Chapter 21*); and
- Board and care facilities (*Chapters 22 and 23*).

4-1.7* Mercantile. (*For requirements, see Chapters 24 and 25.*) Mercantile occupancies include stores, markets, and other rooms, buildings, or structures for the display and sale of merchandise.

Mercantile occupancies include the following:

Auction rooms	Shopping centers
Department stores	Supermarkets
Drugstores	

4-1.8* Business. (*For requirements, see Chapters 26 and 27.*) Business occupancies are those used for the transaction of

business (other than those covered under Mercantile), for the keeping of accounts and records, and for similar purposes.

Business occupancies include the following:

Air traffic control towers (ATCTs)	Courthouses
City halls	Dentists' offices
College and university instructional buildings, classrooms under 50 persons, and instructional laboratories	Doctors' offices
	General offices
	Outpatient clinics, ambulatory
	Town halls

4-1.9* Industrial. (For requirements, see Chapter 28.) Industrial occupancies include factories making products of all kinds and properties devoted to operations such as processing, assembling, mixing, packaging, finishing or decorating, and repairing.

Industrial occupancies include the following:

Dry cleaning plants	Laundries
Factories of all kinds	Power plants
Food processing plants	Pumping stations
Gas plants	Refineries
Hangars (for servicing/maintenance)	Sawmills
	Telephone exchanges

4-1.10* Storage. (For requirements, see Chapter 29.) Storage occupancies include all buildings or structures utilized primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals.

Storage occupancies include the following:

Barns	Hangars (for storage only)
Bulk oil storage	Parking structures
Cold storage	Stables
Freight terminals	Truck and marine terminals
Grain elevators	Warehouses

4-1.11* Day-Care. (For requirements, see Chapters 30 and 31.) Day-care occupancies include all buildings or portions of buildings in which four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day.

Day-care occupancies include the following:

Child day-care occupancies	Kindergarten classes that are incidental to a child day-care occupancy
Adult day-care occupancies, except where part of a health care occupancy	
Nursery schools	
Day-care homes	

In cases where care is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

4-1.12* Mixed Occupancies. Where two or more classes of occupancy occur in the same building or structure and are intermingled so that separate safeguards are impracticable, means of egress facilities, construction, protection, and other safeguards shall comply with the most restrictive life safety requirements of the occupancies involved.

Exception: An occupancy incidental to operations in another occupancy shall be permitted to be considered as part of the predominant occupancy and shall be subject to the provisions of this *Code* that apply to the predominant occupancy.

SECTION 4-2 HAZARD OF CONTENTS

4-2.1 General.

4-2.1.1 The hazard of contents, for the purpose of this *Code*, shall be the relative danger of the start and spread of fire, the danger of smoke or gases generated, and the danger of explosion or other occurrence potentially endangering the lives and safety of the occupants of the building or structure.

4-2.1.2 Hazard of contents shall be determined by the authority having jurisdiction on the basis of the character of the contents and the processes or operations conducted in the building or structure.

4-2.1.3* Where different degrees of hazard of contents exist in different parts of a building or structure, the most hazardous shall govern the classification for the purpose of this *Code*.

Exception: Where hazardous areas are separated or protected as specified in Section 6-4 and the applicable sections of Chapters 8 through 32.

4-2.2 Classification of Hazard of Contents.

4-2.2.1* The hazard of contents of any building or structure shall be classified as low, ordinary, or high in accordance with 4-2.2.2, 4-2.2.3, and 4-2.2.4.

4-2.2.2* Low Hazard. Low hazard contents shall be classified as those of such low combustibility that no self-propagating fire therein can occur.

4-2.2.3* Ordinary Hazard. Ordinary hazard contents shall be classified as those that are likely to burn with moderate rapidity or to give off a considerable volume of smoke.

4-2.2.4* High Hazard. High hazard contents shall be classified as those that are likely to burn with extreme rapidity or from which explosions are likely. (For means of egress requirements, see Section 5-11.)

CHAPTER 5 MEANS OF EGRESS

SECTION 5-1 GENERAL

5-1.1* Application. Means of egress for both new and existing buildings shall comply with this chapter. (*See also Chapter 1.*)

5-1.2 Definitions.

Accessible Area of Refuge. An area of refuge that complies with the accessible route requirements of CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

Accessible Means of Egress.* A path of travel, usable by a person with a severe mobility impairment, that leads to a public way or an area of refuge. (*See 5-5.4.*)

Area of Refuge.* (*See 5-2.12.*) An area of refuge is either:

(a) A story in a building where such building is protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7 and has at least two accessible rooms or spaces separated from each other by smoke-resisting partitions, or

Exception to (a): Two accessible rooms or spaces shall not be required as permitted in Chapters 8 through 31.

(b) A space, in a path of travel leading to a public way, that is protected from the effects of fire, either by means of separation from other spaces in the same building or by virtue of location, thereby permitting a delay in egress travel from any level.

Common Path of Travel.* That portion of exit access that is traversed before two separate and distinct paths of travel to two exits are available. Paths that merge are common paths of travel.

Elevator Evacuation System. A system, including a vertical series of elevator lobbies and the associated elevator lobby doors, an elevator shaft(s), and a machine room(s) that provides protection from fire effects for elevator passengers, people waiting to use elevators, and elevator equipment, to allow use of elevators for egress.

Elevator Lobby. A space from which people directly enter an elevator car(s) and to which people directly leave an elevator car(s).

Elevator Lobby Door. A door between an elevator lobby and another building space that is not the elevator shaft.

Exit.* That portion of a means of egress that is separated from all other spaces of the building or structure by construction or equipment in accordance with 5-1.3.2 to provide a protected way of travel to the exit discharge.

Exit Access. That portion of a means of egress that leads to an exit.

Exit Discharge. That portion of a means of egress between the termination of an exit and a public way.

Horizontal Exit.* A way of passage from one building to an area of refuge in another building on approximately the same level, or a way of passage through or around a fire barrier to an area of refuge on approximately the same level in the same building that affords safety from fire and smoke originating from the area of incidence and areas communicating therewith. (*See 5-2.4.*)

Means of Egress.* A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (a) the exit access, (b) the exit, and (c) the exit discharge.

Ramp. A walking surface that has a slope steeper than 1 in 20.

Severe Mobility Impairment. The ability to move to stairs but not the ability to use the stairs.

Smokeproof Enclosure.* A stair enclosure designed to limit the movement of products of combustion produced by a fire.

5-1.3 Separation of Means of Egress. (*See also Section 6-2.*)

5-1.3.1* Exit Access Corridors. Corridors used as exit access and serving an area having an occupant load of more than 30 shall be separated from other parts of the building by walls having a 1-hr fire resistance rating in accordance with 6-2.3.

Exception No. 1: Existing buildings, provided the occupancy classification does not change.

Exception No. 2: As provided in Chapters 8 through 31.

5-1.3.2 Exits.

5-1.3.2.1 Where an exit is required in this *Code* to be separated from other parts of the building, the separating construction shall meet the requirements of Section 6-2 and the following:

(a)* The separation has at least a 1-hr fire resistance rating where the exit connects three stories or less; and

(b)* The separation has at least a 2-hr fire resistance rating where the exit connects four or more stories. It shall be constructed of an assembly of noncombustible or limited-combustible materials and shall be supported by construction having at least a 2-hr fire resistance rating; and

Exception No. 1 to (b): In existing non-high-rise buildings existing exit stair enclosures shall have not less than a 1-hr fire resistance rating.

Exception No. 2 to (b): In existing buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7, existing exit stair enclosures shall have not less than a 1-hr fire resistance rating.

Exception No. 3 to (b): One-hr enclosures in accordance with 16-2.2.1.2, 17-2.2.1.2, 18-2.2.1.2, and 19-2.2.1.2.

(c) Openings therein are protected by fire door assemblies equipped with door closers complying with 5-2.1.8; and

(d) Openings in exit enclosures are limited to those necessary for access to the enclosure from normally occupied spaces and corridors, and for egress from the enclosure; and

Exception to (d): Exit passageways in covered mall buildings as provided in Chapters 24 and 25.

(e) Penetrations into and openings through an exit enclosure assembly are prohibited except for electrical conduit serving the stairway, required exit doors, duct work and equipment necessary for independent stair pressurization, water or steam piping necessary for the heating or cooling of the exit enclosure, sprinkler piping, and standpipes; and

Exception No. 1 to (e): Existing penetrations protected in accordance with 6-2.3.2.4.

Exception No. 2 to (e): Penetrations for fire alarm circuits shall be permitted within enclosures where fire alarm circuits are installed in metallic conduit and penetrations are protected in accordance with 6-2.3.2.4.

(f) Penetrations or communicating openings are prohibited between adjacent exit enclosures.

5-1.3.2.2 An exit enclosure shall provide a continuous protected path of travel to an exit discharge.

5-1.3.2.3* An exit enclosure shall not be used for any purpose that has the potential to interfere with its use as an exit and, if so designated, as an area of refuge. (See also 5-2.2.5.3.)

5-1.3.3 Exit Passageways. An exit passageway that serves as a discharge from a stair enclosure shall have the same fire resistance rating and opening protective fire protection rating as that required for the stair enclosure, and shall be separated from other parts of the building in accordance with 5-1.3.2.

Exception No. 1: Fire windows in accordance with 6-2.3.2.3 installed in such a separation in a building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Existing fixed wired glass panels in steel sash in such a separation in a building protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

5-1.4 Interior Finish in Exits. The flame spread of interior finish on walls and ceilings shall be limited to Class A or Class B in exit enclosures in accordance with Section 6-5. (See Chapters 8 through 31 for further limitations.)

5-1.5 Headroom. Means of egress shall be designed and maintained to provide headroom as provided in other sections of this Code, and shall be at least 7 ft 6 in. (2.3 m) with projections from the ceiling at least 6 ft 8 in. (2 m) nominal height above the finished floor. Headroom on stairs shall be a minimum of 6 ft 8 in. (2 m), and shall be measured vertically above a plane parallel to and tangent with the most forward projection of the stair tread.

Exception No. 1: In existing buildings, the ceiling height shall not be less than 7 ft (2.1 m) from the floor with no projection below a 6 ft 8 in. (2 m) nominal height from the floor.

Exception No. 2: Industrial equipment access as provided in Chapter 28.

5-1.6 Changes in Level in Means of Egress.

5-1.6.1 Changes in level in means of egress shall be either by a ramp or a stair where the elevation difference is more than 21 in. (53.3 cm).

5-1.6.2* Changes in level in means of egress not more than 21 in. (53.3 cm) shall be either by a ramp or by a stair complying with the requirements of 5-2.2. The presence and location of ramped portions of walkways shall be readily apparent. The minimum tread depth of such stair shall be 13 in. (33 cm), and the presence and location of each step shall be readily apparent.

5-1.7 Guards. Guards in accordance with 5-2.2.4 shall be provided at the open sides of means of egress that are more than 30 in. (76 cm) above the floor or grade below.

5-1.8 Construction Quality, Impediments to Egress.

5-1.8.1 Means of egress components shall be of substantial, reliable construction and shall be built or installed in a skillful manner.

5-1.8.2 Any device or alarm installed to restrict the improper use of a means of egress shall be designed and installed so that it cannot, even in case of failure, impede or prevent emergency use of such means of egress.

Exception No. 1: As provided in 5-2.1.6.

Exception No. 2: As provided in Chapters 12, 13, 14, and 15.

5-1.9 Means of Egress Reliability.

5-1.9.1* Means of egress shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

5-1.9.2 Furnishings and Decorations in Means of Egress.

5-1.9.2.1 No furnishings, decorations, or other objects shall be placed to obstruct exits, access thereto, egress therefrom, or visibility thereof.

5-1.9.2.2 There shall be no obstructions by railings, barriers, or gates that divide the open space into sections appurtenant to individual rooms, apartments, or other uses. Where the authority having jurisdiction finds the required path of travel to be obstructed by furniture or other movable objects, the authority shall be permitted to require that they be fastened out of the way or shall be permitted to require that railings or other permanent barriers be installed to protect the path of travel against encroachment.

5-1.9.2.3 Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of egress.

SECTION 5-2 MEANS OF EGRESS COMPONENTS

5-2.1 Doors.

5-2.1.1 General.

5-2.1.1.1 A door assembly in a means of egress shall conform to the general requirements of Section 5-1 and to the special requirements of this subsection. Such an assembly shall be designated as a door.

5-2.1.1.2 Every door and every principal entrance that is required to serve as an exit shall be designed and constructed so that the way of egress travel is obvious and direct. Windows that, because of their physical configuration or design and the materials used in their construction, have the potential to be mistaken for doors shall be made inaccessible to the occupants by barriers or railings.

5-2.1.1.3* For the purposes of Section 5-2, a building shall be considered to be occupied at any time it is open for general occupancy, open to the public, or at any other time it is occupied by more than 10 persons.

5-2.1.2 Egress Width.

5-2.1.2.1* In determining the egress width for a doorway for purposes of calculating capacity, only the clear width of the doorway when the door is in the full open position shall be measured. Clear width shall be the net, unobstructed width of the door opening without projections into such width.

5-2.1.2.2 Door openings in means of egress shall be at least 32 in. (81 cm) in clear width. Where a pair of doors is provided, at least one of the doors shall provide at least a 32-in. (81-cm) clear width opening.

Exception No. 1: Exit access doors serving a room not larger than 70 sq ft (6.5 sq m) and not required to be accessible to persons in wheelchairs shall be at least 24 in. (61 cm) in door width.

Exception No. 2: In existing buildings, the door width shall be at least 28 in. (71 cm).

Exception No. 3: As provided in Chapters 14 and 15.

Exception No. 4: Interior doors as provided in Chapter 21.

Exception No. 5: A power-operated door leaf located within a two-leaf opening shall be exempt from the minimum 32-in. (81-cm) single-leaf requirement in accordance with Exception No. 2 to 5-2.1.9.

5-2.1.3 Floor Level. The elevation of the floor surfaces on both sides of a door shall not vary by more than $\frac{1}{2}$ in. (13 mm). The elevation shall be maintained on both sides of the doorway for a distance at least equal to the width of the widest leaf. Thresholds at doorways shall not be more than $\frac{1}{2}$ in. (13 mm) in height. Raised thresholds and floor level changes more than $\frac{1}{4}$ in. (6.4 mm) at doorways shall be bevelled with a slope not steeper than 1 in 2.

Exception No. 1: In one- and two-family dwellings and in existing buildings where the door discharges to the outside or to an exterior balcony or exterior exit access, the floor level outside the door shall be permitted to be one step lower than the inside, but not more than 8 in. (20.3 cm) lower.

Exception No. 2: In one- and two-family dwellings and existing buildings, a door at the top of a stair shall be permitted to open directly at a stair provided the door does not swing over the stair and the door serves an area with an occupant load of fewer than 50 persons.

5-2.1.4 Swing and Force to Open.

5-2.1.4.1* Any door in a means of egress shall be of the side-hinged or pivoted-swinging type. The door shall be designed and installed so that it is capable of swinging from any position to the full use of the opening in which it is installed.

Exception No. 1: Sliding doors as provided in Chapters 14 and 15, and doors as provided in Chapter 21.

Exception No. 2: Where permitted in Chapters 8 through 31, horizontal sliding or vertical rolling security grilles or doors that are part of the required means of egress shall be permitted, provided that

(a) They remain secured in the full open position during the period of occupancy by the general public; and

(b) On or adjacent to the door, there is a readily visible, durable sign in letters at least 1 in. (2.5 cm) high on a contrasting background that reads:

**“THIS DOOR TO REMAIN OPEN WHEN
THE BUILDING IS OCCUPIED”; and**

(c) Doors or grilles are not brought to the closed position when the space is occupied; and

(d) Doors or grilles are operable from within the space without the use of any special knowledge or effort; and

(e) Where two or more means of egress are required, not more than half of the means of egress are equipped with horizontal sliding or vertical rolling grilles or doors.

Exception No. 3: Horizontal sliding doors complying with 5-2.1.14.

Exception No. 4: Doors to private garages and industrial and storage areas with an occupant load of not more than 10, where such garages and industrial and storage areas contain low or ordinary hazard contents.

Exception No. 5: Revolving doors complying with 5-2.1.10.

Exception No. 6: Existing fusible link-operated horizontal sliding or vertical rolling fire doors where permitted in Chapters 8 through 31.

5-2.1.4.2 Doors required to be side-hinged or pivoted-swinging type shall swing in the direction of egress travel where serving a room or area with an occupant load of 50 or more.

Exception No. 1: Doors in horizontal exits shall not be required to swing in the direction of egress travel where exempted in 5-2.4.3.6.

Exception No. 2: Smoke barrier doors as provided in Chapter 13.

5-2.1.4.3 Doors shall swing in the direction of egress travel where used in an exit enclosure or where serving a high hazard contents area.

Exception: Doors from individual living units that open directly into an exit enclosure.

5-2.1.4.4* During its swing, any door in a means of egress shall leave unobstructed at least one half of the required width of an aisle, corridor, passageway, or landing, nor project more than 7 in. (17.8 cm) into the required width of an aisle, corridor, passageway, or landing, when fully open. Doors shall not open immediately onto a stair without a landing. The landing shall have a width at least equal to the width of the door. (See 5-2.1.3.)

Exception: In existing buildings, a door providing access to a stair shall maintain an unobstructed width of a stair or landing of at least 22 in. (55.9 cm) and, when open, project not more than 7 in. (17.8 cm) into the required width of a stair or landing.

5-2.1.4.5 The forces required to fully open any door manually in a means of egress shall not be more than 15 lbf (67 N) to release the latch, 30 lbf (133 N) to set the door in motion, and 15 lbf (67 N) to open the door to the minimum required width. Opening forces for interior side-hinged or pivoted-swinging doors without closers shall not be more than 5 lbf (22 N). These forces shall be applied at the latch stile.

Exception No. 1: The opening force for doors in existing buildings shall not be more than 50 lbf (222 N) applied to the latch stile.

Exception No. 2: Horizontal sliding doors as provided in Chapters 14 and 15.

Exception No. 3: Power-operated doors as provided in 5-2.1.9.

5-2.1.4.6 Screen doors and storm doors used in a means of egress shall not swing against the direction of egress travel where doors are required to swing in the direction of egress travel.

5-2.1.5 Locks, Latches, and Alarm Devices.

5-2.1.5.1 Doors shall be arranged to be opened readily from the egress side whenever the building is occupied. Locks, if

provided, shall not require the use of a key, a tool, or special knowledge or effort for operation from the inside of the building.

Exception No. 1: As provided in Chapters 12, 13, 14, and 15.

Exception No. 2: Exterior doors shall be permitted to have key-operated locks from the egress side, provided that

(a) This exception is permitted in Chapters 8 through 31 for the specific occupancy; and

(b) On or adjacent to the door, there is a readily visible, durable sign in letters at least 1 in. (2.5 cm) high on a contrasting background that reads:

**“THIS DOOR TO REMAIN OPEN WHEN
THE BUILDING IS OCCUPIED”; and**

(c) The locking device is of a type that is readily distinguishable as locked; and

(d) A key is immediately available to any occupant inside the building when it is locked.

This exception shall be permitted to be revoked by the authority having jurisdiction for cause.

Exception No. 3: Where permitted in Chapters 8 through 31, key operation shall be permitted, provided the key cannot be removed when the door is locked from the side from which egress is to be made.

5-2.1.5.2* Every stair enclosure door shall permit reentry from the stair enclosure to the interior of the building, or an automatic release shall be provided to unlock all stair enclosure doors to permit reentry. Such automatic release shall be actuated with the initiation of the building fire alarm system.

Exception No. 1: Selected doors on stair enclosures shall be permitted to be equipped with hardware that prevents reentry into the interior of the building, provided that

(a) There are at least two levels where it is possible to leave the stair enclosure; and

(b) There are not more than four stories intervening between stories where it is possible to leave the stair enclosure; and

(c) Reentry is possible on the top or next to top story permitting access to another exit; and

(d) Doors permitting reentry are identified as such on the stair side of the door; and

(e) Doors not permitting reentry shall be provided with a sign on the stair side indicating the location of the nearest door, in each direction of travel, permitting reentry or exit.

Exception No. 2: Stairs serving not more than four stories.

Exception No. 3: Existing installations as permitted in Chapters 8 through 31.

Exception No. 4: Stair enclosures serving a building permitted to have a single exit in accordance with Chapters 8 through 32.

Exception No. 5: As provided in Chapters 12 and 14.

5-2.1.5.3* A latch or other fastening device on a door shall be provided with a releasing device having an obvious method of operation under all lighting conditions. The releasing mechanism for any latch shall be located not more than 48 in.

(122 cm) above the finished floor. Doors shall be openable with not more than one releasing operation.

*Exception:** Egress doors from individual living units and guest rooms of residential occupancies shall be permitted to be provided with devices that require not more than one additional releasing operation, provided such device is operable from the inside without the use of a key or tool and is mounted at a height not more than 48 in. (122 cm) above the finished floor. Existing security devices shall be permitted to have two additional releasing operations. Existing security devices other than automatic latching devices shall not be located more than 60 in. (152 cm) in height above the finished floor. Automatic latching devices shall not be located more than 48 in. (122 cm) above the finished floor.

5-2.1.5.4 Where pairs of doors are required in a means of egress, each leaf of the pair shall be provided with its own releasing device. Devices that depend upon the release of one door before the other shall not be used.

Exception: Where exit doors are used in pairs and approved automatic flush bolts are used, the door leaf having the automatic flush bolts shall have no doorknob or surface-mounted hardware. The unlatching of any leaf shall not require more than one operation.

5-2.1.5.5* Devices shall not be installed in connection with any door on which panic hardware or fire exit hardware is required, provided such device prevents or is intended to prevent the free use of the door for purposes of egress.

Exception: As otherwise provided in 5-2.1.6.

5-2.1.6 Special Locking Arrangements.

5-2.1.6.1 Delayed Egress Locks. Approved, listed, delayed egress locks shall be permitted to be installed on doors serving low and ordinary hazard contents in buildings protected throughout by an approved, supervised automatic fire detection system installed in accordance with Section 7-6, or an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, and where permitted in Chapters 8 through 31, provided that

(a) The doors unlock upon actuation of an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, or upon the actuation of any heat detector or not more than two smoke detectors of an approved, supervised automatic fire detection system installed in accordance with Section 7-6; and

(b) The doors unlock upon loss of power controlling the lock or locking mechanism; and

(c) The doors unlock upon disablement of the automatic fire detection system, sprinkler system, or the means of sprinkler system supervision protecting the building area served by the door(s); and

(d) An irreversible process releases the lock within 15 sec upon application to the release device required in 5-2.1.5.3 of a force that shall not be required to exceed 15 lbf (67 N) nor required to be continuously applied for more than 3 sec. The initiation of the release process shall activate a signal in the vicinity of the door to ensure those attempting to egress that the system is functional. Once the door lock has been released by the application of force to the releasing device, relocking shall be by manual means only; and

Exception to (d): Where approved by the authority having jurisdiction, a delay of not more than 30 sec shall be permitted provided that reasonable life safety is ensured.

(e)* On the door adjacent to the release device, there is a readily visible, durable sign in letters at least 1 in. (2.5 cm) high and at least $\frac{1}{8}$ in. (0.3 cm) in stroke width on a contrasting background that reads:

“PUSH UNTIL ALARM SOUNDS.
DOOR CAN BE OPENED IN 15 SECONDS”.

5-2.1.6.2 Access-Controlled Egress Doors. Where permitted in Chapters 8 through 32, doors in the means of egress shall be permitted to be equipped with an approved entrance and egress access control system, provided that

(a) A sensor is provided on the egress side arranged to detect an occupant approaching the doors and the doors are arranged to unlock upon detection of approaching occupant or loss of power to the sensor; and

(b) Loss of power to that part of the access control system that locks the doors automatically unlocks the doors; and

(c) The doors are arranged to unlock from a manual release device located 40 in. (102 cm) to 48 in. (122 cm) vertically above the floor and within 5 ft (1.5 m) of the secured doors. The manual release device shall be readily accessible and clearly identified by a sign that reads:

“PUSH TO EXIT”.

When operated, the manual release device shall result in direct interruption of power to the lock—independent of the access control system electronics—and the doors shall remain unlocked for at least 30 sec; and

(d) Activation of the building fire-protective signaling system, if provided, automatically unlocks the doors, and the doors remain unlocked until the fire-protective signaling system has been manually reset; and

(e) Activation of the building automatic sprinkler or fire detection system, if provided, automatically unlocks the doors and the doors remain unlocked until the fire-protective signaling system has been manually reset.

5-2.1.7 Panic Hardware and Fire Exit Hardware.

5-2.1.7.1 Panic hardware and fire exit hardware consist of a door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel. Fire exit hardware additionally provides fire protection where used as part of a fire door assembly.

5-2.1.7.2 Where a door is required to be equipped with panic or fire exit hardware, such releasing device shall

(a) Consist of bars or panels, the actuating portion of which extends across at least one half of the width of the door leaf, at least 30 in. (76 cm) and not more than 44 in. (112 cm) above the floor; and

(b) Cause the door latch to release when a force that shall not be required to exceed 15 lbf (67 N) is applied.

5-2.1.7.3 Only approved panic hardware shall be used on doors that are not fire doors. Only approved fire exit hardware shall be used on fire doors.

5-2.1.7.4 Required panic hardware and fire exit hardware shall not be equipped with any locking device, set screw, or

other arrangement that prevents the release of the latch when pressure is applied to the releasing device. Devices that hold the latch in the retracted position shall be prohibited on fire exit hardware.

Exception No. 1: As provided in Chapters 14 and 15.

Exception No. 2: Listed and approved devices that hold the latch in the retracted position shall be permitted on fire exit hardware.

5-2.1.8* Self-Closing Devices. A door designed to normally be kept closed in a means of egress shall be a self-closing door and shall not be secured in the open position at any time.

Exception: In any building of low or ordinary hazard contents, as defined in 4-2.2.2 and 4-2.2.3, or where approved by the authority having jurisdiction, doors shall be permitted to be automatic-closing, provided that

(a) Upon release of the hold-open mechanism, the door becomes self-closing; and

(b) The release device is designed so that the door instantly releases manually and upon release becomes self-closing, or the door closes by some simple or readily obvious operation; and

(c) The automatic releasing mechanism or medium is activated by (1) the operation of an approved, automatic smoke detection system installed in accordance with Section 7-6 to protect the entire building, designed and installed to provide for actuation of the system promptly so as to preclude the generation of heat or smoke sufficient to interfere with egress before the system operates, or (2) the operation of approved smoke detectors installed in such a way as to detect smoke on either side of the door opening, as detailed in NFPA 72, National Fire Alarm Code. The above systems shall be permitted to be zoned where approved by the authority having jurisdiction; and

(d) Any fire detection system or smoke detector is provided with such supervision and safeguards as are necessary to ensure reliability of operation in case of fire (see also Section 7-6); and

(e) Upon loss of power to the hold-open device, the hold-open mechanism is released and the door becomes self-closing; and

(f) The release by means of smoke detection of one door in a stair enclosure results in closing all doors serving that stair.

5-2.1.9* Power-Operated Doors. Where required doors are operated by power upon the approach of a person or doors with power-assisted manual operation, the design shall be such that in the event of power failure, the door opens manually to permit egress travel or closes where necessary to safeguard the means of egress. The forces required to open these doors manually shall not be more than required in 5-2.1.4.5 except that the force required to set the door in motion shall not be more than 50 lbf (222 N). The door shall be designed and installed so that when a force is applied to the door on the side from which egress is made, it shall be capable of swinging from any position to the full use of the required width of the opening in which it is installed. (See 5-2.1.4.) On the egress side of each door, there shall be a readily visible, durable sign that reads:

“IN EMERGENCY PUSH TO OPEN”.

The sign shall be in letters not less than 1 in. (2.5 cm) high on a contrasting background.

Exception No. 1: Sliding, power-operated doors in exit access serving an occupant load of fewer than 50 that manually opens in the direction of door travel with forces not more than required in 5-2.1.4.5 shall not be required to have a swing-out feature. The required sign shall state "In Emergency Slide to Open".

*Exception No. 2:** In the emergency break-out mode, a door leaf located within a two-leaf opening shall be exempt from the minimum 32-in. (81-cm) single-leaf requirement of 5-2.1.2.2 provided the clear width of the single leaf is at least 30 in. (76 cm).

Exception No. 3: For a biparting sliding door in the emergency break-out mode, a door leaf located within a multiple-leaf opening shall be exempt from the minimum 32 in. (81 cm) single-leaf requirement of 5-2.1.2.2 if a minimum of 32 in. (81 cm) clear opening is provided by all leaves broken out.

Exception No. 4: Doors complying with 5-2.1.14.

Exception No. 5: As provided in Chapters 14 and 15.

5-2.1.10 Revolving Doors.

5-2.1.10.1 Revolving doors shall comply with the following:

(a) Revolving doors shall be capable of being collapsed into a book-fold position; and

Exception to (a): Existing revolving doors where approved by the authority having jurisdiction.

(b) When in the book-fold position, the parallel egress paths formed shall provide an aggregate width of 36 in. (91 cm); and

Exception to (b): Existing revolving doors where approved by the authority having jurisdiction.

(c) Revolving doors shall not be used within 10 ft (3 m) of the foot or top of stairs, or escalators. Under all conditions, there shall be a dispersal area acceptable to the authority having jurisdiction between the stairs or escalators and the revolving door; and

(d) The revolutions per minute (rpm) of revolving doors shall not exceed values in the following table:

Inside Diameter	Power Driven-Type Speed Control (rpm)	Manual-Type Speed Control (rpm)
6 ft 6 in. (2 m)	11	12
7 ft 0 in. (2.1 m)	10	11
7 ft 6 in. (2.3 m)	9	11
8 ft 0 in. (2.4 m)	9	10
8 ft 6 in. (2.6 m)	8	9
9 ft 0 in. (2.7 m)	8	9
9 ft 6 in. (2.9 m)	7	8
10 ft 0 in. (3.0 m)	7	8

(e) Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 ft (3 m) of the revolving door.

Exception No. 1 to (e): Revolving doors shall be permitted without adjacent swinging doors for street floor elevator lobbies provided no stairways or doors from other parts of the building discharge through the lobby and the lobby has no occupancy other than as a means of travel between elevators and street.

Exception No. 2 to (e): Existing revolving doors where the number of revolving doors is not more than the number of swinging doors within 20 ft (6.1 m).

5-2.1.10.2 Where permitted in Chapters 8 through 31, revolving doors shall be permitted as a component in a means of egress, provided that

(a) Revolving doors are not given credit for more than 50 percent of the required egress capacity, and

(b) Each revolving door is credited with not more than 50 persons capacity, and

Exception to (b): Revolving doors with at least a 9-ft (2.7-m) diameter shall be permitted egress capacity based on the clear opening width provided.

(c) Revolving doors are capable of being collapsed into a book-fold position when a force of not more than 130 lbf (578 N) is applied to wings within 3 in. (7.6 cm) of the outer edge.

5-2.1.10.3 Revolving doors not used as a component of a means of egress shall have a collapsing force of not more than 180 lbf (800 N).

Exception: Revolving doors, provided the collapsing force is reduced to not more than 130 lbf (578 N) where:

(a) There is a power failure or power is removed to the device holding the wings in position, and

(b) There is an actuation of the automatic sprinkler system where such system is provided, and

(c) There is actuation of a smoke detection system that is installed to provide coverage in all areas within the building that are within 75 ft (23 m) of the revolving doors, and

(d) There is the actuation of a clearly identified manual control switch in an approved location that reduces the holding force to not more than 130 lbf (578 N).

5-2.1.11 Turnstiles.

5-2.1.11.1 Turnstiles or similar devices that restrict travel to one direction or are used to collect fares or admission charges shall not be placed so as to obstruct any required means of egress.

Exception No. 1: Approved turnstiles not more than 39 in. (99 cm) high that turn freely in the direction of egress travel shall be permitted where revolving doors are permitted in Chapters 8 through 31.

Exception No. 2: Where turnstiles are approved by the authority having jurisdiction and permitted in Chapters 8 through 31, each turnstile shall be credited for 50 persons capacity provided such turnstiles:

(a) Freewheel in the egress direction when primary power is lost, and freewheel in the direction of egress travel upon the manual release by an employee assigned in the area; and

(b) Are not given credit for more than 50 percent of the required egress width; and

(c) Are not more than 39 in. (99 cm) high and have a clear width of at least 16½ in. (41.9 cm).

5-2.1.11.2 Turnstiles more than 39 in. (99 cm) high shall meet the requirements for revolving doors.

5-2.1.11.3 Turnstiles in or furnishing access to required exits shall provide at least 16½ in. (41.9 cm) clear width at and below a height of 39 in. (99 cm) and at least 22 in. (55.9 cm) clear width at heights above 39 in. (99 cm).

5-2.1.12 Doors in Folding Partitions. Where permanently mounted folding or movable partitions divide a room into smaller spaces, a swinging door or open doorway shall be provided as an exit access from each such space.

Exception No. 1: The swinging door shall not be required, and the partition shall be permitted to enclose the space completely, provided that

- (a) *The subdivided space is not used by more than 20 persons at any time; and*
- (b) *The use of the space is under adult supervision; and*
- (c) *The partitions are arranged so that they do not extend across any aisle or corridor used as an exit access to the required exits from the story; and*
- (d) *The partitions conform to the interior finish and other requirements of this Code; and*
- (e) *The partitions are of an approved type, have a simple method of release, and are capable of being opened quickly and easily by experienced persons in case of emergency.*

Exception No. 2: Where a subdivided space is provided with at least two means of egress, the swinging door in the folding partition shall not be required, and one such means of egress shall be permitted to be equipped with a horizontal sliding door complying with 5-2.1.14.

5-2.1.13 Balanced Doors. If panic hardware is installed on balanced doors, the panic hardware shall be of the push-pad type, and the pad shall not extend more than approximately one half the width of the door measured from the latch side. [See 5-2.1.7.2(a).]

5-2.1.14 Horizontal Sliding Doors. Horizontal sliding doors shall be permitted in means of egress, provided that

- (a) The door is operable by a simple method from either side without special knowledge or effort; and
- (b) The force, applied to the operating device in the direction of egress, required to operate the door is not more than 15 lbf (67 N); and
- (c) The force required to operate the door in the direction of door travel is not more than 30 lbf (133 N) to set the door in motion and 15 lbf (67 N) to close the door or open it to the minimum required width; and
- (d) The door is operable with a force not more than 50 lbf (222 N) when a force of 250 lbf (1110 N) is applied perpendicularly to the door adjacent to the operating device; and

Exception to (d): Horizontal sliding exit access doors serving an area having an occupant load of fewer than 50.

- (e) The door assembly complies with the fire protection rating and, where rated, is self-closing or automatic-closing by smoke detection in accordance with 5-2.1.8, and is installed in accordance with NFPA 80, *Standard for Fire Doors and Fire Windows*.

5-2.2 Stairs.

5-2.2.1 General. Stairs used as a component in the means of egress shall conform to the general requirements of Section 5-1 and to the special requirements of this subsection.

Exception No. 1: Aisle steps provided in Chapters 8 and 9.

Exception No. 2: Existing noncomplying stairs where approved by the authority having jurisdiction.

5-2.2.2 Dimensional Criteria.

5-2.2.2.1 Standard Stairs. Stairs shall be in accordance with Table 5-2.2.2.1(a).

Table 5-2.2.2.1(a) New Stairs

Minimum width clear of all obstructions, except projections not more than 3½ in. (8.9 cm) at or below handrail height on each side	44 in. (112 cm); 36 in. (91 cm) where total occupant load of all stories served by stairways is fewer than 50
Maximum height of risers	7 in. (17.8 cm)
Minimum height of risers	4 in. (10.2 cm)
Minimum tread depth	11 in. (27.9 cm)
Minimum headroom	6 ft 8 in. (203 cm)
Maximum height between landings	12 ft (3.7 m)
Landing	(See 5-2.1.3 and 5-2.1.4.4.)

Exception No. 1: Existing stairs in existing buildings shall be permitted to remain in use provided they meet the requirements for existing stairs shown in the table for existing stairs. Where approved by the authority having jurisdiction, existing stairs shall be permitted to be rebuilt in accordance with the Table 5-2.2.2.1(b)'s dimensional criteria for existing stairs and in accordance with other Code requirements in 5-2.2 for stairs.*

Table 5-2.2.2.1(b) Existing Stairs

	Class A	Class B
<i>Minimum width clear of all obstructions, except projections not more than 3½ in. (8.9 cm) at or below handrail height on each side</i>	44 in. (112 cm)	44 in. (112 cm)
<i>Maximum height of risers</i>	7½ in. (19.1 cm)	8 in. (20.3 cm)
<i>Minimum tread depth</i>	10 in. (25.4 cm)	9 in. (22.9 cm)
<i>Minimum headroom</i>	6 ft 8 in. (203 cm)	6 ft 8 in. (203 cm)
<i>Maximum height between landings</i>	12 ft (3.7 m)	12 ft (3.7 m)
<i>Landing</i>	(See 5-2.1.3 and 5-2.1.4.4.)	

Exception No. 2: Industrial equipment access as provided in Chapter 28.

5-2.2.2.2 Monumental Stairs. Monumental stairs, either inside or outside, shall be permitted as a component in a means of egress where all the requirements for stairs are met.

5-2.2.2.3 Curved Stairs. Curved stairs shall be permitted as a component in a means of egress provided the minimum depth of tread is 11 in. (27.9 cm) at a point 12 in. (30.5 cm) from the narrower end of the tread, and the smallest radius is at least twice the stair width.

Exception: Existing curved stairs shall be permitted provided the minimum depth of tread is 10 in. (25.4 cm) and the smallest radius is at least twice the stair width.

5-2.2.2.4 Spiral Stairs. Where permitted in Chapters 8 through 31, spiral stairs shall be permitted as a component in a means of egress, provided that

- (a) The occupant load served is not more than 5, and
- (b) The clear width of the stairs is at least 26 in. (66 cm), and
- (c) The height of risers is not more than 9½ in. (24.1 cm), and
- (d) Headroom is at least 6 ft 6 in. (198 cm), and
- (e) Treads have a minimum depth of 7½ in. (19.1 cm) at a point 12 in. (30.5 cm) from the narrower edge, and
- (f) All treads are identical.

5-2.2.2.5* Winders. Where permitted in Chapters 8 through 31, winders shall be permitted in stairs. Winders shall have a minimum tread depth of 6 in. (15.2 cm) and a minimum depth of tread of 11 in. (27.9 cm) at a point 12 in. (30.5 cm) from the narrowest edge.

Exception: Existing winders shall be permitted to remain provided they have a minimum tread depth of 6 in. (15.2 cm) and a minimum depth of tread of 9 in. (22.9 cm) at a point 12 in. (30.5 cm) from the narrowest edge.

5-2.2.3 Stair Details.

5-2.2.3.1 Construction.

5-2.2.3.1.1 All stairs serving as required means of egress shall be of permanent fixed construction.

Exception: Stairs serving seating that is designed to be repositioned in accordance with Chapters 8 and 9.

5-2.2.3.1.2 Each stair, platform, and landing in buildings required in this Code to be of Type I or Type II construction shall be of noncombustible material throughout.

Exception No. 1: Handrails.

Exception No. 2: Existing stairs.

5-2.2.3.2 Landings. Stairs and intermediate landings shall continue with no decrease in width along the direction of egress travel. In new buildings, every landing shall have a dimension measured in direction of travel equal to the width of the stair.

Exception: Landings shall be permitted to be not more than 4 ft (122 cm) in the direction of travel provided the stair has a straight run.

5-2.2.3.3* Tread and Landing Surfaces. Stair treads and landings shall be solid, uniformly slip resistant, and free of projections or lips that could trip stair users. If not vertical, risers shall be permitted to slope under the tread at an angle of not more than 30 degrees from vertical, however, the permitted projection of the nosing shall not be more than 1½ in. (3.8 cm).

Exception: Noncombustible grated stair treads and landings as provided in Chapters 8, 9, 14, 15, and 28.

5-2.2.3.4* Tread Slope. Tread slope shall not be more than ¼ in. per ft (2 cm per m) (a slope of 1 in 48).

5-2.2.3.5* Riser Height and Tread Depth. Riser height shall be measured as the vertical distance between tread nosings. Tread depth shall be measured horizontally between the verti-

cal planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge, but shall not include bevelled or rounded tread surfaces that slope more than 20 degrees (a slope of 1 in 2.75). At tread nosings, such beveling or rounding shall not be more than ½ in. (1.3 cm) in horizontal dimension.

5-2.2.3.6 Dimensional Uniformity. There shall be no variation more than ⅜ in. (0.5 cm) in the depth of adjacent treads or in the height of adjacent risers, and the tolerance between the largest and smallest riser or between the largest and smallest tread shall not be more than ⅜ in. (1 cm) in any flight.

Exception: Where the bottom riser adjoins a sloping public way, walk, or driveway having an established grade and serving as a landing, a variation in height of the bottom riser of not more than 3 in. (7.6 cm) in every 3 ft (91 cm) of stairway width shall be permitted.

5-2.2.4 Guards and Handrails.

5-2.2.4.1* Guards. Means of egress that are more than 30 in. (76 cm) above the floor or grade below shall be provided with guards to prevent falls over the open side.

5-2.2.4.2* Handrails. Stairs and ramps shall have handrails on both sides. In addition, handrails shall be provided within 30 in. (76 cm) of all portions of the required egress width of stairs. The required egress width shall be along the natural path of travel. (See also 5-2.2.4.5.)

Exception No. 1: On existing stairs, handrails shall be provided within 44 in. (112 cm) of all portions of the required egress width of stairs.

Exception No. 2: If part of a curb separating a sidewalk from a vehicular way, a single step or a ramp shall not be required to have a handrail.

Exception No. 3: Existing stairs, existing ramps, stairs within dwelling units and within guest rooms, and ramps within dwelling units and guest rooms shall have a handrail on at least one side.

5-2.2.4.3 Continuity. Required guards and handrails shall continue for the full length of each flight of stairs. At turns of stairs, inside handrails shall be continuous between flights at landings.

Exception: On existing stairs, handrails shall not be required to be continuous between flights of stairs at landings.

5-2.2.4.4 Projections. The design of guards and handrails and the hardware for attaching handrails to guards, balusters, or walls shall be such that there are no projections that might engage loose clothing. Openings in guards shall be designed to prevent loose clothing from becoming wedged in such openings.

5-2.2.4.5* Handrail Details.

(a) Handrails on stairs shall be at least 34 in. (86 cm) and not more than 38 in. (96 cm) above the surface of the tread, measured vertically to the top of the rail from the leading edge of the tread.

Exception No. 1 to (a): The height of required handrails that form part of a guard shall be permitted to be not more than 42 in. (107 cm) measured vertically to the top of the rail from the leading edge of the tread.

Exception No. 2 to (a): Existing required handrails shall be at least 30 in. (76 cm) and not more than 38 in. (96 cm) above the upper surface of the tread, measured vertically to the top of the rail from the leading edge of the tread.

Exception No. 3 to (a): Additional handrails that are lower or higher than the main handrail shall be permitted.*

(b)* New handrails shall provide a clearance of at least $1\frac{1}{2}$ in. (3.8 cm) between the handrail and the wall to which it is fastened.

(c)* Handrails shall have a circular cross section with an outside diameter of at least $1\frac{1}{4}$ in. (3.2 cm) and not more than 2 in. (5 cm). New handrails shall be continuously graspable along the entire length.

Exception No. 1 to (c): Any other shape with a perimeter dimension of at least 4 in. (10.2 cm), but not more than $6\frac{1}{4}$ in. (15.9 cm), and with the largest cross-sectional dimension not more than $2\frac{1}{4}$ in. (5.7 cm) shall be permitted provided that edges are rounded so as to provide a minimum radius of $\frac{1}{8}$ in. (0.3 cm).

Exception No. 2 to (c): Handrail brackets or balusters attached to the bottom surface of the handrail, which do not project horizontally beyond the sides of the handrail within 1 in. (2.5 cm) of the bottom of the handrail and which have edges with $\frac{1}{8}$ in. (0.3 cm) minimum radius, shall not be considered to be obstructions to graspability.

(d) New handrail ends shall be returned to the wall or floor or shall terminate at newel posts.

(e) New handrails that are not continuous between flights shall extend horizontally, at the required height, at least 12 in. (30.5 cm) beyond the top riser and continue to slope for a depth of one tread beyond the bottom riser.

Exception to (e): Where approved by the authority having jurisdiction because of space limitations and within dwelling units, the horizontal extension at the top of the flight shall not be required provided that the handrail extends, at the required height, to a point directly above the top riser.

5-2.2.4.6 Guard Details.

(a) The height of guards required in 5-2.2.4.1 shall be measured vertically to the top of the guard from the surface adjacent thereto.

(b) Guards shall be at least 42 in. (107 cm) high.

Exception No. 1 to (b): Existing guards within dwelling units shall be at least 36 in. (91 cm) high.

Exception No. 2 to (b): As provided in Chapters 8 and 9.

Exception No. 3 to (b): Existing guards on existing stairs shall be at least 30 in. (76 cm) high.*

(c)* Open guards shall have intermediate rails or an ornamental pattern such that a sphere 4 in. (10.1 cm) in diameter shall not pass through any opening up to a height of 34 in. (86 cm).

Exception No. 1 to (c): The triangular openings formed by the riser, tread, and bottom element of a guardrail at the open side of a stair shall be of such size that a sphere 6 in. (15.2 cm) in diameter shall not pass through the triangular opening.

Exception No. 2 to (c): In detention and correctional occupancies, in industrial occupancies, and in storage occupancies, the clear distance

between intermediate rails measured at right angles to the rails shall not be more than 21 in. (53.3 cm).

Exception No. 3 to (c): Approved existing open guards.

5-2.2.5 Enclosure and Protection of Stairs.

5-2.2.5.1 Enclosures. All inside stairs serving as an exit or exit component shall be enclosed in accordance with 5-1.3.2. All other inside stairs shall be protected in accordance with 6-2.4.

Exception: In existing buildings, where a two-story exit enclosure connects the story of exit discharge with an adjacent story, the exit shall be required only to be enclosed on the story of exit discharge and at least 50 percent of the number and capacity of exits on the story of exit discharge shall be independent of such enclosures.

5-2.2.5.2* Exposures. Where nonrated walls or unprotected openings enclose the exterior of a stairway and the walls or openings are exposed by other parts of the building at an angle of not more than 180 degrees, the building enclosure walls within 10 ft (3 m) horizontally of the nonrated wall or unprotected opening shall be constructed as required for stairway enclosures including opening protectives. Construction shall extend vertically from the ground to a point 10 ft (3 m) above the topmost landing of the stairs or to the roofline, whichever is lower.

Exception No. 1: Existing stairways.

Exception No. 2: The fire resistance rating of the separation extending 10 ft (3 m) from the stairs shall not be required to be more than 1 hour with openings having a $\frac{3}{4}$ hr fire protection rating.

5-2.2.5.3* Usable Space. There shall be no enclosed, usable space within an exit enclosure, including under stairs, nor shall any open space within the enclosure be used for any purpose that has the potential to interfere with egress.

Exception: Enclosed usable space shall be permitted under stairs provided the space is separated from the stair enclosure by the same fire resistance as the exit enclosure. Entrance to such enclosed usable space shall not be from within the stair enclosure. (See also 5-1.3.2.3.)

5-2.2.5.4* Stair Identification Signs. Stairs serving five or more stories shall be provided with signage within the enclosure at each floor landing. The signage shall indicate the story, the terminus of the top and bottom of the stair enclosure, and the identification of the stair. The signage also shall state the story of, and the direction to, exit discharge. The signage shall be inside the enclosure located approximately 5 ft (1.5 m) above the floor landing in a position that is readily visible when the door is in the open or closed position.

5-2.2.5.5 Egress Direction Signs. Wherever an enclosed stair requires travel in an upward direction to reach the level of exit discharge, signs with directional indicators indicating the direction to the level of exit discharge shall be provided at each floor level landing from which upward direction of travel is required. Such signage shall be readily visible when the door is in the open or closed position.

Exception No. 1: Where signs required by 5-2.2.5.4 are provided.

Exception No. 2: Stairs that extend not more than 1 story below the level of exit discharge where the exit discharge is clearly obvious.

5-2.2.6 Special Provisions for Outside Stairs.

5-2.2.6.1 Access. Where approved by the authority having jurisdiction, outside stairs shall be permitted where leading to

roofs of other sections of the building or an adjoining building, where the construction is fire resistive, where there is a continuous and safe means of egress from the roof, and where all other reasonable requirements for life safety are maintained. (See also 5-7.6.)

5-2.2.6.2 Balconies. Balconies to which egress doors lead shall be approximately level with the floor of the building.

Exception: In existing buildings located in climates where balconies are subject to accumulation of snow or ice, one step, not more than 8 in. (20.3 cm), shall be permitted below the level of the inside floor.

5-2.2.6.3* Visual Protection. Outside stairs shall be arranged to avoid any impediments to the use of the stairs by persons having a fear of high places. For stairs more than three stories in height, any arrangement intended to meet this requirement shall be at least 4 ft (1.2 m) in height.

5-2.2.6.4 Separation and Protection of Outside Stairs. Outside stairs shall be separated from the interior of the building by walls with the fire resistance rating required for enclosed stairs with fixed or self-closing opening protectives. This construction shall extend vertically from the ground to a point 10 ft (3 m) above the topmost landing of the stairs or to the roofline, whichever is lower, and at least 10 ft (3 m) horizontally.

Exception No. 1: Outside stairs serving an exterior exit access balcony that has two remote outside stairways or ramps.

Exception No. 2: Outside stairs serving not more than two adjacent stories, including the story of exit discharge, shall be permitted to be unprotected where there is a remotely located second exit.

Exception No. 3: In existing buildings, outside stairs serving not more than three adjacent stories, including the story of exit discharge, shall be permitted to be unprotected where there is a remotely located second exit.

Exception No. 4: The fire resistance rating of the separation extending 10 ft (3 m) from the stairs shall not be required to be more than 1 hr with openings having a $\frac{3}{4}$ -hr fire protection rating.

5-2.2.6.5 Protection of Openings. All openings below an outside stair shall be protected with an assembly having a $\frac{3}{4}$ -hr fire protection rating:

(a) Where located in a court, the smallest dimension of which is not more than one third its height, or

(b) Where located in an alcove having a width not more than one third its height and a depth more than one fourth its height.

5-2.2.6.6* Water Accumulation. Outside stairs and landings shall be designed to minimize water accumulation on their surfaces.

5-2.2.6.7 Openness. Outside stairs shall be at least 50 percent open on one side and shall be arranged to restrict the accumulation of smoke.

5-2.3 Smokeproof Enclosures.

5-2.3.1 General. Where smokeproof enclosures are required in other sections of this Code, they shall comply with 5-2.3.

Exception: Existing smokeproof enclosures where approved by the authority having jurisdiction.

5-2.3.2 Performance Design. The appropriate design method shall be any system that meets the definition of smokeproof enclosure. The smokeproof enclosure shall be permitted to be created by using natural ventilation, by using mechanical ventilation incorporating a vestibule, or by pressurizing the stair enclosure.

5-2.3.3 Enclosure. A smokeproof enclosure shall consist of a continuous stair enclosed from the highest point to the lowest point by barriers having 2-hr fire resistance ratings. Where a vestibule is used, it shall be within the 2-hr rated enclosure and shall be considered part of the smokeproof enclosure.

5-2.3.4 Vestibule. Where a vestibule is provided, the doorway into the vestibule shall be protected with an approved fire door assembly having a $1\frac{1}{2}$ -hr fire protection rating, and the fire door assembly from the vestibule to the stair shall have at least a 20-min fire protection rating. Doors shall be designed to minimize air leakage and shall be self-closing or shall be automatic-closing by actuation of a smoke detector within 10 ft (3 m) of the vestibule door.

5-2.3.5 Discharge. Every smokeproof enclosure shall discharge into a public way, into a yard or court having direct access to a public way, or into an exit passageway. Such exit passageways shall be without openings other than the entrance from the smokeproof enclosure and the door to the outside yard, court, or public way. The exit passageway shall be separated from the remainder of the building by a 2-hr fire resistance rating.

5-2.3.6 Access. Access to the stair shall be by way of a vestibule or by way of an exterior balcony.

Exception: Smokeproof enclosures consisting of a pressurized stair enclosure complying with 5-2.3.9.

5-2.3.7 Natural Ventilation. Smokeproof enclosures using natural ventilation shall comply with 5-2.3.3 and the following:

(a) Where access to the stair is by means of an open exterior balcony, the door assembly to the stair shall have a $1\frac{1}{2}$ -hr fire protection rating and shall be self-closing or shall be automatic-closing by actuation of a smoke detector. Openings adjacent to such exterior balconies shall be protected in accordance with 5-2.2.6.5; and

(b) Every vestibule shall have a minimum net area of 16 sq ft (1.5 sq m) of opening in an exterior wall facing an exterior court, yard, or public space at least 20 ft (6.1 m) in width; and

(c) Every vestibule shall have a minimum dimension of at least the required width of the corridor leading to it and a minimum dimension of 72 in. (183 cm) in the direction of travel.

5-2.3.8 Mechanical Ventilation. Smokeproof enclosures by mechanical ventilation shall comply with 5-2.3.3 and the following:

(a) Vestibules shall have a minimum dimension of 44 in. (112 cm) in width and 72 in. (183 cm) in direction of travel; and

(b) The vestibule shall be provided with at least one air change per minute, and the exhaust shall be 150 percent of the supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate tightly constructed ducts used only for those purposes. Supply air shall enter the vestibule within 6 in. (15.2 cm) of the floor level. The top of the exhaust register shall be located not more than

6 in. (15.2 cm) down from the top of the trap and shall be entirely within the smoke trap area. Doors, when in the open position, shall not obstruct duct openings. Controlling dampers shall be permitted in duct openings if needed to meet the design requirements; and

(c) To serve as a smoke and heat trap and to provide an upward moving air column, the vestibule ceiling shall be at least 20 in. (50.8 cm) higher than the door opening into the vestibule. The height shall be permitted to be decreased where justified by engineering design and field testing; and

(d) The stair shall be provided with a dampered relief opening at the top and supplied mechanically with sufficient air to discharge at least 2500 cu ft/min (70.8 cu m/min) through the relief opening while maintaining a minimum positive pressure of 0.10 in. water column (25 Pa) in the stair relative to the vestibule with all doors closed.

5-2.3.9 Stair Pressurization.

5-2.3.9.1* Smokeproof enclosures by stair pressurization shall utilize an approved engineered system with a minimum design pressure difference across the barrier of 0.05 in. water column (12.5 Pa) in sprinklered buildings or 0.10 in. water column (25 Pa) in nonsprinklered buildings, and shall be capable of maintaining these pressure differences under likely conditions of stack effect or wind. The pressure difference across doors shall not be more than that which permits the door to begin to be opened by a force of 30 lbf (133 N) in accordance with 5-2.1.4.5.

5-2.3.9.2 Equipment and ductwork for stair pressurization shall be located

(a) Exterior to the building and directly connected to the stairway by ductwork enclosed in noncombustible construction; or

(b) Within the stair enclosure with intake and exhaust air directly to the outside or through ductwork enclosed by a 2-hr fire-resistive rating; or

(c) Within the building if separated from the remainder of the building, including other mechanical equipment, by a 2-hr fire-resistive rating.

Exception to (c): Where the building, including the stairway enclosure, is protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, the fire resistance rating shall be at least 1 hr.

In any case, openings into the required fire resistance rating shall be limited to those needed for maintenance and operation and shall be protected by self-closing fire protection-rated devices in accordance with 6-2.3.2.3.

5-2.3.10 Activation of Mechanical Ventilation Systems.

5-2.3.10.1 For both mechanical ventilation and pressurized stair enclosure systems, the activation of the systems shall be initiated by a smoke detector installed in an approved location within 10 ft (3 m) of the entrance to the smokeproof enclosure.

5-2.3.10.2 The required mechanical systems shall operate at the activation of the smoke detectors in 5-2.3.10.1 and by manual controls accessible to the fire department. The required system also shall be initiated by the following, if provided:

(a) Water flow signal from a complete automatic sprinkler system, and

(b) General evacuation alarm signal. (*See 7-6.3.5.*)

5-2.3.11 Door Closers. The activation of an automatic-closing device on any door in the smokeproof enclosure shall activate all other automatic-closing devices on doors in the smokeproof enclosure.

5-2.3.12 Standby Power. Standby power for mechanical ventilation equipment shall be provided by an approved, self-contained generator set to operate whenever there is a loss of power in the normal house current. The generator shall be located in a room having a minimum 1-hr fire resistance-rated separation from the remainder of the building. The generator shall have a minimum fuel supply adequate to operate the equipment for two hours.

5-2.3.13 Testing. Before the mechanical equipment is accepted by the authority having jurisdiction, it shall be tested to confirm that the mechanical equipment is operating in compliance with these requirements. All operating parts of the system shall be tested semiannually by approved personnel, and a log shall be kept of the results.

5-2.4 Horizontal Exits.

5-2.4.1* General. Horizontal exits shall be permitted to be substituted for other exits to the extent that the total egress capacity of the other exits (stairs, ramps, doors leading outside the building) shall be at least half that required for the entire area of the building or connected buildings provided no horizontal exits exist.

Exception: As provided in Chapters 12, 13, 14, and 15.

5-2.4.2 Fire Compartments.

5-2.4.2.1 Every fire compartment for which credit is allowed in connection with a horizontal exit shall have, in addition to the horizontal exit or exits, at least one exit, but not less than 50 percent of the required number and capacity of exits, that is not a horizontal exit. Any fire compartment not having an exit leading outside shall be considered as part of an adjoining compartment with an exit leading to the outside.

Exception: As provided in Chapters 12, 13, 14, and 15.

5-2.4.2.2 Every horizontal exit for which credit is given shall be arranged so that there are continuously available paths of travel leading from each side of the exit to stairways or other means of egress leading to outside the building.

5-2.4.2.3 Wherever either side of the horizontal exit is occupied, the doors used in connection with the horizontal exit shall be unlocked from the egress side.

Exception: As provided in Chapters 12, 13, 14, and 15.

5-2.4.2.4 The floor area on either side of a horizontal exit shall be sufficient to hold the occupants of both floor areas, providing at least 3 sq ft (0.28 sq m) clear floor area per person.

Exception: Special floor area requirements as provided in Chapters 12, 13, 14, and 15.

5-2.4.3 Fire Barriers.

5-2.4.3.1 Fire barriers separating buildings or areas between which there are horizontal exits shall have a 2-hr fire resistance rating and shall provide a separation continuous to ground. (*See also 6-2.3.*)

Exception: Where a fire barrier provides a horizontal exit in any story of a building, such fire barrier shall not be required on other stories provided:

(a) The stories on which the fire barrier is omitted are separated from the story with the horizontal exit by construction having a fire resistance rating at least equal to that of the horizontal exit fire barrier; and

(b) Vertical openings between the story with the horizontal exit and the open fire area story are enclosed with construction having a fire resistance rating at least equal to that of the horizontal exit fire barrier; and

(c) All required exits, other than horizontal exits, discharge directly to the outside.

5-2.4.3.2 Where fire barriers serving horizontal exits terminate at outside walls and the outside walls for a distance of 10 ft (3 m) on each side of the horizontal exit are at an angle of less than 180 degrees, the outside walls shall have a 1-hr fire resistance rating with $\frac{3}{4}$ -hr fire protection rating opening protectives for a distance of 10 ft (3 m) on each side of the horizontal exit.

Exception: Existing horizontal exits.

5-2.4.3.3 Fire barriers forming horizontal exits shall not be penetrated by ducts.

Exception No. 1: Existing penetrations protected by approved and listed fire dampers.

Exception No. 2: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: Duct penetrations as permitted in Chapters 14 and 15 that are protected by combination fire dampers/smoke leakage-rated dampers that meet the smoke damper actuation requirements of 6-3.5.

5-2.4.3.4 Any opening in such fire barriers, shall be protected as provided in 6-2.3.2.3.

5-2.4.3.5 Doors in horizontal exits shall comply with 5-2.1.4.

Exception: Sliding doors as provided in Chapters 28 and 29.

5-2.4.3.6 Swinging fire doors shall be permitted in horizontal exits, provided:

(a) They swing in the direction of egress travel; and

(b) Where a horizontal exit serves areas on both sides of a fire barrier, there are adjacent openings with swinging doors, opening in opposite directions, with signs on each side of the fire barrier indicating the door that swings with the travel from that side; or

Exception to (b): Sleeping room areas in detention and correctional occupancies shall be exempt from the sign requirement.

(c) They are of any other approved arrangement provided that doors always swing with any possible egress travel.

Exception No. 1: Horizontal exit door swing as provided in Chapters 13 and 15.

Exception No. 2: Horizontal exit doors in corridors no greater than 6 ft (183 cm) wide in existing buildings.

5-2.4.3.7* Doors in horizontal exits shall be designed and installed to minimize air leakage.

5-2.4.3.8* All fire doors in horizontal exits shall be self-closing or automatic-closing in accordance with 5-2.1.8. Horizontal exit doors located across a corridor shall be automatic-closing in accordance with 5-2.1.8.

Exception: Where approved by the authority having jurisdiction, existing doors in horizontal exits shall be permitted to be self-closing.

5-2.4.4 Bridges and Balconies.

5-2.4.4.1 Each bridge or balcony utilized in conjunction with horizontal exits shall have guards and handrails in conformity with the requirements of 5-2.2.4.

5-2.4.4.2 Every bridge or balcony shall be at least as wide as the door leading to it and at least 44 in. (112 cm) wide for new construction.

5-2.4.4.3 Where the bridge or balcony serves as a horizontal exit in one direction, the door shall be required to swing only in the direction of egress travel.

Exception: Horizontal exit door swing as provided in Chapters 13 and 15.

5-2.4.4.4 Where the bridge or balcony serves as a horizontal exit in both directions, doors shall be provided in pairs, swinging in opposite directions. Only the door swinging in the direction of egress travel shall be counted in determination of egress capacity.

Exception No. 1: If the bridge or balcony has sufficient floor area to accommodate the occupant load of either connected building or fire area on the basis of 3 sq ft (0.28 sq m) per person.

Exception No. 2: In existing buildings, doors on both ends of the bridge or balcony shall be permitted to swing out from the building where approved by the authority having jurisdiction.

Exception No. 3: Horizontal exit door swing as provided in Chapters 13 and 15.

5-2.4.4.5 The bridge or balcony floor shall be approximately level with the building floor and, in climates subject to the accumulation of snow and ice, shall be protected to prevent the accumulation of snow and ice.

Exception: In existing buildings in climates where balconies or bridges are subject to the accumulation of snow or ice, one step, not more than 8 in. (20.3 cm), shall be permitted below the level of the inside floor.

5-2.4.4.6 All wall openings, in both of the connected buildings or fire areas, any part of which is within 10 ft (3 m) of any bridge or balcony as measured horizontally or below, shall be protected with fire doors or fixed fire window assemblies having a $\frac{3}{4}$ -hr fire protection rating.

Exception No. 1: Where bridges have solid sides at least 6 ft (183 cm) in height, such protection of wall openings shall not be required.

Exception No. 2: Existing bridges and balconies where approved by the authority having jurisdiction.

5-2.5 Ramps.

5-2.5.1 General. Every ramp used as a component in a means of egress shall conform to the general requirements of Section 5-1 and to the special requirements of this subsection.

5-2.5.2 Dimensional Criteria. Ramps shall be in accordance with Table 5-2.5.2.

Table 5-2.5.2 New Ramps

Minimum width clear of all obstructions, except projections not more than 3½ in. (8.9 cm) at or below handrail height on each side	44 in. (112 cm)
Maximum slope	1 in 12 for > 6 in. (>15.2 cm) rise 1 in 10 for > 3 in. (> 7.6 cm) and ≤ 6 in. (≤ 15.2 cm) rise 1 in 8 for ≤ 3 in. (≤ 7.6 cm) rise
Maximum cross slope	1 in 48
Maximum rise for a single ramp run	30 in. (76 cm)

Exception No. 1: Aisle ramps as permitted in Chapters 8 and 9.

Exception No. 2: Existing ramps shall be permitted to remain in use or be rebuilt provided they meet the requirements shown in the table for existing ramps.

Existing Ramps

	Class A	Class B
Minimum width	44 in. (122 cm)	30 in. (76 cm)
Maximum slope	1 in 10	1 in 8
Maximum height between landings	12 ft (3.7 m)	12 ft (3.7 m)

Exception No. 3: Existing Class B ramps with slopes not steeper than 1 in 6 shall be permitted to remain in use where approved by the authority having jurisdiction.

Exception No. 4: Existing ramps with slopes no steeper than 1 in 10 shall not be required to be provided with landings.

Exception No. 5: Industrial equipment access as provided in Chapter 28.

Exception No. 6: Ramps providing access to vehicles, vessels, mobile structures, and aircraft shall not be required to comply with the maximum slope or maximum rise for a single ramp run.

5-2.5.3 Ramp Details.

5-2.5.3.1 Construction.

(a) All ramps serving as required means of egress shall be of permanent fixed construction.

(b) A ramp used as a means of egress in a building more than three stories in height, or in a building of any height of noncombustible or fire-resistive construction, shall be constructed of an assembly of noncombustible or limited-combustible material. The ramp floor and landings shall be solid and without perforations.

5-2.5.3.2 Landings.

(a) Ramps shall have landings at the top, bottom, and at doors opening onto the ramp. The slope of the landing shall not be steeper than 1 in 48. Every landing shall have a dimension measured in the direction of travel at least the width of the ramp.

Exception to (a): Landings shall be permitted to be not more than 4 ft (122 cm) in the direction of travel provided the ramp has a straight run.

(b) Any changes in travel direction shall be made only at landings. Ramps and intermediate landings shall continue with no decrease in width along the direction of egress travel.

Exception to (b): Existing ramps shall be permitted to change direction without a landing.

5-2.5.3.3 Slip Resistance. Ramps and landings shall have slip-resistant surfaces.

5-2.5.3.4 Drop-Offs. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from traveling off the edge of the ramp. Curbs or barriers shall be at least 4 in. (10.1 cm) in height.

5-2.5.4 Guards and Handrails. Guards complying with 5-2.2.4 shall be provided for ramps. Handrails complying with 5-2.2.4 shall be provided along both sides of a ramp segment steeper than 1 in 20. The height of handrails and guards shall be measured vertically to the top of the guard or rail from the walking surface adjacent thereto.

Exception: Guards and handrails provided for ramped aisles in accordance with Chapters 8 and 9.

5-2.5.5 Enclosure and Protection of Ramps. Ramps in a required means of egress shall be enclosed or protected as a stair in accordance with 5-2.2.5. The use of Exceptions No. 2 and 3 to 5-2.2.6.4 shall be prohibited.

5-2.5.6 Special Provisions for Outside Ramps.

5-2.5.6.1 Floor Level. Balconies or landings to which doors lead shall be approximately level with the floor of the building.

Exception: In existing buildings located in climates where balconies or landings are subject to accumulation of snow or ice, one step, not more than 8 in. (20.3 cm), shall be permitted below the level of the inside floor.

5-2.5.6.2* Visual Protection. Outside ramps shall be arranged to avoid any impediments to their use by persons having a fear of high places. For ramps more than three stories in height, any arrangement intended to meet this requirement shall be at least 4 ft (122 cm) in height.

5-2.5.6.3* Water Accumulation. Outside ramps and landings shall be designed to minimize water accumulation on their surfaces.

5-2.6* Exit Passageways.

5-2.6.1* General. Exit passageways used as exit components shall conform to the general requirements of Section 5-1 and to the special requirements of this subsection.

5-2.6.2 Width. The width of an exit passageway shall be adequate to accommodate the aggregate required capacity of all exits discharging through it.

Exception No. 1: Where an exit passageway serves occupants of the level of exit discharge as well as other stories, capacity shall not be required to be aggregated.*

Exception No. 2: As permitted in Chapters 24 and 25, an exit passageway in a covered mall building shall be permitted to accommodate occupant loads independently from the covered mall and the tenant spaces. (See Exception to 24-2.2.7 and Exception to 25-2.2.7.)

5-2.6.3 Floor. The floor shall be solid and without perforations.

5-2.7 Escalators and Moving Walks. Escalators and moving walks shall not constitute a part of the required means of egress.

Exception: Previously approved escalators and moving walks in existing buildings.

5-2.8 Fire Escape Stairs.

5-2.8.1 General.

5-2.8.1.1 Fire escape stairs shall comply with the provisions of 5-2.8.

Exception: Existing noncomplying fire escape stairs shall be permitted where approved by the authority having jurisdiction.

5-2.8.1.2 Fire escape stairs shall not constitute any of the required means of egress.

Exception No. 1: Fire escape stairs shall be permitted on existing buildings as permitted in Chapters 8 through 32 but shall not constitute more than 50 percent of the required means of egress.

Exception No. 2: New fire escape stairs shall be permitted to be erected on existing buildings only where the authority having jurisdiction has determined that outside stairs are impractical (see 5-2.2). New fire escape stairs shall not incorporate ladders or access windows, regardless of occupancy classification or occupant load served.

5-2.8.1.3 Fire escape stairs of the return platform-type with superimposed runs or the straight run-type with a platform that continues in the same direction shall be permitted. Either type shall be permitted to be parallel to or at right angles to buildings. Either type shall be permitted to be attached to buildings or erected independently of buildings and connected by walkways.

5-2.8.2 Protection of Openings. Fire escape stairs shall be exposed to the smallest possible number of window and door openings. Each opening shall be protected with approved fire door or fire window assemblies where the opening or any portion of the opening is located as follows.

(a) *Horizontally.* If within 15 ft (4.5 m) of any balcony, platform, or stairway constituting a component of the fire escape stair.

(b) *Below.* If within three stories or 35 ft (10 m) of any balcony, platform, walkway, or stairway constituting a component of the fire escape stair or within two stories or 20 ft (6 m) of a platform or walkway leading from any story to the fire escape stair.

(c) *Above.* If within 10 ft (3 m) of any balcony, platform, or walkway as measured vertically or of any stair tread surface as measured vertically.

(d) *Top Story.* Protection for wall openings shall not be required where stairs do not lead to the roof.

(e) *Court.* Any wall facing a court served by a fire escape stair where the least dimension of the court is not greater than one third of the height to the uppermost platform of the fire escape stair measured from the ground.

(f) *Alcove.* Any wall facing an alcove served by a fire escape stair where the width of the alcove is not greater than one third or the depth more than one fourth of the height to the uppermost platform of the fire escape stair measured from the ground.

Exception: The provisions of 5-2.8.2 shall be permitted to be modified by the authority having jurisdiction in consideration of automatic sprinkler protection, low hazard occupancy, or other special conditions.

5-2.8.3 Access.

5-2.8.3.1 Access to fire escape stairs shall be in accordance with 5-2.8.4 and 5-5.1.2.

Exception: Where permitted in the existing occupancy chapters of this Code, access to fire escape stairs shall be permitted by way of windows. Screening or storm windows shall be prohibited where they restrict free access to the fire escape stair. Windows shall be arranged and maintained so as to be easily opened.

5-2.8.3.2 Fire escape stairs shall extend to the roof in all cases where the roof is subject to occupancy or provides an area of safe refuge.

Exception: If the roof has a pitch of 1 to 6 or less, fire escape ladders in accordance with 5-2.9 or alternating tread devices in accordance with 5-2.11 shall be provided for access to the roof.

5-2.8.3.3 Access to a fire escape stair shall be directly to a balcony, landing, or platform and shall be no higher than the floor or windowsill level and no lower than 8 in. (20.3 cm) below the floor level or 18 in. (45.7 cm) below the windowsill.

5-2.8.4 Stair Details. Fire escape stairs shall comply with the requirements of Table 5-2.8.4(a) and subsequent sections. Replacement of fire escape stairs shall comply with the requirements of Table 5-2.8.4(b).

5-2.8.5 Guards, Handrails, and Visual Enclosures.

5-2.8.5.1 All fire escape stairs shall have walls or guards and handrails on both sides in accordance with 5-2.2.4.

Exception: Existing handrails on existing fire escape stairs shall be permitted provided the height is not be more than 42 in. (107 cm).

5-2.8.5.2 Replacement fire escape stairs in occupancies serving more than 10 occupants shall have visual enclosures to avoid any impediments to stair use by persons having a fear of high places. For stairs more than three stories in height, any arrangement intended to meet this requirement shall be at least 42 in. (107 cm) in height.

5-2.8.6 Materials and Strength.

5-2.8.6.1 Noncombustible materials shall be used for the construction of all components of fire escape stairs.

5-2.8.6.2 The authority having jurisdiction shall be permitted to approve any existing fire escape stair that has been shown by load test or other satisfactory evidence to have adequate strength.

5-2.8.7* Swinging Stairs.

5-2.8.7.1 A single swinging stair section shall be permitted to terminate fire escape stairs over sidewalks, alleys, or driveways where it is impractical to make the termination with fire escape stairs.

5-2.8.7.2 Swinging stair sections shall not be located over doors, over the path of travel from any other exit, or in any locations where there are likely to be obstructions.

5-2.8.7.3 Width of swinging stair sections shall be at least that of the fire escape stairs above.

Table 5-2.8.4(a) Fire Escape Stairs

	Serving More Than 10 Occupants	Serving 10 or Fewer Occupants
Minimum widths	22 in. (55.9 cm) clear between rails	18 in. (45.7 cm) clear between rails
Minimum horizontal dimension of any landing or platform	22 in. (55.9 cm) clear	18 in. (45.7 cm) clear
Maximum riser height	9 in. (22.9 cm)	12 in. (30.5 cm)
Minimum tread, exclusive of nosing	9 in. (22.9 cm)	6 in. (15.3 cm)
Minimum nosing or projection	1 in. (2.5 cm)	No requirement
Tread construction	Solid $\frac{1}{2}$ -in. (1.3-cm) diameter perforations permitted	Flat metal bars on edge or sq bars secured against turning, spaced $1\frac{1}{4}$ in. (3.2 cm) max. on centers
Winders	None	Permitted subject to capacity penalty
Risers	None	No requirement
Spiral	None	Permitted subject to capacity penalty
Maximum height between landings	12 ft (3.7 m)	No requirement
Headroom, minimum	6 ft 8 in. (203 cm)	Same
Handrail height	42 in. (107 cm)	Same
Access to escape	Door or casement windows 24 in. $\times$ 6 ft 6 in. (61 cm $\times$ 198 cm) or double hung windows 30 in. $\times$ 36 in. (76 cm $\times$ 91 cm) clear opening	Windows providing a clear opening of at least 20 in. (50.8 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area
Level of access opening	Not over 12 in. (30.5 cm) above floor; steps if higher	Same
Discharge to ground	Swinging stair section permitted if approved by authority having jurisdiction	Swinging stair, or ladder if approved by authority having jurisdiction
Capacity, number of persons	0.5 in. (1.3 cm) per person, if access by door; 1.0 in. (2.5 cm) per person if access by climbing over windowsill	10; if winders or ladder from bottom balcony, 5; if both, 1

5-2.8.7.4 Pitch of swinging stair sections shall be no steeper than that of the fire escape stairs above.

5-2.8.7.5 Guards and handrails, in accordance with 5-2.2.4, shall be provided and shall be similar in height and construc-

Table 5-2.8.4(b) Replacement Fire Escape Stairs

	Serving More Than 10 Occupants	Serving 10 or Fewer Occupants
Minimum widths	22 in. (55.9 cm) clear between rails	Same
Minimum horizontal dimension of any landing or platform	22 in. (55.9 cm)	Same
Maximum riser height	9 in. (22.9 cm)	Same
Minimum tread, exclusive of nosing	10 in. (25.4 cm)	Same
Tread construction	Solid, $\frac{1}{2}$ -in. (1.3-cm) dia. perforations permitted	Same
Winders	None	Permitted subject to 5-2.2.2.5
Spiral	None	Permitted subject to 5-2.2.2.4
Risers	None	None
Maximum height between landings	12 ft (3.7 m)	Same
Headroom, minimum	6 ft 8 in. (203 cm)	Same
Access to escape	Door or casement windows 24 in. $\times$ 6 ft 6 in. (61 cm $\times$ 198 cm) or double hung windows 30 in. $\times$ 36 in. (76 cm $\times$ 91 cm) clear opening	Windows providing a clear opening of at least 20 in. (50.8 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area
Level of access opening	Not over 12 in. (30.5 cm) above floor; steps if higher	Same
Discharge to ground	Swinging stair section permitted if approved by authority having jurisdiction	Same
Capacity, number of persons	0.5 in. (1.3 cm) per person, if access by door; 1.0 in. (2.5 cm) per person if access by climbing over windowsill	10

tion to those used with the fire escape stairs above. Guards and handrails shall be designed to prevent any possibility of injury to persons where stairs swing downward. Minimum clearance between moving sections and any other portion of the stair system where hands have the potential to be caught shall be 4 in. (10.2 cm).

5-2.8.7.6 If the distance from the lowest platform to ground is at least 12 ft (3.7 m), an intermediate balcony not more than 12 ft (3.7 m) from the ground and at least 7 ft (2.1 m) in

the clear underneath shall be provided, with width at least that of the stairs and length at least 4 ft (1.2 m).

5-2.8.7.7 Swinging stairs shall be counterbalanced about a pivot, and cables shall not be used. A weight of 150 lb (68 kg) located one step from the pivot shall not cause the stairs to swing downward, and a weight of 150 lb (68 kg) located one quarter of the length of the swinging stairs from the pivot shall positively cause the stairs to swing down.

5-2.8.7.8 The pivot for swinging stairs shall be of a corrosion-resistant assembly or have clearances to prevent sticking due to corrosion.

5-2.8.7.9* Devices shall not be installed to lock a swinging stair section in the up position.

5-2.8.8 Intervening Spaces.

5-2.8.8.1 Where approved by the authority having jurisdiction, fire escape stairs shall be permitted to lead to an adjoining roof that is crossed before continuing downward travel. The direction of travel shall be clearly marked, and walkways with guards and handrails complying with 5-2.2.4 shall be provided.

5-2.8.8.2 Where approved by the authority having jurisdiction, fire escape stairs shall be permitted to be used in combination with inside or outside stairs complying with 5-2.2, provided a continuous safe path of travel is maintained.

5-2.9 Fire Escape Ladders.

5-2.9.1 General. Fire escape ladders shall only be permitted if providing

- (a) Access to unoccupied roof spaces as permitted in 5-2.8.3.2; or
- (b) A second means of egress from storage elevators as permitted in Chapter 29; or
- (c) A means of egress from towers and elevated platforms around machinery or similar spaces subject to occupancy by no more than three persons all capable of using the ladder; or
- (d) A secondary means of egress from boiler rooms or similar spaces subject to occupancy by no more than three persons all capable of using the ladder; or
- (e) Access to the ground from the lowest balcony or landing of a fire escape stair for very small buildings as permitted in 5-2.8.4 where approved by the authority having jurisdiction.

5-2.9.2 Construction and Installation.

5-2.9.2.1 Fire escape ladders shall comply with ANSI A14.3, *Safety Code for Fixed Ladders*.

Exception No. 1: Existing ladders complying with the edition of this Code that was in effect when the ladders were installed shall be permitted where approved by the authority having jurisdiction.

Exception No. 2: Fixed industrial stairs complying with ANSI A1264.1, Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems, minimum requirements for fixed stairs shall be permitted where fire escape ladders are permitted in accordance with Chapter 28.

5-2.9.2.2 Ladders installed with a pitch of not more than 75 degrees shall be prohibited.

5-2.9.2.3 Combustible ladders shall be prohibited.

5-2.9.3 Access. The lowest rung of any ladder shall not be more than 12 in. (30.5 cm) above the level of the surface beneath it.

5-2.10 Slide Escapes.

5-2.10.1 General.

5-2.10.1.1 A slide escape shall be permitted as a component in a means of egress where permitted in Chapters 8 through 31.

5-2.10.1.2 Each slide escape shall be of an approved type.

5-2.10.2 Capacity.

5-2.10.2.1 Slide escapes, where permitted as required means of egress, shall be rated at a capacity of 60 persons.

5-2.10.2.2 Slide escapes shall not constitute more than 25 percent of the required egress capacity from any building or structure or any individual story thereof.

Exception: As permitted in Chapter 28.

5-2.11* Alternating Tread Devices.

5-2.11.1 Alternating tread devices complying with 5-2.11.2 shall be permitted if providing

- (a) Access to unoccupied roof spaces as permitted in 5-2.8.3.2;
- (b) A second means of egress from storage elevators as permitted in Chapter 29;
- (c) A means of egress from towers and elevated platforms around machinery or similar spaces subject to occupancy by no more than three persons all capable of using the alternating tread device; or
- (d) A secondary means of egress from boiler rooms or similar spaces subject to occupancy by no more than three persons all capable of using the alternating tread device.

5-2.11.2 Alternating tread devices shall comply with the following:

- (a) Handrails provided on both sides of alternating tread devices in accordance with 5-2.2.4.5; and
- (b) The clear width between handrails at least 17 in. (43.2 cm) and not more than 24 in. (61 cm); and
- (c) Headroom at least 6 ft 8 in. (2 m); and
- (d) The angle of the device between 50 and 68 degrees to horizontal; and
- (e) The height of the riser not more than 9.5 in. (24.1 cm); and
- (f) Treads having a minimum projected tread depth of 5.8 in. (14.7 cm) measured in accordance with 5-2.2 with each tread providing 9.5 in. (24.1 cm) of depth including tread overlap; and
- (g) A minimum distance of 6 in. (15.2 cm) provided between the stair handrail and any other object; and
- (h) The initial tread of the stair beginning at the same elevation as the platform, landing, or floor surface; and
- (i) The alternating treads not laterally separated by more than 2 in. (5.0 cm); and
- (j) The occupant load served not more than three.

5-2.12 Areas of Refuge.

5-2.12.1 General. An area of refuge used as part of a required accessible means of egress in accordance with 5-5.4, or

used as a part of any required means of egress, shall conform to

- (a) The general requirements of Section 5-1, and
- (b) The special requirements of 5-2.12.2 and 5-2.12.3.

Exception to (b): Areas of refuge consisting of stories of buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7. (See 5-1.2.)

5-2.12.2 Accessibility.

5-2.12.2.1 Required portions of an area of refuge shall be accessible from the space they serve by an accessible means of egress.

5-2.12.2.2 Required portions of an area of refuge shall have access to a public way, without requiring return to the building spaces through which travel to the area of refuge occurred, via an exit or an elevator.

5-2.12.2.3* Where the exit providing egress from an area of refuge to a public way, in accordance with 5-2.12.2.2, includes stairs, the minimum clear width of landings and stair flights, measured between handrails and at all points below handrail height, shall be 48 in. (122 cm).

Exception No. 1: Areas of refuge created by horizontal exits in accordance with 5-2.4.

Exception No. 2: For stairs where egress is in the descending direction, a minimum 37-in. (94-cm) clear width, measured at and below handrail height, shall be permitted if approved alternative measures are provided that do not require carrying occupied wheelchairs on the stairs.

Exception No. 3: Existing stairs and landings that provide a minimum 37-in. (94-cm) clear width, measured at and below handrail height, shall be permitted.

Exception No. 4: A minimum 37-in. (94-cm) clear width, measured at and below handrail height, shall be permitted in buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7.

5-2.12.2.4* Where an elevator provides access from an area of refuge to a public way, in accordance with 5-2.12.2.2, the elevator shall be approved for fire fighter service as provided in Section 211 of ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*. The power supply shall be protected against interruption from fire occurring within the building but outside the area of refuge. The elevator shall be located in a shaft system meeting the requirements for smokeproof enclosures in accordance with 5-2.3.

Exception No. 1: The smokeproof enclosure shall not be required for areas of refuge that are more than 1000 sq ft (93 sq m) in size and are created by a horizontal exit meeting the requirements of 5-2.4.

Exception No. 2: The smokeproof enclosure shall not be required in a building that is protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: Elevators complying with 5-2.13.

5-2.12.2.5 The area of refuge shall be provided with a two-way communication system for communication between the area of refuge and a central control point. The door to the stair enclosure or the elevator door and the associated portion of

the area of refuge that the stair enclosure door or elevator door serves shall be identified by signage. (See 5-2.12.3.5.)

5-2.12.2.6* Instructions for summoning assistance, via the two-way communication system, and written identification of the area of refuge location shall be posted adjacent to the two-way communication system.

5-2.12.3 Details.

5-2.12.3.1* Each area of refuge shall be sized to accommodate one wheelchair space of 30 in. × 48 in. (76 cm × 122 cm) for each 200 occupants or portion thereof, based on the occupant load served by the area of refuge. Such wheelchair spaces shall maintain the width of a means of egress to at least that required for the occupant load served, and at least 36 in. (91 cm).

5-2.12.3.2* For any area of refuge no greater than 1000 sq ft (93 sq m) in size, it shall be demonstrated by calculation or test that tenable conditions are maintained within the area of refuge for a period of 15 min when the exposing space on the other side of the separation creating the area of refuge is subjected to the maximum expected fire conditions.

5-2.12.3.3 Access to any designated wheelchair space in an area of refuge shall not be through more than one adjoining wheelchair space.

5-2.12.3.4* Each area of refuge shall be separated from the remainder of the story by a barrier with at least a 1-hr fire resistance rating, unless a greater rating is required in other provisions of this Code. Such barriers, and any openings in them, shall minimize air leakage and retard the passage of smoke. Doors in such barriers shall have at least a 20-min fire protection rating, unless a greater rating is required in other provisions of this Code, and shall be either self-closing or automatic-closing in accordance with the Exception to 5-2.1.8. Ducts shall be permitted to penetrate such barriers, unless prohibited in other provisions of this Code, and shall be provided with smoke-actuated dampers or other approved means to resist the transfer of smoke into the area of refuge.

Exception No. 1: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Existing barriers with a minimum 30-min fire resistance rating shall be permitted.

5-2.12.3.5 Each area of refuge shall be identified by a sign stating: "AREA OF REFUGE" that conforms to the requirements of CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*, for such signage and displays the international symbol of accessibility. Signs also shall be located at each door providing access to the area of refuge. Signs also shall be installed at all exits not providing an accessible means of egress, as defined in 5-1.2, and where necessary to indicate clearly the direction to an area of refuge. Signs shall be illuminated as required for exit signs where exit sign illumination is required.

5-2.12.3.6 Tactile signage complying with CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*, shall be located at each door to an area of refuge.

5-2.13 Elevators.

5-2.13.1* General. An elevator complying with the requirements of Section 7-4 and this subsection shall be permitted to

be used as a second means of egress from towers as defined in 32-1.3.2, provided that

(a) The tower and any attached structure is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7; and

(b) The tower is subject to occupancy by not more than 90 persons; and

(c) Primary egress discharges directly to the outside; and,

(d) There are no high hazard content areas in the tower or attached structure; and

(e) 100 percent of the egress capacity shall be provided independent of the elevators;

(f) An evacuation plan shall be implemented specifically including the elevator. As a part of that plan, staff personnel shall be trained in operation and procedures for elevator emergency use in normal operating mode prior to fire fighter recall.

5-2.13.2 Elevator Evacuation System Capacity.

5-2.13.2.1 The elevator car shall have a capacity of at least eight persons.

5-2.13.2.2 The elevator lobby shall have a capacity of at least 50 percent of the occupant load of the area served by the lobby. The capacity shall be calculated by using 3 sq ft (0.28 sq m) per person and shall also include one wheelchair space of 30 in. × 48 in. (76 cm × 122 cm) for each 50 persons, or fraction thereof of the total occupant load served by that lobby.

5-2.13.3 Elevator Lobby. On every floor served by the elevator there shall be an elevator lobby. Barriers forming the elevator lobby shall have a fire resistance rating of at least 1 hr and shall be arranged as a smoke barrier in accordance with Section 6-3.

5-2.13.4 Elevator Lobby Doors. Elevator lobby doors shall have a fire protection rating of at least 1 hr and the maximum transmitted temperature end point shall not exceed 450°F (250°C) above ambient at the end of 30 min of the fire exposure specified in 6-2.3.2.1, and shall be self-closing doors or automatic-closing doors in accordance with 5-2.1.8.

5-2.13.5 Door Activation. The elevator lobby doors shall close in response to a signal from a smoke detector located directly outside the elevator lobby adjacent to or on each door opening. Closing of lobby doors in response to a signal from the building fire alarm system shall be permitted. Closing of one elevator lobby door by means of smoke detector or a signal from the building fire alarm system shall result in closing of all elevator lobby doors serving that elevator evacuation system.

5-2.13.6* Water Protection. Building elements shall be used to restrict water exposure of elevator equipment.

5-2.13.7* Power and Control Wiring. Elevator equipment, elevator communications, elevator machine room cooling and elevator controller cooling, shall be supplied by both normal and standby power. Wiring for power and control shall be located and properly protected to ensure at least 1 hr of operation in the event of a fire.

5-2.13.8* Communications. Two-way communication systems shall be provided between elevator lobbies and a central control point and between elevator cars and a central control point. Communications wiring shall be protected to ensure at least 1 hr of operation in the event of fire.

5-2.13.9* Elevator Operation. Elevators shall be provided with fire fighter service in accordance with ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

5-2.13.10 Maintenance. Where an elevator lobby is served by only one elevator car, the elevator evacuation system shall have a program of scheduled maintenance during times of building shutdown or low building activity. Repairs shall be performed within 24 hr of breakdown.

5-2.13.11 Earthquake Protection. Elevators shall have the capability of orderly shut downs during earthquakes at locations where such shutdown is an option of ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

5-2.13.12 Signage. (See 5-10.4.3.)

SECTION 5-3 CAPACITY OF MEANS OF EGRESS

5-3.1 Occupant Load.

5-3.1.1 The total capacity of the means of egress for any story, balcony, tier, or other occupied space shall be sufficient for the occupant load thereof.

5-3.1.2* The occupant load in any building or portion thereof shall be at least the number determined by dividing the floor area assigned to that use by the occupant load factor in accordance with Chapters 8 through 28 and Chapter 30 and 31. Where both gross and net area figures are given for the same occupancy, calculations shall be made applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and applying the net area figure to the net area of the specific use for which the net area figure is specified.

5-3.1.3 The occupant load permitted in any building or portion thereof shall be permitted to be increased from that number established for the given use in accordance with 5-3.1.2, where all other requirements of this *Code* are also met, based on such increased number. The authority having jurisdiction shall be permitted to require an approved aisle, seating, or fixed equipment diagram to substantiate any increase in occupant load and shall be permitted to require that such diagram be posted in an approved location.

5-3.1.4 Where exits serve more than one story, only the occupant load of each story considered individually need be used in computing the capacity of the exits at that story, provided required egress capacity of the exit shall not be decreased in the direction of egress travel.

5-3.1.5 Where means of egress from stories above and below converge at an intermediate story, the capacity of the means of egress from the point of convergence shall be at least the sum of the two.

5-3.1.6 Where any required egress capacity from a balcony or mezzanine passes through the room below, that required capacity shall be added to the required egress capacity of the room in which it is located.

5-3.2* Measurement of Means of Egress. Width of means of egress shall be measured in the clear at the narrowest point of the exit component under consideration.

Exception: Projections not more than 3½ in. (8.9 cm) on each side are permitted at and below handrail height.

5-3.3 Egress Capacity.

5-3.3.1 Egress capacity for approved components of means of egress shall be based on the following table:

	Stairways (in. per person) [cm per person]	Level Components and Ramps (in. per person) [cm per person]
Board and Care	0.4 [1.0]	0.2 [0.5]
Health Care		
Sprinklered	0.3 [0.8]	0.2 [0.5]
Health Care		
Nonsprinklered	0.6 [1.5]	0.5 [1.3]
High Hazard Contents	0.7 [1.8]	0.4 [1.0]
All Others	0.3 [0.8]	0.2 [0.5]

5-3.3.2 The required capacity of a corridor is the occupant load utilizing the corridor for exit access divided by the required number of exits to which the corridor connects, but shall be at least the required capacity of the exit to which the corridor leads.

5-3.4 Minimum Width.

5-3.4.1 The minimum width of any means of egress shall be that required for a given egress component in Chapter 5 or Chapters 8 through 31, and shall be at least 36 in. (91 cm).

*Exception No. 1:** The minimum width of exit access formed by furniture and movable partitions, serving not more than six people, and not more than 50 ft (15 m) in length, shall be at least 18 in. (45.7 cm) at and below 38 in. (96 cm) height or 28 in. (71 cm) above 38 in. (96 cm) height, provided the minimum 36 in. (91 cm) for new and 28 in. (71 cm) for existing are provided without moving permanent walls.

Exception No. 2: Doors as provided for in 5-2.1.2.

Exception No. 3: In existing buildings, the minimum width shall be at least 28 in. (71 cm).

Exception No. 4: Aisles and aisle accessways as provided in Chapters 8 and 9.

Exception No. 5: Industrial equipment access as provided in Chapter 28.

5-3.4.2 Where a single exit access leads to an exit, its capacity in terms of width shall be at least equal to the required capacity of the exit to which it leads. Where more than one exit access leads to an exit, each shall have a width adequate for the number of persons it accommodates.

SECTION 5-4 NUMBER OF MEANS OF EGRESS

5-4.1 General.

5-4.1.1 The minimum number of means of egress from any balcony, mezzanine, story, or portion thereof shall be two.

Exception No. 1: Where a single means of egress is permitted in Chapters 8 through 32.

Exception No. 2: A mezzanine or balcony shall be permitted to have a single means of egress provided the common path of travel limitations of Chapters 8 through 31 are met.

5-4.1.2 The minimum number of separate means of egress from any story or portion thereof shall be as follows:

- Occupant load more than 500 but not more than 1000 — 3
- Occupant load more than 1000 — 4

Exception: Existing buildings as permitted in Chapters 8 through 31.

5-4.1.3 Accessible means of egress, in accordance with 5-5.4, not utilizing elevators shall be permitted to serve as any or all of the required minimum number of means of egress.

5-4.1.4 Only the occupant load of each story considered individually shall be required to be used in computing the number of means of egress at that story, provided that the required number of means of egress shall not be decreased in the direction of egress travel.

5-4.1.5 Doors other than the hoistway door and the elevator car door shall be prohibited at the point of access to an elevator car.

Exception: Doors that are readily openable from the car side without a key, tool, special knowledge, or special effort.

5-4.1.6 Elevator lobbies shall have access to at least one exit. Such exit access shall not require the use of a key, tool, special knowledge, or special effort.

SECTION 5-5 ARRANGEMENT OF MEANS OF EGRESS

5-5.1 General.

5-5.1.1 Exits shall be located and exit access shall be arranged so that exits are readily accessible at all times.

5-5.1.2* Where exits are not immediately accessible from an open floor area, safe and continuous passageways, aisles, or corridors leading directly to every exit shall be maintained and shall be arranged to provide access for each occupant to at least two exits by separate ways of travel. Exit access corridors shall provide access to at least two approved exits without passing through any intervening rooms other than corridors, lobbies, and other spaces permitted to be open to the corridor.

Exception No. 1: Where a single exit is permitted in Chapters 8 through 31.

Exception No. 2: Where common paths of travel are permitted for an occupancy in Chapters 8 through 31, such common paths of travel shall be permitted but shall not be more than the limit specified.

Exception No. 3: Existing corridors that require passage through a room to access an exit shall be permitted to continue to be used, provided that

- (a) Such arrangement is approved by the authority having jurisdiction; and
- (b) The path of travel is marked in accordance with Section 5-10; and
- (c) Doors to such rooms comply with 5-2.1; and
- (d) Such arrangement is not prohibited by the occupancy chapter.

Exception No. 4: Corridors that are not required to be fire resistance-rated shall be permitted to discharge into open floor plan areas.

5-5.1.3 Where more than one exit is required from a building or portion thereof, such exits shall be remotely located from each other and shall be arranged and constructed to

minimize the possibility that more than one has the potential to be blocked by any one fire or other emergency condition.

5-5.1.4* Where two exits or exit access doors are required, they shall be placed at a distance from one another equal to and at least one half the length of the maximum overall diagonal dimension of the building or area to be served, measured in a straight line between the nearest edge of the exit doors or exit access doors. Where exit enclosures are provided as the required exits and are interconnected by a corridor conforming to the requirements of 5-1.3.1, exit separation shall be permitted to be measured along the line of travel within the corridor.

Where more than two exits or exit access doors are required, at least two of the required exits or exit access doors shall be arranged to comply with the above. The other exits or exit access doors shall be located so that if one becomes blocked, the others shall be available.

Exception No. 1: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, the minimum separation distance between two exits or exit access doors measured in accordance with 5-5.1.4 shall be at least one third the length of the maximum overall diagonal dimension of the building or area to be served.

Exception No. 2: In existing buildings, where more than one exit or exit access door is required, such exits or exit access doors shall be permitted to be remotely located in accordance with 5-5.1.3.

5-5.1.5* Interlocking or scissor stairs shall be permitted to be considered separate exits if enclosed in accordance with 5-1.3.2 and separated from each other by 2-hr fire resistance-rated noncombustible construction. There shall be no penetrations or communicating openings, whether protected or not, between the stair enclosures.

5-5.1.6* Exit access shall be arranged so that there are no dead ends in corridors.

Exception: Where dead ends are permitted in Chapters 8 through 31, such dead ends shall be permitted but shall not be more than the limit specified.

5-5.1.7 Exit access from rooms or spaces shall be permitted to be through adjoining or intervening rooms or areas, provided such adjoining rooms are accessory to the area served. Foyers, lobbies, and reception rooms constructed as required for corridors shall not be construed as intervening rooms. Exit access shall be arranged so that it shall not be necessary to pass through any area identified under Protection from Hazards in Chapters 8 through 32.

5-5.2 Impediments to Egress. (See also 5-1.8.2 and 5-2.1.5.)

5-5.2.1 In no case shall access to an exit be through kitchens, storerooms, restrooms, workrooms, closets, bedrooms or similar spaces, or other rooms subject to locking.

Exception No. 1: Exit access shall be permitted to pass through rooms or spaces subject to locking as provided in Chapters 12, 13, 14, and 15.

Exception No. 2: Exit access shall be permitted to pass through store-rooms as provided in Chapters 24 and 25.

5-5.2.2* Exit access and exit doors shall be designed and arranged to be clearly recognizable. Hangings or draperies shall

not be placed over exit doors or located to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

Exception: Curtains shall be permitted across means of egress openings in tent walls if

(a) *Distinctly marked in contrast to the tent wall so as to be recognizable as means of egress, and*

(b) *Installed across an opening that is at least 6 ft (1.8 m) in width, and*

(c) *Hung from slide rings or equivalent hardware so as to be readily moved to the side to create an unobstructed opening in the tent wall of the minimum width required of door openings.*

5-5.3 Exterior Ways of Exit Access.

5-5.3.1 Exit access shall be permitted to be by means of any exterior balcony, porch, gallery, or roof that conforms to the requirements of this chapter.

5-5.3.2 The long side of the balcony, porch, gallery, or similar space shall be at least 50 percent open and shall be arranged to restrict the accumulation of smoke.

5-5.3.3 Exterior exit access balconies shall be separated from the interior of the building by walls and opening protectives as required for corridors.

Exception No. 1: Where the exterior exit access balcony is served by at least two remote stairs that are accessed without any occupant needing to travel past an unprotected opening to reach one of the stairs.

Exception No. 2: Where dead ends on the exterior exit access do not exceed 20 ft (6.1 m).

5-5.3.4 A permanent, reasonably straight path of travel shall be maintained throughout the required exterior exit access.

5-5.3.5 There shall be no obstructions of any kind that divide the open space into sections appurtenant to individual rooms, apartments, or other subdivisions.

5-5.3.6 Exterior exit access shall be arranged so that there are no dead ends in excess of those provided in Chapter 8 through 32.

5-5.3.7 Exterior exit access shall comply with the requirements of the *Code* as to width and arrangement.

5-5.3.8 An exterior exit access shall have solid, substantially level floors and shall have guards that are at least equivalent to those required in 5-2.2.4 on unenclosed sides more than 30 in. (76 cm) above the floor or grade below.

5-5.3.9 Where accumulation of snow or ice is likely because of the climate, the exterior exit access shall be protected by a roof.

5-5.3.10 The materials of construction shall be as permitted for the building served.

5-5.4 Accessible Means of Egress.

5-5.4.1 Areas accessible to people with severe mobility impairment shall have at least two accessible means of egress (see definition of *Accessible Means of Egress* in 5-1.2). Access shall be provided to a minimum of one accessible area of refuge or one accessible exit discharge within the allowable travel distance.

Exception No. 1: Existing buildings.

Exception No. 2: Exit access travel along the accessible means of egress shall be permitted to be common for the distances permitted as common paths of travel.

Exception No. 3: A single accessible means of egress shall be permitted from buildings or areas of buildings permitted to have a single exit.

Exception No. 4: The authority having jurisdiction shall be permitted to allow a reduction in the number of accessible means of egress based on an analysis of the fire protection system, the physical arrangement of the space, the facility operation, and determination that such means provide the most direct route from the accessible area.

Exception No. 5: Health care occupancies protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

5-5.4.2 If two accessible means of egress are required, the exits serving these paths shall be placed at a distance from one another not less than one half the length of the maximum overall diagonal dimension of the building or area to be served, measured in a straight line between the nearest edge of the exit doors or exit access doors. Where exit enclosures are provided as the required exits and are interconnected by a corridor conforming to the requirements of 5-1.3.1, exit separation shall be permitted to be measured along the line of travel within the corridor.

Exception No. 1: Buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Where the physical arrangement of means of egress prevents the possibility that access to both accessible means of egress will be blocked by any one fire or other emergency condition as approved by the authority having jurisdiction.

5-5.4.3 Each required accessible means of egress shall be continuous from each accessible occupied area to a public way or area of refuge in accordance with 5-2.12.2.2.

5-5.4.4 Where an exit stair is used in an accessible means of egress, it shall comply with 5-2.12.2.3 and shall either incorporate an accessible area of refuge within an enlarged story-level landing or shall be accessed from an accessible area of refuge.

5-5.4.5 To be considered part of an accessible means of egress, an elevator shall be in accordance with 5-2.12.2.4

5-5.4.6 A smoke barrier, in accordance with Section 6-3, that additionally has a minimum 1-hr fire resistance rating, and a horizontal exit, in accordance with 5-2.4, to be considered part of an accessible means of egress, shall discharge to an accessible area of refuge in accordance with 5-2.12.

5-5.4.7 Accessible stories that are four or more stories above or below a story of exit discharge shall have at least one elevator complying with 5-5.4.5.

SECTION 5-6 MEASUREMENT OF TRAVEL DISTANCE TO EXITS

5-6.1* The travel distance in any occupied space to at least one exit, measured in accordance with the following requirements, shall not be more than the limits specified in this Code (see 5-6.4).

5-6.2* The travel distance to an exit shall be measured on the floor or other walking surface along the centerline of the natural path of travel starting from the most remote point subject to occupancy, curving around any corners or obstructions with a 1-ft (0.3-m) clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, the measurement shall be taken in the plane of the tread nosing.

Exception: Travel distance measurement shall be permitted to terminate at a smoke barrier as provided in Chapter 15.

5-6.3* Where open stairways or ramps are permitted as a path of travel to required exits, the distance shall include the travel on the stairway or ramp and the travel from the end of the stairway or ramp to an outside door or other exit in addition to the distance traveled to reach the stairway or ramp.

5-6.4 Travel distance limitations shall be as provided in Chapters 8 through 32 and for high hazard areas in accordance with Section 5-11.

5-6.5 Where any part of an exterior exit is within 10 ft (3 m) horizontal distance of any unprotected building opening, as permitted in the Exceptions to 5-2.2.6.4 for outside stairs, the travel distance to the exit shall include the length of travel to ground level.

SECTION 5-7 DISCHARGE FROM EXITS

5-7.1* All exits shall terminate directly at a public way or at an exterior exit discharge. Yards, courts, open spaces, or other portions of the exit discharge shall be of required width and size to provide all occupants with a safe access to a public way.

Exception No. 1: Interior exit discharge as permitted in 5-7.2.

Exception No. 2: Rooftop exit discharge as permitted in 5-7.6.

Exception No. 3: Means of egress shall be permitted to terminate in an exterior area of refuge as provided in Chapters 14 and 15.

5-7.2 Not more than 50 percent of the required number of exits, and not more than 50 percent of the required egress capacity, shall be permitted to discharge through areas on the level of exit discharge, provided:

Exception: One hundred percent of the exits shall be permitted to discharge through areas on the level of exit discharge as provided in Chapters 14 and 15.

(a) Such discharge leads to a free and unobstructed way to the exterior of the building, and such way is readily visible and identifiable from the point of discharge from the exit; and

(b) The level of discharge is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, or the portion of the level of discharge used for this purpose is protected by an approved, automatic sprinkler system installed in accordance with Section 7-7 and separated from the nonsprinklered portion of the floor by a fire resistance rating meeting the requirements for the enclosure of exits (see 5-1.3.2.1); and

Exception to (b): If the discharge area is a vestibule or foyer meeting all of the following:

1. The depth from the exterior of the building shall not be more than 10 ft (3 m) and the length shall not be more than 30 ft (9.1 m), and

2. The foyer shall be separated from the remainder of the level of discharge by construction providing protection at least the equivalent of wired glass in steel frames, and

3. The foyer serves only as means of egress and includes an exit directly to the outside.

(c) The entire area on the level of discharge shall be separated from areas below by construction having a fire resistance rating at least that required for the exit enclosure.

Exception to (c): Levels below the level of discharge shall be permitted to be open to the level of discharge in an atrium in accordance with 6-2.4.6.

5-7.3 The exit discharge shall be arranged and marked to make clear the direction of egress to a public way. Stairs shall be arranged so as to make clear the direction of egress to a public way. Stairs that continue beyond the level of exit discharge shall be interrupted at the level of exit discharge by partitions, doors, or other effective means.

Exception: Stairs that continue one-half story beyond the level of exit discharge shall not be required to be so interrupted where the exit discharge is obvious.

5-7.4 Doors, stairs, ramps, corridors, exit passageways, bridges, balconies, escalators, moving walks, and other components of an exit discharge shall comply with the detailed requirements of this chapter for such components.

5-7.5 Signs. (See 5-2.2.5.4 and 5-2.2.5.5.)

5-7.6 Where approved by the authority having jurisdiction, exits shall be permitted to be accepted, provided that

(a) They discharge to the roof or other sections of the building or adjoining buildings, and

(b) The roof has a fire resistance rating at least the equivalent of that required for the exit enclosure, and

(c) There is a continuous and safe means of egress from the roof, and

(d) All other applicable requirements for life safety are maintained.

SECTION 5-8 ILLUMINATION OF MEANS OF EGRESS

5-8.1 General.

5-8.1.1* Illumination of means of egress shall be provided in accordance with this section for every building and structure where required in Chapters 8 through 32. For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit. For the purposes of this requirement, exit discharge shall include only designated stairs, aisles, corridors, ramps, escalators, walkways, and exit passageways leading to a public way.

5-8.1.2 Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use. Artificial lighting shall be employed at such places and for such periods of time as required to maintain the illumination to the minimum criteria values herein specified.

Exception: Automatic, motion sensor-type lighting switches shall be permitted within the means of egress, provided that switch controllers are equipped for fail-safe operation, illumination timers are set for a

minimum 15 min duration, and the motion sensor is activated by any occupant movement in the area served by the lighting units.

5-8.1.3* The floors and other walking surfaces within an exit and within the portions of the exit access and exit discharge designated in 5-8.1.1 shall be illuminated to values of at least 1 ft-candle (10 lux) measured at the floor.

Exception: In assembly occupancies, the illumination of the floors of exit access shall be at least 0.2 ft-candle (2 lux) during periods of performances or projections involving directed light.

5-8.1.4* Any required illumination shall be arranged so that the failure of any single lighting unit shall not leave any area in darkness.

5-8.1.5 The equipment or units installed to meet the requirements of Section 5-10 shall be permitted also to serve the function of illumination of means of egress, provided that all requirements of Section 5-8 for such illumination are met.

5-8.2 Sources of Illumination.

5-8.2.1* Illumination of means of egress shall be from a source of reasonably ensured reliability.

5-8.2.2 Battery-operated electric lights and other types of portable lamps or lanterns shall not be used for primary illumination of means of egress. Battery-operated electric lights shall be permitted to be used as an emergency source to the extent permitted under Section 5-9.

SECTION 5-9 EMERGENCY LIGHTING

5-9.1 General.

5-9.1.1* Emergency lighting facilities for means of egress shall be provided in accordance with this section for

(a) Every building or structure where required in Chapters 8 through 32, and

(b) At doors equipped with delayed egress locks, and

(c) The stair shaft and vestibule of smokeproof enclosures. A standby generator that is installed for the smokeproof enclosure mechanical ventilation equipment shall be permitted to be used for such stair shaft and vestibule power supply.

For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit. For the purposes of this requirement, exit discharge shall include only designated stairs, ramps, aisles, walkways, and escalators leading to a public way.

5-9.1.2 Where maintenance of illumination depends upon changing from one energy source to another, there shall be no appreciable interruption of illumination during the changeover. Where emergency lighting is provided by a prime mover-operated electric generator, a delay of not more than 10 sec shall be permitted.

5-9.2 Performance of System.

5-9.2.1* Emergency illumination shall be provided for a period of 1½ hr in the event of failure of normal lighting. Emergency lighting facilities shall be arranged to provide initial illumination that is at least an average of 1 ft-candle (10 lux) and a minimum at any point of 0.1 ft-candle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 ft-candle (6 lux) average and a

minimum at any point of 0.06 ft-candle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

5-9.2.2* The emergency lighting system shall be arranged to provide the required illumination automatically in the event of any interruption of normal lighting, such as any failure of public utility or other outside electrical power supply; opening of a circuit breaker or fuse; or any manual act(s), including accidental opening of a switch controlling normal lighting facilities.

5-9.2.3 Emergency generators providing power to emergency lighting systems shall be installed, tested, and maintained in accordance with NFPA 110, *Standard for Emergency and Standby Power Systems*. Stored electrical energy systems where required in this Code shall be installed and tested in accordance with NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*.

5-9.2.4* Battery-operated emergency lights shall use only reliable types of rechargeable batteries provided with suitable facilities for maintaining them in properly charged condition. Batteries used in such lights or units shall be approved for their intended use and shall comply with NFPA 70, *National Electrical Code*®.

5-9.2.5 The emergency lighting system shall be either continuously in operation or shall be capable of repeated automatic operation without manual intervention.

5-9.3 Periodic Testing of Emergency Lighting Equipment. A functional test shall be conducted on every required battery-powered emergency lighting system at 30-day intervals for a minimum of 30 sec. An annual test shall be conducted for a 1½-hr duration. Equipment shall be fully operational for the duration of the test. Written records of visual inspections and tests shall be kept by the owner for inspection by the authority having jurisdiction.

Exception: Self-testing/self-diagnostic, battery-operated emergency lighting equipment that automatically performs a minimum 30-sec test and diagnostic routine at least once every 30 days and indicates failures by a status indicator shall be exempt from the 30-day functional test, provided a visual inspection is performed at 30-day intervals.

SECTION 5-10 MARKING OF MEANS OF EGRESS

5-10.1 General.

5-10.1.1 Means of egress shall be marked in accordance with this section where required in Chapters 8 through 32.

5-10.1.2* Exits shall be marked by an approved sign readily visible from any direction of exit access.

Exception: Main exterior exit doors that obviously and clearly are identifiable as exits.

5-10.1.3 At each door into an exit stair enclosure, tactile signage stating "EXIT" and complying with CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*, shall be installed adjacent to the latch side of the door 60 in. (152 cm) above the finished floor to the centerline of the sign.

Exception: Existing buildings, provided the occupancy classification does not change.

5-10.1.4* Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach it is not readily apparent to the occupants. Sign placement shall be such that no point in the exit access corridor is more than 100 ft (30 m) from the nearest sign.

Exception: Signs in exit access corridors in existing buildings shall not be required to meet the 100-ft (30-m) distance requirements.

5-10.1.5* Where floor proximity exit signs are required in Chapters 8 through 32, exit signs shall be placed near the floor level in addition to those signs required for doors or corridors. These signs shall be sized and illuminated in accordance with 5-10.2 and 5-10.3. The bottom of the sign shall be at least 6 in. (15.2 cm) nor more than 8 in. (20.3 cm) above the floor. For exit doors, the sign shall be mounted on the door or adjacent to the door with the nearest edge of the sign within 4 in. (10.2 cm) of the door frame.

5-10.1.6* Every sign required in Section 5-10 shall be located and of such size, distinctive color, and design as to be readily visible and shall provide contrast with decorations, interior finish, or other signs. No decorations, furnishings, or equipment that impairs visibility of an exit sign shall be permitted, nor shall there be any brightly illuminated sign (for other than exit purposes), display, or object in or near the line of vision of the required exit sign of such a character as to detract attention from the exit sign.

5-10.1.7* Where floor proximity egress path marking is required in Chapters 8 through 32, a listed and approved floor proximity egress path marking system that is internally illuminated shall be installed within 8 in. (20.3 cm) of the floor. The system shall provide a visible delineation of the path of travel along the designated exit access and shall be essentially continuous, except as interrupted by doorways, hallways, corridors, or other such architectural features. The system shall operate continuously or at any time the building fire alarm system is activated. The activation, duration, and continuity of operation of the system shall be in accordance with 5-9.2.

5-10.2* Size of Signs.

5-10.2.1 Externally illuminated signs required by 5-10.1 and 5-10.4.1.1 shall have the word "EXIT" or other appropriate wording in plainly legible letters not less than 6 in. (15.2 cm) high with the principal strokes of letters not less than ¾ in. (1.9 cm) wide. The word "EXIT" shall have letters of a width not less than 2 in. (5 cm), except the letter "I," and the minimum spacing between letters shall be not less than ⅜ in. (1 cm). Signs larger than the minimum established in this paragraph shall have letter widths, strokes, and spacing in proportion to their height.

Exception No. 1: Approved existing signs.

Exception No. 2: Existing signs having the required wording in plainly legible letters not less than 4 in. (10.2 cm) high.

Exception No. 3: Marking required by 5-10.1.3 and 5-10.1.7.

5-10.2.2* Internally illuminated signs required by 5-10.1 and 5-10.4.1.1 shall have the word "EXIT" or other appropriate wording in letters legible from a distance of at least 100 ft (30 m) under all normal and emergency lighting conditions (30 ft-candle and 1 ft-candle, respectively). Internally illuminated signs shall be listed in accordance with UL 924, *Standard for Safety Emergency Lighting and Power Equipment*.

Exception No. 1: Approved existing signs.

Exception No. 2: Existing signs having the required wording in legible letters not less than 4 in. (10.2 cm) high.

Exception No. 3: Marking required by 5-10.1.3 and 5-10.1.7.

5-10.3* Illumination of Signs.

5-10.3.1* Every sign required by 5-10.1.2 or 5-10.1.4 shall be suitably illuminated by a reliable light source. Externally and internally illuminated signs shall be legible in both the normal and emergency lighting mode.

5-10.3.2* Externally illuminated signs shall be illuminated by not less than 5 ft-candles (54 lux) and shall employ a contrast ratio of not less than 0.5.

5-10.3.3* The visibility of an internally illuminated sign shall be the equivalent of an externally illuminated sign that complies with 5-10.3.2.

Exception No. 1: Approved existing signs.

Exception No. 2: Listed self-luminous or electroluminescent signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 footlamberts (0.21 cd/sq m) as measured by a color-corrected photometer. New signs shall be located such that the viewing distance along the path of egress is not more than the sign's marked rating.*

5-10.3.4* Every sign required to be illuminated by 5-10.3 shall be continuously illuminated as required under the provisions of Section 5-8.

Exception: Illumination for signs shall be permitted to flash on and off upon activation of the fire alarm system.*

5-10.3.5 Where emergency lighting facilities are required by the applicable provisions of Chapters 8 through 32 for individual occupancies, the exit signs shall be illuminated by the emergency lighting facilities. The level of illumination of the exit sign shall be at the levels provided in accordance with 5-10.3.2 or 5-10.3.3 for the required emergency lighting time duration as specified in 5-9.2.1, but shall be permitted to decline to 60 percent of the illumination level at the end of the emergency lighting time duration.

Exception: Approved self-luminous signs.

5-10.4 Specific Requirements.

5-10.4.1 Directional Signs.

5-10.4.1.1* A sign complying with 5-10.2 reading "EXIT," or a similar designation with a directional indicator showing the direction of travel shall be placed in every location where the direction of travel to reach the nearest exit is not apparent. Directional signs shall be listed.

5-10.4.1.2* Directional Indicator. The directional indicator shall be located outside of the EXIT legend, not less than $\frac{3}{8}$ in. (1 cm) from any letter, and shall be permitted to be integral to or separate from the sign body. The directional indicator shall be of a chevron type as shown in Figure 5-10.4.1.2 and shall be identifiable as a directional indicator at a minimum distance of 40 ft (12.2 m) at 30 ft-candle and 1 ft-candle average illumination on the floor representing normal and emergency lighting levels respectively. The directional indicators shall be located at the end of the sign for the direction indicated.

Exception: Approved existing signs.



Figure 5-10.4.1.2 Chevron-type indicator.

5-10.4.2* Special Signs. Any door, passage, or stairway that is neither an exit nor a way of exit access and that is located or arranged so that it is likely to be mistaken for an exit shall be identified by a sign reading "NO EXIT." Such sign shall have the word "NO" in letters 2 in. (5 cm) high with stroke width of $\frac{3}{8}$ in. (1 cm) and the word "EXIT" in letters 1 in. (2.5 cm) high, with the word "EXIT" below the word "NO."

Exception: Approved existing signs.

5-10.4.3 Elevator Signs. Elevators that are a part of a means of egress (see 5-2.13.1) shall have the following signs, with minimum letter height of $\frac{5}{8}$ in. (1.6 cm), in every elevator lobby:

- (a)* Signs that indicate that the elevator can be used for egress including any restrictions on use, and
- (b)* Signs that indicate the operational status of elevators.

5-10.5 Testing and Maintenance.

5-10.5.1 Exit signs shall be visually inspected at maximum 30-day intervals for operation of the illumination sources.

5-10.5.2 Exit signs connected to or provided with a battery-operated emergency illumination source, where required in 5-10.3.5, shall be tested and maintained in accordance with 5-9.3.

SECTION 5-11 SPECIAL PROVISIONS FOR OCCUPANCIES WITH HIGH HAZARD CONTENTS

(See Section 4-2.)

5-11.1* In all cases where the contents are classified as high hazard, exits of such types and numbers shall be provided and arranged to permit all occupants to escape from the building or structure or from the hazardous area thereof to the outside or to a place of safety with a travel distance of not more than 75 ft (23 m), measured as required in 5-6.2.

5-11.2 Egress capacity for high hazard contents areas shall be based on 0.7 in./person (1.8 cm/person) for stairs or 0.4 in./person (1.0 cm/person) for level components and ramps in accordance with 5-3.3.1.

5-11.3 At least two means of egress shall be provided from each building or hazardous area thereof.

Exception: Rooms or spaces not more than 200 sq ft (18.6 sq m) and having an occupant load of not more than three persons and a travel distance to the room door of not more than 25 ft (7.6 m).

5-11.4 Means of egress shall be arranged so that there are no dead ends in corridors.

Exception: Spaces meeting the requirements of the Exception to 5-11.3.

5-11.5 Doors serving high hazard contents areas with occupant loads of more than five shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware complying with 5-2.1.7.

SECTION 5-12 MECHANICAL EQUIPMENT ROOMS, BOILER ROOMS, AND FURNACE ROOMS

5-12.1 Mechanical equipment rooms, boiler rooms, furnace rooms, and similar spaces shall be arranged to limit common path of travel to not more than 50 ft (15 m).

Exception: A common path of travel not more than 100 ft (30 m) shall be permitted:

- (a) In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, or*
- (b) In mechanical equipment rooms with no fuel-fired equipment, or*
- (c) In existing buildings.*

5-12.2 Stories used exclusively for mechanical equipment, furnaces, or boilers shall be permitted to have a single means of egress where the travel distance to an exit on that story is not more than the common path of travel limitations of 5-12.1.

CHAPTER 6 FEATURES OF FIRE PROTECTION

SECTION 6-1 GENERAL

6-1.1 Application. The features of fire protection set forth in this chapter apply to both new construction and existing buildings.

SECTION 6-2 CONSTRUCTION AND COMPARTMENTATION

6-2.1* Construction. Buildings or structures occupied or used in accordance with the individual occupancy chapters (Chapters 8 through 31) shall meet the minimum construction requirements of those chapters. NFPA 220, *Standard on Types of Building Construction*, shall be used to determine the requirements for the construction classification.

6-2.2 Compartmentation.

6-2.2.1 Where required by Chapters 8 through 31, every building shall be divided into compartments to limit the spread of fire and restrict the movement of smoke.

6-2.2.2* Fire compartments shall be formed with fire barriers that are continuous from outside wall to outside wall, from one fire barrier to another, or a combination thereof, including continuity through all concealed spaces, such as those found above a ceiling, including interstitial spaces. Walls used as fire barriers shall comply with Chapter 3 of NFPA 221, *Standard for Fire Walls and Fire Barrier Walls*. The NFPA 221 limitation on percentage width of openings shall not apply.

Exception: A fire barrier required for an occupied space below an interstitial space shall not be required to extend through the interstitial space provided the construction assembly forming the bottom of the interstitial space has a fire resistance rating equal to that of the fire barrier.

6-2.3 Fire Barriers.

6-2.3.1 Fire Resistance-Rated Assemblies.

6-2.3.1.1 Floor-ceiling assemblies and walls used as fire barriers, including supporting construction, shall be of a design that has been tested to meet the conditions of acceptance of NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*. Fire barriers shall be continuous in accordance with 6-2.2.2.

Exception No. 1: Structural elements shall be required to have only the fire resistance rating required for the construction classification of the building where such elements support nonbearing wall or partition assemblies having a required fire resistance rating of 1 hr or less and such elements do not serve as exit enclosures or protection of vertical openings.

*Exception No. 2:** Assemblies calculated to have equivalent fire resistance provided that the calculations are based on the conditions of acceptance and the fire exposure specified in NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*.

Exception No. 3: Structural elements supporting floor assemblies in accordance with the *Exception to 12-1.6.2*.

6-2.3.1.2 Fire barriers used to provide enclosure, subdivision, or protection under this *Code*, shall be classified in accordance with their fire resistance rating as follows:

- (a) 2-hr fire resistance rating, or
- (b) 1-hr fire resistance rating, and
- (c)* $\frac{1}{2}$ -hr fire resistance rating.

6-2.3.2 Fire Protection-Rated Opening Protectives.

6-2.3.2.1 Door assemblies in fire barriers shall be of an approved type with appropriate fire protection rating for the location in which installed and shall comply with the following:

(a)* Fire doors shall be installed in accordance with NFPA 80, *Standard for Fire Doors and Fire Windows*. Fire doors shall be of a design that has been tested to meet the conditions of acceptance of NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*.

Exception to (a): As permitted in 6-2.3.2.3.1.

(b) Fire doors shall be self-closing or automatic-closing in accordance with 5-2.1.8 and, where used within the means of egress, shall comply with the provisions of 5-2.1.

6-2.3.2.2 Fire window assemblies shall be permitted in fire barriers having a required fire resistance rating of 1 hr or less and shall be of an approved type with appropriate fire protection rating for the location in which installed. Fire windows shall be installed in accordance with NFPA 80, *Standard for Fire Doors and Fire Windows*, and shall comply with the following:

(a)* Fire windows used in fire barriers shall be of a design that has been tested to meet the conditions of acceptance of NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*.

(b) Fire windows used in fire barriers shall not exceed 25 percent of the area of the fire barrier in which they are used.

Exception No. 1: Existing installations of wired glass and other fire-rated glazing material in approved metal frames.

Exception No. 2: Fire-rated glazing material shall be permitted to be installed in approved existing frames.

6-2.3.2.3* Opening Protectives.

NOTICE: Following issuance of this edition, an appeal was filed with respect to 6-2.3.2.3.1. Refer to page 101-16.

6-2.3.2.3.1 Every opening in a fire barrier shall be protected to limit the spread of fire and restrict the movement of smoke from one side of the fire barrier to the other. The fire protection rating for opening protectives shall be as follows:

- (a) 2-hr fire barrier — $\frac{1}{2}$ -hr fire protection rating,
- (b) 1-hr fire barrier — 1-hr fire protection rating where used for vertical openings or exit enclosures, or $\frac{3}{4}$ -hr fire protection rating where used for other than vertical openings or exit enclosures.

Exception No. 1 to (b): Where a lesser fire protection rating is specified by Chapter 5 or Chapters 8 through 32.

Exception No. 2 to (b): Where the fire barrier is provided as a result of a requirement that corridor walls or smoke barriers be of 1-hr fire resistance-rated construction, the opening protectives shall be permitted

to have a minimum 20 min fire protection rating when tested in accordance with NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, without the hose stream test.

Exception No. 3 to (b): Where special requirements for doors in 1-hr fire resistance-rated corridor walls and 1-hr fire resistance-rated smoke barriers are specified in Chapters 12 and 13.

Exception No. 4 to (b): Existing doors having a $\frac{3}{4}$ -hr fire protection rating shall be permitted to continue to be used in vertical openings and in exit enclosures.

(c) $\frac{1}{2}$ -hr fire barrier—20-min fire protection rating.

Exception to (c): Fire doors shall be permitted to have a minimum 20-min fire protection rating when tested in accordance with NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, without the hose stream test.

6-2.3.2.3.2 Where a 20-min fire protection-rated door is required in existing buildings, an existing 1- $\frac{3}{4}$ in. (4.4 cm) solid bonded wood core door, or an existing steel (tin) clad wood door, or an existing solid core steel door with positive latch and closer shall be permitted.

Exception: As permitted in Chapters 8 through 32.

6-2.3.2.4 Penetrations and Miscellaneous Openings in Fire Barriers.

6-2.3.2.4.1* Openings in fire barriers for air-handling ductwork or air movement shall be protected in accordance with 7-2.1.

6-2.3.2.4.2* Pipes, conduits, bus ducts, cables, wires, air ducts, pneumatic tubes and ducts, and similar building service equipment that pass through fire barriers shall be protected as follows.

(a) The space between the penetrating item and the fire barrier shall

1. Be filled with a material capable of maintaining the fire resistance of the fire barrier, or
2. Be protected by an approved device designed for the specific purpose.

(b) Where the penetrating item uses a sleeve to penetrate the fire barrier, the sleeve shall be solidly set in the fire barrier, and the space between the item and the sleeve shall

1. Be filled with a material capable of maintaining the fire resistance of the fire barrier, or
2. Be protected by an approved device designed for the specific purpose.

(c)* Insulation and coverings for pipes and ducts shall not pass through the fire barrier unless

1. The material is capable of maintaining the fire resistance of the fire barrier, or
2. The material is protected by an approved device designed for the specific purpose.

(d) Where designs take transmission of vibration into consideration, any vibration isolation shall

1. Be made on either side of the fire barrier, or
2. Be made by an approved device designed for the specific purpose.

6-2.4 Vertical Openings.

6-2.4.1 Every floor that separates stories in a building shall be constructed as a smoke barrier to provide a basic degree of compartmentation. (See Section 3-2 for definition of Smoke Barrier.)

Exception No. 1: As permitted by 6-2.4.5.

Exception No. 2: As permitted by 6-2.4.6.

Exception No. 3: As permitted by Chapters 8 through 32.

6-2.4.2* Openings through floors, such as stairways, hoistways for elevators, dumbwaiters, inclined and vertical conveyors; shaftways used for light, ventilation, or building services; or expansion joints and seismic joints used to allow structural movements, shall be enclosed with fire barrier walls. Such enclosures shall be continuous from floor to floor or floor to roof. Openings shall be protected as appropriate for the fire resistance rating of the barrier.

Exception No. 1: As permitted by 6-2.4.5.

Exception No. 2: As permitted by 6-2.4.6.

Exception No. 3: As permitted by 6-2.4.7.

Exception No. 4: Escalators and moving walks protected in accordance with 6-2.4.11.

*Exception No. 5:** Expansion or seismic joints designed to prevent the penetration of fire for a time period not less than the required fire resistance rating of the floor.

Exception No. 6: Enclosure shall not be required for pneumatic tube conveyors protected in accordance with 6-2.3.2.4.2.

Exception No. 7: As permitted by Chapters 8 through 32.

Exception No. 8: Existing mail chutes:

(a) With cross-sectional area not exceeding 16 sq in. (103 sq cm), or

(b) In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

6-2.4.3 Vertical openings (shafts) that do not extend to the bottom or the top of the building or structure shall be enclosed at the lowest or highest level of the shaft, respectively, with construction in accordance with 6-2.4.4.

Exception: Shafts shall be permitted to terminate in a room or space having a use related to the purpose of the shaft provided that the room or space is separated from the remainder of the building by construction having a fire resistance rating and opening protectives in accordance with 6-2.4.4 and 6-2.3.2.3.

6-2.4.4* The minimum fire resistance rating for the enclosure of floor openings shall be as follows (see 5-1.3.2.1 for enclosure of exits):

(a) Enclosures connecting four stories or more in new construction — 2-hr fire barriers.

(b) Other enclosures in new construction — 1-hr fire barriers.

(c) Enclosures in existing buildings — $\frac{1}{2}$ -hr fire barriers.

(d) As specified in Chapter 16 for new hotels, Chapter 18 for new apartment buildings, and in Chapter 20 for lodging and rooming houses.

6-2.4.5 Where permitted by Chapters 8 through 31, unenclosed floor openings forming a communicating space between floor levels shall be permitted, provided the following conditions are met.

(a) The communicating space does not connect more than three contiguous stories.

(b) The lowest or next to lowest story within the communicating space is a street floor.

(c) The entire floor area of the communicating space is open and unobstructed such that a fire in any part of the space will be readily obvious to the occupants of the space prior to the time it becomes a hazard to them.

(d) The communicating space is separated from the remainder of the building by fire barriers with at least a 1-hr fire resistance rating.

Exception No. 1 to (d): In buildings protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7, a smoke barrier in accordance with Section 6-3 shall be permitted to serve as the required separation.

Exception No. 2 to (d): Fully sprinklered residential housing units of detention and correctional occupancies in accordance with Exception No. 3 to 14-3.1.1 and Exception No. 3 to 15-3.1.1.

(e) The communicating space has ordinary hazard contents protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7 or has only low hazard contents. (See 4-2.2.)

(f) Egress capacity is sufficient to provide for all the occupants of all levels within the communicating space to simultaneously egress the communicating space by considering it as single floor area in determining the required egress capacity.

(g)* Each occupant within the communicating space has access to at least one exit without having to traverse another story within the communicating space.

(h) Each occupant not in the communicating space has access to at least one exit without having to enter the communicating space.

6-2.4.6* Atriums. Where permitted by Chapters 8 through 31, an atrium shall be permitted, provided the following conditions are met.

(a) Atriums are separated from the adjacent spaces by fire barriers with at least a 1-hr fire resistance rating with opening protectives for corridor walls. [See 6-2.3.2.3.1(c).]

Exception No. 1 to (a): Any number of levels of the building shall be permitted to open directly to the atrium without enclosure based on the results of the engineering analysis required in (e).

Exception No. 2 to (a): Glass walls and inoperable windows shall be permitted in lieu of the fire barriers where automatic sprinklers are spaced 6 ft (1.8 m) apart or less along both sides of the glass wall and inoperable windows, not more than 1 ft (0.3 m) from the glass, and with the automatic sprinklers located so that the entire surface of the glass is wet upon operation of the sprinklers. The glass shall be tempered, wired, or laminated glass held in place by a gasket system that permits the glass framing system to deflect without breaking (loading) the glass before the sprinklers operate. Automatic sprinklers shall not be required on the atrium side of the glass wall and inoperable windows where there is no walkway or other floor area on the atrium side above the main floor level. Doors in such walls shall be glass or other material that will resist the passage of smoke. Doors shall be self-closing or automatic-closing upon detection of smoke.*

Exception No. 3 to (a): Existing construction.

(b) Access to exits is permitted to be within the atrium. Exit discharge in accordance with 5-7.2 is permitted to be within the atrium.

(c) The occupancy within the space meets the specifications for classification as low or ordinary hazard contents. (See 4-2.2.)

(d) The entire building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7.

(e)* An engineering analysis is performed which demonstrates that the building is designed to keep the smoke layer interface above the highest unprotected opening to adjoining spaces, or 6 ft (1.85 m) above the highest floor level of exit access open to the atrium for a time period equal to 1.5 times the calculated egress time or 20 min, whichever is greater.

Exception to (e): Existing previously approved atria.

(f)* If an engineered smoke control system is installed to meet the requirements of (e) above, the system is independently activated by each of the following:

1. The required automatic sprinkler system, and
2. Manual controls that are readily accessible to the fire department.

Exception to (f): Existing construction.

6-2.4.7 A vertical opening, not serving as an exit enclosure, connecting only two adjacent stories, piercing only one floor, shall be permitted to be open to one of the two stories.

6-2.4.8 Convenience Openings. Where permitted by Chapters 8 through 31, unenclosed vertical openings not concealed within the building construction shall be permitted as follows:

(a) Such openings shall connect a maximum of two adjacent stories (pierce one floor only), and

(b) Such openings shall be separated from unprotected vertical openings serving other floors by a barrier complying with 6-2.4.4, and

(c) Such openings shall be separated from corridors, and

(d) Such openings shall not serve as a required means of egress.

6-2.4.9 Where there are three or fewer elevator cars in a building, they shall be permitted to be located within the same hoistway enclosure. Where there are four elevator cars, they shall be divided in such a manner that at least two separate hoistway enclosures are provided. Where there are more than four elevator cars, not more than four elevator cars shall be located within a single hoistway enclosure.

Exception: Existing buildings.

6-2.4.10 Service openings for conveyors, elevators, and dumbwaiters, where required to be open on more than one story at the same time for purposes of operation, shall be provided with closing devices in accordance with 5-2.1.8.

6-2.4.11 Any escalators or moving walks serving as a required exit in existing buildings shall be enclosed in the same manner as exit stairways. (See 5-2.7.)

6-2.4.12 Escalators or moving walks not constituting an exit shall have their floor openings enclosed or protected as required for other vertical openings.

*Exception No. 1:** In buildings protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7, escalators or moving walk openings shall be permitted to be protected in accordance with the method detailed in NFPA 13, *Standard for the Installation of Sprinkler Systems*, or in accordance with a method approved by the authority having jurisdiction.

Exception No. 2: Escalators in large open areas, such as atriums and enclosed shopping malls.

Exception No. 3: In buildings protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7, escalators or moving walk openings shall be permitted to be protected by rolling steel shutters appropriate for the fire resistance rating of the vertical opening protected. The shutters shall close automatically upon smoke detection and sprinkler operation, independently of each other. There shall be a manual means of operating and testing the operation of the shutter. The shutters shall be operated at least once a week to ensure that they remain in proper operating condition. The shutters shall operate at a speed of not more than 30 ft/min (0.15 m/s) and shall be equipped with a sensitive leading edge. The leading edge shall arrest the progress of a moving shutter and cause it to retract a distance of approximately 6 in. (15.2 cm) upon the application of a force not in excess of 20 lbf (90 N) applied to the surface of the leading edge. The shutter, following this retraction, shall continue to close. The operating mechanism for the rolling shutter shall be provided with standby power complying with the provisions of NFPA 70, *National Electrical Code*.

6-2.5 Mezzanines.

6-2.5.1 General. A mezzanine shall not be counted as a story for the purpose of determining the allowable number of stories.

6-2.5.2 Area Limitations.

6-2.5.2.1 The aggregate area of mezzanines within a room shall not exceed one third the open area of the room in which the mezzanines are located. Enclosed space shall not be included in a determination of the size of the room in which the mezzanine is located.

Exception No. 1: Special purpose industrial occupancies.

Exception No. 2: Multilevel residential housing areas in detention and correctional occupancies in accordance with Chapters 14 and 15 shall be exempt from the provisions of 6-2.5.2 and 6-2.5.3.

6-2.5.2.2 There shall be no limit on the number of mezzanines in a room.

6-2.5.2.3 For purposes of determining the allowable mezzanine area, the area of mezzanines shall not be included in the area of the room.

6-2.5.3 Openness. All portions of a mezzanine shall be open to and unobstructed from the room in which the mezzanine is located.

Exception No. 1: Walls not more than 42 in. (107 cm) high, columns, and posts.

Exception No. 2: Mezzanines or portions thereof shall not be required to be open to the room in which they are located, provided the occupant load of the aggregate area of the enclosed space does not exceed 10.

Exception No. 3: A mezzanine having two or more means of egress shall not be required to open into the room in which it is located if at least one of the means of egress provides direct access from the enclosed area to an exit at the mezzanine level.

6-2.6 Concealed Spaces.

6-2.6.1* In new Type III, Type IV, or Type V construction, any concealed space in which materials having a flame-spread rating greater than Class A (as defined in Section 6-5) are exposed shall be effectively firestopped or draftstopped as provided below.

(a) Every exterior and interior wall and partition shall be firestopped at each floor level, at the top-story ceiling level, and at the level of support for roofs.

(b) Every unoccupied attic space shall be subdivided by draftstops into areas not to exceed 3000 sq ft (280 sq m).

(c) Any concealed space between the ceiling and the floor or roof above shall be draftstopped for the full depth of the space along the line of support for the floor or roof structural members and, if necessary, at other locations to form areas not to exceed 1000 sq ft (93 sq m) for any space between the ceiling and floor and 3000 sq ft (280 sq m) for any space between the ceiling and roof.

Exception No. 1: The space is protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Concealed spaces serving as plenums. (See NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*.)

6-2.6.2 In every existing building, firestopping and draftstopping shall be provided as required by the provisions of Chapters 8 through 31.

SECTION 6-3 SMOKE BARRIERS

6-3.1* Where required by Chapters 8 through 31, smoke barriers shall be provided to subdivide building spaces for the purpose of restricting the movement of smoke.

6-3.2* Smoke barriers required by this Code shall be continuous from an outside wall to an outside wall, from a floor to a floor, from a smoke barrier to a smoke barrier, or a combination thereof; this includes continuity through all concealed spaces such as those found above a ceiling, including interstitial spaces.

Exception: A smoke barrier required for an occupied space below an interstitial space shall not be required to extend through the interstitial space, provided the construction assembly forming the bottom of the interstitial space provides resistance to the passage of smoke equal to that provided by the smoke barrier.

6-3.3 A fire barrier shall be permitted to be used as a smoke barrier if it meets the requirements of 6-3.4 through 6-3.6.

6-3.4 Doors.

6-3.4.1* Doors in smoke barriers shall close the opening with only a minimum clearance necessary for proper operation and shall be without undercuts, louvers, or grilles.

6-3.4.2* Where a fire resistance rating for smoke barriers is specified elsewhere in the Code, openings shall be protected as follows.

(a) Door opening protectives shall have a fire protection rating of not less than 20 min where tested in accordance with NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, without the hose stream test.

(b) Fire windows shall comply with 6-2.3.2.2.

Exception No. 1: If a different fire protection rating for smoke barrier doors is specified by Chapters 8 through 31.

Exception No. 2: Latching hardware shall not be required on doors in smoke barriers where so indicated by Chapters 8 through 31.

6-3.4.3* Doors in smoke barriers shall be self-closing or automatic-closing in accordance with 5-2.1.8 and shall comply with the provisions of 5-2.1.

6-3.5 Smoke Dampers.

6-3.5.1 An approved damper designed to resist the passage of smoke shall be provided for each air-transfer opening or duct penetration of a required smoke barrier.

Exception No. 1: Ducts or air-transfer openings that are part of an engineered smoke control system in accordance with Section 7-3.

Exception No. 2: Ducts where the air continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions.

Exception No. 3: Where the air inlet or outlet openings in ducts are limited to a single smoke compartment.

Exception No. 4: Where ducts penetrate floors that serve as smoke barriers.

Exception No. 5: Where specifically permitted by Chapters 8 through 31.

6-3.5.2 Required smoke dampers in ducts penetrating smoke barriers shall close upon detection of smoke by approved smoke detectors installed in accordance with NFPA 72, *National Fire Alarm Code*.

Exception No. 1: Duct detectors shall not be required where ducts penetrate smoke barriers above the smoke barrier doors and the door release detector actuates the damper.

Exception No. 2: Approved smoke detectors located within the ducts in existing installations.

6-3.5.3 Required smoke dampers in air transfer openings shall close upon detection of smoke by approved smoke detectors installed in accordance with NFPA 72, *National Fire Alarm Code*.

Exception: Where a duct is provided on one side of the smoke barrier, the smoke detectors on the duct side shall be in accordance with 6-3.5.2.

6-3.6 Penetrations and Miscellaneous Openings in Floors and Smoke Barriers.

6-3.6.1 Pipes, conduits, bus ducts, cables, wires, air ducts, pneumatic tubes and ducts, and similar building service equipment that pass through floors and smoke barriers shall be protected as follows:

(a) The space between the penetrating item and the smoke barrier shall

1. Be filled with a material capable of maintaining the smoke resistance of the smoke barrier, or

2. Be protected by an approved device designed for the specific purpose.

(b) Where the penetrating item uses a sleeve to penetrate the smoke barrier, the sleeve shall be solidly set in the smoke barrier, and the space between the item and the sleeve shall

1. Be filled with a material capable of maintaining the smoke resistance of the smoke barrier, or

2. Be protected by an approved device designed for the specific purpose.

(c) Where designs take transmission of vibration into consideration, any vibration isolation shall

1. Be made on either side of the smoke barrier, or

2. Be made by an approved device designed for the specific purpose.

6-3.6.2 Openings occurring at points where floors or smoke barriers meet the outside walls, other smoke barriers, or fire barriers of a building shall

(a) Be filled with a material capable of maintaining the smoke resistance of the floor or smoke barrier, or

(b) Be protected by an approved device designed for the specific purpose.

SECTION 6-4 SPECIAL HAZARD PROTECTION

6-4.1 General.

6-4.1.1* Protection from any area having a degree of hazard greater than that normal to the general occupancy of the building or structure shall be provided as follows:

(a) Enclose the area with a fire barrier having a 1-hr fire resistance rating in accordance with Section 6-2, without windows; or

(b) Protect the area with automatic extinguishing systems in accordance with Section 7-7; or

(c) Apply both (a) and (b) above where the hazard is severe or where otherwise specified by Chapters 8 through 31.

6-4.1.2 In new construction, where protection is provided with automatic extinguishing systems without fire-resistive separation, the space protected shall be enclosed to resist the passage of smoke, and doors shall be self-closing or automatic-closing and resist the passage of smoke.

Exception No. 1: Mercantile occupancy general storage areas and stockrooms protected by automatic sprinklers in accordance with Section 7-7.

Exception No. 2: Hazardous areas in industrial occupancies protected by automatic extinguishing systems in accordance with 28-3.2.

6-4.1.3 Doors in barriers required to have a fire resistance rating shall have a $\frac{3}{4}$ -hr fire protection rating and shall be self-closing or automatic-closing in accordance with 5-2.1.8.

6-4.2* Explosion Protection. Where hazardous processes or storage are of such a character as to introduce an explosion potential, an explosion venting or an explosion suppression system specifically designed for the hazard involved shall be provided.

6-4.3 Flammable Liquids and Gases.

6-4.3.1 The storage and handling of flammable liquids or gases shall be in accordance with the applicable standards:

- (a) NFPA 30, *Flammable and Combustible Liquids Code*;
- (b) NFPA 54, *National Fuel Gas Code*;
- (c) NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

6-4.3.2* No storage or handling of flammable liquids or gases shall be permitted in any location where it would jeopardize egress from the structure.

Exception: As permitted by 6-4.3.1.

6-4.4 Laboratories. Laboratories that use chemicals shall comply with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*, unless otherwise modified by other provisions of this Code.

Exception: Laboratories in health care occupancies and medical and dental offices shall comply with NFPA 99, *Standard for Health Care Facilities*.

SECTION 6-5 INTERIOR FINISH

6-5.1 General.

6-5.1.1* Interior finish includes interior wall and ceiling finish and interior floor finish.

6-5.1.2 Interior wall and ceiling finish means the exposed interior surfaces of buildings including, but not limited to, fixed or movable walls and partitions, columns, and ceilings.

Exception: Materials less than $\frac{1}{28}$ in. (0.09 cm) in thickness applied directly to the surface of walls or ceilings shall not be considered as interior finish if such materials have surface burning characteristics no greater than paper of this thickness applied directly to a non-combustible backing in the same manner.

6-5.1.3 Interior floor finish means the exposed floor surfaces of buildings including coverings that might be applied over a normal finished floor or stair, including risers.

6-5.1.4 Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction shall be permitted to establish the classification of any material on which a rating by standard test is not available.

6-5.2* Use of Interior Finishes.

6-5.2.1 Requirements for interior wall and ceiling finish shall apply as specified

(a) Elsewhere in this Code for specific occupancies. (See Chapter 5 and Chapters 8 through 32.)

(b) In 6-5.3.

6-5.2.2* Requirements for interior floor finish shall apply only where (a) there is a floor finish of unusual hazard, or (b) where floor finish requirements are specified elsewhere in this Code for specific occupancies. (See Chapters 8 through 31 for specific occupancy requirements.)

6-5.3 Specific Materials.

6-5.3.1 Use of Textile Wall and Textile Ceiling Materials as Interior Finish. The use of textile materials on walls or ceilings shall be limited as specified in 6-5.3.1 through 6-5.3.1.5.

6-5.3.1.1 Textile materials having a Class A rating (see 6-5.5.1) shall be permitted on the walls or ceilings of rooms or areas protected by an approved, automatic sprinkler system.

6-5.3.1.2 Textile materials having a Class A rating (see 6-5.5.1) shall be permitted on partitions that are not more than $\frac{3}{4}$ of the floor-to-ceiling height nor more than 8 ft (2.4 m) in height, whichever is less.

6-5.3.1.3 Textile materials having a Class A ratings (see 6-5.5.1) shall be permitted to extend up to 4 ft (1.2 m) above the finished floor on ceiling-height walls and ceiling-height partitions.

6-5.3.1.4 Previously approved, existing installations of textile material having a Class A rating (see 6-5.5.1) shall be permitted to be continued to be used.

6-5.3.1.5* Textile materials shall be permitted on walls and partitions where tested in accordance with NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*, using a product mounting system, including adhesive, representative of actual use, provided the textile material complies with the criteria of 6-5.3.1.5.1 or 6-5.3.1.5.2.

6-5.3.1.5.1 When using method A of the NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*, test protocol:

(a) Flame shall not spread to the ceiling during the 40-kW exposure, and

(b) During the 150-kW exposure the following criteria shall be met:

(1) Flame shall not spread to the outer extremity of the sample on the 8 ft × 12 ft (2.4 m × 3.7 m) wall, and

(2) The specimen shall not burn to the outer extremity of the 2-ft (0.6-m) wide samples mounted vertically in the corner of the room, and

(3) Burning droplets that are judged to be capable of igniting the textile wall covering or that persist in burning for 30 sec or more shall not be formed and dropped to the floor, and

(4) Flashover shall not occur, and

(5) The maximum instantaneous net peak rate of heat release shall not exceed 300 kW.

6-5.3.1.5.2 When using method B of the NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*, test protocol:

(a) Flame shall not spread to the ceiling during the 40-kW exposure, and

(b) During the 150-kW exposure the following criteria shall be met:

(1) Flame shall not spread to the outer extremities of the sample on the 8 ft × 12 ft (2.4 m × 3.7 m) wall, and

(2) Flashover shall not occur.

6-5.3.2 Cellular or foamed plastic materials shall not be used as interior wall and ceiling finish.

Exception No. 1: Cellular or foamed plastic material shall be permitted on the basis of fire tests that substantiate on a reasonable basis their combustibility characteristics for the use intended under actual fire conditions.

Exception No. 2: Cellular or foamed plastic shall be permitted for trim not in excess of 10 percent of the wall or ceiling area, provided it is not less than 20 lb/cu ft (320 kg/cu m) in density, is limited to

$\frac{1}{2}$ in. (1.3 cm) in thickness and 4 in. (10.2 cm) in width, and complies with the requirements for Class A or B interior wall and ceiling finish as described in 6-5.5; however, the smoke rating shall not be limited.

6-5.3.3* Light-transmitting plastics shall be permitted to be used as interior wall and ceiling finish if approved by the authority having jurisdiction.

6-5.3.4 Where surface nonmetallic raceway products, as permitted by NFPA 70, *National Electrical Code*, are regulated as interior finish, they shall comply with the requirements for Class A interior wall and ceiling finish as described in 6-5.5 and testing in the form in which they are used. The smoke rating shall not be limited when the raceway is less than 10 percent of the wall or ceiling area.

6-5.3.5 Expanded Vinyl Wall Coverings.

6-5.3.5.1* Expanded vinyl wall covering shall comply with one of following the conditions:

(a) Materials having a Class A rating (*see 6-5.5.1*) shall be permitted on the walls or ceilings of rooms or areas protected by an approved, automatic sprinkler system.

(b) Materials having a Class A rating (*see 6-5.5.1*) shall be permitted on partitions that are not more than $\frac{3}{4}$ of the floor-to-ceiling height nor more than 8 ft (2.4 m) in height, whichever is less.

(c) Materials having a Class A rating (*see 6-5.5.1*) shall be permitted on ceiling-height walls and ceiling-height partitions up to 4 ft (1.2 m) above the finished floor.

(d) Previously approved, existing installations of materials having a Class A rating (*see 6-5.5.1*) shall be permitted to be continued to be used.

(e) Materials shall be permitted on walls and partitions, without requiring classification in accordance with 6-5.5, where tested in accordance with NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*.

6-5.3.5.2 Expanded vinyl wall coverings in existing installations complying with the appropriate wall finish classification for the occupancy involved shall be classified in accordance with the provisions in 6-5.5.1.

6-5.3.6 For requirements on decorations and furnishings not meeting the definition of interior finish, see Section 6-6.

6-5.4 Interior Wall or Ceiling Finish Classifications.

6-5.4.1 Interior wall or ceiling finish shall be classified based on test results from NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*.

6-5.5 Interior Wall and Ceiling Finish Testing.

6-5.5.1* Products required to be tested in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*, shall be grouped in the following classes in accordance with their flame spread and smoke development.

(a) *Class A Interior Wall and Ceiling Finish.* Flame spread 0–25; smoke development 0–450. Includes any material classified at 25 or less on the flame spread test scale and 450 or less on the smoke test scale. Any element thereof, when so tested, shall not continue to propagate fire.

(b) *Class B Interior Wall and Ceiling Finish.* Flame spread 26–75; smoke development 0–450. Includes any material clas-

sified at more than 25 but not more than 75 on the flame spread test scale and 450 or less on the smoke test scale.

(c) *Class C Interior Wall and Ceiling Finish.* Flame spread 76–200; smoke development 0–450. Includes any material classified at more than 75 but not more than 200 on the flame spread test scale and 450 or less on the smoke test scale.

Exception: Existing interior finishes complying with the above flame spread ratings only shall be permitted to be continued to be used.

6-5.5.2 Wherever the use of Class C interior wall and ceiling finish is required, Class A or B shall be permitted. Where Class B interior wall and ceiling finish is required, Class A shall be permitted.

6-5.5.3 The classification of interior finish specified in 6-5.5.1 shall be that of the basic material used by itself or in combination with other materials.

Exception: Exposed portions of structural members complying with the requirements for Type IV(2HH) construction per NFPA 220, *Standard on Types of Building Construction*.

6-5.6 Interior Floor Finish Classification.

6-5.6.1* Interior floor finishes shall be classified in accordance with 6-5.6.2 based on test results from NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*.

6-5.6.2 Interior floor finishes shall be grouped in the following classes in accordance with the critical radiant flux ratings.

(a) *Class I Interior Floor Finish.* Critical radiant flux minimum of 0.45 W/sq cm as determined by the test described in 6-5.6.1.

(b) *Class II Interior Floor Finish.* Critical radiant flux minimum of 0.22 W/sq cm as determined by the test described in 6-5.6.1.

6-5.6.3 Wherever the use of Class II interior floor finish is required, Class I interior floor finish shall be permitted.

6-5.7 Trim and Incidental Finish. Interior wall and ceiling finish not in excess of 10 percent of the aggregate wall and ceiling areas of any room or space shall be permitted to be Class C materials in occupancies where interior wall and ceiling finish of Class A or Class B is required.

6-5.8* Fire Retardant Coatings.

6-5.8.1 The required flame spread or smoke developed classification of existing surfaces of walls, partitions, columns, and ceilings shall be permitted to be secured by applying approved fire retardant coatings to surfaces having higher flame spread ratings than permitted. Such treatments shall comply with the requirements of NFPA 703, *Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*.

6-5.8.2 Fire retardant coatings shall possess the desired degree of permanency and shall be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

6-5.9 Automatic Sprinklers.

6-5.9.1 Where an approved, automatic sprinkler system is installed in accordance with Section 7-7, Class C interior wall and ceiling finish materials shall be permitted in any location where Class B is required, and Class B interior wall and ceiling

finish materials shall be permitted in any location where Class A is required.

Exception: Unless specifically prohibited elsewhere in this Code.

6-5.9.2 Where an approved, automatic sprinkler system is installed in accordance with Section 7-7, Class II interior floor finish shall be permitted in any location where Class I interior floor finish is required, and where Class II is required, no critical radiant flux rating shall be required.

SECTION 6-6 FURNISHINGS, CONTENTS, DECORATIONS, AND TREATED FINISHES

6-6.1* Where required by the applicable provisions of this Code, draperies, curtains, and other similar loosely hanging furnishings and decorations shall be flame resistant as demonstrated by complying with NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*.

Exception: For materials that show excessive melting or shrinkage or ongoing combustion at the junction of the specimen and its holder in the small-scale test, the large-scale test shall be considered applicable in accordance with the test selection provisions of NFPA 701, Standard Methods of Fire Tests for Flame-Resistant Textiles and Films.

6-6.2* Where required by the applicable provisions of this Code, upholstered furniture and mattresses shall be resistant to a cigarette (i.e., smoldering) ignition in accordance with the following.

(a) Where required by the applicable provisions of this Code, the components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260, *Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture*.

Exception: Upholstered furniture in rooms or spaces protected by an approved, automatic sprinkler system.

(b) Where required by the applicable provisions of this Code, mocked-up composites of the upholstered furniture shall have a char length not exceeding 1.5 in. (3.8 cm) when tested in accordance with NFPA 261, *Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes*.

Exception: Upholstered furniture in rooms or spaces protected by an approved, automatic sprinkler system.

(c) Where required by the applicable provisions of this Code, mattresses shall have a char length not exceeding 2 in. (5.1 cm) when tested in accordance with Part 1632 of the Code of Federal Regulations 16.

Exception: Mattresses in rooms or spaces protected by an approved, automatic sprinkler system.

6-6.3* Where required by the applicable provisions of this Code, upholstered furniture shall have limited rates of heat release when tested in accordance with NFPA 266, *Standard Method of Test for Fire Characteristics of Upholstered Furniture Exposed to Flaming Ignition Source*, or with ASTM E1537, *Standard Method for Fire Testing of Real Scale Upholstered Furniture Items*, as follows.

(a) The peak rate of heat release for the single upholstered furniture item shall not exceed 250 kW.

Exception to (a): Upholstered furniture in rooms or spaces in facilities or buildings protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7.

(b) The total energy released by the single upholstered furniture item during the first 5 min of the test shall not exceed 40 MJ.

Exception to (b): Upholstered furniture in rooms or spaces protected by an approved, automatic sprinkler system.

6-6.4* Where required by the applicable provisions of this Code, mattresses shall have limited rates of heat release when tested in accordance with ASTM E1590, *Standard Method for Fire Testing of Real Scale Mattresses*, as follows.

(a) The peak rate of heat release for the mattress shall not exceed 250 kW.

Exception to (a): Mattresses in rooms or spaces protected by an approved, automatic sprinkler system.

(b) The total energy released by the mattress during the first 5 min of the test shall not exceed 40 MJ.

Exception to (b): Mattresses in rooms or spaces protected by an approved, automatic sprinkler system.

6-6.5* Furnishings or decorations of an explosive or highly flammable character shall not be used.

6-6.6 Fire retardant coatings shall be maintained to retain the effectiveness of the treatment under service conditions encountered in actual use.

6-6.7* Where required by the applicable provisions of this Code, furnishings and contents made with foamed plastic materials that are unprotected from ignition shall have a maximum heat release rate of 100 kW when tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

CHAPTER 7 BUILDING SERVICE AND FIRE PROTECTION EQUIPMENT

SECTION 7-1 UTILITIES

7-1.1 Equipment utilizing gas and related gas piping shall be installed in accordance with NFPA 54, *National Fuel Gas Code*, or NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

7-1.2 Electrical wiring and equipment installed shall be in accordance with NFPA 70, *National Electrical Code*.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

7-1.3 Emergency generators, where required for compliance with this *Code*, shall be tested and maintained in accordance with NFPA 110, *Standard for Emergency and Standby Power Systems*.

7-1.4 Stored electrical energy systems shall be maintained in accordance with NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*.

SECTION 7-2 HEATING, VENTILATING, AND AIR CONDITIONING

7-2.1 Air conditioning, heating, and ventilating ductwork, and related equipment shall be installed in accordance with NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*, or NFPA 90B, *Standard for the Installation of Warm Air Heating and Air Conditioning Systems*, as applicable.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

7-2.2 Ventilating or heat-producing equipment shall be installed in accordance with NFPA 91, *Standard for Exhaust Systems for Air Conveying of Materials*; NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*; NFPA 31, *Standard for the Installation of Oil-Burning Equipment*; NFPA 54, *National Fuel Gas Code*; or NFPA 70, *National Electrical Code*, as applicable.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

7-2.3 Commercial cooking equipment shall be installed in accordance with NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

7-2.4 Ventilating systems in laboratories using chemicals shall be installed in accordance with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*, or NFPA 99, *Standard for Health Care Facilities*, as appropriate.

SECTION 7-3 SMOKE CONTROL

7-3.1* Smoke control systems where required or permitted by Chapters 8 through 32 shall have an approved maintenance and testing program to ensure operational integrity. The purpose of such smoke control systems shall be to con-

fine smoke to the general area of fire origin and maintain use of the means of egress system.

SECTION 7-4 ELEVATORS, ESCALATORS, AND CONVEYORS

7-4.1* An elevator shall not be considered a component in a required means of egress but shall be permitted as a component in an accessible means of egress.

Exception: Elevators in accordance with 5-2.13.

7-4.2 Except as modified herein, new elevators, escalators, dumbwaiters, and moving walks shall be installed in accordance with the requirements of ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

7-4.3 Except as modified herein, existing elevators, escalators, dumbwaiters, and moving walks shall conform to the requirements of ASME/ANSI A17.3, *Safety Code for Existing Elevators and Escalators*.

7-4.4 All new elevators shall conform to the Fire Fighters' Service Requirements of ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

7-4.5 All existing elevators having a travel distance of 25 ft (7.6 m) or more above or below the level that best serves the needs of emergency personnel for fire fighting or rescue purposes shall conform to the Fire Fighters' Service Requirements of ASME/ANSI A17.3, *Safety Code for Existing Elevators and Escalators*.

7-4.6 The number of elevator cars permitted in a hoistway shall be in accordance with 6-2.4.9.

7-4.7* Elevator Machine Rooms. Elevator machine rooms that contain solid-state equipment for elevators having a travel distance of more than 50 ft (15 m) above the level of exit discharge or more than 30 ft (9.1 m) below the level of exit discharge shall be provided with independent ventilation or air conditioning systems required to maintain temperature during fire fighters' service operation for elevator operation (see 7-4.4 and 7-4.5). The operating temperature shall be established by the elevator equipment manufacturer's specifications. When standby power is connected to the elevator, the machine room ventilation or air conditioning shall be connected to standby power.

Exception: Existing elevators.

7-4.8 Elevator Testing. Elevators shall be subject to routine and periodic inspections and tests as specified in ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*. All elevators equipped with fire fighter service in accordance with 7-4.4 and 7-4.5 shall be subject to a monthly operation with a written record of the findings made and kept on the premises as required by ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

7-4.9 Conveyors, elevators, dumbwaiters, and pneumatic conveyors serving various stories of a building, shall not open to an exit.

SECTION 7-5 RUBBISH CHUTES, INCINERATORS, AND LAUNDRY CHUTES

7-5.1 Rubbish chutes and laundry chutes shall be separately enclosed by walls or partitions in accordance with the provisions of Section 6-2. Inlet openings serving chutes shall be

protected in accordance with Section 6-2. Doors of such chutes shall open only to a room that is designed and used exclusively for accessing the chute opening. The room shall be separated from other spaces in accordance with Section 6-4.

Exception No. 1: Existing installations having properly enclosed service chutes and properly installed and maintained service openings shall be permitted to have inlets open to a corridor or normally occupied space.

Exception No. 2: Rubbish chutes and laundry chutes shall be permitted to open into rooms not exceeding 400 sq ft (37 sq m) in area used for storage, provided the room is protected by automatic sprinklers.

7-5.2 Rubbish chutes, laundry chutes, and incinerators shall be installed and maintained in accordance with NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment*.

Exception: Existing installations shall be permitted to be continued in service, subject to approval by the authority having jurisdiction.

SECTION 7-6 FIRE DETECTION, ALARM, AND COMMUNICATION SYSTEMS

7-6.1 General.

7-6.1.1 The provisions of this section shall apply only where specifically required by another section of this *Code*.

7-6.1.2 Fire detection, alarm, and communication systems installed to make use of an alternative allowed by this *Code* shall be considered "required" systems and shall meet the provisions of this *Code* applicable to required systems.

7-6.1.3* The provisions of this section cover the basic functions of a complete protective signaling and control system including fire detection, alarm, and communication. These systems are primarily intended to provide the indication and warning of abnormal conditions, the summoning of appropriate aid, and the control of occupancy facilities to enhance protection of life.

7-6.1.4 A fire alarm system required for life safety shall be installed, tested, and maintained in accordance with applicable requirements of NFPA 70, *National Electrical Code*, and NFPA 72, *National Fire Alarm Code*.

Exception: Existing installations shall be permitted to be continued in use, subject to the approval of the authority having jurisdiction.

7-6.1.5 All systems and components shall be approved for the purpose for which they are installed.

7-6.1.6 Fire alarm system installation wiring or other transmission paths shall be monitored for integrity in accordance with 7-6.1.4.

7-6.1.7* Maintenance and Testing. To ensure operational integrity, the fire alarm system shall have an approved maintenance and testing program complying with the requirements of the applicable documents specified in 7-6.1.4.

7-6.1.8* Fire Alarm System Shutdown. Where a required fire alarm system is out of service for more than 4 hr in a 24-hr period, the authority having jurisdiction shall be notified, and the building shall be evacuated or an approved fire watch shall be provided for all parties left unprotected by the shutdown until the fire alarm system has been returned to service.

7-6.1.9 For the purposes of this *Code*, a protective signaling and control system is used for initiation, notification, and control.

(a) *Initiation.* The initiation function provides the input signal to the system.

(b) *Notification.* The notification function is the means by which the system advises that human action is required in response to a particular condition.

(c) *Control.* The control function provides outputs to control building equipment to enhance protection of life.

7-6.2 Signal Initiation.

7-6.2.1 Where required by other sections of this *Code*, actuation of the protective signaling and control system shall occur by any or all of the following means of initiation, but shall not be limited thereto

(a) Manual fire alarm initiation.

(b) Automatic detection.

(c) Extinguishing system operation.

7-6.2.2 Manual fire alarm stations shall be approved for the particular application and shall be used only for fire protective signaling purposes. Combination fire alarm and guard's tour stations shall be acceptable.

7-6.2.3 A manual fire alarm station shall be provided in the natural exit access path near each required exit from an area, unless modified by another section of this *Code*.

7-6.2.4 Additional manual fire alarm stations shall be located so that, from any part of the building, not more than 200 ft (60 m) horizontal distance on the same floor shall be traversed in order to reach a manual fire alarm station.

7-6.2.5 For fire alarm systems utilizing automatic fire detection or waterflow detection devices, at least one manual fire alarm station shall be provided to initiate a fire alarm signal. This manual fire alarm station shall be located where required by the authority having jurisdiction.

7-6.2.6* Each manual fire alarm station on a system shall be accessible, unobstructed, and visible.

7-6.2.7 Where a sprinkler system provides automatic detection and alarm system initiation, it shall be provided with an approved, alarm initiation device that will operate when the flow of water is equal to or greater than that from a single automatic sprinkler.

7-6.2.8 Complete Smoke Detection Systems. Where a complete smoke detection system is required by another section of this *Code*, automatic detection of smoke in accordance with NFPA 72, *National Fire Alarm Code*, shall be provided in all occupiable areas, common areas, and work spaces in those environments suitable for proper smoke detector operation.

7-6.2.9 Partial Smoke Detection Systems. Where a partial smoke detection system is required by another section of this *Code*, automatic detection of smoke in accordance with NFPA 72, *National Fire Alarm Code*, shall be provided in all common areas and work spaces, such as corridors, lobbies, storage rooms, equipment rooms, and other tenantless spaces in those environments suitable for proper smoke detector operation. Selective smoke detection unique to other sections of this *Code* shall be provided as required by those sections.

7-6.2.10 Smoke Alarms. Where required by another section of this *Code*, single-station smoke alarms shall be installed in accordance with the household fire warning equipment requirements of Chapter 2 of NFPA 72, *National Fire Alarm Code*.

Exception: System smoke detectors in accordance with NFPA 72, *National Fire Alarm Code*, arranged to function in the same manner shall be permitted.

7-6.2.10.1 Smoke alarms shall receive their operating power from the building electrical system.

Exception No. 1: Battery-operated devices as permitted by other sections of this *Code*.

Exception No. 2: Battery-operated devices complying with 7-6.1.4 and the low power wireless system requirements of Chapter 2 of NFPA 72, *National Fire Alarm Code*.

7-6.2.10.2* In new construction, where two or more smoke alarms are required within a living unit, suite of rooms, or similar area, they shall be arranged so that operation of any smoke alarm shall cause the alarm in all smoke alarms within the living unit, suite of rooms, or similar area to sound.

Exception No. 1: Configurations that provide equivalent distribution of the alarm signal.

Exception No. 2: Where otherwise permitted by another section of this *Code*.

7-6.2.10.2.1 The alarms shall sound only within an individual living unit, suite of rooms, or similar area and shall not actuate the building fire alarm system. Remote annunciation shall be permitted.

Exception: Where permitted by the authority having jurisdiction.

7-6.2.11 Where required by Chapters 8 through 32, an automatic fire detection system shall be provided in hazardous areas for initiation of the signaling system.

7-6.3 Occupant Notification.

7-6.3.1 Occupant notification shall provide signal notification to alert occupants of fire or other emergency as required by other sections of this *Code*.

7-6.3.2 Notification shall be provided by audible and visible signals in accordance with 7-6.3.3 through 7-6.3.10.

Exception No. 1: Where permitted by Chapters 8 through 31, a pre-signal system shall be permitted when the initial fire alarm signal is automatically transmitted without delay to a municipal fire department, a fire brigade (if provided), and an on-site staff person trained to respond to a fire emergency.

Exception No. 2: Where permitted by Chapters 8 through 32, a positive alarm sequence shall be permitted provided it is in accordance with NFPA 72, *National Fire Alarm Code*.

*Exception No. 3:** Elevator lobby, hoistway, and associated machine room smoke detectors used solely for elevator recall, and heat detectors used solely for elevator power shutdown, shall not be required to activate the building evacuation alarm if the power supply and installation wiring to these detectors are monitored by the building fire alarm system, and the activation of these detectors results in an audible and visible alarm signal at a constantly attended location.

*Exception No. 4:** Smoke detectors used solely for closing dampers or heating, ventilating, and air conditioning system shutdown shall not be required to activate the building evacuation alarm.

*Exception No. 5:** Detectors at doors for the exclusive operation of automatic door release shall not be required to activate the building evacuation alarm.

Exception No. 6: Detectors in accordance with the *Exception to 14-3.4.3.1* and the *Exception to 15-3.4.3.1* shall not be required to activate the building evacuation alarm.

7-6.3.3* Where a standard evacuation signal is required by another section of this *Code*, the evacuation signal shall be the standard fire alarm evacuation signal described in NFPA 72, *National Fire Alarm Code*.

7-6.3.4 Notification signals for occupants to evacuate shall be by audible and visible signals in accordance with NFPA 72, *National Fire Alarm Code*, and CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

Exception No. 1: Areas not subject to occupancy by persons who are hearing impaired shall not be required to comply with the provisions for visible signals.

Exception No. 2: Visible only signals as specifically permitted in health care occupancies in accordance with the provisions of Chapters 12 and 13.

Exception No. 3: Other means of notification acceptable to the authority having jurisdiction.

Exception No. 4: Existing alarm systems shall not be required to comply with the provision for visible signals.

Exception No. 5: Visible signals shall not be required in lodging or rooming houses in accordance with the provisions of Chapter 20.

7-6.3.5 The general evacuation alarm signal shall operate throughout the entire building.

*Exception No. 1:** Where total evacuation of occupants is impractical due to building configuration, only the occupants in the affected zones shall be initially notified. Provisions shall be made to selectively notify occupants in other zones to afford orderly evacuation of the entire building.

Exception No. 2: Where occupants are incapable of evacuating themselves because of age, physical or mental disabilities, or physical restraint, the private operating mode as described in NFPA 72, *National Fire Alarm Code*, shall be permitted to be used. Only the attendants and other personnel required to evacuate occupants from a zone, area, floor, or building shall be required to be notified. This notification shall include means to readily identify the zone, area, floor, or building in need of evacuation.

Exception No. 3: Notification within the covered mall per 24-4.4.3.3 and 25-4.4.3.3.

7-6.3.6 Audible alarm notification appliances shall be of such character and so distributed as to be effectively heard above the average ambient sound level occurring under normal conditions of occupancy.

7-6.3.7 Audible alarm notification appliances shall produce signals that are distinctive from audible signals used for other purposes in the same building.

7-6.3.8 Automatically transmitted or live voice evacuation or relocation instructions to occupants shall be permitted and shall be in accordance with NFPA 72, *National Fire Alarm Code*.

7-6.3.9 Audible and visible fire alarm notification appliances shall be used only for fire alarm system or other emergency purposes.

Exception No. 1: Voice communication systems shall be permitted to be used for other purposes, subject to the approval of the authority having jurisdiction, if the fire alarm system takes precedence over all other signals.

Exception No. 2: Where otherwise permitted by another section of this Code.

7-6.3.10 Alarm notification signals shall take precedence over all other signals.

7-6.4 Emergency Forces Notification. Where required by another section of this *Code*, emergency forces notification shall be provided to alert the municipal fire department and fire brigade (if provided) of fire or other emergency.

Where fire department notification is required by another section of this *Code*, the fire alarm system shall be arranged to transmit the alarm automatically via any of the following means acceptable to the authority having jurisdiction and in accordance with NFPA 72, *National Fire Alarm Code*:

- (a) An auxiliary alarm system, or
- (b) A central station connection, or
- (c) A proprietary system, or
- (d) A remote station connection.

Exception: Where none of the above means of notification is available, a plan for notification of the municipal fire department, acceptable to the authority having jurisdiction, shall be provided.

7-6.5 Emergency Control.

7-6.5.1 A fire alarm and control system, where required by another section of this *Code*, shall be arranged to actuate automatically control functions necessary to make the protected premises safer for building occupants.

7-6.5.2 Where required by another section of this *Code*, the following functions shall be actuated by the protective signaling and control system:

- (a) Release of hold-open devices for doors or other opening protectives.
- (b) Stairwell or elevator shaft pressurization.
- (c) Smoke management or smoke control systems.
- (d) Emergency lighting control.
- (e) Unlocking of doors.

7-6.5.3 The functions specified in 7-6.5.2 shall be permitted to be actuated by any fire alarm and control system where otherwise not required by this *Code*. Additionally, the fire alarm and control system shall be permitted to recall elevators, as required by Section 7-4, if the activation of the system for this purpose comes only from elevator lobby, hoistway, or associated machine room detectors.

7-6.5.4* Installation of emergency control devices shall be in accordance with NFPA 72, *National Fire Alarm Code*. The performance of emergency control functions shall not, in any

way, impair the effective response of all required alarm notification functions.

7-6.6 Location of Controls. Operator controls, alarm indicators, and manual communications capability shall be installed in a control center at a convenient location acceptable to the authority having jurisdiction.

7-6.7 Annunciation.

7-6.7.1 Where alarm annunciation is required by another section of this *Code*, it shall comply with 7-6.7.2 through 7-6.7.7.

7-6.7.2 Alarm annunciation at the control center shall be by means of audible and visible indicators.

7-6.7.3 For the purposes of alarm annunciation, each floor of the building shall be considered, as a minimum, one zone.

Exception No. 1: Where otherwise permitted by another section of this Code.

Exception No. 2: Existing buildings.

7-6.7.4 If a floor area exceeds 20,000 sq ft (1860 sq m), additional zoning shall be provided. The length of any zone shall not exceed 300 ft (91 m) in any direction.

Exception No. 1: Where the building is provided with automatic sprinklers throughout, installed in accordance with Section 7-7, the area of the alarm zone shall be permitted to coincide with the allowable area of the sprinkler zone.

Exception No. 2: Where otherwise permitted by another section of this Code.

7-6.7.5 A system trouble signal shall be annunciated at the control center by means of audible and visible indicators.

7-6.7.6 A system supervisory signal shall be annunciated at the control center by means of audible and visible indicators.

7-6.7.7 Where the system serves more than one building, each building shall be considered separately.

SECTION 7-7 AUTOMATIC SPRINKLERS AND OTHER EXTINGUISHING EQUIPMENT

7-7.1 Automatic Sprinklers.

7-7.1.1* Each automatic sprinkler system required by another section of this *Code* shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*. Where partial sprinkler protection is permitted by another section of this *Code*, 1-6.2 of NFPA 13 shall apply.

Exception No. 1: NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted for use as specifically referenced in Chapters 16 through 23 of this Code.

Exception No. 2: NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, shall be permitted for use as provided in Chapters 21 through 23 of this Code.

7-7.1.2 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gpm/sq ft (6.1 L/min/sq m) of floor area throughout the entire enclosed area. An indicat-

ing shut-off valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply.

7-7.1.3* In areas protected by automatic sprinklers, automatic heat detection devices required by other sections of this *Code* shall be permitted to be deleted.

7-7.1.4 Automatic sprinkler systems installed to make use of an alternative allowed by this *Code* shall be considered “required” systems and shall meet the provisions of this *Code* applicable to required systems.

7-7.2 Supervision.

7-7.2.1* Supervisory Signals. Where supervised, automatic sprinkler systems are required by another section of this *Code*, supervisory attachments shall be installed and monitored for integrity in accordance with NFPA 72, *National Fire Alarm Code*, and a distinctive supervisory signal shall be provided to indicate a condition that would impair the satisfactory operation of the sprinkler system. This shall include, but not be limited to, monitoring of control valves, fire pump power supplies and running conditions, water tank levels and temperatures, pressure of tanks, and air pressure on dry-pipe valves. Supervisory signals shall sound and shall be displayed either at a location within the protected building that is constantly attended by qualified personnel or at an approved, remotely located receiving facility.

7-7.2.2 Alarm Signal Transmission. Where supervision of automatic sprinkler systems is provided in accordance with another provision of this *Code*, waterflow alarms shall be transmitted to an approved, proprietary alarm receiving facility, a remote station, a central station, or the fire department. Such connection shall be installed in accordance with 7-6.1.4.

7-7.3* Other Automatic Extinguishing Equipment.

7-7.3.1 In any occupancy where the character of the potential fuel for fire is such that extinguishment or control of fire might be more effectively accomplished by a type of automatic extinguishing system other than an automatic sprinkler system such as carbon dioxide, dry chemical, foam, Halon 1301, or water spray, a standard extinguishing system of another type shall be permitted to be installed in lieu of an auto-

matic sprinkler system. Such systems shall be installed, inspected, and maintained in accordance with appropriate NFPA standards. The actuation of the extinguishing system shall activate the building fire alarm system, if provided.

7-7.3.2 In new installations, if the extinguishing system is being installed in lieu of a required supervised, automatic sprinkler system, the activation of the extinguishing system shall activate the building fire alarm system. The actuation of an extinguishing system that is not installed in lieu of a required supervised, automatic sprinkler system shall be indicated at the building fire alarm system, if provided.

7-7.4 Manual Extinguishing Equipment.

7-7.4.1* Where required by the provisions of another section of this *Code*, portable fire extinguishers shall be installed, inspected, and maintained in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*.

7-7.4.2 Where required by the provisions of another section of this *Code*, standpipe and hose systems shall be provided in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*. Where standpipe and hose systems are installed in combination with automatic sprinkler systems, installation shall be done in accordance with the appropriate provisions established by NFPA 13, *Standard for the Installation of Sprinkler Systems*, and NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

7-7.5* Maintenance and Testing. All automatic sprinkler and standpipe systems required by this *Code* shall be inspected, tested, and maintained in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

7-7.6 Where a required automatic sprinkler system is out of service for more than 4 hr in a 24-hr period, the authority having jurisdiction shall be notified, and the building shall be evacuated or an approved fire watch shall be provided for all parties left unprotected by the shutdown until the sprinkler system has been returned to service.

Sprinkler impairment procedures shall comply with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

CHAPTER 8 NEW ASSEMBLY OCCUPANCIES

SECTION 8-1 GENERAL REQUIREMENTS

8-1.1 Application. The requirements of this chapter apply to

- (a) New buildings or portions thereof used as an assembly occupancy (*see Section 1-3*); and
- (b) Additions made to, or used as, an assembly occupancy (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing assembly occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to an assembly occupancy (*see 1-3.12*).

8-1.2 Mixed Occupancies. (*See also 4-1.12.*)

8-1.2.1* Any assembly occupancy and its access to exits in buildings of other occupancy, such as ballrooms in hotels, restaurants in stores, rooftop assembly occupancies, or assembly rooms in schools, shall be located, separated, or protected to avoid any undue danger to the occupants of the assembly occupancy from a fire originating in the other occupancy or smoke therefrom.

8-1.2.2 Occupancy of any room or space for assembly purposes by fewer than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classified as part of the other occupancy and shall be subject to the provisions applicable thereto.

8-1.2.3 Assembly occupancies in buildings of other occupancy shall be permitted to use exits common to the assembly occupancy and the other occupancy provided the assembly area and the other occupancy considered separately each have exits sufficient to meet the requirements of this *Code*.

8-1.2.4 Exits shall be sufficient for simultaneous occupancy of both the assembly occupancy and other parts of the building.

*Exception:** Where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur.

8-1.2.5 Combined Assembly and Residential Occupancies.

8-1.2.5.1 No dwelling unit of a residential occupancy shall have its sole means of egress pass through any assembly occupancy in the same building.

8-1.2.5.2 No multiple-dwelling unit of a residential occupancy shall be located above an assembly occupancy.

Exception No. 1: Where the dwelling unit of the residential occupancy and exits therefrom are separated from the assembly occupancy by construction having a fire resistance rating of at least 1 hr.

Exception No. 2: Where the assembly occupancy is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7.

8-1.3 Special Definitions.

Aisle Accessway.* That initial portion of an exit access that leads to an aisle.

Assembly Occupancy. Occupancies that include, but are not limited to, all buildings or portions of buildings used for gatherings of 50 or more persons for such purposes as deliberation, worship, entertainment, dining, amusement, or awaiting transportation.

Exhibitor. An individual or entity engaged in the display of the products or services offered.

Exhibits. A space or portable structure used for the display of products or services.

Exposition. An event in which the display of products or services is organized to bring together the provider and user of the products or services.

Exposition Facility. A convention center, hotel, or other building at which exposition events are held.

Festival Seating.* That form of audience/spectator accommodation in which no seating, other than a floor or ground surface, is provided for the audience/spectators gathered to observe some performance.

Flow Time. The time during which there is crowd flow past a point in the means of egress system; flow time is a component of total evacuation time.

Fly Gallery. A raised floor area above a stage from which the movement of scenery and operation of other stage effects are controlled.

Gridiron. The structural framing over a stage supporting equipment for hanging or flying scenery and other stage effects.

Life Safety Evaluation.* A written review dealing with the adequacy of life safety features relative to fire, storm, collapse, crowd behavior, and other related safety considerations.

Multilevel Play Structure. A structure that consists of tubes, slides, crawling areas, and jumping areas that is located within a building and is used for climbing and entertainment, generally by children.

Multipurpose Assembly Occupancy. An assembly room designed to accommodate temporarily any of several possible assembly uses.

Pinrail. A rail on or above a stage through which belaying pins are inserted and to which lines are fastened.

Platform.* The raised area within a building used for the presentation of music, plays, or other entertainment; the head tables for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater-in-the-round; and for similar purposes wherein there are no overhead drops, pieces of scenery, or stage effects other than lighting and a screening valance.

Platform, Temporary. A platform erected within an area for not more than 30 days.

Proscenium Wall. The wall that separates the stage from the auditorium or house.

Smoke-Protected Assembly Seating. (*See 8-4.2.*)

Special Amusement Building. Any building that is temporary, permanent, or mobile that contains a device or system that conveys passengers or provides a walkway along, around, or over a course in any direction as a form of amusement arranged so that the egress path is not readily apparent due to visual or audio distractions or an intentionally confounded egress path, or is not readily available due to the mode of conveyance through the building or structure. Included are amusements such as a "haunted house," a "roller coaster" type ride within a building, a multilevel play structure within a building, a "submarine" ride, and similar amusements where the occupants are not in the open air.

Stage. A space within a building used for entertainment and utilizing drops or scenery or other stage effects, which shall be further classified as one of the following:

(a) *Stage, Legitimate.* A stage with a height greater than 50 ft (15 m) measured from the lowest point on the stage floor to the highest point of the roof or floor deck above.

(b) *Stage, Regular.* A stage with a height of 50 ft (15 m) or less measured from the lowest point on the deck above.

8-1.4* Classification of Occupancy. (See 4-1.2.)

8-1.5 Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 4-2.

8-1.6 Minimum Construction Requirements. (See 6-2.1.) The location of an assembly occupancy shall be limited as shown in Table 8-1.6.

8-1.7 Occupant Load.

8-1.7.1* The occupant load permitted in any assembly building, structure, or portion thereof shall be determined on the basis of the following occupant load factors:

(a)* An assembly area of concentrated use without fixed seats, such as an auditorium, place of worship, dance floor, discotheque, or lodge hall: one person per 7 net sq ft (0.65 net sq m).

(b) An assembly area of less concentrated use, such as a conference room, dining room, drinking establishment, exhibit room, gymnasium, or lounge: one person per 15 net sq ft (1.4 net sq m).

(c) Bleachers, pews, and similar bench-type seating: one person per 18 linear in. (45.7 linear cm).

(d) *Fixed Seating.* The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

(e) *Kitchens.* One person per 100 gross sq ft (9.3 gross sq m).

(f) *Libraries.* In stack areas, one person per 100 gross sq ft (9.3 gross sq m); in reading rooms, one person per 50 net sq ft (4.6 net sq m).

(g) *Swimming Pools.* One person per 50 gross sq ft (4.7 sq m) of water surface. Pool decks, one person per 30 gross sq ft (2.8 sq m).

(h) *Stages.* One person per 15 net sq ft (1.4 net sq m).

(i) *Lighting and Access Catwalks, Galleries, and Gridirons.* One person per 100 net sq ft (9.3 net sq m).

Exception: Larger occupant loads as permitted by 8-1.7.3.

8-1.7.2 The occupant load of a stage area that is part of an assembly area shall be included in determining the occupant load for the assembly area.

Table 8-1.6 Construction Type Limitations

Type of Construction	Below LED	LED	Number of Levels Above LED			
			1	2	3	≥ 4
I(443)†† ◊ I(332)†† ◊ II(222)†† ◊	Any assembly †	Any assembly	Any assembly	Any assembly	Any assembly	Any assembly If OL>300 †
II(111)†† ◊	Any assembly † Limited to 1 level below LED	Any assembly	Any assembly	Any assembly If OL>1000 †	Assembly with OL≤1000 †	NP
III(211) ◊ IV(2HH) V(111)	Any assembly † Limited to 1 level below LED	Any assembly	Any assembly	Any assembly If OL>300†	Assembly with OL≤1000 †	NP
II(000)	Assembly with OL≤1000 † Limited to 1 level below LED	Any assembly If OL>1000 †	Assembly with OL≤300 †	NP	NP	NP
III(200) V(000)	Assembly with OL≤1000 † Limited to 1 level below LED	Assembly with OL≤1000	Assembly with OL≤300 †	NP	NP	NP

†Permitted if all the following are protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7:

- (a) The level of the assembly occupancy, and
- (b) Any level below the level of the assembly occupancy, and

(c) In the case of an assembly occupancy located below the level of exit discharge, any level intervening between that level and the level of exit discharge, including the level of exit discharge.

††Where every part of the structural framework of roofs in Type I or Type II construction is 20 ft (6.1 m) or more above the floor immediately below, omission of all fire protection of the structural members shall be permitted, including protection of trusses, roof framing, and decking.

◊Where seating treads and risers serve as floors, such seating treads and risers shall be permitted to be of 1 hr fire resistance-rated construction. Structural members supporting seating treads and risers shall conform to the requirements of Table 8-1.6. Joints between seating tread and riser units shall be permitted to be unrated provided such joints do not involve separation from areas containing high hazard contents and the facility is constructed and operated in accordance with 8-4.2, Smoke Protected Assembly Seating.

NP: Not Permitted

LED: Level of Exit Discharge

OL: Occupant Load

Note: For the purpose of this table, a mezzanine is not counted as a level.

8-1.7.3* The occupant load permitted in a building or portion thereof shall be permitted to be increased above that specified in 8-1.7.1 if the necessary aisles and exits are provided. To increase the occupant load, a diagram indicating placement of equipment, aisles, exits, and seating shall be provided to and approved by the authority having jurisdiction prior to any increase in occupant load. In areas not greater than 10,000 sq ft (930 sq m), the occupant load shall not exceed one person in 5 sq ft (0.46 sq m); in areas greater than 10,000 sq ft (930 sq m), the occupant load shall not exceed one person in 7 sq ft (0.65 sq m).

8-1.7.4 Waiting Spaces. In theaters and other assembly occupancies where persons are admitted to the building at times when seats are not available to them, or when the permitted occupant load has been reached based on 8-1.7.1 or 8-1.7.2 and persons are allowed to wait in a lobby or similar space until seats or space is available, such use of lobby or similar space shall not encroach upon the required clear width of exits. Such waiting shall be restricted to areas other than the required means of egress. Exits shall be provided for such waiting spaces on the basis of one person for each 3 sq ft (0.28 sq m) of waiting space area. Such exits shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

8-1.7.5 Where the occupant load of an assembly occupancy is greater than 6000, a life safety evaluation shall be performed in accordance with 8-4.1.

Exception: Where approved by the authority having jurisdiction, the number of usually seated occupants provided with a minimum of 15 sq ft (1.4 sq m) of lawn surface in outdoor facilities shall be permitted to be excluded in determining the need for a life safety evaluation.

SECTION 8-2 MEANS OF EGRESS REQUIREMENTS

8-2.1 General. All means of egress shall be in accordance with Chapter 5 and this section.

8-2.2 Means of Egress Components.

8-2.2.1 Components of means of egress shall be limited to the types described in 8-2.2.2 through 8-2.2.10.

8-2.2.2 Doors.

8-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

8-2.2.2.2 Assembly occupancies with occupant loads of 300 or less in covered malls (*see Exception to 24-4.4.1*) shall be permitted to have horizontal or vertical security grilles or doors complying with Exception No. 2 to 5-2.1.4.1 on the main entrance/exits.

8-2.2.2.3 Panic Hardware or Fire Exit Hardware. Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware complying with 5-2.1.7.

Exception No. 1: In assembly occupancies having an occupant load not greater than 500, where the main exit consists of a single door or single pair of doors, locking devices complying with Exception No. 2 to 5-2.1.5.1 shall be permitted to be used on the main exit. Any latching device on this door(s) shall be released by panic hardware.

Exception No. 2: Delayed egress locks as permitted in 8-2.2.2.4.

Exception No. 3: Access-controlled egress doors as permitted in 8-2.2.2.5.

8-2.2.2.4 Delayed egress locks complying with 5-2.1.6.1 shall be permitted on doors other than main entrance/exit doors.

8-2.2.2.5 Doors in the means of egress shall be permitted to be equipped with an approved, access control system complying with 5-2.1.6.2. Doors shall not be locked from the egress side when the assembly occupancy is occupied. (*See 5-2.1.1.3.*)

8-2.2.2.6 Revolving doors complying with the requirements of 5-2.1.10 shall be permitted.

8-2.2.2.7 Turnstiles. No turnstiles or other devices that restrict the movement of persons shall be installed in any assembly occupancy in such a manner as to interfere in any way with required means of egress facilities.

8-2.2.3 Stairs.

8-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

*Exception No. 1:** Stairs serving seating that is designed to be repositioned shall not be required to comply with 5-2.2.3.1.

Exception No. 2: Stages and platforms as permitted by 8-4.5.

8-2.2.3.2 Catwalk, Gallery, and Gridiron Stairs.

8-2.2.3.2.1 Noncombustible grated stair treads and landing floors shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

8-2.2.3.2.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

8-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

8-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

8-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

Exception: Ramps serving only stages or nonpublic areas and ramped aisles shall be permitted to have a slope not steeper than 1 in 8.

8-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

8-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

8-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

8-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

8-2.3 Capacity of Means of Egress.

8-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3 or, for means of egress serving theater-type seating or similar seating arranged in rows, in accordance with 8-2.3.2.

8-2.3.2* Minimum clear widths of aisles and other means of egress serving theater-type seating, or similar seating arranged in rows, shall be in accordance with Table 8-2.3.2. The minimum clear widths shown shall be modified in accordance with all of the following:

(a) If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the table by factor A, where

$$A = 1 + \frac{(\text{riser height} - 7 \text{ in.})}{5}$$

(b) Stairs not having a handrail within a 30-in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated, i.e., multiply by factor $B = 1.25$.

(c) Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent, i.e., multiply by factor $C = 1.10$.

Exception No. 1: Lighting and access catwalks as permitted by 8-4.5.9.

Exception No. 2: Grandstands, bleachers, and folding and telescopic seating as permitted by 8-4.8.

Table 8-2.3.2 Capacity Factors

No. of Seats	Nominal Flow Time (sec)	Inch of Clear Width Per Seat Served	
		Stairs	Passageways, Ramps, and Doorways
Unlimited	200	0.300 <i>AB</i>	0.220 <i>C</i>

SI Units: 1 in. = 2.54 cm

8-2.3.3 Main Entrance/Exit. Every assembly occupancy shall be provided with a main entrance/exit. The main entrance/exit shall be of sufficient width to accommodate one half of the total occupant load and shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street. Each level of an assembly occupancy shall have access to the main entrance/exit, and such access shall have sufficient capacity to accommodate 50 percent of the occupant load of such levels. Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit regardless of whether all such exits serve as entrances to the building.

Exception No. 1: A bowling establishment shall have a main entrance/exit of sufficient capacity to accommodate 50 percent of the total occupant load without regard to the number of aisles that it serves.

Exception No. 2: In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the permitted occupant load.*

8-2.3.4 Other Exits. Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of sufficient width to accommodate a minimum of one half of the total occupant load served by that level. Such exits shall discharge in accordance with 8-2.7. Such exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable. Such exits shall be accessible from a cross aisle or a side aisle. (See 8-2.3.3.)

Exception: In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the permitted occupant load.

8-2.3.5 The minimum width of any exit access corridor serving 50 or more persons shall be 44 in. (112 cm).

8-2.4* Number of Exits. (See also Section 5-4.)

8-2.4.1 The number of exits shall be in accordance with Section 5-4.

Exception: Fenced outdoor assembly occupancies in accordance with 8-2.4.2.

8-2.4.2 A fenced outdoor assembly occupancy shall have at least two widely separated means of egress from the enclosure. If more than 6000 persons are to be served by such means of egress, there shall be at least three means of egress; if more than 9000 persons are to be served, there shall be at least four means of egress.

8-2.4.3 Balconies or mezzanines having an occupant load not greater than 50 shall be permitted to be served by a single means of egress and such means of egress shall be permitted to lead to the floor below.

8-2.4.4 Balconies or mezzanines having an occupant load greater than 50 but not greater than 100 shall have at least two remote means of egress, but both such means of egress shall be permitted to lead to the floor below.

8-2.4.5 Balconies or mezzanines having an occupant load greater than 100 shall have means of egress provided as for a floor.

8-2.4.6 A second means of egress shall not be required from lighting and access catwalks, galleries, and gridirons where a means of escape to a floor or a roof is provided. Ladders, alternating tread devices, or spiral stairs shall be permitted in such means of escape.

8-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

8-2.5.1 Exits shall be located remotely from each other and shall be arranged to minimize the possibility that they might be blocked by any emergency.

Exception: A common path of travel shall be permitted for the first 20 ft (6.1 m) from any point where serving any number of occupants and for the first 75 ft (23 m) from any point where serving not more than 50 occupants.

8-2.5.2 Means of egress shall not be permitted through kitchens, storerooms, restrooms, closets, or hazardous areas as described in 8-3.2.

8-2.5.3 Where the floor area of auditoriums and arenas is used for activities/events described by 8-1.7.1, at least 50 percent of the occupant load shall have means of egress provided without passing through adjacent fixed seating areas.

8-2.5.4 General Requirements for Access and Egress Routes within Assembly Areas.

8-2.5.4.1 Festival seating shall be prohibited within a building. (See Section 3-2.)

Exception No. 1: Festival seating shall be permitted in assembly occupancies having occupant loads of 1000 or less.

Exception No. 2: Festival seating shall be permitted in assembly occupancies with occupant loads greater than 1000 with an approved life safety evaluation. (See 8-4.1.)

8-2.5.4.2* Access and egress routes shall be maintained so that any individual is able to move without undue hindrance, on personal initiative and at any time, from an occupied position to exits.

8-2.5.4.3* Access and egress routes shall be maintained so that crowd management, security, and emergency medical personnel shall be able to move without undue hindrance at any time to any individual.

8-2.5.4.4* The width of aisle accessways and aisles shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle accessway or aisle in accordance with 8-2.3.1. Where aisle accessways or aisles converge to form a single path of egress travel, the required egress capacity of that path shall not be less than the combined required capacity of the converging aisle accessways and aisles.

8-2.5.4.5 Those portions of aisle accessways and aisles where egress is possible in either of two directions shall be uniform in required width.

Exception: Those portions of aisle accessways where the required width, not including the seat space described by 8-2.5.7.2, does not exceed 12 in. (30.5 cm).

8-2.5.4.6 In the case of side boundaries, other than non-fixed seating at tables, for aisle accessways or aisles, the clear width shall be measured to boundary elements such as walls, guardrails, handrails, edges of seating, tables, and side edges of treads, with the measurement made horizontally to the vertical projection of the elements resulting in the smallest width measured perpendicularly to the line of travel.

8-2.5.5* Aisle Accessways Serving Seating Not at Tables.

8-2.5.5.1* To determine the required clear width of aisle accessways between rows of seating, horizontal measurements shall be made (between vertical planes) from the back of one seat to the front of the most forward projection of the seat immediately behind it. Where the entire row consists of automatic or self-rising seats that comply with ASTM F851, *Test Method for Self-Rising Seat Mechanisms*, the measurement shall be permitted to be made with the seats in the up position.

8-2.5.5.2 The aisle accessway between rows of seating shall have a clear width of not less than 12 in. (30.5 cm), and this minimum shall be increased as a function of row length in accordance with 8-2.5.5.3 and 8-2.5.5.4.

Exception No. 1: If used by not more than four persons, there shall be no minimum clear width requirement for the portion of the aisle accessway having a length not exceeding 6 ft (1.8 m) measured from the center of the seat farthest from the aisle.

Exception No. 2: The maximum number of seats permitted between the furthest seat in an aisle in grandstands, bleachers, and folding and telescopic seating shall not exceed that shown in Table 8-2.5.5.2.

Table 8-2.5.5.2 Maximum Number of Seats Permitted Between Furthest Seat and an Aisle

Application	Outdoors	Indoors
Grandstands	11	6
Bleachers (see 8-2.5.6.1 Exception No. 1)	20	9

8-2.5.5.3* Rows of seating served by aisles or doorways at both ends shall have no more than 100 seats per row. The 12-in. (30.5-cm) minimum clear width of aisle accessway between such rows shall be increased by 0.3 in. (0.8 cm) for every seat over a total of 14, but shall not be required to exceed 22 in. (55.9 cm).

Exception: Smoke-protected assembly seating as permitted by 8-4.2.4.

8-2.5.5.4 Rows of seating served by an aisle or doorway at one end only shall have a path of travel not exceeding 30 ft (9.1 m) in length from any seat to an aisle. The 12-in. (30.5-cm) minimum clear width of aisle accessway between such rows shall be increased by 0.6 in. (1.6 cm) for every seat over a total of seven.

Exception: Smoke-protected assembly seating as permitted by 8-4.2.5 and 8-4.2.6.

8-2.5.5.5 Rows of seating utilizing tablet-arm chairs shall be permitted only if the clear width of aisle accessways complies with the requirements of 8-2.5.5 where the tablet is in the usable position.

Exception: Tablet arms shall be permitted to be measured in the stored position where the tablet arm automatically returns to the stored position when raised manually to a vertical position in one motion and falls to the stored position by force of gravity.

8-2.5.5.6 The depth of seat boards shall not be less than 9 in. (23 cm) where the same level is not used for both seat boards and footboards. Footboards, independent of seats, shall be provided such that there is no horizontal opening permitting the passage of a ½-in. (1.3-cm) diameter sphere.

8-2.5.6 Aisles Serving Seating Not at Tables.

8-2.5.6.1 Aisles shall be provided so that the number of seats served by the nearest aisle is in accordance with 8-2.5.5.2 through 8-2.5.5.4.

Exception No. 1: Aisles shall not be required in bleachers if all of the following conditions are met:

- (a) Egress from front row is not obstructed by rail, guard, or other obstruction.
- (b) Row spacing is 28 in. (71.1 cm) or less.
- (c) Rise per row; including first row, is 6 in. (15.2 cm) or less.
- (d) Number of rows does not exceed 16.
- (e) Seat spaces are not physically defined.

(f) Seat boards that are also used as stepping surfaces for descent shall provide a walking surface with a minimum width of 12 in. (30.5 cm), and, where there is a depressed footboard, the gap between seat boards of adjacent rows shall not exceed 12 in. (30.5 cm) measured horizontally. Leading edges of such surfaces shall be provided with a contrasting marking stripe so that the location of such leading edge is readily apparent, particularly where viewed in descent. Such stripe shall be at least 1 in. (2.5 cm) wide and shall not exceed 2 in. (5.1 cm) in width. The marking stripe shall not be required where bleacher surfaces and environmental conditions under all conditions of use are such that the location of each leading edge is readily apparent, particularly when viewed in descent.

Exception No. 2: In seating composed entirely of bleachers, in which the row-to-row dimension is 28 in. (71 cm) or less, and from which

front egress is not limited, aisles shall not be required to be more than 66 in. (168 cm) in width. Such aisles shall not be considered as dead-end aisles.

8-2.5.6.2 Dead-end aisles shall not exceed 20 ft (6.1 m) in length.

Exception No. 1: A longer dead-end aisle shall be permitted where seats served by the dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 in. (30.5 cm) plus 0.6 in. (1.5 cm) for each additional seat over a total of seven in the row.

Exception No. 2: A 16-row, dead-end aisle shall be permitted in folding and telescopic seating and grandstands.

8-2.5.6.3 The minimum clear width of aisles shall be sufficient to provide egress capacity in accordance with 8-2.3.2 but shall be not less than:

- (a) 48 in. (122 cm) for stairs having seating on each side.

Exception to (a): 36 in. (91 cm) where aisle does not serve more than 50 seats.

- (b) 36 in. (91 cm) for stairs having seating on only one side.

- (c) 23 in. (58 cm) between a handrail and seating or a guardrail where the aisle is subdivided by a handrail.

- (d) 42 in. (107 cm) for level or ramped aisles having seating on both sides.

Exception to (d): 36 in. (91 cm) where aisle does not serve more than 50 seats.

- (e) 36 in. (91 cm) for level or ramped aisles having seating on only one side.

- (f) 23 in. (58 cm) between a handrail or guardrail and seating where the aisle does not serve more than five rows on one side.

8-2.5.6.4* **Aisle Stairs and Ramps.** Aisles having a gradient steeper than 1 in 20, but not steeper than 1 in 8, shall consist of a ramp. Aisles having a gradient steeper than 1 in 8 shall consist of an aisle stair.

Exception No. 1: Aisles in folding and telescopic seating shall be permitted to be by stepped aisles.

Exception No. 2: The Exception to 8-2.5.6.8 shall not apply.

8-2.5.6.5 Aisle Stair Treads.

- (a) There shall be no variation exceeding $\frac{3}{16}$ in. (0.5 cm) in the depth of adjacent treads.

- (b)* Treads shall be a minimum of 11 in. (27.9 cm).

- (c) All treads shall extend the full width of the aisle.

8-2.5.6.6 Aisle Stair Risers.

- (a) Riser heights shall be a minimum of 4 in. (10.2 cm).

Exception to (a): The riser height of aisle stairs in folding and telescopic seating shall be permitted to be a minimum of $3\frac{1}{2}$ in. (8.9 cm) and a maximum of 11 in. (27.9 cm).

- (b) Riser heights shall not exceed 8 in. (20.3 cm).

Exception No. 1 to (b): Where the gradient of an aisle is steeper than 8 in. (20.3 cm) in rise in 11 in. (27.9 cm) of run (to maintain neces-

sary sight lines in the adjoining seating area), the riser height shall be permitted to exceed 8 in. (20.3 cm) but shall not exceed 9 in. (22.9 cm).

Exception No. 2 to (b): The riser height of aisle stairs in folding and telescopic seating shall be permitted to be a minimum of $3\frac{1}{2}$ in. (8.9 cm) and a maximum of 11 in. (27.9 cm).

(c) Riser heights shall be designed to be uniform in each aisle, and the construction-caused nonuniformities shall not exceed $\frac{3}{16}$ in. (0.5 cm) between adjacent risers.

Exception to (c): Riser height shall be permitted to be nonuniform only for the purpose of accommodating necessary changes in gradient to maintain necessary sight lines within a seating area and shall be permitted to exceed $\frac{3}{16}$ in. (0.5 cm) in any flight. Where nonuniformities exceed $\frac{3}{16}$ in. (0.5 cm) between adjacent risers, the exact location of such nonuniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the non-uniform risers.

8-2.5.6.7* Aisle Handrails. Ramped aisles having a gradient exceeding 1 in 12 and aisle stairs shall be provided with handrails at one side or along the centerline.

Where there is seating on both sides of the aisle, the handrails shall be discontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of not less than 22 in. (55.9 cm) and not greater than 36 in. (91 cm) measured horizontally, and the handrail shall have rounded terminations or bends. Where handrails are provided in the middle of aisle stairs, there shall be an additional intermediate rail located approximately 12 in. (30 cm) below the main handrail.

Exception No. 1: Handrails shall not be required for ramped aisles having a gradient not steeper than 1 in 8 and having seating on both sides.

Exception No. 2: The requirement for a handrail is satisfied by the use of a guard providing a rail that complies with the graspability requirements for handrails and is located at a consistent height between 34 in. (86 cm) and 42 in. (107 cm) measured vertically from the top of the rail to the leading edge (nosing) of stair treads or to the adjacent walking surface in the case of a ramp.

8-2.5.6.8* Aisle Marking. A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of such tread is readily apparent, particularly when viewed in descent. Such stripes shall be at least 1 in. (2.5 cm) wide and shall not exceed 2 in. (5 cm) in width.

Exception: The marking stripe shall not be required where tread surfaces and environmental conditions under all conditions of use are such that the location of each tread is readily apparent, particularly when viewed in descent.

8-2.5.7* Aisle Accessways Serving Seating at Tables.

8-2.5.7.1 The minimum required clear width of an aisle accessway shall be 12 in. (30.5 cm) where measured in accordance with 8-2.5.7.2 and increased as a function of length in accordance with 8-2.5.7.3.

*Exception:** If used by not more than four persons, there shall be no minimum clear width requirement for the portion of aisle accessway having a length not exceeding 6 ft (1.8 m) and located farthest from an aisle.

8-2.5.7.2* Where nonfixed seating is located between a table and an aisle accessway, the measurement of required clear width of the aisle accessway shall be made to a line 19 in. (48.3 cm) away from the edge of the table. The 19-in. (48.3-cm) distance shall be measured perpendicularly to the edge of the table.

8-2.5.7.3* The minimum required clear width of an aisle accessway measured in accordance with 8-2.5.4.6 and 8-2.5.7.2 shall be increased beyond the 12-in. (30.5-cm) requirement by 0.5 in. (1.3 cm) for each additional 12 in. (30.5 cm) or fraction thereof beyond 12 ft (3.7 m) of aisle accessway length where measured from the center of the seat farthest from an aisle.

8-2.5.7.4 The path of travel along the aisle accessway shall not exceed 36 ft (10.9 m) from any seat to the closest aisle or egress doorway.

8-2.5.8 Aisles Serving Seating at Tables.

8-2.5.8.1* Aisles that contain steps or that are ramped, such as the aisles serving dinner theater style configurations, shall comply with the requirements of 8-2.5.6.

8-2.5.8.2* The minimum width of aisles serving seating at tables shall be 44 in. (112 cm) where serving an occupant load greater than 50, and 36 in. (91 cm) where serving an occupant load of 50 or fewer.

8-2.5.8.3* Where nonfixed seating is located between a table and an aisle, the measurement of required clear width of the aisle shall be made to a line 19 in. (48.3 cm) away from the edge of the table. The 19-in. (48.3-cm) distance shall be measured perpendicularly to the edge of the table.

8-2.5.9 Approval of Layouts. Where required by the authority having jurisdiction, plans drawn to scale showing the arrangement of furnishings or equipment shall be submitted to the authority by the building owner, manager, or authorized agent to substantiate conformance with the provisions of this section and shall constitute the only acceptable arrangement until revised or additional plans are submitted and approved.

Exception: Temporary deviations from the specifications of the approved plans shall be permitted provided the occupant load is not increased and the intent of this section is maintained.

8-2.6 Travel Distance to Exits.

8-2.6.1 Exits shall be arranged so that the total length of travel from any point to reach an exit shall not exceed 150 ft (45 m) in any assembly occupancy.

Exception No. 1: The travel distance shall not exceed 200 ft (60 m) in assembly occupancies protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Smoke-protected assembly seating as permitted by 8-4.2.8 and its Exception.

8-2.7 Discharge from Exits.

8-2.7.1 Exit discharge shall comply with Section 5-7.

8-2.7.2 The level of exit discharge shall be measured at the point of principal entrance to the building.

8-2.7.3 Where the principal entrance to an assembly occupancy is via a terrace, either raised or depressed, such terrace shall be permitted to be considered to be the level of exit discharge for the purposes of 8-1.6 if:

(a) The terrace is at least as long (measured parallel to the building) as the total width of the exit(s) it serves, but not less than 5 ft (1.5 m) long, and

(b) The terrace is at least as wide (measured perpendicularly to the building) as the exit(s) it serves, but not less than 10 ft (3 m) wide, and

(c) Required stairs leading from the terrace to grade are protected in accordance with 5-2.2.6.4 or are a minimum of 10 ft (3 m) from the building.

8-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

Exception: Private party tents not larger than 1200 sq ft (111.5 sq m).

8-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

Exception: Private party tents not larger than 1200 sq ft (111.5 sq m).

8-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Exit markings shall not be required on the seating side of vomitories from seating areas where exit marking is provided in the concourse and such marking is readily apparent from the vomitories.

8-2.11 Special Means of Egress Features.

8-2.11.1 Guards and Railings.

8-2.11.1.1* Sightline-Constrained Rail Heights. Unless subject to the requirements of 8-2.11.1.2, a fascia or railing system complying with the guard requirements of 5-2.2.4 and having a minimum height of 26 in. (66 cm) shall be provided where the floor or footboard elevation is more than 30 in. (76 cm) above the floor or grade below and the fascia or railing system would otherwise interfere with sightlines of immediately adjacent seating.

8-2.11.1.2 At Foot of Aisles. A fascia or railing system complying with the guard requirements of 5-2.2.4 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 in. (76 cm) above the floor or grade below. The fascia or railing shall be a minimum of 36 in. (91 cm) high and shall provide a minimum 42 in. (107 cm) measured diagonally between the top of the rail and the nosing of the nearest tread.

8-2.11.1.3 At Cross Aisles.

(a) Cross aisles located behind seating rows shall be provided with railings not less than 26 in. (66 cm) above the adjacent floor.

Exception to (a): Where the backs of seats located at the front of the aisle project 24 in. (61 cm) or more above the adjacent floor of the aisle.

(b) Where cross aisles are more than 30 in. (76 cm) above the floor or grade below guards shall be provided in accordance with 5-2.2.4.

8-2.11.1.4 At Side and Back of Seating Areas. Guards complying with the guard requirements of 5-2.2.4 shall be provided with a height not less than 42 in. (107 cm) above the aisle, aisle accessway, or footboard where the floor elevation is more than 30 in. (76 cm) above the floor or grade to the side or back of seating.

8-2.11.1.5 Below Seating. Openings between footboards and seat boards shall be provided with intermediate construc-

tion so that a 4-in. (10.2-cm) diameter sphere cannot pass through the opening.

8-2.11.1.6 Locations Not Requiring Guards.

(a) Guards shall not be required on the audience side of stages, of raised platforms, and of other raised floor areas such as runways, ramps, and side stages used for entertainment or presentations.

(b) Permanent guards shall not be required at vertical openings in the performance area of stages.

(c) Guards shall not be required where the side of an elevated walking surface is required to be open for the normal functioning of special lighting or for access and use of other special equipment.

SECTION 8-3 PROTECTION

8-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors in accordance with 6-2.4.5 shall be permitted.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Stairs or ramps shall be permitted to be unenclosed between balconies or mezzanines and main assembly areas located below provided the balcony or mezzanine is open to the main assembly area.*

Exception No. 4: Exit access stairs from lighting and access catwalks, galleries, and gridirons shall not be required to be enclosed.

8-3.2 Protection from Hazards.

8-3.2.1 Service Equipment, Hazardous Operations or Processes, and Storage Facilities.

8-3.2.1.1 Rooms containing high pressure boilers, refrigerating machinery of other than domestic refrigerator type, large transformers, or other service equipment subject to possible explosion shall not be located directly under or abutting required exits. All such rooms shall be separated from other parts of the building by fire barriers in accordance with 6-2.3 having a fire resistance rating of not less than 1 hr or shall be protected by automatic extinguishing systems in accordance with Section 6-4.

8-3.2.1.2 Adequate vents to the outside air shall be provided in accordance with Section 6-4.

8-3.2.1.3 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following.

(a) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Boiler and furnace rooms.

Exception to (a)(1): Rooms enclosing only air-handling or compressor equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction.

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Laundries.

(2) Maintenance shops, including woodworking and painting areas.

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction.

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted to be in accordance with 7-7.1.2.

8-3.3 Interior Finish.

8-3.3.1 Interior finish shall be in accordance with Section 6-5.

8-3.3.2 Interior wall and ceiling finish materials complying with 6-5.5 shall be Class A or Class B in all corridors and lobbies, and shall be Class A in enclosed stairways.

8-3.3.3 Interior wall and ceiling finish materials complying with 6-5.5 shall be Class A or Class B in general assembly areas having occupant loads of more than 300, and shall be Class A, Class B, or Class C in assembly areas having occupant loads of 300 or fewer.

Exception: In any assembly occupancy, exposed portions of structural members complying with the requirements for Type IV(2HH) construction shall be permitted.

8-3.3.4 Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish in accordance with 6-5.5.

8-3.3.5 Interior Floor Finish. (No requirements.)

8-3.4 Detection, Alarm, and Communication Systems.

8-3.4.1 General. Assembly occupancies with occupant loads greater than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with 7-6.1 and this section.

Exception No. 1: Assembly occupancies that are a part of a mixed occupancy (see 4-1.12) shall be permitted to be served by a common fire alarm system provided the individual requirements of each occupancy are met.

Exception No. 2: Voice communications or public address systems complying with 8-3.4.3.3 shall not be required to comply with 7-6.1.

8-3.4.2 Initiation.

8-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a), which shall be provided with an emergency power source. The initiating device shall be capable of transmitting an alarm to a receiving station, located within the building, that is constantly attended when the assembly occupancy is occupied.

Exception No. 1: Initiation by means of an approved, automatic fire detection system in accordance with 7-6.2.1(b) that provides fire detection throughout the building.

Exception No. 2: Initiation by means of an approved, automatic sprinkler system in accordance with 7-6.2.1(c) that provides fire detection and protection throughout the building.

8-3.4.2.2* In assembly occupancies with occupant loads greater than 300, automatic detection shall be provided in all hazardous areas that are not normally occupied.

Exception: Areas that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

8-3.4.3 Notification.

8-3.4.3.1 The required fire alarm system shall sound an audible alarm in a constantly attended receiving station within the building when occupied for purposes of initiating emergency action. A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted. Positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

8-3.4.3.2 Occupant notification shall be by means of visible signals and voice announcements, either live or prerecorded, initiated by the person in the constantly attended location.

8-3.4.3.3 The announcement shall be made via an approved voice communication or public address system, provided with an emergency power source, that is audible above the ambient noise level of the assembly occupancy.

8-3.4.3.4 Where the authority having jurisdiction determines that it is impractical to have a constantly attended location, a fire alarm system in accordance with Section 7-6 that is initiated by manual stations in accordance with 7-6.2.1(a) or other approved means of initiation and that automatically provides prerecorded evacuation instructions in accordance with 7-6.3.8 shall be used.

8-3.5 Extinguishment Requirements. (See also 8-1.6, 8-2.6, 8-3.2, and 8-3.6.)

8-3.5.1 Buildings containing assembly occupancies with occupant loads greater than 300 shall be protected by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7 as follows:

(a) Throughout the story containing the assembly occupancy; and

(b) Throughout all stories below the story containing the assembly occupancy; and

(c) In the case of an assembly occupancy located below the level of exit discharge, throughout all stories intervening between that story and the level of exit discharge including the level of exit discharge.

Exception No. 1: Assembly occupancies used primarily for worship with fixed seating and not part of a mixed occupancy. (See 4-1.12.)

Exception No. 2: Assembly occupancies consisting of a single multipurpose room of less than 12,000 sq ft (1100 sq m) and not used for exhibition or display.*

Exception No. 3: Gymnasiums, skating rinks, and swimming pools used exclusively for participant sports with no audience facilities for more than 300 persons.

8-3.6 Corridors. Interior corridors and lobbies shall be constructed in accordance with 5-1.3.1 and 6-2.3.

Exception No. 1: Corridor and lobby protection shall not be required where assembly rooms served by the corridor or lobby have at least 50 percent of their exit capacity discharging directly to the outside, independent of corridors and lobbies.

Exception No. 2: Corridor and lobby protection shall not be required in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: Lobbies serving only one assembly area that meet the requirements for intervening rooms (see 5-5.1.7) shall not be required to have a fire resistance rating.

Exception No. 4: Where the corridor ceiling is an assembly having a 1-hr fire resistance rating where tested as a wall, the corridor walls shall be permitted to terminate at the corridor ceiling.

SECTION 8-4 SPECIAL PROVISIONS

8-4.1 Life Safety Evaluation.

8-4.1.1 Where a life safety evaluation is required by other provisions of the Code, it shall be done by persons acceptable to the authority having jurisdiction. The life safety evaluation shall include a written assessment of safety measures for conditions listed in 8-4.1.2. The life safety evaluation shall be approved annually by the authority having jurisdiction and shall be updated for special or unusual conditions.

8-4.1.2 Life safety evaluations shall include an assessment of the following conditions and the related appropriate safety measures:

(a) Nature of the events and the participants and attendees;

(b) Access and egress movement including crowd density problems;

(c) Medical emergencies;

(d) Fire hazards;

(e) Permanent and temporary structural systems;

(f) Severe weather conditions;

(g) Earthquakes;

(h) Civil or other disturbances;

(i) Hazardous materials incidents within and near the facility; and

(j) Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility.

8-4.1.3 Life safety evaluations shall include assessments of both building systems and management features upon which reliance is placed for the safety of facility occupants.

8-4.2* Smoke-Protected Assembly Seating.

8-4.2.1 Fire Protection Requirements. To be considered smoke protected, an assembly seating facility shall comply with the following:

(a) All enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 1 to (a): The floor area used for the contest, performance, or entertainment, provided the roof construction is more than 50 ft (15 m) above the floor level and use is restricted to low fire hazard uses.

Exception No. 2 to (a): Sprinklers shall be permitted to be omitted over the floor area used for contest, performance, or entertainment and over the seating areas where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading.*

(b) All means of egress serving a smoke-protected assembly seating area shall be provided with smoke-actuated ventilation facilities or natural ventilation designed to maintain the level of smoke at least 6 ft (1.8 m) above the floor of the means of egress.

8-4.2.2 Life Safety Evaluation. For facilities to utilize the provisions of smoke-protected assembly seating, a life safety evaluation shall be done in accordance with 8-4.1.

8-4.2.3 For Table 8-4.2.3 the number of seats specified must be within a single assembly space, and interpolation shall be permitted between the specific values shown. The minimum clear widths shown shall be modified in accordance with all of the following:

(a) If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the tables by factor *A*, where

$$A = 1 + \frac{(\text{riser height} - 7 \text{ in.})}{5}$$

(b) Stairs not having a handrail within a 30-in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated; i.e., multiply by factor *B* = 1.25.

(c) Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; i.e., multiply by factor *C* = 1.10.

Table 8-4.2.3 Capacity Factors

No. of Seats	Nominal Flow Time (sec)	Inch of Clear Width Per Seat Served	
		Stairs	Passageways, Ramps, and Doorways
2000	200	0.300 <i>AB</i>	0.200 <i>C</i>
5000	260	0.200 <i>AB</i>	0.150 <i>C</i>
10,000	360	0.130 <i>AB</i>	0.100 <i>C</i>
15,000	460	0.096 <i>AB</i>	0.070 <i>C</i>
20,000	560	0.076 <i>AB</i>	0.056 <i>C</i>
25,000 or more	600	0.060 <i>AB</i>	0.044 <i>C</i>

SI Units: 1 in. = 2.54 cm

8-4.2.4 With smoke-protected assembly seating conforming to the requirements of 8-4.2, for rows of seats served by aisles or doorways at both ends, there shall be not more than 100 seats per row and the minimum clear width of 12 in. (30.5 cm) for aisle accessways shall be increased by 0.3 in. (0.8 cm) for every additional seat beyond the number stipulated in

Table 8-4.2.4, but the minimum clear width shall not be required to exceed 22 in. (55.9 cm).

Table 8-4.2.4 Smoke-Protected Assembly Seating

Total number of seats in the space	No. of seats per row permitted to have a minimum 12-in. (30.5-cm) clear width aisle accessway	
	Aisle or doorway at both ends of row	Aisle or doorway at one end of row
<4000	14	7
4000–6999	15	7
7000–9999	16	8
10,000–12,999	17	8
13,000–15,999	18	9
16,000–18,999	19	9
19,000–21,999	20	10
≥22,000	21	11

8-4.2.5 With smoke-protected assembly seating conforming to the requirements of 8-4.2, for rows of seats served by an aisle or doorway at one end only, the aisle accessway minimum clear width of 12 in. (30.5 cm) shall be increased by 0.6 in. (1.6 cm) for every additional seat beyond the number stipulated in Table 8-4.2.4, but the minimum clear width need not exceed 22 in. (55.9 cm).

8-4.2.6 Smoke-protected assembly seating conforming with the requirements of 8-4.2 shall be permitted to have a common path of travel of 50 ft (15 m) from any seat to a point where a person has a choice of two directions of egress travel.

8-4.2.7 Aisle Termination. For smoke-protected assembly seating conforming to the requirements of 8-4.2, the dead ends in aisle stairs shall not exceed a distance of 21 rows.

Exception: A longer dead-end aisle shall be permitted for smoke-protected assembly seating where seats served by the dead-end aisle are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 in. (30.5 cm) plus 0.3 in. (0.8 cm) for each additional seat above seven in the row.

8-4.2.8 For smoke-protected assembly seating conforming with the requirements of 8-4.2.1, the travel distance from each seat to the nearest entrance to an egress vomitory portal or egress concourse shall not exceed 400 ft (122 m). The travel distance from the entrance to vomitory portal or from egress concourse to an approved egress stair, ramp, or walk at the building exterior shall not exceed 200 ft (60 m).

Exception: In outdoor assembly seating facilities of Type I or Type II construction, where all portions of the means of egress are essentially open to the outside, the distance shall not be limited.

8-4.3 Windowless or Underground Buildings.

8-4.3.1 Windowless or underground buildings shall comply with this section and Section 32-7.

8-4.3.2 Underground buildings or portions of buildings having a floor level more than 30 ft (9.1 m) below the level of exit discharge shall comply with the requirements of 8-4.3.3 through 8-4.3.5.

Exception No. 1: Areas within buildings used only for service to the building, such as boiler/heater rooms, cable vaults and dead storage.

Exception No. 2: Auditoriums without intervening occupiable levels complying with the requirements of this chapter.

8-4.3.3 Each level more than 30 ft (9.1 m) below the level of exit discharge shall be divided into not less than two smoke compartments by a smoke barrier complying with Section 6-3 and having a 1-hr fire resistance rating.

8-4.3.3.1 Each smoke compartment shall have access to at least one exit without passing through the other required compartment. Any doors connecting required compartments shall be tight-fitting, minimum 1-hr rated fire doors designed and installed to minimize smoke leakage and to close and latch automatically upon detection of smoke.

8-4.3.3.2 Each smoke compartment shall be provided with a mechanical means of moving people vertically, such as an elevator or escalator.

8-4.3.3.3 Each smoke compartment shall have an independent air supply and exhaust system capable of smoke control or smoke exhaust functions that provides a minimum smoke exhaust rate of six air changes per hour.

8-4.3.3.4 Each smoke compartment shall be provided with an automatic smoke detection system throughout. The system shall be designed such that the activation of any two detectors shall cause the smoke control system to operate and the building voice alarm to sound.

8-4.3.4 Any required smoke control or exhaust system shall be provided with a standby power system complying with Article 701 of NFPA 70, *National Electrical Code*.

8-4.3.5 The building shall be provided with an approved, supervised voice alarm system in accordance with Section 7-6. The voice alarm system shall comply with 7-6.3.8. A prerecorded evacuation message shall be provided.

8-4.4 High-Rise Buildings. High-rise assembly occupancy buildings and high-rise mixed occupancy buildings that house assembly occupancies in the high-rise portions of the building shall comply with Section 32-8.

8-4.5 Stages and Platforms. (See 8-1.3.)

8-4.5.1 Materials and Design. Materials used in the construction of platforms and stages shall conform to the applicable requirements of the local building code.

8-4.5.2 Platform Construction. Temporary platforms shall be permitted to be constructed of any materials. The space between the floor and the platform above shall not be used for any purpose other than electrical wiring to platform equipment.

Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located except that the finish floor shall be permitted to be of wood in all types of construction. Where the space beneath the platform is used for storage or any purpose other than equipment wiring or plumbing, the floor construction shall not be less than 1-hr fire resistive.

8-4.5.3 Stage Construction.

8-4.5.3.1 Regular stages shall be constructed of materials as required for the type of construction of the building in which they are located. In all cases, the finish floor shall be permitted to be of wood.

8-4.5.3.2 Legitimate stages shall be constructed of materials required for Type I buildings except that the area extending from the proscenium opening to the back wall of the stage, and for a distance of 6 ft (183 cm) beyond the proscenium opening on each side, shall be permitted to be constructed of steel or heavy timber covered with a wood floor not less than 1½ in. (3.8 cm) in actual thickness.

8-4.5.3.3 Openings through stage floors (traps) shall be equipped with tight-fitting trap doors of wood having an actual thickness of not less than 1½ in. (3.8 cm) with approved safety locks.

8-4.5.4 Accessory Rooms. Workshops, storerooms, permanent dressing rooms, and other accessory spaces contiguous to stages shall be separated from each other and other building areas by 1-hr fire resistance-rated construction and protected openings.

Exception: A separation shall not be required for stages having a floor area not exceeding 1000 sq ft (93 sq m).

8-4.5.5 Ventilators. Regular stages greater than 1000 sq ft (93 sq m) in area and legitimate stages shall be provided with emergency ventilation to provide a means of removing smoke and combustion gases directly to the outside in the event of a fire. Ventilation shall be by one or a combination of the following methods:

(a) *Smoke Control.* A means complying with Section 7-3 shall be provided to maintain the smoke level not less than 6 ft (183 cm) above the highest level of assembly seating or above the top of the proscenium opening where a proscenium wall and opening protection is provided. The system shall be activated independently by each of the following:

- (1) Activation of the sprinkler system in the stage area,
- (2) Activation of smoke detectors over the stage area, and
- (3) By manually operated switch at an approved location.

The emergency ventilation system shall be supplied by both normal and standby power. The fan(s) power wiring and ducts shall be located and properly protected to ensure a minimum 20 min of operation in the event of activation.

(b) *Roof Vents.* Two or more vents shall be located near the center of and above the highest part of the stage area. They shall be raised above the roof and shall provide a net-free vent area equal to 5 percent of the stage area. Vents shall be constructed to open automatically by approved heat-activated devices. Supplemental means shall be provided for manual operation and periodic testing of the ventilator from the stage floor. Vents shall be labeled.

(c) *Other Means.* Approved, alternate means of removing smoke and combustion gases shall be permitted.

8-4.5.6 Proscenium Walls. Legitimate stages shall be completely separated from the seating area by a proscenium wall of not less than 2-hr fire-resistive noncombustible construction. The proscenium wall shall extend at least 4 ft (122 cm) above the roof of the auditorium in combustible construction.

All openings in the proscenium wall of a legitimate stage shall be protected by a fire assembly having a 1½-hr fire protection rating.

Exception No. 1: The main proscenium opening used for viewing performances shall be provided with an automatic-closing fire-resistive curtain as described in 8-4.5.7.

Exception No. 2: Proscenium walls shall not be required in smoke-protected assembly seating facilities constructed and operated in accordance with 8-4.2.

8-4.5.7 Proscenium Opening Protection. Where required by 8-4.5.6, the proscenium opening shall be protected by a fire curtain or an approved water curtain complying with NFPA 13, *Standard for the Installation of Sprinkler Systems*. The fire curtain shall be designed to close automatically upon automatic detection of a fire and upon manual activation and shall resist the passage of flame and smoke between the stage area and the audience area for 20 min.

A fire curtain shall be an opening protective assembly labeled by an approved agency or shall be constructed as follows:

(a) *Asbestos Fabrics.* Where not prohibited by applicable federal, state, or local law, a curtain shall be permitted to be made of one or more thicknesses of a minimum $2\frac{3}{4}$ lb/sq yd (1.5 kg/sq m) AAA grade wire-inserted asbestos fabric or of another wire-inserted asbestos fabric of greater fire resistance than $2\frac{3}{4}$ lb/sq yd (1.5 kg/sq m) AAA grade wire-inserted fabric. Nonasbestos portions of these fabrics, if any, shall be flame-resistant treated so as not to support combustion.

(b) *Other Fabrics.* Curtains not meeting the above criteria shall be made of one or more thicknesses of a noncombustible fabric or a fabric with a noncombustible base material, which shall be permitted to be given a coating provided the modified fabric meets the criteria detailed in this section. Curtain fabrics shall have a minimum weight of $2\frac{3}{8}$ lb/sq yd (1.3 kg/sq m).

(c) *Tensile Strength Requirements.* Curtain fabric shall have minimum tensile strength requirements of 400 lbf/in. (540 N/m) in both the warp and fill directions.

(d) *Wire-Insertion Reinforcement Requirements.* The fabric shall be reinforced with noncorrosive wire intertwined with the base fiber at a minimum rate of one wire per yarn. Wire shall not be required and fabric weight shall be permitted to be less than $2\frac{3}{8}$ lb/sq yd (1.3 kg/sq m) if it can be substantiated by approved tests that it is equivalent in strength and durability.

(e) *Fire Test.* A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*, as applicable to nonbearing walls and partitions for a period of 30 min. The curtain shall overlap the furnace edges by an amount that is appropriate to seal the top and sides. It shall have a bottom pocket containing a minimum 4 lb/linear ft (5 kg/m) of batten. The unexposed surface of the curtain shall not glow, and neither flame nor smoke shall penetrate the curtain during the test period. Unexposed surface temperature and hose stream test requirements shall not be applicable to this proscenium fire safety curtain test.

(f) *Smoke Test.* Curtain fabrics shall have a smoke density of not greater than 25 where tested in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*. The curtain fabric shall be tested in the condition in which it is to be used.

The complete installation of every proscenium curtain shall be subjected to operating tests, and any theater in which a proscenium curtain is placed shall not be open to public performance until after the proscenium curtain has been accepted and approved by the authority having jurisdiction.

The curtain shall be kept in the normally closed position when each day's performances are completed.

The curtain shall be automatic-closing without the use of applied power. The curtain also shall be capable of manual operation.

(g) All proscenium curtains shall be in the closed position except during performances, rehearsals, or similar activities.

8-4.5.8 Gridiron, Fly Galleries, and Pinrails. Structural framing designed only for the attachment of portable or fixed theater equipment, gridirons, galleries, and catwalks shall be constructed of materials consistent with the building type of construction, and a fire resistance rating shall not be required.

Exception: Combustible materials shall be permitted for use as the floors of galleries and catwalks of all types of construction.

8-4.5.9 Catwalks. The minimum clear width of lighting and access catwalks and the means of egress from galleries and gridirons shall be 22 in. (56 cm).

8-4.5.10 Fire Protection. Every stage shall be protected by an approved, automatic sprinkler system installed in compliance with Section 7-7. The protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to such stages.

Exception No. 1: Sprinklers shall not be required for stages 1000 sq ft (93 sq m) or less in area and 50 ft (15 m) or less in height where curtains, scenery, or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs, and a single backdrop.

Exception No. 2: Sprinklers shall not be required under stage areas less than 4 ft (1.2 m) in clear height used exclusively for chair or table storage and lined on the inside with $\frac{5}{8}$ -in. (1.6-cm) Type X gypsum wallboard or the approved equivalent.

8-4.5.11 Flame-Retardant Requirements. Combustible scenery of cloth, film, vegetation (dry), and similar effects shall meet the requirements of NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*. Foamed plastics (see Section 3-2) shall be permitted to be used only by specific approval of the authority having jurisdiction. Scenery and stage properties not separated from the audience by proscenium opening protection shall be of either noncombustible or limited-combustible materials.

In theaters, motion picture theaters, and television stage settings, with or without horizontal projections, and simulated caves and caverns of foamed plastic, any single fuel package shall have a maximum heat release rate of 100 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

8-4.5.12 Standpipes. Regular stages over 1000 sq ft (93 sq m) in area and all legitimate stages shall be equipped with a Class III standpipe located at each side of the stage and installed in accordance with 7-7.4.2.

8-4.6 Projection Booths.

8-4.6.1 Film or video projectors or spotlights utilizing light sources that produce particulate matter or toxic gases or light sources that produce hazardous radiation without protective shielding shall be located within a projection room complying with 8-3.2.1.3. Where cellulose nitrate film is used,

the projection room shall comply with NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*.

8-4.6.2 Projection Rooms for Safety Film. Projection rooms for safety film shall comply with 8-4.6.2.1 through 8-4.6.2.6.

8-4.6.2.1 Every projection room for safety film shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings shall not be required to be protected. The room shall have a floor area of not less than 80 sq ft (7.4 sq m) for a single machine and not less than 40 sq ft (3.7 sq m) for each additional machine. Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space of not less than 30 in. (76 cm) on each side and at its rear, but only one such space shall be required between adjacent projectors.

The projection room and the rooms appurtenant to it shall have a ceiling height of not less than 7 ft 6 in. (2.3 m).

8-4.6.2.2 Each projection room for safety film shall have at least one out-swinging, self-closing door not less than 30 in. (76 cm) wide and 6 ft 8 in. (2 m) high.

8-4.6.2.3 The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium. All openings shall be provided with glass or other approved material so as to completely close the opening.

8-4.6.2.4 Projection room ventilation shall not be less than the following:

(a) *Supply Air.* Each projection room shall be provided with adequate air supply inlets arranged to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air shall be permitted to be taken from the outside; from adjacent spaces within the building, provided the volume and infiltration rate is sufficient; or from the building air conditioning system, provided it is arranged to supply sufficient air whether or not other systems are in operation.

(b) *Exhaust Air.* Projection booths shall be permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is sufficient airflow required for the lamp. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system shall be permitted to also serve appurtenant rooms, such as the generator room and the rewind room.

8-4.6.2.5 Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust shall be permitted to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp and projection room exhaust systems shall be permitted to be combined but shall not be interconnected with any other exhaust or return air system within the buildings.

(a) *Electric Arc Projection Equipment.* The exhaust capacity shall be 200 cfm (0.09 cu m/s) for each lamp connected to the lamp exhaust system, or as recommended by the equip-

ment manufacturer. Auxiliary air shall be permitted to be introduced into the system through a screened opening to stabilize the arc.

(b) *Xenon Projection Equipment.* The lamp exhaust system shall exhaust not less than 300 cfm (0.14 cu m/s) per lamp, or not less than that exhaust volume required or recommended by the equipment manufacturer, whichever is greater.

8-4.6.2.6 Miscellaneous equipment and storage shall be protected as follows:

(a) Each projection room shall be provided with rewind and film storage facilities.

(b) A maximum of four containers for flammable liquids of not greater than 16 oz (0.5 L) capacity and of a nonbreakable type shall be permitted in each projection booth.

(c) Appurtenant electrical equipment, such as rheostats, transformers, and generators, shall be permitted to be located within the booth or in a separate room of equivalent construction.

8-4.6.3 Projection Room Posting. A conspicuous sign with 1-in. (2.5-cm) block letters stating: "SAFETY FILM ONLY PERMITTED IN THIS ROOM" shall be posted on the outside of each projection room door and within the projection room proper.

Exception: The projection room is constructed in accordance with NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*.

8-4.7* Special Amusement Buildings.

8-4.7.1 Special amusement buildings, regardless of occupant load, shall meet the requirements for assembly occupancies in addition to the requirements of this subsection.

Exception: A building in which the multilevel play structures are not more than 10 ft (3 m) in height and have aggregate horizontal projections not more than 160 sq ft (14.9 sq m).

8-4.7.2* Every special amusement building shall be protected throughout by an approved, automatic sprinkler system installed and maintained in accordance with Section 7-7. Where the special amusement building is movable or portable, sprinkler water supply shall be permitted to be by an approved temporary means.

Exception: Buildings or structures not more than 10 ft (3 m) in height and not more than 160 sq ft (14.9 sq m) in horizontal projection.

8-4.7.3 Where the nature of the special amusement building is such that it operates in reduced lighting levels, the building shall be protected throughout by an approved, automatic smoke detection system in accordance with Section 7-6. Actuation of any smoke detection system device shall sound an alarm at a constantly attended location on the premises. Actuation of the automatic sprinkler system, or any other suppression system, or actuation of a smoke detection system having an approved verification or cross zoning operation capability shall:

(a) Cause illumination in the means of egress to increase to that required by Section 5-8, and

(b) Stop any conflicting or confusing sounds and visuals.

8-4.7.4 Exit Marking.

8-4.7.4.1 Exit marking shall be in accordance with Section 5-10.

8-4.7.4.2 Exit marking in mobile special amusement buildings shall be of the luminescent, self-luminous, or electroluminescent type.

8-4.7.4.3 Floor proximity exit signs shall be provided in accordance with 5-10.1.5.

8-4.7.4.4* In special amusement buildings where mazes, mirrors, or other designs are used to confound the egress path, approved directional exit marking that will become apparent in an emergency shall be provided.

8-4.7.5 Interior Finish. Interior finish shall be Class A throughout in accordance with Section 6-5.

8-4.8 Grandstands, Bleachers, and Folding and Telescopic Seating.

8-4.8.1 Where bleacher or grandstand seating without backs is used indoors, rows of seats shall be spaced not less than 22 in. (55.9 cm) back to back.

8-4.8.2 Guards and Railings.

8-4.8.2.1 Railings or guards not less than 42 in. (107 cm) above the aisle surface or footrest or 36 in. (91 cm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all grandstands and folding and telescopic seating where the seats are more than 4 ft (1.2 m) above the floor or ground.

Exception: Where an adjacent wall or fence affords equivalent safeguard.

8-4.8.2.2 Where the front footrest of any grandstand or folding or telescopic seating is more than 2 ft (0.6 m) above the floor, railings or guards not less than 33 in. (84 cm) above such footrests shall be provided.

Exception: In grandstands, or where the front row of seats includes backrests, the rails shall be not less than 26 in. (66 cm) high.

8-4.8.2.3 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (66 cm) high along the front edge of the cross aisle.

Exception: Where the backs of the seats in front of the cross aisle project 24 in. (61 cm) or more above the surface of the cross aisle, the rail shall not be required.

8-4.8.2.4 Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4-in. (10.2-cm) diameter sphere cannot pass through the opening.

8-4.8.2.5 An opening between the seat board and footboard located more than 30 in. (76 cm) above grade shall be provided with intermediate construction so that a 4-in. (10.2-cm) diameter sphere cannot pass through the opening.

SECTION 8-5 BUILDING SERVICES

8-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

8-5.2 Heating, Ventilating, and Air Conditioning Equipment. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

8-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

8-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 8-6 RESERVED

SECTION 8-7 OPERATING FEATURES

8-7.1 Special Provisions for Food Service Operations.

8-7.1.1 All devices in connection with the preparation of food shall be installed and operated to avoid hazard to the safety of occupants.

8-7.1.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

8-7.1.3 Food preparation facilities shall be protected in accordance with 7-2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

8-7.1.4 Portable Cooking Equipment. Portable cooking equipment that is not flue-connected shall be permitted only as follows:

(a) Equipment fueled by small heat sources that can be readily extinguished by water, such as candles or alcohol-burning equipment (including solid alcohol), shall be permitted to be used provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

(b) Candles shall be permitted to be used on tables used for food service if securely supported on substantial noncombustible bases located so as to avoid danger of ignition of combustible materials and only if approved by the authority having jurisdiction. Candle flames shall be protected.

(c) "Flaming sword" or other equipment involving open flames and flamed dishes, such as cherries jubilee or crêpe suzette, shall be permitted to be used provided necessary precautions are taken and subject to the approval of the authority having jurisdiction.

(d)* Listed and approved LP-Gas commercial food service appliances as permitted by NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

8-7.2 Open Flame Devices. No open flame devices or pyrotechnic device shall be used in any assembly occupancy.

Exception No. 1: Pyrotechnic special effect devices shall be permitted to be used on stages before proximate audiences for ceremonial or religious purposes, as part of a demonstration in exhibits, or as part of a performance, provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material and use of the pyrotechnic device complies with 8-7.3.

Exception No. 2: Open flame devices shall be permitted to be used in the following situations, provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material or injury to occupants:

(a)* Where necessary for ceremonial or religious purposes.

(b) On stages and platforms as a necessary part of a performance.

(c) Where candles on tables are securely supported on substantial noncombustible bases and candle flame is protected.

Exception No. 3: Heat-producing equipment complying with 7-2.2.

Exception No. 4: Food service operations in accordance with 8-7.1.

Exception No. 5: Gas lights shall be permitted to be used provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

8-7.3* Pyrotechnic Devices. Pyrotechnic devices shall be permitted to be used on stages and before proximate audiences in accordance with the requirements of NFPA 1126, *Standard for the Use of Pyrotechnics before a Proximate Audience*.

8-7.4 Furnishings, Decorations, and Scenery.

8-7.4.1 Fabrics and films used for decorative purposes, all draperies and curtains, and similar furnishings shall be in accordance with the provisions of 6-6.1.

8-7.4.2 The authority having jurisdiction shall impose controls on the amount and arrangement of combustible contents in assembly occupancies to provide an adequate level of safety to life from fire.

8-7.4.3* Exposed foamed plastic materials and unprotected materials containing foamed plastic used for decorative purposes or stage scenery shall have a maximum heat release rate of 100kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

Exception: Individual foamed plastic items or items containing foamed plastic where the foamed plastic does not exceed 1 lb (0.45 kg) in weight.

8-7.5 Special Provisions for Exposition Facilities.

8-7.5.1 No display or exhibit shall be installed or operated to interfere in any way with access to any required exit or with visibility of any required exit or any required exit sign; nor shall any display block access to fire-fighting equipment.

8-7.5.2 A storage room having an enclosure consisting of a smoke barrier having a fire resistance rating of 1 hr and protected by an automatic extinguishing system shall be provided for combustible materials not on display, including combustible packing crates used to ship exhibitors' supplies and products.

8-7.5.3 Exhibits.

8-7.5.3.1 Exhibits shall comply with 8-7.5.3.2 through 8-7.5.3.11.

8-7.5.3.2 The travel distance within the exhibit booth or exhibit enclosure to an exit access aisle shall not be greater than 50 ft (15 m).

8-7.5.3.3 The upper deck of multilevel exhibits greater than 300 sq ft (27.9 sq m) shall have at least two remote means of egress.

8-7.5.3.4 Exhibit booths shall be constructed of:

(a) Noncombustible or limited-combustible materials.

(b) Wood greater than 1/4 in. (0.6 cm) nominal thickness or wood not greater than 1/4 in. (0.6 cm) nominal thickness that is pressure treated fire-retardant wood meeting the re-

quirements of NFPA 703, *Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*.

(c)* Flame-retardant materials complying with NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*.

(d) Textile wall coverings such as carpeting and similar products used as wall or ceiling finishes complying with the provisions of 6-5.2 and 6-5.3.

(e) Plastics limited to those that comply with 8-3.3 and Section 6-5.

(f) Foamed plastics and materials containing foamed plastics having a maximum heat release rate for any single fuel package of 100 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

(g) Cardboard, honeycombed paper, and other combustible materials having a maximum heat release rate for any single fuel package of 150 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

8-7.5.3.5 Curtains, drapes, and decorations shall comply with the applicable portions of 6-6.1.

8-7.5.3.6 Acoustical and decorative material including, but not limited to, cotton, hay, paper, straw, moss, split bamboo, and wood chips shall be flame-retardant treated to the satisfaction of the authority having jurisdiction. Materials that cannot be treated for flame retardancy shall not be used. Foamed plastics and materials containing foamed plastics used as decorative objects such as, but not limited to, mannequins, murals, and signs shall have a maximum heat release rate for any single fuel package of 150 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

Exception: Where the aggregate area of such materials is less than 10 percent of the individual floor or wall area, such materials shall be permitted to be used subject to the approval of the authority having jurisdiction.

8-7.5.3.7 The following shall be protected by automatic extinguishing systems:

(a) Single-level exhibit booths greater than 300 sq ft (27.9 sq m) and covered with a ceiling.

(b) Throughout each level of multilevel exhibit booths, including the uppermost level if the uppermost level is covered with a ceiling.

(c) A single exhibit or group of exhibits with ceilings that do not require sprinklers shall be separated by a minimum of 10 ft (3 m) where the aggregate ceiling exceeds 300 sq ft (27.9 sq m).

The water supply and piping for the sprinkler system shall be permitted to be of approved temporary means taken from an existing domestic water supply, an existing standpipe system, or an existing sprinkler system.

Exception No. 1: Ceilings that are constructed of open grate design or listed dropout ceilings in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, shall not be considered ceilings within the context of this section.

Exception No. 2: Vehicles, boats, and similar exhibited products having over 100 sq ft (9.3 sq m) of roofed area shall be provided with smoke detectors acceptable to the authority having jurisdiction.

Exception No. 3: Where fire protection of multilevel exhibit booths is consistent with the criteria developed through a life safety evaluation of the exhibition hall in accordance with 8-4.1, subject to approval of the authority having jurisdiction.*

8-7.5.3.8 Open flame devices within exhibit booths shall comply with 8-7.2.

8-7.5.3.9 Cooking and food warming devices in exhibit booths shall comply with 8-7.1 and the following:

(a) Gas-fired devices.

(1) Natural gas-fired devices shall be installed in accordance with 7-1.1.

Exception to (a)(1): Compressed natural gas shall be permitted to be used where permitted by the authority having jurisdiction.

(2) The use of LP-Gas cylinders shall be prohibited.

Exception to (a)(2): Nonrefillable cylinders shall be permitted to be used where permitted by the authority having jurisdiction.

(b) Devices shall be isolated from the public by at least 4 ft (1.2 m) or by a barrier between the devices and the public.

(c) Multi-well cooking equipment using combustible oils or solids shall comply with 7-2.3.

(d) Single-well cooking equipment using combustible oils or solids shall:

(1) Have lids available for immediate use.

(2) Be limited to 288 sq in. (0.19 sq m) of cooking surface.

(3) Be placed on noncombustible surface materials.

(4) Be separated from each other by a minimum horizontal distance of 2 ft (0.6 m).

Exception to (d)(4): Multiple single-well cooking equipment where the aggregate cooking surface area does not exceed 288 sq in. (0.19 sq m).

(5) Be kept a minimum horizontal distance of 2 ft (0.6 m) from any combustible material.

(e) A 20-B:C fire extinguisher shall be provided within the booth for each device, or an approved, automatic extinguishing system shall be provided. (See 7-7.4.1.)

8-7.5.3.10 Combustible materials within exhibit booths shall be limited to a one-day supply. Storage of combustible materials behind the booth shall be prohibited. (See 8-7.4.2 and 8-7.5.2.)

8-7.5.3.11 Plans for the exposition, in an acceptable form, shall be submitted to the authority having jurisdiction for approval prior to the move-in of any exhibit. The plan shall show all details of the proposed exposition. No exposition shall occupy any exposition facility without approved plans.

8-7.5.4 Vehicles. Vehicles on display within an exposition facility shall comply with 8-7.5.4.1 through 8-7.5.4.5.

8-7.5.4.1 All fuel tank openings shall be locked and sealed in an approved manner to prevent the escape of vapors. Fuel tanks shall not be more than one-half full or contain more than 10 gal (37.9 L) of fuel, whichever is less.

8-7.5.4.2 At least one battery cable shall be removed from the batteries used to start the vehicle engine. The disconnected battery cable shall then be taped.

8-7.5.4.3 Batteries used to power auxiliary equipment shall be permitted to be kept in service.

8-7.5.4.4 Fueling or defueling of vehicles shall be prohibited.

8-7.5.4.5 Vehicles shall not be moved during show hours.

8-7.5.5 Compressed flammable gases; flammable or combustible liquids; hazardous chemicals or materials; and Class II or greater lasers, blasting agents, and explosives shall be prohibited within exhibit halls.

Exception: The authority having jurisdiction shall be permitted to allow the limited use of any of the above items under special circumstances.

8-7.5.6 Alternatives. (See Section 1-6.)

8-7.6* Crowd Managers. In assembly occupancies having occupant loads greater than 1000, there shall be trained crowd managers or crowd manager supervisors at a ratio of 1 crowd manager/supervisor for every 250 occupants who shall have received approved training in crowd management techniques.

Exception No. 1: Assembly occupancies used exclusively for religious worship with an occupant load not more than 2000.

Exception No. 2: Where in the opinion of the authority having jurisdiction the existence of an approved, supervised sprinkler system and the nature of the event warrant, the ratio of trained crowd managers to occupants shall be permitted to be reduced.

8-7.7* Drills.

8-7.7.1 The employees or attendants of assembly occupancies shall be schooled and drilled in the duties they are to perform in case of fire, panic, or other emergency in order to effect orderly exiting.

8-7.7.2 Employees or attendants of assembly occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment if provided.

8-7.7.3* In theaters, motion picture theaters, auditoriums, and other similar assembly occupancies with occupant loads greater than 300 where there are noncontinuous programs, an audible announcement shall be made or projected image shown prior to the start of each program to notify occupants of the location of the exits to be used in case of a fire or other emergency.

Exception: Assembly occupancies in schools where used for nonpublic events.

8-7.8 Smoking.

8-7.8.1 Smoking in assembly occupancies shall be regulated by the authority having jurisdiction.

8-7.8.2 In rooms or areas where smoking is prohibited, plainly visible "NO SMOKING" signs shall be posted.

8-7.8.3 No person shall smoke in prohibited areas that are so posted.

Exception: The authority having jurisdiction shall be permitted to allow smoking on a stage only where it is a necessary and rehearsed part of a performance and only where the smoker is a regular performing member of the cast.

8-7.8.4 Where smoking is permitted, suitable ashtrays or receptacles shall be provided in convenient locations.

8-7.9 Seating.

8-7.9.1 Seats in assembly occupancies accommodating more than 200 persons shall be securely fastened to the floor except where fastened together in groups of not less than three nor more than seven and as permitted by 8-7.9.2. All seats in balconies and galleries shall be securely fastened to the floor, except in places of religious worship.

8-7.9.2 Seats not secured to the floor shall be permitted in restaurants, night clubs, and other occupancies where the fastening of seats to the floor might be impracticable, provided that in the area used for seating (excluding dance floor, stage, etc.) there shall not be more than one seat for each 15 sq ft (1.4 sq m) of net floor area and adequate aisles to reach exits shall be maintained at all times.

Exception: Seating diagrams shall be submitted for approval of the authority having jurisdiction to allow increase in occupant load per 8-1.7.2.

8-7.9.3 Every room constituting an assembly occupancy and not having fixed seats shall have the occupant load of the room posted in a conspicuous place near the main exit from the room. Approved signs shall be maintained in a legible manner by the owner or authorized agent. Signs shall be durable and shall indicate the number of occupants permitted for each room use.

8-7.10 Clothing. Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

CHAPTER 9 EXISTING ASSEMBLY OCCUPANCIES

SECTION 9-1 GENERAL REQUIREMENTS

9-1.1 Application.

9-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as assembly occupancies. (See 9-1.3 for definition of Assembly Occupancy; see also 8-1.1.)

Exception: An existing building housing an assembly occupancy established prior to the effective date of this Code shall be permitted to be approved for continued use if it conforms to or is made to conform to the provisions of this Code to the extent that, in the opinion of the authority having jurisdiction, reasonable life safety against the hazards of fire, explosion, and panic is provided and maintained.

9-1.1.2 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure shall not be required to be modified provided that the new construction has not diminished the fire safety features of the facility.

Exception: Existing portions shall be upgraded if the addition results in an increase in the required minimum number of separate means of egress in accordance with 5-4.1.2.

9-1.1.3 An assembly occupancy in which an occupant load increase results in an increase in the required minimum number of separate means of egress, in accordance with 5-4.1.2, shall meet the requirements for new construction.

9-1.2 Mixed Occupancies. (See also 4-1.12.)

9-1.2.1* Any assembly occupancy and its access to exits in buildings of other occupancy, such as ballrooms in hotels, restaurants in stores, rooftop assembly occupancies, or assembly rooms in schools, shall be located, separated, or protected to avoid any undue danger to the occupants of the assembly occupancy from a fire originating in the other occupancy or smoke therefrom.

9-1.2.2 Occupancy of any room or space for assembly purposes by fewer than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classified as part of the other occupancy and shall be subject to the provisions applicable thereto.

9-1.2.3 Assembly occupancies in buildings of other occupancy shall be permitted to use exits common to the assembly occupancy and the other occupancy provided the assembly area and the other occupancy considered separately each have exits sufficient to meet the requirements of this Code.

9-1.2.4 Exits shall be sufficient for simultaneous occupancy of both the assembly occupancy and other parts of the building.

*Exception:** Where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur.

9-1.2.5 Combined Assembly and Residential Occupancies.

9-1.2.5.1 No dwelling unit of a residential occupancy shall have its sole means of egress pass through any assembly occupancy in the same building.

9-1.2.5.2 No multiple-dwelling unit of a residential occupancy shall be located above an assembly occupancy.

Exception No. 1: Where the dwelling unit of the residential occupancy and exits therefrom are separated from the assembly occupancy by construction having a fire resistance rating of at least 1 hr.

Exception No. 2: Where the assembly occupancy is protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7.

Exception No. 3: As permitted in 9-1.2.5.3.

9-1.2.5.3 A building with not more than two dwelling units of residential occupancy above an assembly occupancy shall be permitted provided the assembly occupancy is protected by an automatic fire detection system in accordance with Section 7-6.

9-1.3 Special Definitions.

Aisle Accessway.* That initial portion of an exit access that leads to an aisle.

Assembly Occupancy. Occupancies that include, but are not limited to, all buildings or portions of buildings used for gatherings of 50 or more persons for such purpose as deliberation, worship, entertainment, dining, amusement, or awaiting transportation.

Exhibitor. An individual or entity engaged in the display of the products or services offered.

Exhibits. A space or portable structure used for the display of products or services.

Exposition. An event in which the display of products or services is organized to bring together the provider and user of the products or services.

Exposition Facility. A convention center, hotel, or other building at which exposition events are held.

Festival Seating.* That form of audience/spectator accommodation in which no seating, other than a floor or ground surface, is provided for the audience/spectators gathered to observe some performance.

Flow Time. The time during which there is crowd flow past a point in the means of egress system; flow time is a component of total evacuation time.

Fly Gallery. A raised floor area above a stage from which the movement of scenery and operation of other stage effects are controlled.

Gridiron. The structural framing over a stage supporting equipment for hanging or flying scenery and other stage effects.

Life Safety Evaluation.* A written review dealing with the adequacy of life safety features relative to fire, storm, collapse, crowd behavior, and other related safety considerations.

Multilevel Play Structure. A structure that consists of tubes, slides, crawling areas, and jumping areas that is located within a building and is used for climbing and entertainment, generally by children.

Pinrail. A rail on or above a stage through which belaying pins are inserted and to which lines are fastened.

Platform.* The raised area within a building used for the presentation of music, plays, or other entertainment; the head tables for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater-in-the-round;

and for similar purposes wherein there are no overhead drops, pieces of scenery, or stage effects other than lighting and a screening valance.

Platform, Temporary. A platform erected within an area for not more than 30 days.

Proscenium Wall. The wall that separates the stage from the auditorium or house.

Smoke-Protected Assembly Seating. (See 9-4.2.)

Special Amusement Building. Any building that is temporary, permanent, or mobile that contains a device or system that conveys passengers or provides a walkway along, around, or over a course in any direction as a form of amusement arranged so that the egress path is not readily apparent due to visual or audio distractions or an intentionally confounded egress path, or is not readily available due to the mode of conveyance through the building or structure. Included are amusements such as a "haunted house," a "roller coaster" type ride within a building, a multilevel play structure within a building, a "submarine" ride, and similar amusements where the occupants are not in the open air.

Stage. A space within a building used for entertainment and utilizing drops or scenery or other stage effects, which shall be further classified as one of the following:

(a) *Stage, Legitimate.* A stage with a height greater than 50 ft (15 m) measured from the lowest point on the stage floor to the highest point of the roof or floor deck above.

(b) *Stage, Regular.* A stage with a height of 50 ft (15 m) or less measured from the lowest point on the deck above.

9-1.4* Classification of Occupancy. (See 4-1.2.)

9-1.5 Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 4-2.

9-1.6 Minimum Construction Requirements. (See 6-2.1.) The location of an assembly occupancy shall be limited as shown in Table 9-1.6.

9-1.7 Occupant Load.

9-1.7.1* The occupant load permitted in any assembly building, structure, or portion thereof shall be determined on the basis of the following occupant load factors:

(a)* An assembly area of concentrated use without fixed seats, such as an auditorium, place of worship, dance floor, discotheque, or lodge hall: one person per 7 net sq ft (0.65 net sq m).

(b) An assembly area of less concentrated use, such as a conference room, dining room, drinking establishment, exhibit room, gymnasium, or lounge: one person per 15 net sq ft (1.4 net sq m).

(c) Bleachers, pews, and similar bench-type seating: one person per 18 linear in. (45.7 linear cm).

(d) *Fixed seating.* The occupant load of an area having fixed seats shall be determined by the number of fixed seats

Table 9-1.6 Construction Type Limitations

Type of Construction	Below LED	LED	Number of Levels Above LED			
			1	2	3	≥ 4
I(443)†† I(332)†† II(222)††	Any assembly †	Any assembly	Any assembly	Any assembly	Any assembly	Any assembly If OL>1000†
II(111)††	Any assembly † Limited to 1 level below LED	Any assembly	Any assembly	Any assembly If OL>1000 †	Assembly with OL≤1000 †	NP
III(211) IV(2HH) V(111)	Any assembly † Limited to 1 level below LED	Any assembly	Any assembly	Any assembly If OL>300†	Assembly with OL≤1000†	NP
II(000)	Assembly with OL≤1000 † Limited to 1 level below LED	Any assembly If OL>1000 †	Assembly with OL≤300†	NP	NP	NP
III(200) V(000)	Assembly with OL≤1000 † Limited to 1 level below LED	Any assembly If OL>1000†	Assembly with OL≤300†	NP	NP	NP

†Permitted if all the following are protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7:

(a) The level of the assembly occupancy, and

(b) Any level intervening between the level of the assembly occupancy and the level of exit discharge, and

(c) The level of the exit discharge if there are any openings between the level of exit discharge and the exits serving the assembly occupancy.

††Where every part of the structural framework of roofs in Type I or Type II construction is 20 ft (6.1 m) or more above the floor immediately below, omission of all fire protection of the structural members shall be permitted, including protection of trusses, roof framing, and decking.

NP: Not Permitted

LED: Level of Exit Discharge

OL: Occupant Load

Note: For the purpose of this table, a mezzanine is not counted as a level.

installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

(e) *Kitchens.* One person per 100 gross sq ft (9.3 gross sq m).

(f) *Libraries.* In stack areas, one person per 100 gross sq ft (9.3 gross sq m); in reading rooms, one person per 50 net sq ft (4.6 net sq m).

(g) *Swimming pools.* One person per 50 gross sq ft (4.7 sq m) of water surface. Pool decks, one person per 30 gross sq ft (2.8 sq m).

(h) *Stages.* One person per 15 net sq ft (1.4 net sq m).

(i) *Lighting and access catwalks, galleries, and gridirons.* One person per 100 net sq ft (9.3 net sq m).

Exception No. 1: Larger occupant loads as permitted by 9-1.7.3.

Exception No. 2: The authority having jurisdiction shall be permitted to establish the occupant load as the number of persons for which the existing means of egress is adequate, providing that measures are established to prevent occupancy by a greater number of persons.

9-1.7.2 The occupant load of a stage area that is part of an assembly area shall be included in determining the occupant load for the assembly area.

9-1.7.3* The occupant load permitted in a building or portion thereof shall be permitted to be increased above that specified in 9-1.7.1 if the necessary aisles and exits are provided. To increase the occupant load, a diagram indicating placement of equipment, aisles, exits, and seating shall be provided to and approved by the authority having jurisdiction prior to any increase in occupant load. In areas not greater than 10,000 sq ft (930 sq m), the occupant load shall not exceed one person in 5 sq ft (0.46 sq m); in areas greater than 10,000 sq ft (930 sq m), the occupant load shall not exceed one person in 7 sq ft (0.65 sq m).

9-1.7.4 Waiting Spaces. In theaters and other assembly occupancies where persons are admitted to the building at times when seats are not available to them, or when the permitted occupant load has been reached based on 9-1.7.1 or 9-1.7.3 and persons are allowed to wait in a lobby or similar space until seats or space is available, such use of a lobby or similar space shall not encroach upon the required clear width of exits. Such waiting shall be restricted to areas other than the required means of egress. Exits shall be provided for such waiting spaces on the basis of one person for each 3 sq ft (0.28 sq m) of waiting space area. Such exits shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

9-1.7.5 Where the occupant load of an assembly occupancy is greater than 6000, a life safety evaluation shall be performed in accordance with 9-4.1.

Exception: Where approved by the authority having jurisdiction, the number of usually seated occupants provided with a minimum of 15 sq ft (1.4 sq m) of lawn surface in outdoor facilities shall be permitted to be excluded in determining the need for a life safety evaluation.

SECTION 9-2 MEANS OF EGRESS REQUIREMENTS

9-2.1 General. All means of egress shall be in accordance with Chapter 5 and this section.

9-2.2 Means of Egress Components.

9-2.2.1 Components of means of egress shall be limited to the types described in 9-2.2.2 through 9-2.2.12.

9-2.2.2 Doors.

9-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

9-2.2.2.2 Assembly occupancies with occupant loads of 300 or less in covered malls (*see Exception to 25-4.4.1*) shall be permitted to have horizontal or vertical security grilles or doors complying with Exception No. 2 to 5-2.1.4.1 on the main entrance/exits.

9-2.2.2.3 Panic Hardware or Fire Exit Hardware. Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware complying with 5-2.1.7.

Exception No. 1: In assembly occupancies having an occupant load not greater than 600, where the main exit consists of a single door or single pair of doors, locking devices complying with Exception No. 2 to 5-2.1.5.1 shall be permitted to be used on the main exit. Any latching device on this door(s) shall be released by panic hardware.

Exception No. 2: Delayed egress locks as permitted in 9-2.2.2.4.

Exception No. 3: Access-controlled egress doors as permitted in 9-2.2.2.5.

9-2.2.2.4 Delayed egress locks complying with 5-2.1.6.1 shall be permitted on doors other than main entrance/exit doors.

9-2.2.2.5 Doors in the means of egress shall be permitted to be equipped with an approved, access control system complying with 5-2.1.6.2. Doors shall not be locked from the egress side when the assembly occupancy is occupied. (*See 5-2.1.1.3.*)

9-2.2.2.6 Revolving doors complying with the requirements of 5-2.1.10 for new construction shall be permitted.

9-2.2.2.7 Turnstiles. No turnstiles or other devices that restrict the movement of persons shall be installed in any assembly occupancy in such a manner as to interfere in any way with required means of egress facilities.

9-2.2.3 Stairs.

9-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

Exception No. 1: Stairs serving seating that is designed to be repositioned shall not be required to comply with 5-2.2.3.1.*

Exception No. 2: Stages and platforms as permitted by 9-4.5.

9-2.2.3.2 Catwalk, Gallery, and Gridiron Stairs.

9-2.2.3.2.1 Noncombustible grated stair treads and landing floors shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

9-2.2.3.2.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

9-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

9-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

9-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

9-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

9-2.2.8 Escalators and Moving Walks. Escalators and moving walks complying with 5-2.7 shall be permitted.

9-2.2.9 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

9-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

9-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

9-2.2.12 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

9-2.3 Capacity of Means of Egress.

9-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3 or, for means of egress serving theater-type seating or similar seating arranged in rows, in accordance with 9-2.3.2.

9-2.3.2* Minimum clear widths of aisles and other means of egress serving theater-type seating, or similar seating arranged in rows, shall be in accordance with Table 9-2.3.2. The minimum clear widths shown shall be modified in accordance with all of the following:

(a) If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the tables by factor *A*, where

$$A = 1 + \frac{(\text{riser height} - 7 \text{ in.})}{5}$$

(b) Stairs not having a handrail within a 30-in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated; i.e., multiply by factor *B* = 1.25.

(c) Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; i.e., multiply by factor *C* = 1.10.

Exception No. 1: Lighting and access catwalks as permitted by 9-4.5.9.

Exception No. 2: Grandstands, bleachers, and folding and telescopic seating as permitted by 9-4.8.

Table 9-2.3.2 Capacity Factors

No. of Seats	Nominal Flow Time (sec)	Inch of Clear Width Per Seat Served	
		Stairs	Passageways, Ramps, and Doorways
Unlimited	200	0.300 <i>AB</i>	0.220 <i>C</i>

SI Units: 1 in. = 2.54 cm

9-2.3.3 Main Entrance/Exit. Every assembly occupancy shall be provided with a main entrance/exit. The main entrance/exit shall be of sufficient width to accommodate one half of the total occupant load and shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street. Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit regardless of whether all such exits serve as entrances to the building.

Exception No. 1: A bowling establishment shall have a main entrance/exit of sufficient capacity to accommodate 50 percent of the total occupant load without regard to the number of aisles that it serves.

*Exception No. 2:** In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the permitted occupant load.

9-2.3.4 Other Exits. Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of sufficient width to accommodate a minimum of one half of the total occupant load served by that level. Such exits shall discharge in accordance with 9-2.7. Such exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable. Such exits shall be accessible from a cross aisle or a side aisle. (See 9-2.3.3.)

Exception: In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the permitted occupant load.

9-2.4* Number of Exits. (See also Section 5-4.)

9-2.4.1 The number of exits shall be in accordance with Section 5-4.

Exception No. 1: Assembly occupancies with occupant loads of 600 or fewer shall have two separate means of egress. Assembly occupancies with occupant loads greater than 600 but fewer than 1000 shall have three separate means of egress.

Exception No. 2: Fenced outdoor assembly occupancies in accordance with 9-2.4.2.

9-2.4.2 A fenced outdoor assembly occupancy shall have at least two widely separated means of egress from the enclosure. If more than 6000 persons are to be served by such means of egress, there shall be at least three means of egress; if more than 9000 persons are to be served, there shall be at least four means of egress.

9-2.4.3 Balconies or mezzanines having an occupant load not greater than 50 shall be permitted to be served by a single means of egress and such means of egress shall be permitted to lead to the floor below.

9-2.4.4 Balconies or mezzanines having an occupant load greater than 50 but not greater than 100 shall have at least two remote means of egress, but both such means of egress shall be permitted to lead to the floor below.

9-2.4.5 Balconies or mezzanines having an occupant load greater than 100 shall have means of egress provided as for a floor.

9-2.4.6 A second means of egress shall not be required from lighting and access catwalks, galleries, and gridirons where a means of escape to a floor or a roof is provided. Ladders, alternating tread devices, or spiral stairs shall be permitted in such means of escape.

9-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

9-2.5.1 Exits shall be located remotely from each other and shall be arranged to minimize the possibility that they might be blocked by any emergency.

Exception: A common path of travel shall be permitted for the first 20 ft (6.1 m) from any point where serving any number of occupants and for the first 75 ft (23 m) from any point where serving not more than 50 occupants.

9-2.5.2 Means of egress shall not be permitted through kitchens, storerooms, restrooms, closets, or hazardous areas as described in 9-3.2.

9-2.5.3 (Reserved.)

9-2.5.4 General Requirements for Access and Egress Routes within Assembly Areas.

9-2.5.4.1 Festival seating shall be prohibited within a building. (See Section 3-2.)

Exception No. 1: Festival seating shall be permitted in assembly occupancies having occupant loads of 1000 or less.

Exception No. 2: Festival seating shall be permitted in assembly occupancies with occupant loads greater than 1000 with an approved life safety evaluation. (See 9-4.1.)

9-2.5.4.2* Access and egress routes shall be maintained so that any individual is able to move without undue hindrance, on personal initiative and at any time, from an occupied position to exits.

9-2.5.4.3* Access and egress routes shall be maintained so that crowd management, security, and emergency medical personnel shall be able to move without undue hindrance at any time to any individual.

9-2.5.4.4* The width of aisle accessways and aisles shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle accessway or aisle in accordance with 9-2.3.1. Where aisle accessways or aisles converge to form a single path of egress travel, the required egress capacity of that path shall not be less than the combined required capacity of the converging aisle accessways and aisles.

9-2.5.4.5 Those portions of aisle accesses and aisles where egress is possible in either of two directions shall be uniform in required width.

Exception: Those portions of aisle accesses where the required width, not including the seat space described by 9-2.5.7.2, does not exceed 12 in. (30.5 cm).

9-2.5.4.6 In the case of side boundaries other than nonfixed seating at tables, for aisle accessways or aisles, the clear width shall be measured to boundary elements such as walls, guardrails, handrails, edges of seating, tables, and side edges of treads, with the measurement made horizontally to the vertical projection of the elements resulting in the smallest width measured perpendicularly to the line of travel.

9-2.5.5* Aisle Accessways Serving Seating Not at Tables.

9-2.5.5.1* To determine the required clear width of aisle accesses between rows of seating, horizontal measurements shall be made (between vertical planes) from the back of one seat to the front of the most forward projection of the seat immediately behind it. Where the entire row consists of automatic

or self-rising seats that comply with ASTM F851, *Test Method for Self-Rising Seat Mechanisms*, the measurement shall be permitted to be made with the seats in the up position.

9-2.5.5.2 The aisle accessway between rows of seating shall have a clear width of not less than 12 in. (30.5 cm), and this minimum shall be increased as a function of row length in accordance with 9-2.5.5.3 and 9-2.5.5.4.

Exception No. 1: If used by not more than four persons, there shall be no minimum clear width requirement for the portion of the aisle accessway having a length not exceeding 6 ft (1.8 m) measured from the center of the seat farthest from the aisle.

Exception No. 2: The maximum number of seats permitted between the furthest seat in an aisle in grandstands, bleachers, and folding and telescopic seating shall not exceed that shown in Table 9-2.5.5.2.

Table 9-2.5.5.2 Maximum Number of Seats Permitted Between Furthest Seat and an Aisle

Application	Outdoors	Indoors
Grandstands	11	6
Bleachers (see 9-2.5.6.1 Exception No. 1)	20	9

9-2.5.5.3* Rows of seating served by aisles or doorways at both ends shall have no more than 100 seats per row. The 12-in. (30.5-cm) minimum clear width of aisle accessway between such rows shall be increased by 0.3 in. (0.8 cm) for every seat over a total of 14, but shall not be required to exceed 22 in. (55.9 cm).

Exception: Smoke-protected assembly seating as permitted by 9-4.2.4.

9-2.5.5.4 Rows of seating served by an aisle or doorway at one end only shall have a path of travel not exceeding 30 ft (9.1 m) in length from any seat to an aisle. The 12-in. (30.5-cm) minimum clear width of aisle accessway between such rows shall be increased by 0.6 in. (1.6 cm) for every seat over a total of seven.

Exception: Smoke-protected assembly seating as permitted by 9-4.2.5 and 9-4.2.6.

9-2.5.5.5 Rows of seating utilizing tablet-arm chairs shall be permitted only if the clear width of aisle accesses complies with the requirements of 9-2.5.5 where the tablet is in the usable position.

Exception: Tablet arms shall be permitted to be measured in the stored position where the tablet arm automatically returns to the stored position when raised manually to a vertical position in one motion and falls to the stored position by force of gravity.

9-2.5.5.6 The depth of seat boards shall not be less than 9 in. (23 cm) where the same level is not used for both seat boards and footboards. Footboards, independent of seats, shall be provided such that there is no horizontal opening permitting the passage of a ½-in. (1.3-cm) diameter sphere.

9-2.5.6 Aisles Serving Seating Not at Tables.

9-2.5.6.1 Aisles shall be provided so that the number of seats served by the nearest aisle is in accordance with 9-2.5.5.2 through 9-2.5.5.4.

Exception No. 1: Aisles shall not be required in bleachers if all of the following conditions are met:

(a) Egress from front row is not obstructed by rail, guard, or other obstruction.

(b) Row spacing is 28 in. (71.1 cm) or less.

(c) Rise per row, including first row, is 6 in. (15.2 cm) or less.

(d) Number of rows does not exceed 16.

(e) Seat spaces are not physically defined.

(f) Seat boards that are also used as stepping surfaces for descent shall provide a walking surface with a minimum width of 12 in. (30.5 cm), and, where there is a depressed footboard, the gap between seat boards of adjacent rows shall not exceed 12 in. (30.5 cm) measured horizontally. Leading edges of such surfaces shall be provided with a contrasting marking stripe so that the location of such leading edge is readily apparent, particularly where viewed in descent. Such stripe shall be at least 1 in. (2.5 cm) wide and shall not exceed 2 in. (5.1 cm) in width. The marking stripe shall not be required where bleacher surfaces and environmental conditions under all conditions of use are such that the location of each leading edge is readily apparent, particularly when viewed in descent.

Exception No. 2: In seating composed entirely of bleachers, in which the row-to-row dimension is 28 in. (71 cm) or less, and from which front egress is not limited, aisles shall not be required to be more than 66 in. (168 cm) in width. Such aisles shall not be considered as dead-end aisles.

9-2.5.6.2 Dead-end aisles shall not exceed 20 ft (6.1 m) in length.

Exception No. 1: A longer dead-end aisle shall be permitted where seats served by the dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 in. (30.5 cm) plus 0.6 in. (1.5 cm) for each additional seat over a total of seven in the row.

Exception No. 2: A 16-row, dead-end aisle shall be permitted in folding and telescopic seating and grandstands.

9-2.5.6.3 The minimum clear width of aisles shall be sufficient to provide egress capacity in accordance with 9-2.3.2 but shall not be less than

(a) 42 in. (107 cm) for stairs having seating on each side.

Exception No. 1 to (a): 30 in. (76 cm) for catchment areas having not more than 60 seats.

Exception No. 2 to (a): 36 in. (91 cm) where aisle does not serve more than 50 seats.

(b) 36 in. (91 cm) for stairs having seating on only one side.

Exception to (b): 30 in. (76 cm) for catchment areas having not more than 60 seats.

(c) 20 in. (51 cm) between a handrail and seating or a guardrail where the aisle is subdivided by a handrail.

(d) 42 in. (107 cm) for level or ramped aisles having seating on both sides.

Exception No. 1 to (d): 30 in. (76 cm) for catchment areas having not more than 60 seats.

Exception No. 2 to (d): 36 in. (91 cm) where aisle does not serve more than 50 seats.

(e) 36 in. (91 cm) for level or ramped aisles having seating on only one side.

Exception to (e): 30 in. (76 cm) for catchment areas having not more than 60 seats.

(f) 23 in. (58 cm) between a handrail or guardrail and seating where aisle does not serve more than five rows on one side.

9-2.5.6.4* Aisle Stairs and Ramps. Aisles having a gradient steeper than 1 in 20, but not steeper than 1 in 8, shall consist of a ramp. Aisles having a gradient steeper than 1 in 8 shall consist of an aisle stair.

Exception No. 1: Aisles in folding and telescopic seating shall be permitted to be by stepped aisles.

Exception No. 2: The Exception to 9-2.5.6.8 shall not apply.

9-2.5.6.5 Aisle Stair Treads.

(a) There shall be no variation exceeding $\frac{3}{16}$ in. (0.5 cm) in the depth of adjacent treads.

*Exception No. 1 to (a):** In aisle stairs where a single intermediate tread is provided halfway between seating platforms, such intermediate treads shall be permitted to have a relatively smaller but uniform depth, but not less than 13 in. (33 cm).

Exception No. 2 to (a): In grandstands, bleachers, and folding and telescopic seating, steps shall not be placed in aisles to overcome differences in level unless the gradient exceeds 1 ft (0.3 m) in 10 ft (3 m) of run. Where the rise of seating platform exceeds 11 in. (27.9 cm), an intermediate step shall be provided the full width of the aisles and shall be proportioned to provide two steps of equal rise per platform. Where the rise of the seating platform exceeds 18 in. (45.7 cm), two intermediate steps the full width of the aisles shall be provided and proportioned to provide three steps of equal rise per platform. The resulting treads shall be uniform and not less than 9 in. (22.9 cm). The full length of the nose of each step in the aisle shall be conspicuously marked.

(b)* Treads shall be a minimum of 11 in. (27.9 cm).

(c) All treads shall extend the full width of the aisle.

9-2.5.6.6 Aisle Stair Risers.

(a) Riser heights shall be a minimum of 4 in. (10.2 cm).

Exception to (a): The riser height of aisle stairs in folding and telescopic seating shall be permitted to be a minimum of $3\frac{1}{2}$ in. (8.9 cm) and a maximum of 11 in. (27.9 cm).

(b) Riser heights shall not exceed 8 in. (20.3 cm).

Exception No. 1 to (b): Where the gradient of an aisle is steeper than 8 in. (20.3 cm) in rise in 11 in. (27.9 cm) of run (to maintain necessary sight lines in the adjoining seating area), the riser height shall be permitted to exceed 8 in. (20.3 cm) but shall not exceed 11 in. (27.9 cm).

Exception No. 2 to (b): The riser height of aisle stairs in folding and telescopic seating shall be permitted to be a minimum of $3\frac{1}{2}$ in. (8.9 cm) and a maximum of 11 in. (27.9 cm).

(c) Riser heights shall be designed to be uniform in each aisle, and the construction-caused nonuniformities shall not exceed $\frac{3}{16}$ in. (0.5 cm) between adjacent risers.

Exception to (c): Riser height shall be permitted to be nonuniform only for the purpose of accommodating necessary changes in gradient to maintain necessary site lines within a seating area and shall be permitted to exceed $\frac{3}{16}$ in. (0.5 cm) in any flight. Where nonuniformities exceed $\frac{3}{16}$ in. (0.5 cm) between adjacent risers, the exact location of such nonuniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the non-uniform risers.

9-2.5.6.7* Aisle Handrails. Ramped aisles having a gradient exceeding 1 in 12 and aisle stairs shall be provided with handrails at one side or along the centerline.

Where there is seating on both sides of the aisle, the handrails shall be discontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of not less than 22 in. (55.9 cm) and not greater than 36 in. (91 cm) measured horizontally, and the handrail shall have rounded terminations or bends. Where handrails are provided in the middle of aisle stairs, there shall be an additional intermediate rail located approximately 12 in. (30 cm) below the main handrail.

Exception No. 1: Handrails shall not be required for ramped aisles having a gradient not steeper than 1 in 8 and having seating on both sides.

Exception No. 2: The requirement for a handrail is satisfied by the use of a guard providing a rail that complies with the graspability requirements for handrails and is located at a consistent height between 34 in. (86 cm) and 42 in. (107 cm) measured vertically from the top of the rail to the leading edge (nosing) of stair treads or to the adjacent walking surface in the case of a ramp.

Exception No. 3: Handrails shall not be required where risers do not exceed 7 in. (17.8 cm) in height.

9-2.5.6.8* Aisle Marking. A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of such tread is readily apparent, particularly when viewed in descent. Such stripes shall be at least 1 in. (2.5 cm) wide and shall not exceed 2 in. (5 cm) in width.

Exception: The marking stripe shall not be required where tread surfaces and environmental conditions under all conditions of use are such that the location of each tread is readily apparent, particularly when viewed in descent.

9-2.5.7* Aisle Accessways Serving Seating at Tables.

9-2.5.7.1 The minimum required clear width of an aisle accessway shall be 12 in. (30.5 cm) where measured in accordance with 9-2.5.7.2 and increased as a function of length in accordance with 9-2.5.7.3.

*Exception:** If used by not more than four persons, there shall be no minimum clear width requirement for the portion of aisle accessway having a length not exceeding 6 ft (1.8 m) and located farthest from an aisle.

9-2.5.7.2* Where nonfixed seating is located between a table and an aisle accessway or aisle, the measurement of required clear width of the aisle accessway or aisle shall be made to a line 19 in. (48.3 cm) away from the edge of the table. The 19-in. (48.3-cm) distance shall be measured perpendicularly to the edge of the table.

9-2.5.7.3* The minimum required clear width of an aisle accessway measured in accordance with 9-2.5.4.6 and 9-2.5.7.2 shall be increased beyond the 12-in. (30.5-cm) requirement by 0.5 in. (1.3 cm) for each additional 12 in. (30.5 cm) or fraction thereof beyond 12 ft (3.7 m) of aisle accessway length where measured from the center of the seat farthest from an aisle.

9-2.5.7.4 The path of travel along the aisle accessway shall not exceed 36 ft (10.9 m) from any seat to the closest aisle or egress doorway.

9-2.5.8 Aisles Serving Seating at Tables.

9-2.5.8.1* Aisles that contain steps or that are ramped, such as the aisles serving dinner theater style configurations, shall comply with the requirements of 9-2.5.6.

9-2.5.8.2* The minimum width of aisles serving seating at tables shall be 44 in. (112 cm) where serving an occupant load greater than 50, and 36 in. (91 cm) where serving an occupant load of 50 or fewer.

9-2.5.8.3* Where nonfixed seating is located between a table and an aisle, the measurement of required clear width of the aisle shall be made to a line 19 in. (48.3 cm) away from the edge of the table. The 19-in. (48.3-cm) distance shall be measured perpendicularly to the edge of the table.

9-2.5.9 Approval of Layouts. Where required by the authority having jurisdiction, plans drawn to scale showing the arrangement of furnishings or equipment shall be submitted to the authority by the building owner, manager, or authorized agent to substantiate conformance with the provisions of this section and shall constitute the only acceptable arrangement until revised or additional plans are submitted and approved.

Exception: Temporary deviations from the specifications of the approved plans shall be permitted provided the occupant load is not increased and the intent of this section is maintained.

9-2.6 Travel Distance to Exits.

9-2.6.1 Exits shall be arranged so that the total length of travel from any point to reach an exit shall not exceed 150 ft (45 m) in any assembly occupancy.

Exception No. 1: The travel distance shall not exceed 200 ft (60 m) in assembly occupancies protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Smoke-protected assembly seating as permitted by 9-4.2.8 and its Exception.

9-2.7 Discharge from Exits.

9-2.7.1 Exit discharge shall comply with Section 5-7.

9-2.7.2 The level of exit discharge shall be measured at the point of principal entrance to the building.

9-2.7.3 Where the principal entrance to an assembly occupancy is via a terrace, either raised or depressed, such terrace shall be permitted to be considered to be the level of exit discharge for the purposes of 9-1.6 if:

(a) The terrace is at least as long (measured parallel to the building) as the total width of the exit(s) it serves, but not less than 5 ft (1.5 m) long, and

(b) The terrace is at least as wide (measured perpendicularly to the building) as the exit(s) it serves, but not less than 5 ft (1.5 m) wide, and

(c) Required stairs leading from the terrace to grade are protected in accordance with 5-2.2.6.4 or are a minimum of 10 ft (3 m) from the building.

9-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

Exception: Private party tents not larger than 1200 sq ft (111.5 sq m).

9-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

Exception No. 1: Private party tents not larger than 1200 sq ft (111.5 sq m).

Exception No. 2: Assembly occupancies with an occupant load not exceeding 300 and used exclusively for a place of worship shall not be required to have emergency lighting.

9-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Exit markings shall not be required on the seating side of vomitories from seating areas where exit marking is provided in the concourse and such marking is readily apparent from the vomitories.

9-2.11 Special Means of Egress Features.

9-2.11.1 Guards and Railings.

9-2.11.1.1 Boxes, Balconies, and Galleries.

(a) The fasciae of boxes, balconies, and galleries shall not rise less than 26 in. (66 cm) above the adjacent floor or shall have substantial railings not less than 26 in. (66 cm) above the adjacent floor.

(b) The height of the rail above footrests on the adjacent floor immediately in front of a row of seats shall be not less than 26 in. (66 cm). Railings at the ends of aisles shall not be less than 36 in. (91 cm) high for the full width of the aisle and shall not be less than 42 in. (107 cm) high for the width of the aisle where steps occur.

Exception to (b): Existing railings 36 in. (91 cm) high at the ends of aisles where steps occur shall be permitted to be continued to be used.

(c) Aisle accessways adjacent to orchestra pits and vomitories, and all cross aisles shall be provided with railings not less than 26 in. (66 cm) above the adjacent floor.

Exception to (c): Where the backs of seats located at the front of the aisle project 24 in. (61 cm) or more above the adjacent floor of the aisle.

(d) Guardrails shall not be required on the audience side of stages, raised platforms, and other raised floor areas such as runways, ramps, and side stages used for entertainment or presentations.

(e) Permanent guardrails shall not be required at vertical openings in the performance area of stages.

(f) Guardrails shall not be required where the side of an elevated walking surface is required to be open for the normal functioning of special lighting or for access and use of other special equipment.

SECTION 9-3 PROTECTION

9-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors in accordance with 6-2.4.5 shall be permitted.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

*Exception No. 3:** Stairs or ramps shall be permitted to be unenclosed between balconies or mezzanines and main assembly areas located below provided the balcony or mezzanine is open to the main assembly area.

Exception No. 4: Existing wood lath and plaster; existing 1/2-in. (1.3-cm) gypsum wallboard; existing installations of 1/4-in. (0.6-cm) thick wired glass that are, or are rendered, inoperative and fixed in the closed position; or other existing materials having similar fire resistance capabilities shall be acceptable. All such assemblies shall be in good repair and free of any condition that would diminish their original fire resistance characteristics.

Exception No. 5: Exit access stairs from lighting and access catwalks, galleries, and gridirons shall not be required to be enclosed.

9-3.2 Protection from Hazards.

9-3.2.1 Service Equipment, Hazardous Operations or Processes, and Storage Facilities.

9-3.2.1.1 Rooms containing high pressure boilers, refrigerating machinery of other than domestic refrigerator type, large transformers, or other service equipment subject to possible explosion shall not be located directly under or abutting required exits. All such rooms shall be separated from other parts of the building by fire barriers in accordance with 6-2.3 having a fire resistance rating of not less than 1 hr or shall be protected by automatic extinguishing systems in accordance with Section 6-4.

9-3.2.1.2 Adequate vents to the outer air shall be provided in accordance with Section 6-4.

9-3.2.1.3 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following.

(a)* Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

(1) Boiler and furnace rooms.

*Exception to (a)(1):** Rooms enclosing only air-handling or compressor equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction.

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

(1) Laundries.

(2) Maintenance shops, including woodworking and painting areas.

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction.

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted to be in accordance with 7-7.1.2.

9-3.3 Interior Finish.

9-3.3.1 Interior finish shall be in accordance with Section 6-5.

9-3.3.2 Interior wall and ceiling finish materials complying with 6-5.5 shall be Class A or Class B in all corridors and lobbies, and shall be Class A in enclosed stairways.

9-3.3.3 Interior wall and ceiling finish materials complying with 6-5.5 shall be Class A or Class B in general assembly areas having occupant loads of more than 300, and shall be Class A, Class B, or Class C in assembly areas having occupant loads of 300 or fewer.

Exception: In any assembly occupancy, exposed portions of structural members complying with the requirements for Type IV(2HH) construction shall be permitted.

9-3.3.4 Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish in accordance with 6-5.5.

9-3.3.5 Interior Floor Finish. (No requirements.)

9-3.4 Detection, Alarm, and Communication Systems.

9-3.4.1 General. Assembly occupancies with occupant loads greater than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with 7-6.1 and this section.

Exception No. 1: Assembly occupancies that are a part of a mixed occupancy (see 4-1.12) shall be permitted to be served by a common fire alarm system provided the individual requirements of each occupancy are met.

Exception No. 2: Assembly occupancies where, in the judgment of the authority having jurisdiction, adequate alternative provisions exist or are provided for the discovery of a fire condition and for alerting the occupants promptly.

Exception No. 3: Voice communications or public address systems complying with 9-3.4.3.3 shall not be required to comply with 7-6.1.

9-3.4.2 Initiation.

9-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a), which shall be provided with an emergency power source. The initiating device shall be capable of transmitting an alarm to a receiving station, located within the building, that is constantly attended when the assembly occupancy is occupied.

Exception No. 1: Initiation by means of an approved, automatic fire detection system in accordance with 7-6.2.1(b) that provides fire detection throughout the building.

Exception No. 2: Initiation by means of an approved, automatic sprinkler system in accordance with 7-6.2.1(c) that provides fire detection and protection throughout the building.

9-3.4.2.2* In assembly occupancies with occupant loads greater than 300, automatic detection shall be provided in all hazardous areas that are not normally occupied.

Exception: Areas that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

9-3.4.3 Notification.

9-3.4.3.1 The required fire alarm system shall sound an audible alarm in a constantly attended receiving station within the building when occupied for purposes of initiating emergency action. A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted. Positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

9-3.4.3.2 Occupant notification shall be by means of voice announcements, either live or prerecorded, initiated by the person in the constantly attended location.

9-3.4.3.3 The announcement shall be made via an approved voice communication or public address system that is audible above the ambient noise level of the assembly occupancy.

9-3.4.3.4 Where the authority having jurisdiction determines that it is impractical to have a constantly attended location, a fire alarm system in accordance with Section 7-6 that is initiated by manual stations in accordance with 7-6.2.1(a) or other approved means of initiation and that automatically provides prerecorded evacuation instructions in accordance with 7-6.3.8 shall be used.

9-3.5 Extinguishment Requirements. (See also 9-1.6, 9-2.6, and 9-3.2.)

9-3.5.1 Fire Suppression Systems. Any assembly occupancy used or capable of being used for exhibition or display purposes shall be protected throughout by an approved, automatic sprinkler system in accordance with Section 7-7 where the exhibition or display area exceeds 15,000 sq ft (1400 sq m).

9-3.6 Corridors. (No requirement.)

SECTION 9-4 SPECIAL PROVISIONS

9-4.1 Life Safety Evaluation.

9-4.1.1 Where a life safety evaluation is required by other provisions of the Code, it shall be done by persons acceptable to the authority having jurisdiction. The life safety evaluation shall include a written assessment of safety measures for conditions listed in 9-4.1.2. The life safety evaluation shall be approved annually by the authority having jurisdiction and shall be updated for special or unusual conditions.

9-4.1.2 Life safety evaluations shall include an assessment of the following conditions and the related appropriate safety measures:

- (a) Nature of the events and the participants and attendees;
- (b) Access and egress movement including crowd density problems;
- (c) Medical emergencies;
- (d) Fire hazards;
- (e) Permanent and temporary structural systems;
- (f) Severe weather conditions;
- (g) Earthquakes;
- (h) Civil or other disturbances;

(i) Hazardous materials incidents within and near the facility; and

(j) Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility.

9-4.1.3 Life safety evaluations shall include assessments of both building systems and management features upon which reliance is placed for the safety of facility occupants.

9-4.2* Smoke-Protected Assembly Seating.

9-4.2.1 Fire Protection Requirements. To be considered smoke protected, an assembly seating facility shall comply with the following:

(a) All enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 1 to (a): The floor area used for the contest, performance, or entertainment, provided the roof construction is more than 50 ft (15 m) above the floor level and use is restricted to low fire hazard uses.

Exception No. 2 to (a): Sprinklers shall be permitted to be omitted over the floor area used for contest, performance, or entertainment and over the seating areas where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading.*

(b) All means of egress serving a smoke-protected assembly seating area shall be provided with smoke-actuated ventilation facilities or natural ventilation designed to maintain the level of smoke at least 6 ft (1.8 m) above the floor of the means of egress.

9-4.2.2 Life Safety Evaluation. For facilities to utilize the provisions of smoke-protected assembly seating, a life safety evaluation shall be done in accordance with 9-4.1.

9-4.2.3 For Table 9-4.2.3 the number of seats specified must be within a single assembly space, and interpolation shall be permitted between the specific values shown. The minimum clear widths shown shall be modified in accordance with all of the following:

(a) If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the tables by factor *A*, where

$$A = 1 + \frac{(\text{riser height} - 7 \text{ in.})}{5}$$

(b) Stairs not having a handrail within a 30-in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated; i.e., multiply by factor *B* = 1.25.

(c) Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; i.e., multiply by factor *C* = 1.10.

9-4.2.4 With smoke-protected assembly seating conforming to the requirements of 9-4.2, for rows of seats served by aisles or doorways at both ends, there shall be not more than 100 seats per row and the minimum clear width of 12 in. (305 cm) for aisle accessways shall be increased by 0.3 in. (0.8 cm) for every additional seat beyond the number stipulated in Table 9-4.2.4, but the minimum clear width shall not be required to exceed 22 in. (55.9 cm).

Table 9-4.2.3 Capacity Factors

No. of Seats	Nominal Flow Time (sec)	Inch of Clear Width Per Seat Served	
		Stairs	Passageways, Ramps, and Doorways
2000	200	0.300 <i>AB</i>	0.200 <i>C</i>
5000	260	0.200 <i>AB</i>	0.150 <i>C</i>
10,000	360	0.130 <i>AB</i>	0.100 <i>C</i>
15,000	460	0.096 <i>AB</i>	0.070 <i>C</i>
20,000	560	0.076 <i>AB</i>	0.056 <i>C</i>
25,000 or more	600	0.060 <i>AB</i>	0.044 <i>C</i>

SI Units: 1 in. = 2.54 cm

Table 9-4.2.4 Smoke-Protected Assembly Seating

Total number of seats in the space	No. of seats per row permitted to have a minimum 12-in. (30.5-cm) clear width aisle accessway	
	Aisle or doorway at both ends of row	Aisle or doorway at one end of row
<4000	14	7
4000-6999	15	7
7000-9999	16	8
10,000-12,999	17	8
13,000-15,999	18	9
16,000-18,999	19	9
19,000-21,999	20	10
≥22,000	21	11

9-4.2.5 With smoke-protected assembly seating conforming to the requirements of 9-4.2, for rows of seats served by an aisle or doorway at one end only, the aisle accessway minimum clear width of 12 in. (30.5 cm) shall be increased by 0.6 in. (1.6 cm) for every additional seat beyond the number stipulated in Table 9-4.2.4, but the minimum clear width need not exceed 22 in. (55.9 cm).

9-4.2.6 Smoke-protected assembly seating conforming to the requirements of 9-4.2 shall be permitted to have a common path of travel of 50 ft (15 m) from any seat to a point where a person has a choice of two directions of egress travel.

9-4.2.7 Aisle Termination. For smoke-protected assembly seating conforming to the requirements of 9-4.2, the dead ends in aisle stairs shall not exceed a distance of 21 rows.

Exception: A longer dead-end aisle shall be permitted for smoke-protected assembly seating where seats served by the dead-end aisle are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 in. (30.5 cm) plus 0.3 in. (0.8 cm) for each additional seat above seven in the row.

9-4.2.8 For smoke-protected assembly seating conforming to the requirements of 9-4.2.1, the travel distance from each seat to the nearest entrance to an egress vomitory portal or egress concourse shall not exceed 400 ft (122 m). The travel distance from the entrance to vomitory portal or from egress concourse to an approved egress stair, ramp, or walk at the building exterior shall not exceed 200 ft (60 m).

Exception: In outdoor assembly seating facilities of Type I or Type II construction, where all portions of the means of egress are essentially open to the outside, the distance shall not be limited.

9-4.3 Windowless or Underground Buildings. Windowless or underground buildings shall comply with this chapter and Section 32-7.

9-4.4 High-Rise Buildings. Existing high-rise buildings that house assembly occupancies in high-rise portions of the building shall have the highest level of the assembly occupancy and all levels below protected by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7. (See also 9-1.6.)

9-4.5 Stages and Platforms. (See 9-1.3.)

9-4.5.1 Materials and Design. (Reserved.)

9-4.5.2 Platform Construction. (Reserved.)

9-4.5.3 Stage Construction. (Reserved.)

9-4.5.4 Accessory Rooms. (Reserved.)

9-4.5.5 Ventilators. Regular stages greater than 1000 sq ft (93 sq m) in area and legitimate stages shall be provided with emergency ventilation to provide a means of removing smoke and combustion gases directly to the outside in the event of a fire. Ventilation shall be by one or a combination of the following methods:

(a) *Smoke Control.* A means complying with Section 7-3 shall be provided to maintain the smoke level not less than 6 ft (183 cm) above the highest level of assembly seating or above the top of the proscenium opening where a proscenium wall and opening protection is provided. The system shall be activated independently by each of the following:

- (1) activation of the sprinkler system in the stage area,
- (2) activation of smoke detectors over the stage area, and
- (3) by manually operated switch at an approved location.

The emergency ventilation system shall be supplied by both normal and standby power. The fan(s) power wiring and ducts shall be located and properly protected to ensure a minimum 20 minutes of operation in the event of activation.

(b) *Roof Vents.* Two or more vents shall be located near the center of and above the highest part of the stage area. They shall be raised above the roof and shall provide a net-free vent area equal to 5 percent of the stage area. Vents shall be constructed to open automatically by approved heat-activated devices. Supplemental means shall be provided for manual operation and periodic testing of the ventilator from the stage floor. Vents shall be labeled.

Exception to (b): Existing vents not labeled shall be permitted to conform to the following requirements.

(1) *Vents shall open by spring action or force of gravity sufficient to overcome the effects of neglect, rust, dirt, frost, snow, or expansion by heat or warping of the framework. Glass, if used in vents, shall be protected against falling onto the stage. A wire screen, if used under the glass, shall be placed so that if clogged, it does not reduce the required venting area, or interfere with the operating mechanism, or obstruct the distribution of water from an automatic sprinkler. Vents shall be arranged to open automatically by the use of fusible links. The fusible links and operating cable shall hold each door closed against the minimum 30-lb (133 N) counter force that shall be exerted on each door through its entire arc of travel and for a minimum of 115 degrees. A manual control shall be provided.*

(2) *Springs, where employed to actuate vent doors, shall be capable of maintaining full required tension. Springs shall not be stressed more than 50 percent of their rated capacity and shall not be located directly in the airstream nor exposed to the outside.*

(3) *A fusible link shall be placed in the cable control system on the underside of the vent at or above the roofline or as approved by the building official and shall be located so as not to be affected by the operation of an automatic sprinkler system. Remote, manual, or electric controls shall provide for both opening and closing of the vent doors for periodic testing and shall be located at a point on stage designated by the authority having jurisdiction. Where remote control vents are electrical, power failure shall not affect its instant operation in the event of fire. Hand winches shall be permitted to be employed to facilitate operation of manually controlled vents.*

(c) *Other Means.* Approved, alternate means of removing smoke and combustion gases shall be permitted.

9-4.5.6 Proscenium Walls. (Reserved.)

9-4.5.7 Proscenium Curtain. The proscenium opening of every legitimate stage shall be provided with a curtain constructed and mounted so as to intercept hot gases, flames, and smoke and to prevent flame from a fire on the stage from becoming visible from the auditorium side for a 5-min period where the curtain is of asbestos. Other materials shall be permitted if they have passed a 30-min fire test in a small scale 3 ft × 3 ft (0.9 m × 0.9 m) furnace with the sample mounted in the horizontal plane at the top of the furnace and subjected to the standard time-temperature curve.

The curtain shall be automatic-closing without the use of applied power.

All proscenium curtains shall be in the closed position except during performances, rehearsals, or similar activities.

Exception No. 1: In lieu of the protection required herein, all the following shall be provided:

(a) *A noncombustible opaque fabric curtain shall be arranged so that it will close automatically; and*

(b) *An automatic, fixed waterspray deluge system shall be located on the auditorium side of the proscenium opening and shall be arranged so that the entire face of the curtain will be wetted. The system shall be activated by combination of rate-of-rise and fixed-temperature detectors located on the ceiling of the stage. Detectors shall be spaced in accordance with their listing. The water supply shall be controlled by a deluge valve and shall be sufficient to keep the curtain completely wet for 30 min or until the valve is closed by fire department personnel; and*

(c) *The curtain shall be automatically operated in case of fire by a combination of rate-of-rise and fixed-temperature detectors that also activates the deluge spray system. Stage sprinklers and vents shall be automatically operated by fusible elements in case of fire; and*

(d) *Operation of the stage sprinkler system or spray deluge valve shall automatically activate the emergency ventilating system and close the curtain; and*

(e) *The curtain, vents, and spray deluge system valve shall also be capable of manual operation.*

Exception No. 2: Proscenium fire curtains or water curtains complying with 8-4.5.7.

9-4.5.8 Gridirons, Fly Galleries, and Pinrails. (Reserved.)

9-4.5.9 Catwalks. The minimum clear width of lighting and access catwalks and the means of egress from galleries and gridirons shall be 22 in. (56 cm).

9-4.5.10 Fire Protection. Every stage shall be protected by an approved, automatic sprinkler system installed in compliance with Section 7-7. The protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to such stages.

Exception No. 1: Sprinklers shall not be required for stages 1000 sq ft (93 sq m) or less in area where curtains, scenery, or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs, and a single backdrop.

Exception No. 2: Sprinklers shall not be required under stage areas less than 4 ft (1.2 m) in clear height used exclusively for chair or table storage and lined on the inside with 3/8 in. (1.6 cm) Type X gypsum wallboard or the approved equivalent.

9-4.5.11 Flame-Retardant Requirements. Combustible scenery of cloth, film, vegetation (dry), and similar effects shall meet the requirements of NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*. Foamed plastics (see Section 3-2) shall be permitted to be used only by specific approval of the authority having jurisdiction. Scenery and stage properties on thrust stages shall be of either noncombustible or limited-combustible materials.

9-4.5.12 Standpipes. Each legitimate or regular stage over 1000 sq ft (93 sq m) shall be equipped with a Class III standpipe located on each side of the stage and installed in accordance with 7-7.4.2.

9-4.6 Projection Booths.

9-4.6.1 Film or video projectors or spotlights utilizing light sources that produce particulate matter or toxic gases or light sources that produce hazardous radiation without protective shielding shall be located within a projection room complying with 9-3.2.1.3. Where cellulose nitrate film is used, the projection room shall comply with NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*.

9-4.6.2 Projection Rooms for Safety Film. Projection rooms for safety film shall comply with 9-4.6.2.1 through 9-4.6.2.6.

9-4.6.2.1 Every projection room for safety film shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings shall not be required to be protected. The room shall have a floor area of not less than 80 sq ft (7.4 sq m) for a single machine and not less than 40 sq ft (3.7 sq m) for each additional machine. Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space not less than 30 in. (76 cm) on each side and at the rear thereof, but only one such space shall be required between adjacent projectors.

The projection room and the rooms appurtenant to it shall have a ceiling height of not less than 7 ft 6 in. (2.3 m).

9-4.6.2.2 Each projection room for safety film shall have at least one out-swinging, self-closing door not less than 30 in. (76 cm) wide and 6 ft 8 in. (2 m) high.

9-4.6.2.3 The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium. All openings shall be provided with glass or other approved material, so as to completely close the opening.

9-4.6.2.4 Projection room ventilation shall not be less than the following:

(a) *Supply Air.* Each projection room shall be provided with adequate air supply inlets arranged to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air shall be permitted to be taken from the outside; from adjacent spaces within the building, provided the volume and infiltration rate is sufficient; or from the building air conditioning system, provided it is arranged to supply sufficient air whether or not other systems are in operation.

(b) *Exhaust Air.* Projection booths shall be permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is sufficient airflow required for the lamp. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system shall be permitted to also serve appurtenant rooms, such as the generator room and the rewind room.

9-4.6.2.5 Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust shall be permitted to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp and projection room exhaust systems shall be permitted to be combined but shall not be interconnected with any other exhaust or return air system within the buildings.

(a) *Electric Arc Projection Equipment.* The exhaust capacity shall be 200 cfm (0.09 cu m/s) for each lamp connected to the lamp exhaust system, or as recommended by the equipment manufacturer. Auxiliary air shall be permitted to be introduced into the system through a screened opening to stabilize the arc.

(b) *Xenon Projection Equipment.* The lamp exhaust system shall exhaust not less than 300 cfm (0.14 cu m/s) per lamp, or not less than that exhaust volume required or recommended by the equipment manufacturer, whichever is greater.

9-4.6.2.6 Miscellaneous equipment and storage shall be protected as follows:

(a) Each projection room shall be provided with rewind and film storage facilities.

(b) A maximum of four containers for flammable liquids of not greater than 16 oz (0.5 L) capacity and of a nonbreakable type shall be permitted in each projection booth.

(c) Appurtenant electrical equipment, such as rheostats, transformers, and generators, shall be permitted to be located within the booth or in a separate room of equivalent construction.

9-4.6.3 Projection Room Posting. A conspicuous sign with 1-in. (2.5-cm) block letters stating: "SAFETY FILM ONLY PERMITTED IN THIS ROOM" shall be posted on the outside

of each projection room door, and within the projection room proper.

Exception: The projection room is constructed in accordance with NFPA 40, Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film.

9-4.7* Special Amusement Buildings.

9-4.7.1 Special amusement buildings, regardless of occupant load, shall meet the requirements for assembly occupancies in addition to the requirements of this subsection.

Exception: A building in which the multilevel play structures are not more than 10 ft (3 m) in height and have aggregate horizontal projections not more than 160 sq ft (14.9 sq m).

9-4.7.2* Every special amusement building shall be protected throughout by an approved, automatic sprinkler system installed and maintained in accordance with Section 7-7. Where the special amusement building is movable or portable, sprinkler water supply shall be permitted to be by an approved temporary means.

Exception: Buildings or structures not more than 10 ft (3 m) in height and not more than 160 sq ft (14.9 sq m) in horizontal projection.

9-4.7.3 Where the nature of the special amusement building is such that it operates in reduced lighting levels, the building shall be protected throughout by an approved, automatic smoke detection system in accordance with Section 7-6. Actuation of any smoke detection system device shall sound an alarm at a constantly attended location on the premises. Actuation of the automatic sprinkler system, or any other suppression system, or actuation of a smoke detection system having an approved verification or cross zoning operation capability shall:

- (a) Cause illumination in the means of egress to increase to that required by Section 5-8, and
- (b) Stop any conflicting or confusing sounds and visuals.

9-4.7.4 Exit Marking.

9-4.7.4.1 Exit marking shall be in accordance with Section 5-10.

9-4.7.4.2 Exit marking in mobile special amusement buildings shall be of the luminescent, self-luminous, or electroluminescent type.

9-4.7.4.3 Floor proximity exit signs shall be provided in accordance with 5-10.1.5.

9-4.7.4.4* In special amusement buildings where mazes, mirrors, or other designs are used to confound the egress path, approved directional exit marking that will become apparent in an emergency shall be provided.

9-4.7.5 Interior Finish. Interior finish shall be Class A throughout in accordance with Section 6-5.

9-4.8 Grandstands, Bleachers, and Folding and Telescopic Seating.

9-4.8.1* All grandstands, tents, and other places of outdoor assembly shall comply with the requirements of NFPA 102, *Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures*. Existing grandstands shall be permitted to be continued to be used subject to the approval of the authority having jurisdiction.

9-4.8.2 Guards and Railings.

9-4.8.2.1 Railings or guards not less than 42 in. (107 cm) above the aisle surface or footrest or 36 in. (91 cm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all grandstands and folding and telescopic seating where the seats are more than 4 ft (1.2 m) above the floor or ground.

Exception: Where an adjacent wall or fence affords equivalent safeguard.

9-4.8.2.2 Where the front footrest of any grandstand or folding or telescopic seating is more than 2 ft (0.6 m) above the floor, railings or guards not less than 33 in. (84 cm) above such footrests shall be provided.

Exception: In grandstands, or where the front row of seats includes backrests, the rails shall be not less than 26 in. (66 cm) high.

9-4.8.2.3 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (66 cm) high along the front edge of the cross aisle.

Exception: Where the backs of the seats in front of the cross aisle project 24 in. (61 cm) or more above the surface of the cross aisle, the rail shall not be required.

SECTION 9-5 BUILDING SERVICES

9-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

9-5.2 Heating, Ventilating, and Air Conditioning Equipment. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

9-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

9-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 9-6 RESERVED

SECTION 9-7 OPERATING FEATURES

9-7.1 Special Provisions for Food Service Operations.

9-7.1.1 All devices in connection with the preparation of food shall be installed and operated to avoid hazard to the safety of occupants.

9-7.1.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

9-7.1.3 Food preparation facilities shall be protected in accordance with 7-2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

9-7.1.4 Portable Cooking Equipment. Portable cooking equipment that is not flue-connected shall be permitted only as follows:

- (a) Equipment fueled by small heat sources that can be readily extinguished by water, such as candles or alcohol-burning equipment (including solid alcohol), shall be per-

mitted to be used provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

(b) Candles shall be permitted to be used on tables used for food service if securely supported on substantial noncombustible bases located so as to avoid danger of ignition of combustible materials and only if approved by the authority having jurisdiction. Candle flames shall be protected.

(c) "Flaming sword" or other equipment involving open flames and flamed dishes, such as cherries jubilee or crêpe suzette, shall be permitted to be used provided necessary precautions are taken and subject to the approval of the authority having jurisdiction.

(d)* Listed and approved LP-Gas commercial food service appliances as permitted by NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*.

9-7.2 Open Flame Devices. No open flame devices or pyrotechnic device shall be used in any assembly occupancy.

Exception No. 1: Pyrotechnic special effect devices shall be permitted to be used on stages before proximate audiences for ceremonial or religious purposes, as part of a demonstration in exhibits, or as part of a performance, provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material and use of the pyrotechnic device complies with 9-7.3.

Exception No. 2: Open flame devices shall be permitted to be used in the following situations, provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material or injury to occupants:

- (a)* *Where necessary for ceremonial or religious purposes.*
- (b) *On stages and platforms as a necessary part of a performance.*
- (c) *Where candles on tables are securely supported on substantial noncombustible bases and candle flame is protected.*

Exception No. 3: Heat-producing equipment complying with 7-2.2.

Exception No. 4: Food service operations in accordance with 9-7.1.

Exception No. 5: Gas lights shall be permitted to be used provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

9-7.3* Pyrotechnic Devices. Pyrotechnic devices shall be permitted to be used on stages and before proximate audiences in accordance with the requirements of NFPA 1126, *Standard for the Use of Pyrotechnics before a Proximate Audience*.

9-7.4 Furnishings, Decorations, and Scenery.

9-7.4.1 Fabrics and films used for decorative purposes, all draperies and curtains, and similar furnishings shall be in accordance with the provisions of 6-6.1.

9-7.4.2 The authority having jurisdiction shall impose controls on the amount and arrangement of combustible contents in assembly occupancies to provide an adequate level of safety to life from fire.

9-7.4.3* Exposed foamed plastic materials and unprotected materials containing foamed plastic used for decorative purposes or stage scenery shall have a maximum heat release rate of 100kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

Exception: Individual foamed plastic items or items containing foamed plastic where the foamed plastic does not exceed 1 lb (0.45 kg) in weight.

9-7.5 Special Provisions for Exposition Facilities.

9-7.5.1 No display or exhibit shall be installed or operated to interfere in any way with access to any required exit or with visibility of any required exit or any required exit sign; nor shall any display block access to fire-fighting equipment.

9-7.5.2 A storage room having an enclosure consisting of a smoke barrier having a fire resistance rating of 1 hour and protected by an automatic extinguishing system shall be provided for combustible materials not on display, including combustible packing crates used to ship exhibitors' supplies and products.

9-7.5.3 Exhibits.

9-7.5.3.1 Exhibits shall comply with 9-7.5.3.2 through 9-7.5.3.11.

9-7.5.3.2 The travel distance within the exhibit booth or exhibit enclosure to an exit access aisle shall not be greater than 50 ft (15 m).

9-7.5.3.3 The upper deck of multilevel exhibits greater than 300 sq ft (27.9 sq m) shall have at least two remote means of egress.

9-7.5.3.4 Exhibit booths shall be constructed of:

- (a) Noncombustible or limited-combustible materials.
- (b) Wood greater than 1/4 in. (0.6 cm) nominal thickness or wood not greater than 1/4 in. (0.6 cm) nominal thickness that is pressure treated fire-retardant wood meeting the requirements of NFPA 703, *Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*.
- (c)* Flame-retardant materials complying with NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*.
- (d) Textile wall coverings and similar products such as carpeting used as wall or ceiling finishes complying with the provisions of 6-5.2 and 6-5.3.
- (e) Plastics limited to those that comply with 9-3.3 and Section 6-5.
- (f) Foamed plastics and materials containing foamed plastics having a maximum heat release rate for any single fuel package of 100 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.
- (g) Cardboard, honeycombed paper, and other combustible materials having a maximum heat release rate for any single fuel package of 150 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

9-7.5.3.5 Curtains, drapes, and decorations shall comply with the applicable portions of 6-6.1.

9-7.5.3.6 Acoustical and decorative material including, but not limited to, cotton, hay, paper, straw, moss, split bamboo, and wood chips shall be flame-retardant treated to the satisfaction of the authority having jurisdiction. Materials that cannot be treated for flame retardancy shall not be used. Foamed plastics and materials containing foamed plastics used as decorative objects such as, but not limited to, mannequins, mu-

rals, and signs shall have a maximum heat release rate for any single fuel package of 150 kW where tested in accordance with UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*.

Exception: Where the aggregate area of such materials is less than 10 percent of the individual floor or wall area, such materials shall be permitted to be used subject to the approval of the authority having jurisdiction.

9-7.5.3.7 The following shall be protected by automatic extinguishing systems:

(a) Single-level exhibit booths greater than 300 sq ft (27.9 sq m) and covered with a ceiling.

(b) Throughout each level of multilevel exhibit booths, including the uppermost level if the uppermost level is covered with a ceiling.

(c) A single exhibit or group of exhibits with ceilings that do not require sprinklers shall be separated by a minimum of 10 ft (3 m) where the aggregate ceiling exceeds 300 sq ft (27.9 sq m).

The water supply and piping for the sprinkler system shall be permitted to be of approved temporary means taken from an existing domestic water supply, an existing standpipe system, or an existing sprinkler system.

Exception No. 1: Ceilings that are constructed of open grate design or listed dropout ceilings in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall not be considered ceilings within the context of this section.

Exception No. 2: Vehicles, boats, and similar exhibited products having over 100 sq ft (9.3 sq m) of roofed area shall be provided with smoke detectors acceptable to the authority having jurisdiction.

*Exception No. 3:** Where fire protection of multilevel exhibit booths is consistent with the criteria developed through a life safety evaluation of the exhibition hall in accordance with 9-4.1, subject to approval of the authority having jurisdiction.

9-7.5.3.8 Open flame devices within exhibit booths shall comply with 9-7.2.

9-7.5.3.9 Cooking and food warming devices in exhibit booths shall comply with 9-7.1 and the following:

(a) Gas-fired devices.

(1) Natural gas-fired devices shall be installed in accordance with 7-1.1.

Exception to (a) (1): Compressed natural gas shall be permitted to be used where permitted by the authority having jurisdiction.

(2) The use of LP-Gas cylinders shall be prohibited.

Exception to (a) (2): Nonrefillable cylinders shall be permitted to be used where permitted by the authority having jurisdiction.

(b) Devices shall be isolated from the public by at least 4 ft (1.2 m) or by a barrier between the devices and the public.

(c) Multi-well cooking equipment using combustible oils or solids shall comply with 7-2.3.

(d) Single-well cooking equipment using combustible oils or solids shall

(1) Have lids available for immediate use.

(2) Be limited to 288 sq in. (0.19 sq m) of cooking surface.

(3) Be placed on noncombustible surface materials.

(4) Be separated from each other by a minimum horizontal distance of 2 ft (0.6 m).

Exception to (d) (4): Multiple single-well cooking equipment where the aggregate cooking surface area does not exceed 288 sq in. (0.19 sq m).

(5) Be kept a minimum horizontal distance of 2 ft (0.6 m) from any combustible material.

(e) A 20-B:C fire extinguisher shall be provided within the booth for each device, or an approved automatic extinguishing system shall be provided. (See 7-7.4.1.)

9-7.5.3.10 Combustible materials within exhibit booths shall be limited to a one-day supply. Storage of combustible materials behind the booth shall be prohibited. (See 9-7.4.2 and 9-7.5.2.)

9-7.5.3.11 Plans for the exposition, in an acceptable form, shall be submitted to the authority having jurisdiction for approval prior to the move-in of any exhibit. The plan shall show all details of the proposed exposition. No exposition shall occupy any exposition facility without approved plans.

9-7.5.4 Vehicles. Vehicles on display within an exposition facility shall comply with 9-7.5.4.1 through 9-7.5.4.5.

9-7.5.4.1 All fuel tank openings shall be locked and sealed in an approved manner to prevent the escape of vapors. Fuel tanks shall not be more than one-half full or contain more than 10 gal (37.9 L) of fuel, whichever is less.

9-7.5.4.2 At least one battery cable shall be removed from the batteries used to start the vehicle engine. The disconnected battery cable shall then be taped.

9-7.5.4.3 Batteries used to power auxiliary equipment shall be permitted to be kept in service.

9-7.5.4.4 Fueling or defueling of vehicles shall be prohibited.

9-7.5.4.5 Vehicles shall not be moved during show hours.

9-7.5.5 Compressed flammable gases; flammable or combustible liquids; hazardous chemicals or materials; and Class II or greater lasers, blasting agents, and explosives shall be prohibited within exhibit halls.

Exception: The authority having jurisdiction shall be permitted to allow the limited use of any of the above items under special circumstances.

9-7.5.6 Alternatives. (See Section 1-6.)

9-7.6* Crowd Managers. In assembly occupancies having occupant loads greater than 1000, there shall be trained crowd managers or crowd manager supervisors at a ratio of 1 crowd manager/supervisor for every 250 occupants who shall have received approved training in crowd management techniques.

Exception No. 1: Assembly occupancies used exclusively for religious worship with an occupant load not more than 2000.

Exception No. 2: Where in the opinion of the authority having jurisdiction the existence of an approved, supervised sprinkler system and the nature of the event warrant, the ratio of trained crowd managers to occupants shall be permitted to be reduced.

9-7.7* Drills.

9-7.7.1 The employees or attendants of assembly occupancies shall be schooled and drilled in the duties they are to perform

in case of fire, panic, or other emergency in order to effect orderly exiting.

9-7.7.2 Employees or attendants of assembly occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment if provided.

9-7.7.3* In theaters, motion picture theaters, auditoriums, and other similar assembly occupancies with occupant loads greater than 300 where there are noncontinuous programs, an audible announcement shall be made or projected image shown prior to the start of each program to notify occupants of the location of the exits to be used in case of a fire or other emergency.

Exception: Assembly occupancies in schools where used for nonpublic events.

9-7.8 Smoking.

9-7.8.1 Smoking in assembly occupancies shall be regulated by the authority having jurisdiction.

9-7.8.2 In rooms or areas where smoking is prohibited, plainly visible "NO SMOKING" signs shall be posted.

9-7.8.3 No person shall smoke in prohibited areas that are so posted.

Exception: The authority having jurisdiction shall be permitted to allow smoking on a stage only where it is a necessary and rehearsed part of a performance and only where the smoker is a regular performing member of the cast.

9-7.8.4 Where smoking is permitted, suitable ashtrays or receptacles shall be provided in convenient locations.

9-7.9 Seating.

9-7.9.1 Seats in assembly occupancies accommodating more than 200 persons shall be securely fastened to the floor except

where fastened together in groups of not less than three nor more than seven and as permitted by 9-7.9.2. All seats in balconies and galleries shall be securely fastened to the floor, except in places of religious worship.

9-7.9.2 Seats not secured to the floor shall be permitted in restaurants, night clubs, and other occupancies where the fastening of seats to the floor might be impracticable, provided that in the area used for seating (excluding dance floor, stage, etc.) there shall not be more than one seat for each 15 sq ft (1.4 sq m) of net floor area and adequate aisles to reach exits shall be maintained at all times.

Exception: Seating diagrams shall be submitted for approval of the authority having jurisdiction to allow increase in occupant load per 9-1.7.2.

9-7.9.3 Every room constituting an assembly occupancy and not having fixed seats shall have the occupant load of the room posted in a conspicuous place near the main exit from the room. Approved signs shall be maintained in a legible manner by the owner or authorized agent. Signs shall be durable and shall indicate the number of occupants permitted for each room use.

9-7.10 Clothing. Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

CHAPTER 10 NEW EDUCATIONAL OCCUPANCIES

SECTION 10-1 GENERAL REQUIREMENTS

10-1.1 Application.

10-1.1.1 The requirements of this chapter apply to the following:

- (a) New buildings or portions thereof used as educational occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, an educational occupancy (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing educational occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to an educational occupancy (*see 1-3.12*).

10-1.1.2 Educational facilities that do not meet the definition of an educational occupancy need not comply with this chapter but shall comply with the following requirements:

- (a) Instructional building — business occupancy.
- (b) Classrooms under 50 persons — business occupancy.
- (c) Classrooms 50 persons and over — assembly occupancy.
- (d) Laboratories, instructional — business occupancy.
- (e) Laboratories, noninstructional — industrial.

10-1.2 Mixed Occupancies. (*See also 10-1.4.*)

10-1.2.1 Where other types of occupancy occur in the same building as an educational occupancy, the requirements of 4-1.12 of this *Code* shall be applicable.

Exception: As otherwise specified in this chapter.

10-1.2.2 Assembly and Educational. Spaces subject to assembly occupancy shall comply with Chapter 8, including 8-1.2, which provides that where auditorium and gymnasium egress lead through corridors or stairways also serving as egress for other parts of the building, the egress capacity shall be sufficient to permit simultaneous egress from auditorium and classroom sections.

Exception: In the case of an assembly occupancy of a type suitable only for use by the school occupant load (and therefore not subject to simultaneous occupancy), the same egress capacity shall be permitted to serve both sections.

10-1.2.3 Dormitory and Classrooms. Any building used for both classroom and dormitory purposes shall comply with the applicable provisions of Chapter 16 in addition to complying with Chapter 10. Where classroom and dormitory sections are not subject to simultaneous occupancy, the same egress capacity shall be permitted to serve both sections.

10-1.3 Special Definitions.

Common Atmosphere. The atmosphere that exists between rooms, spaces, or areas within a building that are not separated by an approved smoke barrier.

Flexible Plan and Open Plan Educational Buildings. These include every building or portion of a building designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by tables, chairs, desks, bookcases, counters, low-height [maximum 5-ft (1.5-m)] partitions, or similar furnishings.

Separate Atmosphere. The atmosphere that exists between rooms, spaces, or areas that are separated by an approved smoke barrier.

10-1.4 Classification of Occupancy. (*See 4-1.3.*)

10-1.4.1 Educational occupancies shall include all buildings used for educational purposes through the twelfth grade by six or more persons for four or more hours per day or more than 12 hours per week.

10-1.4.2 Educational occupancies include part-day pre-schools, kindergartens, and other schools whose purpose is primarily educational even though the children are of pre-school age.

10-1.4.3 In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

10-1.4.4 Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*. (*See Chapters 12, 16, 18, 20, 28, and 29 and 4-1.12.*)

10-1.5 Classification of Hazard of Contents. Contents of educational occupancies shall be classified in accordance with the provisions of Section 4-2.

10-1.6 Minimum Construction Requirements. (No requirements.)

10-1.7 Occupant Load.

10-1.7.1 The occupant load in number of persons for whom means of egress and other requirements are to be provided shall be determined on the basis of the following occupant load factors or the maximum probable population of any room or section under consideration, whichever is greater:

- (a) Classrooms: one person per 20 net sq ft (1.9 net sq m).
- (b) Shops, laboratories, and similar vocational rooms: one person for each 50 net sq ft (4.6 net sq m).

10-1.7.2 The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

10-1.7.3 The occupant load of an educational occupancy or a portion thereof shall be permitted to be modified from that specified above if the necessary aisles and exits are provided. An approved aisle or seating diagram shall be required by the authority having jurisdiction to substantiate such a modification.

10-1.7.4 The occupant load for determining egress requirements of individual lecture rooms, gymnasiums, or cafeterias used for assembly purposes by more than 50 persons shall be determined in accordance with 8-1.7 of this *Code*.

SECTION 10-2 MEANS OF EGRESS REQUIREMENTS

10-2.1 General.

10-2.1.1 Means of egress shall be in accordance with Chapter 5 and this section.

10-2.1.2 Rooms normally occupied by preschool, kindergarten, or first-grade pupils shall not be located above or below the level of exit discharge. Rooms normally occupied by second-grade pupils shall not be located more than one story above the level of exit discharge.

10-2.2 Means of Egress Components.

10-2.2.1 Components of means of egress shall be limited to the types described in 10-2.2.2 through 10-2.2.10.

10-2.2.2 Doors.

10-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

10-2.2.2.2 Panic Hardware or Fire Exit Hardware. Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware complying with 5-2.1.7.

10-2.2.2.3 Special locking arrangements complying with 5-2.1.6 shall be permitted.

10-2.2.2.4 Door Closure. Any exit door that is designed to normally be kept closed shall conform with 5-2.1.8.

10-2.2.2.5 Only one locking or latching device shall be permitted on a door or on one leaf of a pair of doors.

10-2.2.3* Stairs. Stairs complying with 5-2.2 shall be permitted.

10-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

10-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

10-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

10-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

10-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

10-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

10-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

10-2.3 Capacity of Means of Egress.

10-2.3.1 Capacity of means of egress shall be in accordance with Section 5-3.

10-2.3.2 Minimum Corridor Width.

10-2.3.2.1 Exit access corridors shall be not less than 6 ft (1.8 m) clear width.

10-2.3.2.2 Drinking fountains or other equipment, fixed or movable, shall not be placed so to obstruct the required minimum 6-ft (1.8-m) corridor width.

10-2.4 Number of Exits. There shall be at least two exits available from every floor area. (See Section 5-4.)

10-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

10-2.5.1 Means of egress shall be arranged in accordance with Section 5-5. No common path of travel shall exceed 75 ft (23 m); no dead end shall exceed 20 ft (6.1 m).

10-2.5.2 Every room that is normally occupied shall have an exit access door leading directly to an exit access corridor or exit.

Exception No. 1: If there is an exit door opening directly to the outside or to an exterior balcony or corridor as described in 10-2.5.6.

Exception No. 2: One room shall be permitted to intervene between a normally occupied student room and an exit access corridor provided that the following requirements are met:

(1) The total travel from a room served by an intervening room to the corridor door or exit shall not exceed 75 ft (23 m); and

(2) Clothing, personal effects, or other materials deemed hazardous by the authority having jurisdiction shall be stored in metal lockers provided they do not obstruct the exit access, or the intervening room shall be sprinklered in accordance with Section 7-7; and either

(3) The intervening room shall have installed approved fire detection that will activate the building alarm, or

(4) The building shall be protected by an approved, automatic sprinkler system installed in accordance with Section 7-7.

10-2.5.3 Every room or space with a capacity of more than 50 persons or an area of more than 1000 sq ft (93 sq m) shall have at least two exit access doorways as remotely located from each other as practicable. Such doorways shall provide access to separate exits but, where egress is through corridors, they shall be permitted to open upon a common corridor leading to separate exits located in opposite directions.

10-2.5.4 Doors that swing into an exit access corridor shall be recessed to prevent interference with corridor traffic; any doors not recessed shall open 180 degrees to stop against the wall. Doors in any position shall not reduce the required corridor width by more than one half.

10-2.5.5 Aisles. Where there are more than 60 seats, every aisle shall be not less than 36 in. (91 cm) wide where serving seats on one side only and not less than 42 in. (107 cm) wide where serving seats on both sides. Where serving 60 seats or less, aisles shall be not less than 30 in. (76 cm) wide. The space between parallel rows of seats shall not constitute an aisle. No more than six seats shall intervene between any seat and an aisle.

10-2.5.6* Exterior Corridors or Balconies.

10-2.5.6.1 Exterior exit access shall comply with 5-5.3.

10-2.5.6.2* Where exterior corridors or balconies are provided as means of egress, they shall open to the outside air except for railings or balustrades, with stairs or exits level to grade not over the allowable travel distance apart and located so that an exit will be available in either direction from the door to any individual room or space, with dead ends not to exceed 20 ft (6.1 m). If balconies are enclosed by glass or in any other manner, they shall be treated as interior corridors.

10-2.5.6.3 The floors of balconies (exterior corridors) and stairs shall be solid, without openings, and shall comply with requirements for outside stairs with respect to balustrades or railings, width and pitch of stairs, and other details. However,

they shall not be required to be shielded from fire within the building by blank walls, wired glass windows, or the like where the stairs are located on the side of the balcony or corridor away from the building and are separated from the building by the full required width of the balcony or corridor. Regardless of other provisions of this *Code*, exterior balconies and stairs shall be permitted to be of the same type of construction as the building that they serve.

10-2.6 Travel Distance to Exits. Travel distance to an exit shall not exceed 150 ft (45 m) from any point in a building. (See also Section 5-6.)

Exception: Travel distance shall not exceed 200 ft (60 m) in educational occupancies protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

10-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

Exception: Every classroom or room used for educational purposes or student occupancy below the floor of exit discharge shall have access to at least one exit that leads directly to the exterior at level of discharge without entering the floor above.

10-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

10-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9 in the following areas:

- (a) Interior stairs and corridors.
- (b) Normally occupied spaces.

Exception to (b): Administrative areas, general classrooms, and mechanical rooms and storage areas.

- (c) Flexible and open plan buildings.
- (d) Interior or windowless portions of buildings.
- (e) Shops and laboratories.

10-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Signs shall not be required in situations where locations of exits are otherwise obvious and familiar to all occupants, such as in small elementary school buildings.

10-2.11 Special Means of Egress Features.

10-2.11.1* Windows for Rescue and Ventilation. Every room or space greater than 250 sq ft (23.2 sq m) used for classroom or other educational purposes or normally subject to student occupancy shall have at least one outside window for emergency rescue and ventilation. Such window shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area. The bottom of the opening shall be not more than 44 in. (112 cm) above the floor, and any latching device shall be capable of being operated from not more than 54 in. (137 cm) above the finished floor. The clear opening shall permit a rectangular solid, with a minimum width and height that provides the required 5.7 sq ft (0.53 sq m) opening and a minimum depth of 20 in. (51 cm), to pass fully through the opening. Such windows shall be accessible by the fire department and shall open into an area having access to a public way.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

Exception No. 3: In rooms located higher than three stories above grade, the openable clear height, width, and area of the window shall be permitted to be modified to the dimensions necessary for ventilation.

SECTION 10-3 PROTECTION

10-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings connecting not more than three floors shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

10-3.2 Protection from Hazards.

10-3.2.1 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following.

(a) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Boiler and furnace rooms,

Exception to (a)(1): Rooms enclosing only air-handling equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction,

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards,

- (4) Janitor closets.

Exception to (a)(4): Janitor closets protected by automatic sprinklers shall be permitted to have doors with ventilating louvers.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Laundries;

(2) Maintenance shops, including woodworking and painting areas;

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction;

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted in accordance with 7-7.1.2.

10-3.2.2 Food preparation facilities shall be protected in accordance with 7-2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

10-3.2.3 Laboratories that use chemicals shall comply with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*.

10-3.2.4 Stages shall be protected in accordance with Chapter 8.

10-3.3 Interior Finish.

10-3.3.1 Interior finish shall be in accordance with Section 6-5.

10-3.3.2 Interior wall and ceiling finish materials in accordance with 6-5.5 shall be permitted as follows:

- (a) Exits — Class A.
- (b) Other than exits — Class A or Class B.

Exception to (b): Fixtures and low-height partitions not over 5 ft (1.5 m) high shall be Class A, Class B, or Class C.

*Exception:** The exposed portions of structural members complying with the requirements for Type IV (2HH) construction shall be permitted.

10-3.3.3 Interior Floor Finish. (No requirements.)

10-3.4 Detection, Alarm, and Communication Systems.

10-3.4.1 General. Educational occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

Exception: A building with a maximum area of 1000 sq ft (93 sq m) that contains a single classroom and is located not closer than 50 ft (15.2 m) from another building.

10-3.4.2 Initiation.

10-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: In buildings where all normally occupied spaces are provided with a two-way communication system between such spaces and a constantly attended receiving station from where a general evacuation alarm can be sounded, the manual pull stations shall not be required except in locations specifically designated by the authority having jurisdiction.

Exception No. 2: As permitted by 10-3.4.2.3.

10-3.4.2.2 In buildings provided with automatic sprinkler protection, the operation of the sprinkler system shall automatically activate the fire alarm system in addition to the initiation means required in 10-3.4.2.1.

10-3.4.2.3 Alternative Protection System. Manual pull stations shall be permitted to be eliminated where all of the following conditions apply:

(a) Interior corridors are protected by smoke detectors using an alarm verification system as described in NFPA 72, *National Fire Alarm Code*.

(b) Auditoriums, cafeterias, gymnasiums, etc., are protected by heat or other approved detection devices.

(c) Shops and laboratories involving dusts or vapors are protected by heat or other approved detection devices.

(d) Fire alarm signals are automatically transmitted to the public fire department in accordance with 7-6.4.

(e) Provision is made at a central point to manually activate the evacuation signal, or to evacuate only affected areas.

10-3.4.3 Notification.

10-3.4.3.1 Occupant notification shall be by means of audible and visible signals in accordance with 7-6.3.

10-3.4.3.2 Where acceptable to the authority having jurisdiction, the fire alarm system shall be permitted to be used to designate class change, provided the fire alarm is distinctive in signal and overrides all other use.

10-3.4.3.3 Wherever any of the school authorities determine that an actual fire exists, they shall immediately call the local fire department using the public fire alarm system or other available facilities.

10-3.4.3.4 All fire exit drill alarms shall be sounded on the fire alarm system.

10-3.4.3.5 In order to prevent pupils from being returned to a building that is burning, the recall signal shall be one that is separate and distinct from, and cannot be mistaken for, any other signals. Such signal shall be permitted to be given by use of distinctively colored flags or banners. If the recall signal is electrical, the push buttons or other controls shall be kept under lock, the key for which shall be in the possession of the principal or some other designated person in order to prevent a recall at a time when there is an actual fire. Regardless of the method of recall, the means of giving the signal shall be kept under a lock.

10-3.5 Extinguishment Requirements. Every portion of educational buildings below the level of exit discharge shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

10-3.6 Interior Corridors. Corridors shall be separated from other parts of the story by walls having a 1-hr fire resistance rating in accordance with 6-2.3.

Exception No. 1: Corridor protection shall not be required where all spaces normally subject to student occupancy have at least one door opening directly to the outside or to an exterior exit access balcony or corridor in accordance with 10-2.5.6.

Exception No. 2: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, corridor walls shall not be required to be rated, provided such walls, in conjunction with openings therein and ceilings at which they terminate, resist the passage of smoke.

Exception No. 3: Where the corridor ceiling is an assembly having a 1-hr fire resistance rating where tested as a wall, the corridor walls shall be permitted to terminate at the corridor ceiling.

Exception No. 4: Lavatories shall not be required to be separated from corridors, provided they are separated from all other spaces by walls having not less than a 1-hr fire resistance rating in accordance with 6-2.3.

10-3.7 Subdivision of Building Spaces.

10-3.7.1 School buildings shall be subdivided into compartments by smoke barriers having a 1-hr fire resistance rating and complying with Section 6-3 where

(a) The maximum area of a compartment, including the aggregate area of all floors having a common atmosphere, exceeds 30,000 sq ft (2800 sq m); or

(b) The length or width of the building exceeds 300 ft (91 m).

Exception No. 1: Where all spaces normally subject to student occupancy have at least one door opening directly to the outside or to an exterior or exit access balcony or corridor in accordance with 10-2.5.6.

Exception No. 2: Buildings that consist of only one story and are protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

10-3.7.2 The maximum area of a smoke compartment shall not exceed 30,000 sq ft (2800 sq m) with no dimension exceeding 300 ft (91 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, there shall be no limitation on smoke compartment size, provided that the floor is divided into a minimum of two smoke compartments.

SECTION 10-4 SPECIAL PROVISIONS

10-4.1 Windowless or Underground Buildings.

10-4.1.1 Windowless or underground buildings shall comply with this section and Section 32-7.

10-4.1.2 Underground buildings or portions of buildings having a floor level more than 30 ft (9.1 m) below the level of exit discharge shall comply with the requirements of 10-4.1.3 through 10-4.1.6.

Exception No. 1: Areas within buildings used only for service to the building, such as boiler rooms and heater rooms, cable vaults, and dead storage.

Exception No. 2: Auditoriums without intervening occupiable levels complying with the requirements of Chapter 8.

10-4.1.3 Each level more than 30 ft (9.1 m) below the level of exit discharge shall be divided into not less than two smoke compartments by a smoke barrier complying with Section 6-3 and having a 1-hr fire resistance rating.

10-4.1.3.1 Each smoke compartment shall have access to at least one exit without passing through the other required compartment. Any doors connecting required compartments shall be tight-fitting, minimum 1-hr rated fire doors designed and installed to minimize passage of smoke and to close and latch automatically upon detection of smoke.

10-4.1.3.2 Each smoke compartment shall be provided with a mechanical means of moving people vertically, such as an elevator or escalator.

10-4.1.3.3 Each smoke compartment shall have an independent air supply and exhaust system capable of smoke control or smoke exhaust functions that provides a minimum smoke exhaust rate of six air changes per hour.

10-4.1.3.4 Each smoke compartment shall be provided with an automatic smoke detection system throughout. The system shall be designed such that the activation of any two detectors shall cause the smoke control system to operate and the building voice alarm to sound.

10-4.1.4 The building shall be provided with emergency lighting in accordance with Section 5-9.

10-4.1.5 Any required smoke control or exhaust system shall be provided with a standby power system complying with Article 701 of NFPA 70, *National Electrical Code*.

10-4.1.6 The building shall be provided with an approved, supervised voice alarm system in accordance with Section 7-6. The voice alarm system shall comply with 7-6.3.8. A prerecorded evacuation message shall be permitted.

10-4.2 High-Rise Buildings. High-rise buildings shall comply with Section 32-8.

10-4.3 Flexible Plan and Open Plan Buildings.

10-4.3.1 Flexible plan and open plan buildings shall comply with the requirements of this chapter as modified by 10-4.3.2 through 10-4.3.4.

10-4.3.2 Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are required, not more than two of them shall enter into the same atmosphere.

10-4.3.3 Flexible plan schools shall be permitted to have walls and partitions rearranged periodically only if revised plans or diagrams have been approved by the authority having jurisdiction.

10-4.3.4 Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position.

SECTION 10-5 BUILDING SERVICES

10-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

10-5.2 Heating, Ventilating, and Air Conditioning Equipment.

10-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

10-5.2.2 Unvented fuel-fired heating equipment shall be prohibited.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

10-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

10-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 10-6 RESERVED

SECTION 10-7 OPERATING FEATURES

10-7.1 Drills.

10-7.1.1* Fire exit drills shall be conducted regularly in accordance with the applicable provisions of 10-7.1.2 through 10-7.1.9.

10-7.1.2* Fire exit drills shall be conducted as stipulated in 10-7.1.2.1 and 10-7.1.2.2.

10-7.1.2.1 At least one fire drill shall be conducted every month the facility is in session.

Exception: In climates where the weather is severe, the monthly fire exit drills shall be permitted to be deferred provided that the required number of fire exit drills is achieved and at least four are conducted before the drills are deferred.

10-7.1.2.2 One additional fire exit drill shall be required within the first 30 days of operation.

10-7.1.3* Drills shall be executed at different hours of the day or evening, during the changing of classes, when the school is at assembly, during the recess or gymnastic periods, or during other times to avoid distinction between drills and actual fires. If a drill is called while pupils are going up and down the stairways, such as during the time classes are changing, the pupils shall be instructed to form in file and immediately proceed to the nearest available exit in an orderly manner.

10-7.1.4* Every fire exit drill shall be an exercise in school management for principal and teachers with the chief purpose of every drill being the complete control of the class so that the teacher can form its ranks quickly and silently, and can halt, turn, or direct the class as desired. Great emphasis shall be put upon the execution of each drill in a brisk, quiet, and orderly manner. Running shall be prohibited. If there are pupils incapable of holding their places in a line moving at a reasonable speed, provisions shall be made to have them taken care of by the more capable pupils, who will keep them from moving independently of the regular line of march.

10-7.1.5 Monitors shall be appointed from among the more mature pupils to assist in the proper execution of all drills. They shall be instructed to hold doors open in the line of march or to close doors where necessary to prevent spread of fire or smoke in accordance with 5-2.1.8. There shall be at least two substitutes for each appointment so as to provide for proper performance in case of the absence of the regular monitors. The searching of toilet or other rooms shall be the duty of the teachers or other members of the staff. If the teachers are to search, this should be done after they have joined their classes to the preceding lines.

10-7.1.6 As all drills simulate an actual fire condition, pupils shall not be allowed to obtain clothing after the alarm is sounded, even when in homerooms, due to the confusion that would result in forming the lines and the danger of tripping over dragging apparel.

10-7.1.7 Each class or group shall proceed to a predetermined point outside the building and remain there while a

check is made to see that all are accounted for, leaving only when a recall signal is given to return to the building or when dismissed. Such points shall be sufficiently far away from the building and from each other as to avoid danger from any fire in the building, interference with fire department operations, or confusion among different classes or groups.

10-7.1.8* Where necessary for drill lines to cross roadways, signs reading "STOP! SCHOOL FIRE DRILL", or the equivalent, shall be carried by monitors to the traffic intersecting points in order to stop traffic during the period of the drill.

10-7.1.9* Fire exit drills in schools shall not include any fire extinguishing operations.

10-7.2 Inspection.

10-7.2.1* It shall be the duty of principals and teachers to inspect all exit facilities daily in order to make sure that all stairways, doors, and other exits are in proper condition.

10-7.2.2 Open-plan buildings shall require extra surveillance to ensure that exit paths are maintained clear of obstruction and are obvious.

10-7.3 Furnishings and Decorations.

10-7.3.1 Draperies, curtains, and other similar furnishings and decorations in educational occupancies shall be in accordance with the provisions of 6-6.1.

10-7.3.2 Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

10-7.4 Child-Prepared Artwork. Child-prepared artwork and teaching materials shall be permitted to be attached directly to the walls and shall not exceed 20 percent of the wall area.

10-7.5 Unvented Fuel-Fired Heating Equipment. Unvented fuel-fired heating equipment shall be prohibited in educational occupancies.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

CHAPTER 11 EXISTING EDUCATIONAL OCCUPANCIES

SECTION 11-1 GENERAL REQUIREMENTS

11-1.1 Application.

11-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as educational occupancies. (*See also 10-1.1.*)

11-1.1.2 Educational facilities that do not meet the definition of an educational occupancy need not comply with this chapter but shall comply with the following requirements:

- (a) Instructional building — business occupancy.
- (b) Classrooms under 50 persons — business occupancy.
- (c) Classrooms 50 persons and over — assembly occupancy.
- (d) Laboratories, instructional — business occupancy.
- (e) Laboratories, noninstructional — industrial.

11-1.2 Mixed Occupancies. (*See also 11-1.4.*)

11-1.2.1 Where other types of occupancy occur in the same building as an educational occupancy, the requirements of 4-1.12 of this *Code* shall be applicable.

Exception: As otherwise specified in this chapter.

11-1.2.2 Assembly and Educational. Spaces subject to assembly occupancy shall comply with Chapter 9, including 9-1.2, which provides that where auditorium and gymnasium egress lead through corridors or stairways also serving as egress for other parts of the building, the egress capacity shall be sufficient to permit simultaneous egress from auditorium and classroom sections.

Exception: In the case of an assembly occupancy of a type suitable only for use by the school occupant load (and therefore not subject to simultaneous occupancy), the same egress capacity shall be permitted to serve both sections.

11-1.2.3 Dormitory and Classrooms. Any building used for both classroom and dormitory purposes shall comply with the applicable provisions of Chapter 17 in addition to complying with Chapter 11. Where classroom and dormitory sections are not subject to simultaneous occupancy, the same egress capacity shall be permitted to serve both sections.

11-1.3 Special Definitions.

Common Atmosphere. The atmosphere that exists between rooms, spaces, or areas within a building that are not separated by an approved smoke barrier.

Flexible Plan and Open Plan Educational Buildings. These include every building or portion of a building designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by tables, chairs, desks, bookcases, counters, low-height [maximum 5-ft (1.5-m)] partitions, or similar furnishings.

Separate Atmosphere. The atmosphere that exists between rooms, spaces, or areas that are separated by an approved smoke barrier.

Story of Exit Discharge. That story or stories from which the exits are primarily doors discharging directly outside essentially at grade level (level of exit discharge). Where no such story exists, the story of exit discharge shall be that story with the smallest elevation change needed to reach the level of exit discharge.

11-1.4 Classification of Occupancy. (*See 4-1.3.*)

11-1.4.1 Educational occupancies shall include all buildings used for educational purposes through the twelfth grade by six or more persons for four or more hr per day or more than 12 hr per week.

11-1.4.2 Educational occupancies include part-day preschools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age.

11-1.4.3 In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

11-1.4.4 Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*. (*See Chapters 13, 17, 19, 20, 28, and 29 and 4-1.12.*)

11-1.5 Classification of Hazard of Contents. Contents of educational occupancies shall be classified in accordance with the provisions of Section 4-2.

11-1.6 Minimum Construction Requirements. (No requirements.)

11-1.7 Occupant Load.

11-1.7.1 The occupant load in number of persons for whom means of egress and other requirements are to be provided shall be determined on the basis of the following occupant load factors or the maximum probable population of any room or section under consideration, whichever is greater:

- (a) Classrooms: one person per 20 net sq ft (1.9 net sq m).
- (b) Shops, laboratories, and similar vocational rooms: one person for each 50 net sq ft (4.6 net sq m).

11-1.7.2 The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

11-1.7.3 The occupant load of an educational occupancy or a portion thereof shall be permitted to be modified from that specified above if the necessary aisles and exits are provided. An approved aisle or seating diagram shall be required by the authority having jurisdiction to substantiate such a modification.

11-1.7.4 The occupant load for determining egress requirements of individual lecture rooms, gymnasiums, or cafeterias used for assembly purposes by more than 50 persons shall be determined in accordance with 9-1.7 of this *Code*.

SECTION 11-2 MEANS OF EGRESS REQUIREMENTS

11-2.1 General.

11-2.1.1 Means of egress shall be in accordance with Chapter 5 and this section.

11-2.1.2 Rooms normally occupied by preschool, kindergarten, or first-grade pupils shall not be located above or below the story of exit discharge. Rooms normally occupied by second-grade pupils shall not be located more than one story above the story of exit discharge.

11-2.2 Means of Egress Components.

11-2.2.1 Components of means of egress shall be limited to the types described in 11-2.2.2 through 11-2.2.10.

11-2.2.2 Doors.

11-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

11-2.2.2.2 Panic Hardware or Fire Exit Hardware. Any required exit door subject to use by 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware complying with 5-2.1.7.

11-2.2.2.3 Special locking arrangements complying with 5-2.1.6 shall be permitted.

11-2.2.2.4 Door Closure. Any exit door that is designed to normally be kept closed shall conform with 5-2.1.8.

11-2.2.2.5 Only one locking or latching device shall be permitted on a door or on one leaf of a pair of doors.

11-2.2.3* Stairs.

11-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

11-2.2.3.2 Stairs shall be Class A.

Exception: Class B stairs shall be permitted where not used for student access.

11-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

11-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

11-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

11-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

11-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

11-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

11-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

11-2.3 Capacity of Means of Egress.

11-2.3.1 Capacity of means of egress shall be in accordance with Section 5-3.

11-2.3.2 Minimum Corridor Width.

11-2.3.2.1 Exit access corridors shall be not less than 6 ft (1.8 m) clear width.

11-2.3.2.2 Drinking fountains or other equipment, fixed or movable, shall not be placed so to obstruct the required minimum 6-ft (1.8-m) corridor width.

11-2.4 Number of Exits. There shall be at least two exits available from every floor area. (See Section 5-4.)

11-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

11-2.5.1 Means of egress shall be arranged in accordance with Section 5-5. No common path of travel shall exceed 75 ft (23 m); no dead end shall exceed 20 ft (6.1 m).

11-2.5.2 Every room that is normally occupied shall have an exit access door leading directly to an exit access corridor or exit.

Exception No. 1: If there is an exit door opening directly to the outside or to an exterior balcony or corridor as described in 11-2.5.6.

Exception No. 2: One room shall be permitted to intervene between a normally occupied student room and an exit access corridor, provided that

(1) The total travel from a room served by an intervening room to the corridor door or exit shall not exceed 75 ft (23 m); and

(2) Clothing, personal effects, or other materials deemed hazardous by the authority having jurisdiction shall be stored in metal lockers provided they do not obstruct the exit access, or the intervening room shall be sprinklered in accordance with Section 7-7; and either

(3) The intervening room shall have installed approved fire detection that will activate the building alarm, or

(4) The building shall be protected by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: Previously approved arrangements shall be permitted to continue to be used with the approval of the authority having jurisdiction.

11-2.5.3 Every room or space with a capacity of more than 50 persons or an area of more than 1000 sq ft (93 sq m) shall have at least two exit access doorways as remotely located from each other as practicable. Such doorways shall provide access to separate exits but, where egress is through corridors, they shall be permitted to open upon a common corridor leading to separate exits located in opposite directions.

11-2.5.4 Doors that swing into an exit access corridor shall be recessed to prevent interference with corridor traffic; any doors not recessed shall open 180 degrees to stop against the wall. Doors in any position shall not reduce the required corridor width by more than one half.

11-2.5.5 Aisles. Where there are more than 60 seats, every aisle shall be not less than 36 in. (91 cm) wide where serving seats on one side only and not less than 42 in. (107 cm) where serving seats on both sides. Where serving 60 seats or less, aisles shall be not less than 30 in. (76 cm) wide. The space between parallel rows of seats shall not constitute an aisle. No more than six seats shall intervene between any seat and an aisle.

11-2.5.6* Exterior Corridors or Balconies.

11-2.5.6.1 Exterior exit access shall comply with 5-5.3.

11-2.5.6.2* Where exterior corridors or balconies are provided as means of egress, they shall open to the outside air except for railings or balustrades, with stairs or exits level to grade not over the allowable travel distance apart and located so that an exit will be available in either direction from the door to any individual room or space, with dead ends not to exceed 20 ft (6.1 m). If balconies are enclosed by glass or in any other manner, they shall be treated as interior corridors.

11-2.5.6.3 The floors of balconies (exterior corridors) and stairs shall be solid, without openings, and shall comply with requirements for outside stairs with respect to balustrades or railings, width and pitch of stairs, and other details. However, they shall not be required to be shielded from fire within the building by blank walls, wired glass windows, or the like where the stairs are located on the side of the balcony or corridor away from the building and are separated from the building by the full required width of the balcony or corridor. Regardless of other provisions of this *Code*, exterior balconies and stairs shall be permitted to be of the same type of construction as the building that they serve.

11-2.6 Travel Distance to Exits. Travel distance to an exit shall not exceed 150 ft (45 m) from any point in a building. (See also Section 5-6.)

Exception No. 1: Travel distance shall not exceed 200 ft (60 m) in educational occupancies protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Previously approved travel distances.

11-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

Exception: Every classroom or room used for educational purposes or student occupancy below the floor of exit discharge shall have access to at least one exit that leads directly to the exterior at level of discharge without entering the floor above.

11-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

11-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9 in the following areas:

- (a) Interior stairs and corridors.
- (b) Normally occupied spaces.

Exception to (b): Administrative areas, general classrooms, and mechanical rooms and storage areas.

- (c) Flexible and open plan buildings.
- (d) Interior or windowless portions of buildings.
- (e) Shops and laboratories.

11-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Signs shall not be required in situations where locations of exits are otherwise obvious and familiar to all occupants, such as in small elementary school buildings.

11-2.11 Special Means of Egress Features.

11-2.11.1* Windows for Rescue and Ventilation. Every room or space greater than 250 sq ft (23.2 sq m) used for classroom or other educational purposes or normally subject to student occupancy shall have at least one outside window for emergency rescue and ventilation. Such window shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area. The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. The clear opening shall permit a rectangular solid, with a minimum width and height that provides the required 5.7 sq ft (0.53 sq m) opening and a mini-

mum depth of 20 in. (51 cm), to pass fully through the opening.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

Exception No. 3: In rooms located higher than three stories above grade, the openable clear height, width, and area of the window shall be permitted to be modified to the dimensions necessary for ventilation.

Exception No. 4: Awning or hopper-type windows that are hinged or subdivided to provide a clear opening not less than 600 sq in. (3900 sq cm) in area nor any dimension less than 22 in. (55.9 cm) shall be permitted to continue to be used. Screen walls or devices in front of required windows shall not interfere with normal rescue requirements.

Exception No. 5: Where the room or space complies with the following:

(a) Doors exist that allow travel between adjacent classrooms and, where used to travel from classroom to classroom, provide direct access to exits in both directions or direct access to an exit in one direction and to a separate smoke compartment that provides access to another exit in the other direction; and

(b) The corridor is separated from the classrooms by a wall that resists the passage of smoke, and all doors between the classrooms and the corridor are self-closing or automatic-closing in accordance with 5-2.1.8; and

(c) The length of travel to exits along such paths shall not exceed 150 ft (45 m); and

(d) Each communicating door shall be marked in accordance with Section 5-10; and

(e) No locking device shall be allowed on the communicating doors.

SECTION 11-3 PROTECTION

11-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings connecting not more than three floors shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Stairway enclosures shall not be required for a stairway that serves only one adjacent floor (other than a basement), is not connected with stairways serving other floors, and is not connected with corridors serving other than the two floors involved.

11-3.2 Protection from Hazards.

11-3.2.1 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following.

(a) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Boiler and furnace rooms,

Exception to (a)(1): Rooms enclosing only air-handling equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction,

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards,

- (4) Janitor closets.

Exception to (a)(4): Janitor closets protected by automatic sprinklers shall be permitted to have doors with ventilating louvers.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Laundries;

(2) Maintenance shops, including woodworking and painting areas;

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction;

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted in accordance with 7-7.1.2.

11-3.2.2 Food preparation facilities shall be protected in accordance with 7-2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

11-3.2.3 Laboratories that use chemicals shall comply with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*.

11-3.2.4 Stages shall be protected in accordance with Chapter 9.

11-3.3 Interior Finish.

11-3.3.1 Interior finish shall be in accordance with Section 6-5.

11-3.3.2 Interior wall and ceiling finish materials in accordance with 6-5.5 shall be permitted as follows:

- (a) Exits — Class A.

- (b) Corridors and lobbies — Class A or Class B.

Exception to (b): Fixtures and low-height partitions not over 5 ft (1.5 m) high shall be Class A, Class B, or Class C.

- (c) All other locations — Class A, Class B, or Class C.

*Exception:** The exposed portions of structural members complying with the requirements for Type IV(2HH) construction shall be permitted.

11-3.3.3 Interior Floor Finish. (No requirements.)

11-3.4 Detection, Alarm, and Communication Systems.

11-3.4.1 General. Educational occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

Exception: A building with a maximum area of 1000 sq ft (93 sq m) that contains a single classroom and is located not closer than 50 ft (15.2 m) from another building.

11-3.4.2 Initiation.

11-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: In buildings where all normally occupied spaces are provided with a two-way communication system between such spaces and a constantly attended receiving station from where a general evacuation alarm can be sounded, the manual pull stations shall not be required except in locations specifically designated by the authority having jurisdiction.

Exception No. 2: As permitted by 11-3.4.2.3.

11-3.4.2.2 In buildings provided with automatic sprinkler protection, the operation of the sprinkler system shall automatically activate the fire alarm system in addition to the initiation means required in 11-3.4.2.1.

11-3.4.2.3 Alternative Protection System. Manual pull stations shall be permitted to be eliminated where all of the following conditions apply:

(a) Interior corridors are protected by smoke detectors using an alarm verification system as described in NFPA 72, *National Fire Alarm Code*.

(b) Auditoriums, cafeterias, gymnasiums, etc., are protected by heat or other approved detection devices.

(c) Shops and laboratories involving dusts or vapors are protected by heat or other approved detection devices.

(d) Fire alarm signals are automatically transmitted to the public fire department in accordance with 7-6.4.

(e) Provision is made at a central point to manually activate the evacuation signal, or to evacuate only affected areas.

11-3.4.3 Notification.

11-3.4.3.1 Occupant notification shall be by means of an audible alarm in accordance with 7-6.3.

11-3.4.3.2 Where acceptable to the authority having jurisdiction, the fire alarm system shall be permitted to be used to designate class change, provided the fire alarm is distinctive in signal and overrides all other uses.

11-3.4.3.3 Wherever any of the school authorities determine that an actual fire exists, they shall immediately call the local fire department using the public fire alarm system or other available facilities.

11-3.4.3.4 All fire exit drill alarms shall be sounded on the fire alarm system.

11-3.4.3.5 In order to prevent pupils from being returned to a building that is burning, the recall signal shall be one that is separate and distinct from, and cannot be mistaken for, any other signals. Such signal shall be permitted to be given by use of distinctively colored flags or banners. If the recall signal is electrical, the push buttons or other controls shall be kept under lock, the key for which shall be in the possession of the principal or some other designated person in order to prevent a recall at a time when there is an actual fire. Regardless of the method of recall, the means of giving the signal shall be kept under a lock.

11-3.5 Extinguishment Requirements. Wherever student occupancy occurs below the story of exit discharge, every portion of such floor shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7. Where student occupancy does not occur on floors below the story of exit discharge, such floors shall be separated from the rest of the building by 1-hr fire resistance-rated construction or shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception: Where student occupancy occurs below the story of exit discharge, automatic sprinkler protection shall not be required, subject to the approval of the authority having jurisdiction, if windows for rescue and ventilation are provided in accordance with 11-2.11.1.

11-3.6 Interior Corridors. Corridors shall be separated from other parts of the story by walls having a ½-hr fire resistance rating in accordance with 6-2.3.

Exception No. 1: Corridor protection shall not be required where all spaces normally subject to student occupancy have at least one door opening directly to the outside or to an exterior exit access balcony or corridor in accordance with 11-2.5.6.

Exception No. 2: In buildings protected throughout by an approved, automatic sprinkler system with valve supervision installed in accordance with Section 7-7, corridor walls shall not be required to be rated, provided such walls, in conjunction with openings therein and ceilings at which they terminate, resist the passage of smoke.

Exception No. 3: Existing doors shall be permitted to be 1¾-in. (4.4-cm) thick solid bonded wood core doors or the equivalent.

Exception No. 4: Lavatories shall not be required to be separated from corridors, provided they are separated from all other spaces by walls having not less than a ½-hr fire resistance rating in accordance with 6-2.3.

11-3.7 Subdivision of Building Spaces.

11-3.7.1 School buildings shall be subdivided into compartments by smoke barriers complying with Section 6-3 where

(a) The maximum area of a compartment, including the aggregate area of all floors having a common atmosphere, exceeds 30,000 sq ft (2800 sq m); or

(b) The length or width of the building exceeds 300 ft (91 m).

Exception No. 1: Where all classrooms have exterior exit access in accordance with 5-5.3.

Exception No. 2: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

11-3.7.2 The maximum area of a smoke compartment shall not exceed 30,000 sq ft (2800 sq m) with no dimension exceeding 300 ft (91 m).

11-3.7.3 Doors in smoke barriers shall be self-latching.

SECTION 11-4 SPECIAL PROVISIONS

11-4.1 Windowless or Underground Buildings. Windowless buildings and underground structures shall comply with Section 32-7.

11-4.2 High-Rise Buildings. (Reserved.)

11-4.3 Flexible Plan and Open Plan Buildings.

11-4.3.1 Flexible plan and open plan buildings shall comply with the requirements of this chapter as modified by 11-4.3.2 through 11-4.3.4.

11-4.3.2 Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are required, not more than two of them shall enter into the same atmosphere.

11-4.3.3 Flexible plan schools shall be permitted to have walls and partitions rearranged periodically only if revised plans or diagrams have been approved by the authority having jurisdiction.

11-4.3.4 Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position.

SECTION 11-5 BUILDING SERVICES

11-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

11-5.2 Heating, Ventilating, and Air Conditioning Equipment.

11-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

11-5.2.2 Unvented fuel-fired heating equipment shall be prohibited.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

11-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

11-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 11-6 RESERVED

SECTION 11-7 OPERATING FEATURES

11-7.1 Drills.

11-7.1.1* Fire exit drills shall be conducted regularly in accordance with the applicable provisions of 11-7.1.2 through 11-7.1.9.

11-7.1.2* Fire exit drills shall be conducted as stipulated in 11-7.1.2.1 and 11-7.1.2.2.

11-7.1.2.1 At least one fire drill shall be conducted every month the facility is in session.

Exception: In climates where the weather is severe, the monthly fire exit drills shall be permitted to be deferred provided that the required number of fire exit drills is achieved and at least four are conducted before the drills are deferred.

11-7.1.2.2 One additional fire exit drill shall be required within the first 30 days of operation.

11-7.1.3* Drills shall be executed at different hours of the day or evening, during the changing of classes, when the school is at assembly, during the recess or gymnastic periods,

or during other times to avoid distinction between drills and actual fires. If a drill is called while pupils are going up and down the stairways, such as during the time classes are changing, the pupils shall be instructed to form in file and immediately proceed to the nearest available exit in an orderly manner.

11-7.1.4* Every fire exit drill shall be an exercise in school management for principal and teachers with the chief purpose of every drill being the complete control of the class so that the teacher can form its ranks quickly and silently, and can halt, turn, or direct the class as desired. Great emphasis shall be put upon the execution of each drill in a brisk, quiet, and orderly manner. Running shall be prohibited. If there are pupils incapable of holding their places in a line moving at a reasonable speed, provisions shall be made to have them taken care of by the more capable pupils, who will keep them from moving independently of the regular line of march.

11-7.1.5 Monitors shall be appointed from among the more mature pupils to assist in the proper execution of all drills. They shall be instructed to hold doors open in the line of march or to close doors where necessary to prevent spread of fire or smoke in accordance with 5-2.1.8. There shall be at least two substitutes for each appointment so as to provide for proper performance in case of the absence of the regular monitors. The searching of toilet or other rooms shall be the duty of the teachers or other members of the staff. If the teachers are to search, this should be done after they have joined their classes to the preceding lines.

11-7.1.6 As all drills simulate an actual fire condition, pupils shall not be allowed to obtain clothing after the alarm is sounded, even when in homerooms, due to the confusion that would result in forming the lines and the danger of tripping over dragging apparel.

11-7.1.7 Each class or group shall proceed to a predetermined point outside the building and remain there while a check is made to see that all are accounted for, leaving only when a recall signal is given to return to the building or when dismissed. Such points shall be sufficiently far away from the building and from each other as to avoid danger from any fire in the building, interference with fire department operations, or confusion among different classes or groups.

11-7.1.8* Where necessary for drill lines to cross roadways, signs reading "STOP! SCHOOL FIRE DRILL," or the equivalent, shall be carried by monitors to the traffic intersecting points in order to stop traffic during the period of the drill.

11-7.1.9* Fire exit drills in schools shall not include any fire extinguishing operations.

11-7.2 Inspection.

11-7.2.1* It shall be the duty of principals and teachers to inspect all exit facilities daily in order to make sure that all stairways, doors, and other exits are in proper condition.

11-7.2.2 Open-plan buildings shall require extra surveillance to ensure that exit paths are maintained clear of obstruction and are obvious.

11-7.3 Furnishings and Decorations.

11-7.3.1 Draperies, curtains, and other similar furnishings and decorations in educational occupancies shall be in accordance with the provisions of 6-6.1.

11-7.3.2 Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

11-7.4 Child-Prepared Artwork. Child-prepared artwork and teaching materials shall be permitted to be attached directly to the walls and shall not exceed 20 percent of the wall area.

11-7.5 Unvented Fuel-Fired Heating Equipment. Unvented fuel-fired heating equipment shall be prohibited in educational occupancies.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

CHAPTER 12 NEW HEALTH CARE OCCUPANCIES

SECTION 12-1 GENERAL REQUIREMENTS

12-1.1 Application.

12-1.1.1 General.

12-1.1.1.1 The requirements of this chapter apply to

(a) New buildings or portions thereof used as health care occupancies (*see Section 1-3*); and

(b) Additions made to, or used as, a health care occupancy (*see 1-3.6 and 12-1.1.4*); and

Exception to (b): Additions classified as occupancies other than health care that are properly separated from the health care occupancy in accordance with 12-1.2.1 and conform to the requirements for the specific occupancy in accordance with Chapters 8 through 11 and Chapters 14 through 31, as appropriate.

(c) Alterations, modernizations, or renovations of existing health care occupancies (*see 1-3.7 and 12-1.1.4*); and

(d) Existing buildings or portions thereof upon change of occupancy to a health care occupancy (*see 1-3.12*).

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety has been provided in accordance with Section 1-6.

12-1.1.1.2 This chapter establishes life safety requirements for the design of all new hospitals, nursing homes, and limited care facilities. Where requirements vary, the specific subclass of health care occupancy is named in the paragraph pertaining thereto. Section 12-6 establishes life safety requirements for all new ambulatory health care facilities.

12-1.1.1.3 Health care occupancies shall be those that provide medical care and treatment of persons suffering from physical or mental illness, disease, or infirmity, including infants, convalescents, or infirm aged persons.

12-1.1.1.4 Health care facilities provide sleeping accommodations for their occupants and are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

12-1.1.1.5 This chapter also covers ambulatory health care facilities as defined in 12-1.3. (*See Section 12-6 for requirements.*)

12-1.1.1.6 Buildings or sections of buildings that primarily house patients who, in the opinion of the governing body of the facility and the governmental agency having jurisdiction, are capable of judgment and appropriate physical action for self-preservation under emergency conditions shall be permitted to comply with chapters of the *Code* other than Chapter 12.

12-1.1.1.7 It shall be recognized that, in buildings housing certain types of patients or having detention rooms or a security section, it might be necessary to lock doors and bar windows to confine and protect building inhabitants. In such instances, the authority having jurisdiction shall make appropriate modifications to those sections of this *Code* that would otherwise require means of egress to be kept unlocked.

12-1.1.1.8 Buildings or sections of buildings that house older persons and that provide activities that foster continued

independence but do not include services distinctive to health care facilities (as defined in 12-1.3) shall be permitted to comply with the requirements of other sections of this *Code*, such as Chapters 18 or 22.

12-1.1.1.9 Health care occupancies shall include all buildings or parts thereof with occupancy as described in 12-1.3.

12-1.1.1.10 Except for ambulatory health care facilities, facilities that do not provide housing on a 24-hr basis for their occupants shall be classified as other occupancies and shall be covered by other chapters of this *Code*.

12-1.1.1.11* The requirements of this chapter are based on the assumption that staff is available in all patient occupied areas to perform certain fire safety functions as required in other paragraphs of this chapter.

12-1.1.2* Objective. The objective of this chapter is to provide a reasonable level of safety by reducing the probability of injury and loss of life from the effects of fire with due consideration for functional requirements. This is accomplished by limiting the development and spread of a fire emergency to the room of fire origin and reducing the need for occupant evacuation, except from the room of fire origin.

12-1.1.3 Total Concept. All health care facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire emergency requiring the evacuation of occupants. Because the safety of health care occupants cannot be ensured adequately by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate staffing, and development of operating and maintenance procedures composed of the following:

- (a) Design, construction, and compartmentation; and
- (b) Provision for detection, alarm, and extinguishment; and
- (c) Fire prevention and the planning, training, and drilling in programs for the isolation of fire, transfer of occupants to areas of refuge, or evacuation of the building.

12-1.1.4 Additions, Conversions, Modernization, Renovation, and Construction Operations. (*See also 1-3.6 and 1-3.7.*)

12-1.1.4.1 Additions. Additions shall be separated from any existing structure not conforming to the provisions within Chapter 13 by a fire barrier having at least a 2-hr fire resistance rating and constructed of materials as required for the addition.

12-1.1.4.2 Communicating openings in dividing fire barriers required by 12-1.1.4.1 shall occur only in corridors and shall be protected by approved self-closing fire doors. (*See also Section 6-2.*)

12-1.1.4.3 Doors in barriers required by 12-1.1.4.1 shall normally be kept closed.

Exception: Doors shall be permitted to be held open if they meet the requirements of 12-2.2.2.6.

12-1.1.4.4 Conversions. Conversions shall comply with 1-3.12. A conversion from a hospital to a nursing home or from a nursing home to a hospital shall not be considered a change in occupancy or occupancy subclassification.

12-1.1.4.5* Renovations, Alterations, and Modernizations. Renovations, alterations, and modernizations shall comply, to the extent practical, with requirements for new construction

in accordance with 1-3.7. Where major renovations, alterations, or modernizations are made in a nonsprinklered facility, the automatic sprinkler requirements of Chapter 12 shall apply to the smoke compartment undergoing the renovation, alteration, or modernization. However, in cases where the building is not protected throughout by an approved, automatic sprinkler system, the requirements of 13-1.6 and 13-2.3.2 shall also apply. Exception No. 2 to 12-3.7.3 shall be permitted only where adjacent smoke compartments are protected throughout by an approved, supervised automatic sprinkler system in accordance with 12-3.5.2. Where minor renovations, alterations, modernizations, or repairs are done in a nonsprinklered facility, the requirements of 12-3.5.1 shall not apply, but, in such cases, the renovations, alterations, modernizations, or repairs shall not reduce life safety below that which existed before, nor below the requirements of Chapter 13 for nonsprinklered buildings.

12-1.1.4.6 Construction Operations. See 1-3.11 for life safety provisions during construction.

12-1.2 Mixed Occupancies. (See also 4-1.12.)

12-1.2.1* Sections of health care facilities shall be permitted to be classified as other occupancies provided they meet all of the following conditions:

(a) They are not intended to serve health care occupants for purposes of housing, treatment, or customary access by patients incapable of self-preservation;

(b) They are separated from areas of health care occupancies by construction having a fire resistance rating of at least 2 hr.

12-1.2.2* Ambulatory care facilities, medical clinics, and similar facilities that are contiguous to health care occupancies but are primarily intended to provide outpatient services shall be permitted to be classified as business occupancies or ambulatory health care facilities, provided the facilities are separated from the health care occupancy by not less than 2-hr fire resistance-rated construction and the facility is not intended to provide services simultaneously for four or more health care patients who are litter-borne.

12-1.2.3 Health care occupancies in buildings housing other occupancies shall be completely separated from them by construction having a fire resistance rating of at least 2 hr as provided for additions in 12-1.1.4.

12-1.2.4 All means of egress from health care occupancies that traverse non-health care spaces shall conform to requirements of this Code for health care occupancies.

Exception: It shall be permissible to exit through a horizontal exit into other contiguous occupancies that do not conform with health care egress provisions but that do comply with requirements set forth in the appropriate occupancy chapter of this Code, provided the occupancy does not contain high hazard contents. The horizontal exit shall comply with the requirements of 12-2.2.5.

12-1.2.5 Egress provisions for areas of health care facilities that correspond to other occupancies shall meet the corresponding requirements of this Code for such occupancies. Where the clinical needs of the occupant necessitate the locking of means of egress, staff shall be present for the supervised release of occupants during all times of use.

12-1.2.6 Auditoriums, chapels, staff residential areas, or other occupancies provided in connection with health care facilities shall have means of egress provided in accordance with other applicable sections of the Code.

12-1.2.7 Any area with a hazard of contents classified higher than that of the health care occupancy and located in the same building shall be protected as required in 12-3.2.

12-1.2.8 Non-health care related occupancies classified as containing high hazard contents shall not be permitted in buildings housing health care occupancies.

12-1.3* Special Definitions.

Ambulatory Health Care Facilities. A building or part of a building used to provide services or treatment to four or more patients at the same time that meets the criteria of either (a) or (b) below.

(a) Facilities that provide, on an outpatient basis, treatment for patients incapable of taking action for self-preservation under emergency conditions without assistance from others.

(b) Facilities that provide, on an outpatient basis, surgical treatment requiring general anesthesia.

Hospital. A building or part thereof used on a 24-hr basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. The term hospital, wherever used in this Code, shall include general hospitals, psychiatric hospitals, and specialty hospitals.

Limited Care Facility. A building or part of a building used on a 24-hr basis for the housing of four or more persons who are incapable of self-preservation because of age, physical limitations due to accident or illness, or mental limitations such as mental retardation/developmental disability, mental illness, or chemical dependency.

Nursing Home. A building or part of a building used on a 24-hr basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. The term "nursing home," wherever used in this Code, shall include nursing and convalescent homes, skilled nursing facilities, intermediate care facilities, and infirmaries in homes for the aged.

12-1.4 Classification of Occupancy. (See 12-1.3.)

12-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

12-1.6 Minimum Construction Requirements.

12-1.6.1 For the purpose of 12-1.6, the number of stories shall be counted starting with the primary level of exit discharge and ending with the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be the lowest story whose floor is level with or above finished grade on the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story.

12-1.6.2 Health care occupancies shall be limited to the types of building construction permitted by Table 12-1.6.2 (see 6-2.1).

Table 12-1.6.2 Construction Type Limitations

Construction Type	Stories			
	1	2	3	4 or More
I(443) I(332) II(222) }	X	X	X	X
II(111)	X	X	X	N.P.
II(000)	X	N.P.	N.P.	N.P.
III(211)	X	N.P.	N.P.	N.P.
III(200)	N.P.	N.P.	N.P.	N.P.
IV(2HH)	X	N.P.	N.P.	N.P.
V(111)	X	N.P.	N.P.	N.P.
V(000)	N.P.	N.P.	N.P.	N.P.

X: Permitted type of construction

N.P.: Not Permitted

Exception: Any building of Type I, Type II(222), or Type II(111) construction shall be permitted to include roofing systems involving combustible supports, decking, or roofing, provided:

(a) The roof covering meets Class A requirements in accordance with NFPA 256, *Standard Methods of Fire Tests of Roof Coverings*; and

(b) The roof is separated from all occupied portions of the building by a noncombustible floor assembly having at least a 2-hr fire resistance rating that includes at least 2½ in. (6.4 cm) of concrete or gypsum fill. Structural elements supporting the 2-hr fire resistance-rated floor assembly shall be required to have only the fire resistance rating required of the building.

12-1.6.3 All interior walls and partitions in buildings of Type I or Type II construction shall be of noncombustible or limited-combustible materials.

12-1.6.4 Openings for the passage of pipes or conduit in walls or partitions that are required to have fire-resisting or smoke-resisting capability shall be protected in accordance with 6-2.3.2.4.2 or 6-3.6.1.

12-1.6.5 For construction requirements of enclosures of vertical openings between floors, see 12-3.1.

12-1.6.6 All buildings with more than one level below the level of exit discharge shall have all such lower levels separated from the level of exit discharge by at least Type II(111) construction.

12-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.1 sq m) of gross floor area in health care sleeping departments and not less than one person for each 240 sq ft (22.3 sq m) of gross floor area of inpatient health care treatment departments. Gross floor areas shall be measured within the exterior building walls with no deductions. (See Chapter 3.)

SECTION 12-2 MEANS OF EGRESS REQUIREMENTS

12-2.1 General. Every aisle, passageway, corridor, exit discharge, exit location, and access shall be in accordance with Chapter 5.

Exception: As modified by 12-2.2 through 12-2.11.

12-2.2* Means of Egress Components.

12-2.2.1 Components of means of egress shall be limited to the types described in 12-2.2.2 through 12-2.2.10.

12-2.2.2 Doors.

12-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

12-2.2.2.2 Locks shall not be permitted on patient sleeping room doors.

Exception No. 1: Key locking devices that restrict access to the room from the corridor and that are operable only by staff from the corridor side shall be permitted. Such devices shall not restrict egress from the room.

Exception No. 2: Door locking arrangements shall be permitted in health care occupancies or portions of health care occupancies where the clinical needs of the patients require specialized security measures for their safety, provided keys are carried by staff at all times.

12-2.2.2.3 Doors not in a required means of egress shall be permitted to be subject to locking.

12-2.2.2.4 Doors within a required means of egress shall not be equipped with a latch or lock that requires the use of a tool or key from the egress side.

Exception No. 1: Door locking arrangements shall be permitted in health care occupancies or portions of health care occupancies where the clinical needs of the patients require specialized security measures for their safety, provided staff can readily unlock such doors at all times. (See 12-1.1.1.7 and 12-2.2.2.5.)

*Exception No.2:** Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any egress path.

Exception No. 3: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

12-2.2.2.5 Doors located in the means of egress that are permitted to be locked under other provisions of this chapter shall have adequate provisions made for the rapid removal of occupants by such reliable means as the remote-control of locks or by keying all locks to keys carried by staff at all times, or by other reliable means available to the staff at all times. Only one such locking device shall be permitted on each door.

Exception: Locks installed in accordance with Exceptions No. 2 and 3 to 12-2.2.2.4.

12-2.2.2.6* Any door in an exit passageway, stairway enclosure, horizontal exit, smoke barrier, or hazardous area enclosure (except boiler rooms, heater rooms, and mechanical equipment rooms) shall be permitted to be held open only by an automatic release device that complies with 5-2.1.8. The automatic sprinkler system, the fire alarm system, and the systems required by 5-2.1.8, Exception(c), shall be arranged to initiate the closing action of all such doors by zone or throughout the entire facility.

12-2.2.2.7 Where doors in a stair enclosure are held open by an automatic device as permitted in 12-2.2.2.6, initiation of a door-closing action on any level shall cause all doors at all levels in the stair enclosure to close.

12-2.2.2.8 High-rise health care occupancies shall comply with the reentry provisions of 5-2.1.5.2.

12-2.2.2.9 Horizontal sliding doors, as permitted by 5-2.1.14, that are not automatic-closing shall be limited to a single leaf and shall have a latch or other mechanism that will ensure that doors will not rebound into a partially open position if forcefully closed in an emergency.

12-2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

12-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

12-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 and the modifications of 12-2.2.5.1 through 12-2.2.5.6 shall be permitted.

12-2.2.5.1 At least 30 net sq ft (2.8 net sq m) per patient in a hospital or nursing home or 15 net sq ft (1.4 net sq m) per resident in a limited care facility shall be provided within the aggregated area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the horizontal exit. On stories not housing bed or litter patients, at least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the horizontal exit for the total number of occupants in adjoining compartments.

12-2.2.5.2 A single door shall be permitted in a horizontal exit if the exit serves one direction only. Such door shall be a swinging door or a horizontal sliding door complying with 5-2.1.14. The door shall be a minimum of 41.5 in. (105 cm) in clear width.

12-2.2.5.3 A horizontal exit involving a corridor 8 ft (2.4 m) or more in width serving as a means of egress from both sides of the doorway shall have the opening protected by a pair of swinging doors arranged to swing in opposite directions from each other, with each door having a clear width of at least 41.5 in. (105 cm), or a horizontal sliding door complying with 5-2.1.14 and providing a clear width of at least 83 in. (211 cm).

12-2.2.5.4 A horizontal exit involving a corridor 6 ft (1.8 m) or more in width serving as a means of egress from both sides of the doorway shall have the opening protected by a pair of swinging doors, arranged to swing in opposite directions from each other, with each door having a clear width of at least 32 in. (81 cm), or a horizontal sliding door complying with 5-2.1.14 and providing a clear width of at least 64 in. (163 cm).

12-2.2.5.5 An approved vision panel shall be required in each horizontal exit. Center mullions shall be prohibited.

12-2.2.5.6 The total egress capacity of the other exits (stairs, ramps, doors leading outside the building) shall not be reduced below one third that required for the entire area of the building.

12-2.2.6 Ramps.

12-2.2.6.1 Ramps complying with the requirements of 5-2.5 for Class A ramps shall be permitted.

Exception: A Class B ramp shall be permitted where the height of the ramp is 1 ft (30.5 cm) or less.

12-2.2.6.2 Ramps enclosed as exits shall be of sufficient width to provide egress capacity in accordance with 12-2.3.2.

12-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

12-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

12-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

12-2.2.10 Areas of Refuge. Areas of refuge used as part of a required accessible means of egress shall comply with 5-2.12.

12-2.3 Capacity of Means of Egress.

12-2.3.1 The capacity of any required means of egress shall be based on its width, as defined in Section 5-3.

12-2.3.2 The capacity of means of egress providing travel by means of stairs shall be 0.3 in. (0.8 cm) per person, and the capacity of means of egress providing horizontal travel (without stairs) by means such as doors, ramps, or horizontal exits shall be 0.2 in. (0.5 cm) per person.

12-2.3.3 Aisles, corridors, and ramps required for exit access in a hospital or nursing home shall be at least 8 ft (2.4 m) in clear and unobstructed width. Where ramps are used as exits, see 12-2.2.6.

*Exception No. 1:** Aisles, corridors, and ramps in adjunct areas not intended for the housing, treatment, or use of inpatients shall be a minimum of 44 in. (112 cm) in clear and unobstructed width.

*Exception No. 2:** Exit access within a room or suite of rooms complying with the requirements of 12-2.5.

12-2.3.4 Aisles, corridors, and ramps required for exit access in a limited care facility or hospital for psychiatric care shall be at least 6 ft (1.8 m) in clear and unobstructed width. Where ramps are used as exits, see 12-2.2.6.

*Exception No. 1:** Aisles, corridors, and ramps in adjunct areas not intended for the housing, treatment, or use of inpatients shall be a minimum of 44 in. (112 cm) in clear and unobstructed width.

*Exception No. 2:** Exit access within a room or suite of rooms complying with the requirements of 12-2.5.

12-2.3.5 The minimum clear width for doors in the means of egress from sleeping rooms; diagnostic and treatment areas, such as X-ray, surgery, or physical therapy; and nursery rooms shall be as follows:

(a) Hospitals and nursing homes: 41.5 in. (105 cm).

(b) Psychiatric hospitals and limited care facilities: 32 in. (81 cm).

Exception No. 1: Doors that are located so as not to be subject to use by any health care occupant shall be not less than 32 in. (81 cm) in clear width.

Exception No. 2: Doors in exit stair enclosures shall be not less than 32 in. (81 cm) in clear width.

Exception No. 3: Doors serving newborn nurseries shall be not less than 32 in. (81 cm) in clear width.

Exception No. 4: Where a pair of doors is provided, at least one of the doors shall provide a minimum 32-in. (81-cm) clear width opening and a rabbet, bevel, or astragal shall be provided at the meeting edge. The inactive leaf shall have an automatic flush bolt to provide positive latching.

12-2.4 Number of Exits.

12-2.4.1 At least two exits of the types described in 12-2.2.2 through 12-2.2.10, remotely located from each other, shall be provided for each floor or fire section of the building.

12-2.4.2 At least one exit from each floor or fire section shall be one of the following:

- (a) A door leading directly outside the building, or
- (b) A stair, or
- (c) A smokeproof enclosure, or
- (d) A ramp, or
- (e) An exit passageway.

Any fire section not meeting these requirements shall be considered part of an adjoining zone. Egress shall not require return through the zone of fire origin.

12-2.4.3* At least two exits of the types described in 12-2.2.2 through 12-2.2.10 shall be accessible from each smoke compartment. Egress shall be permitted through an adjacent compartment(s), but shall not require return through the compartment of fire origin.

12-2.5 Arrangement of Means of Egress.

12-2.5.1 Every habitable room shall have an exit access door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at ground level.

Exception No. 2: Patient sleeping rooms shall be permitted to have one intervening room if the intervening room is not used as an exit access for more than eight patient sleeping beds.

Exception No. 3: Special nursing suites shall be permitted to have one intervening room where the arrangement allows for direct and constant visual supervision by nursing personnel.

Exception No. 4: For rooms other than patients' sleeping rooms, one or more adjacent rooms shall be permitted to intervene in accordance with 12-2.5.7.

12-2.5.2 Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1000 sq ft (93 sq m) shall have at least two exit access doors remotely located from each other.

12-2.5.3 Any room or any suite of rooms, other than patient sleeping rooms, of more than 2500 sq ft (230 sq m) shall have at least two exit access doors remotely located from each other.

12-2.5.4 Any suite of rooms that complies with the requirements of 12-2.5 shall be permitted to be subdivided with non-fire-rated, noncombustible or limited-combustible partitions.

12-2.5.5 Intervening rooms shall not be hazardous areas as defined by 12-3.2.

12-2.5.6 Suites of sleeping rooms shall not exceed 5000 sq ft (460 sq m).

12-2.5.7 Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 sq ft (930 sq m).

12-2.5.8 Suites of rooms, other than patient sleeping rooms, shall be permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 ft (30 m) and shall be permitted to have two intervening rooms where the travel distance within the suite to the exit access door is not greater than 50 ft (15 m).

12-2.5.9 Every corridor shall provide access to at least two approved exits in accordance with Sections 5-4 and 5-5 without passing through any intervening rooms or spaces other than corridors or lobbies.

12-2.5.10 Every exit or exit access shall be arranged so that no corridor, aisle, or passageway has a pocket or dead end exceeding 30 ft (9.1 m).

12-2.6 Travel Distance to Exits.

12-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

12-2.6.2 Travel Distance. Travel distance shall comply with 12-2.6.2.1 through 12-2.6.2.4.

12-2.6.2.1 The travel distance between any room door required as an exit access and an exit shall not exceed 150 ft (45 m).

12-2.6.2.2 The travel distance between any point in a room and an exit shall not exceed 200 ft (60 m).

12-2.6.2.3 The travel distance between any point in a health care sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

12-2.6.2.4 The travel distance between any point in a suite of sleeping rooms as permitted by 12-2.5 and an exit access door of that suite shall not exceed 100 ft (30 m) and shall meet the requirements of 12-2.6.2.2.

12-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

12-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

12-2.9 Emergency Lighting.

12-2.9.1 Emergency lighting shall be provided in accordance with Section 5-9.

12-2.9.2 Buildings equipped with or in which patients require the use of life-support systems (*see 12-5.1.3*) shall have emergency lighting equipment supplied by the life safety branch of the electrical system as described in NFPA 99, *Standard for Health Care Facilities*.

12-2.10 Marking of Means of Egress.

12-2.10.1 Means of egress shall have signs in accordance with Section 5-10.

12-2.10.2 Buildings equipped with or in which patients require the use of life-support systems (*see 12-5.1.3*) shall have illumination of the required exit and directional signs supplied by the life safety branch of the electrical system as described in NFPA 99, *Standard for Health Care Facilities*.

Exception: Self-luminous exit signs as permitted by Exception No. 2 to 5-10.3.3.

12-2.11 Special Means of Egress Features. (Reserved.)

SECTION 12-3 PROTECTION

12-3.1 Protection of Vertical Openings.

12-3.1.1 Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute, or other vertical opening between stories shall be enclosed in accordance with 6-2.4 with construction having the following minimum fire resistance ratings:

(a) One hour in buildings required to be of 1-hr construction.

(b) One hour for enclosures connecting not more than three floors.

(c) Two hours for enclosures connecting more than three floors.

Exception No. 1: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: An atrium shall be permitted in accordance with 6-2.4.6. Exception No. 1 to 6-2.4.6(a) shall not apply to patient sleeping and treatment rooms.

Exception No. 3: Multilevel patient sleeping areas in psychiatric facilities shall be permitted without enclosure protection between levels provided all the following conditions are met:

(a) The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed that a fire or other dangerous condition in any part shall be obvious to the occupants or supervisory personnel in the area.

(b) Egress capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, with all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required egress capacity.

(c) The height between the highest and lowest finished floor levels shall not exceed 13 ft (4 m). The number of levels shall not be restricted.

12-3.1.2 A door in a stair enclosure shall be self-closing and shall normally be kept in a closed position.

Exception: Doors in stair enclosures held open under the conditions specified by 12-2.2.2.6 and 12-2.2.2.7.

12-3.2 Protection from Hazards.

12-3.2.1* Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The following areas shall be protected as indicated in Table 12-3.2.1.

12-3.2.2* Laboratories. Laboratories employing quantities of flammable, combustible, or hazardous materials that are considered as severe hazard shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

12-3.2.3 Anesthetizing Locations. Anesthetizing locations shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

12-3.2.4 Medical Gas. Medical gas storage and administration areas shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

12-3.2.5 Gift Shops. Gift shops shall be protected as hazardous areas where used for the storage or display of combustibles in quantities considered hazardous. Gift shops not considered hazardous and having separately protected storage shall be permitted to be:

(a) Open to a lobby or corridor if the gift shop is not greater than 500 sq ft (46.5 sq m), or

(b) Separated from a lobby or corridor with non-fire-rated walls.

12-3.2.6 Cooking Facilities. Cooking facilities shall be protected in accordance with 7-2.3.

Table 12-3.2.1 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Boiler and fuel-fired heater rooms	1-hr
Central/bulk laundries more than 100 sq ft (9.3 sq m) in area	1-hr
Laboratories employing flammable or combustible materials in quantities less than that which would be considered severe	See 12-3.6.3.3
Laboratories that use hazardous materials that would cause classification as severe hazard in accordance with NFPA 99, <i>Standard for Health Care Facilities</i>	1-hr
Paint shops employing hazardous substances and materials in quantities less than that which would cause classification as severe hazard	1-hr
Physical plant maintenance shops	1-hr
Soiled linen rooms	1-hr
Storage rooms more than 50 sq ft (4.6 sq m) in area but not more than 100 sq ft (9.3 sq m) in area storing combustible material	See 12-3.6.3.3
Storage rooms more than 100 sq ft (9.3 sq m) storing combustible material	1-hr
Trash collection rooms	1-hr

Exception: Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities shall not be required.*

12-3.2.7 Buildings housing health care occupancies as indicated in 12-1.1.1.2 which have roof-top heliports shall be protected in accordance with NFPA 418, *Standard for Heliports*.

12-3.3 Interior Finish.

12-3.3.1 Interior finish shall be in accordance with Section 6-5.

12-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted throughout if Class A or Class B. The provisions of 6-5.9.1 shall not apply.

Exception No. 1: Walls and ceilings shall be permitted to have Class A, Class B, or Class C interior finish in individual rooms having a capacity of not more than four persons.

Exception No. 2: Corridor wall finish up to 4 ft (1.2 m) in height that is restricted to the lower half of the wall shall be permitted to be Class A, Class B, or Class C.

12-3.3.3 Interior Floor Finish. (No requirements.)

12-3.4 Detection, Alarm, and Communication Systems.

12-3.4.1 General.

12-3.4.1.1 Health care occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

12-3.4.1.2 All required fire alarm systems and detection systems shall be provided with a secondary power supply in accordance with 7-6.1.4.

12-3.4.2* Initiation. Initiation of the required fire alarm systems shall be by manual means in accordance with 7-6.2 and by means of any required sprinkler system water flow alarms, detection devices, or detection systems.

Exception: Fire alarm pull stations in patient sleeping areas shall not be required at exits if located at all nurses' control stations or other continuously attended staff location, provided such pull stations are visible and continuously accessible and that travel distances required by 7-6.2.4 are not exceeded.

12-3.4.3 Notification.

12-3.4.3.1 Occupant Notification. Occupant notification shall be accomplished automatically in accordance with 7-6.3. Presignal systems shall be prohibited. Use of Exception No. 5 to 7-6.3.2 shall not be permitted.

*Exception:** In lieu of audible alarm signals, visible alarm-indicating appliances shall be permitted to be used in critical care areas.

12-3.4.3.2 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

Exception: Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department unless the alarm condition is reconfirmed after a maximum 120-sec time period.

12-3.4.3.3 Alarm annunciation shall be provided in accordance with 7-6.7.

Exception: The alarm zone shall be permitted to coincide with the allowable area of smoke compartments.

12-3.4.4 Emergency Control. Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically any control functions to be performed by that device. (See 7-6.5.)

12-3.4.5 Detection.

12-3.4.5.1 Detection systems, where required, shall be installed in accordance with Section 7-6.

12-3.4.5.2 Detection in Spaces Open to Corridors. (See 12-3.6.1.)

12-3.4.5.3* Nursing Homes. An approved, automatic smoke detection system shall be installed in corridors throughout smoke compartments containing patient sleeping rooms and in spaces open to corridors as permitted in nursing homes by 12-3.6.1.

Exception No. 1: Corridor systems shall not be required where each patient sleeping room is protected by an approved smoke detection system.

Exception No. 2: Corridor systems shall not be required where patient room doors are equipped with automatic door-closing devices with integral smoke detectors on the room side installed in accordance with their listing, provided that the integral detectors provide occupant notification.

12-3.5 Extinguishment Requirements.

12-3.5.1* Buildings containing health care facilities shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception: In Type I and Type II construction, where approved by the authority having jurisdiction, alternative protection measures shall be permitted to be substituted for sprinkler protection in specified areas where the authority having jurisdiction has prohibited sprinklers, without causing a building to be classified as nonsprinklered.

12-3.5.2* Listed quick response or listed residential sprinklers shall be used throughout smoke compartments containing patient sleeping rooms.

12-3.5.3* Sprinklers in areas where cubicle curtains are installed shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*.

12-3.5.4 Portable fire extinguishers shall be provided in all health care occupancies in accordance with 7-7.4.1.

12-3.6 Corridors.

12-3.6.1 Corridors shall be separated from all other areas by partitions complying with 12-3.6.2 through 12-3.6.5. (See also 12-2.5.8.)

Exception No. 1: Spaces shall be permitted to be unlimited in area and open to the corridor, provided that

(a) The spaces are not used for patient sleeping rooms, treatment rooms, or hazardous areas; and

(b) The corridors onto which the spaces open in the same smoke compartment are protected by an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4, or the smoke compartment in which the space is located is protected throughout by quick response sprinklers; and

(c) The open space is protected by an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4, or the entire space is arranged and located to permit direct supervision by the facility staff from a nursing station or similar space; and

(d) The space does not obstruct access to required exits.

Exception No. 2: Waiting areas shall be permitted to be open to the corridor, provided that

(a) The aggregate waiting area in each smoke compartment does not exceed 600 sq ft (55.7 sq m); and

(b) Each area is protected by an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4, or each area is arranged and located to permit direct supervision by the facility staff from a nursing station or similar space; and

(c) The area does not obstruct access to required exits.

*Exception No. 3:** Space for nurses' stations.

Exception No. 4: Gift shops open to the corridor where protected in accordance with 12-3.2.5.

Exception No. 5: In a limited care facility, group meeting or multi-purpose therapeutic spaces shall be permitted to open to the corridor, provided that

(a) The space is not a hazardous area; and

(b) The space is protected by an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4, or the space is arranged and located to permit direct supervision by the facility staff from the nurses' station or similar location; and

(c) The area does not obstruct access to required exits.

12-3.6.2* Construction of Corridor Walls. Corridor walls shall form a barrier to limit the transfer of smoke. Such walls shall be permitted to terminate at the ceiling where the ceiling is constructed to limit the transfer of smoke. No fire resistance rating is required for corridor walls.

12-3.6.3* Corridor Doors.

12-3.6.3.1* Doors protecting corridor openings shall be constructed to resist the passage of smoke.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

12-3.6.3.2 Doors shall be provided with positive latching hardware. Roller latches shall be prohibited.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

12-3.6.3.3 Door-closing devices shall not be required on doors in corridor wall openings other than those serving required exits, smoke barriers, or enclosures of vertical openings and hazardous areas.

12-3.6.3.4 Nonrated, factory- or field-applied protective plates extending not more than 48 in. (122 cm) above the bottom of the door shall be permitted.

12-3.6.3.5 Dutch doors shall be permitted where they conform to 12-3.6.3, and, in addition, both upper leaf and lower leaf shall be equipped with a latching device, and the meeting edges of the upper and lower leaves shall be equipped with an astragal, rabbet, or bevel.

Dutch doors protecting openings in enclosures around hazardous areas shall comply with NFPA 80, *Standard for Fire Doors and Fire Windows*.

12-3.6.4 Transfer Grilles. Transfer grilles, whether or not protected by fusible link-operated dampers, shall not be used in these walls or doors.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

12-3.6.5 Openings. In other than smoke compartments containing patient bedrooms, miscellaneous openings such as mail slots, pharmacy pass-through windows, laboratory pass-through windows, and cashier pass-through windows shall be permitted to be installed in vision panels or doors without special protection, provided the aggregate area of openings per room does not exceed 80 sq in. (520 sq cm) and the openings are installed at or below half the distance from the floor to the room ceiling.

12-3.7* Subdivision of Building Spaces.

12-3.7.1 Buildings containing health care facilities shall be subdivided by smoke barriers as follows:

(a) To divide every story used by inpatients for sleeping or treatment into at least two smoke compartments, and

(b) To divide every story having an occupant load of 50 or more persons, regardless of use, into at least two smoke compartments, and

(c) To limit the size of each smoke compartment required by (a) and (b) to an area not exceeding 22,500 sq ft (2100 sq m), and

Exception to (c): The area of an atrium separated in accordance with 6-2.4.6 shall not be limited in size.

(d) To limit the travel distance from any point to reach a door in the required smoke barrier to 200 ft (60 m).

Exception No. 1: Stories that do not contain a health care occupancy, located totally above the health care occupancy.

Exception No. 2: Areas that do not contain a health care occupancy and that are separated from the health care occupancy by a fire barrier complying with 5-2.4.3.

Exception No. 3: Stories that do not contain health care occupancies and that are more than one story below the health care occupancy.

Exception No. 4: Open-air parking structures protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

12-3.7.2 Smoke barriers shall be provided on stories that are usable but unoccupied.

12-3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 and shall have a fire resistance rating of at least 1 hr.

Exception No. 1: Where an atrium is used, smoke barriers shall be permitted to terminate at an atrium wall constructed in accordance with *Exception No. 2* to 6-2.4.6(a). A minimum of two separate smoke compartments shall be provided on each floor.

Exception No. 2:* Dampers shall not be required in duct penetrations of smoke barriers in fully ducted heating, ventilating, and air conditioning systems.

12-3.7.4 At least 30 net sq ft (2.8 net sq m) per patient in a hospital or nursing home or 15 net sq ft (1.4 net sq m) per resident in a limited care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the smoke barrier. On stories not housing bed or litter patients, at least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

12-3.7.5* Doors in smoke barriers shall be substantial doors, such as 1³/₄-in. (4.4-cm) thick, solid bonded wood core, or of construction that will resist fire for at least 20 minutes. Non-rated factory- or field-applied protective plates extending not more than 48 in. (122 cm) above the bottom of the door shall be permitted. Cross corridor openings in smoke barriers shall be protected by a pair of swinging doors or a horizontal sliding door complying with 5-2.1.14. Swinging doors shall be arranged so that each door will swing in a direction opposite from the other.

The minimum clear width for swinging doors shall be as follows:

(a) Hospitals and nursing homes: 41.5 in. (105 cm).

(b) Psychiatric hospitals and limited care facilities: 32 in. (81 cm).

The minimum clear width opening for horizontal sliding doors shall be as follows:

(a) Hospitals and nursing homes: 83 in. (211 cm).

(b) Psychiatric hospitals and limited care facilities: 64 in. (163 cm).

12-3.7.6* Doors in smoke barriers shall comply with 6-3.4 and shall be self-closing or automatic-closing in accordance with 12-2.2.2.6.

12-3.7.7* Vision panels consisting of fire-rated glazing or wire glass panels in approved frames shall be provided in each cross corridor swinging door and at each cross corridor horizontal sliding door in a smoke barrier.

12-3.7.8 Rabbets, bevels, or astragals shall be required at the meeting edges, and stops shall be required at the head and sides of door frames in smoke barriers. Positive latching hardware shall not be required. Center mullions shall be prohibited.

12-3.8 Special Protection Features.

12-3.8.1* Outside Window or Door. Every patient sleeping room shall have an outside window or outside door. The maximum allowable sill height shall not exceed 36 in. (91 cm) above the floor.

Exception No. 1: The window sill in special nursing care areas, such as those housing ICU, CCU, hemodialysis, and neonatal patients, shall not exceed 60 in. (152 cm) above the floor.

Exception No. 2: Newborn nurseries and rooms intended for occupancy for less than 24 hr, such as those housing obstetrical labor beds, recovery beds, and observation beds in the emergency department.

Exception No. 3: Windows in atrium walls shall be considered outside windows for the purposes of this requirement.

Exception No. 4: The window sill in limited care facilities shall not exceed 44 in. (112 cm) above the floor.

SECTION 12-4 SPECIAL PROVISIONS

12-4.1 Windowless Buildings. Windowless buildings or windowless portions of buildings shall not be used for patient sleeping rooms. Windowless buildings or windowless portions of buildings shall comply with Section 32-7.

12-4.2 High-Rise Buildings. High-rise buildings shall comply with 32-8.2.

SECTION 12-5 BUILDING SERVICES

12-5.1 Utilities.

12-5.1.1 Utilities shall comply with the provisions of Section 7-1.

12-5.1.2 Power for alarms, emergency communication systems, and the illumination of generator set locations shall be in accordance with the essential electrical system requirements of NFPA 99, *Standard for Health Care Facilities*.

12-5.1.3 Any health care occupancy, as indicated in 12-1.1.1.2, that normally utilizes life-support devices shall have electrical systems designed and installed in accordance with NFPA 99, *Standard for Health Care Facilities*.

Exception: This requirement shall not apply to a facility that uses life-support equipment for emergency purposes only.

12-5.2 Heating, Ventilating, and Air Conditioning.

12-5.2.1 Heating, ventilating, and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 12-5.2.2.

12-5.2.2* Any heating device other than a central heating plant shall be designed and installed so that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception No. 1: Approved, suspended unit heaters shall be permitted in locations other than means of egress and patient sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area, and provided they are equipped with the safety features required above.

Exception No. 2: Fireplaces shall be permitted and used only in areas other than patient sleeping areas, provided these areas are separated from patient sleeping spaces by construction having a minimum 1-hr fire resistance rating and such fireplaces comply with the provisions of 7-2.2. In addition, the fireplace shall be equipped with a hearth that shall be raised at least 4 in. (10.2 cm) and a fireplace enclosure guaranteed against breakage up to a temperature of 650°F (343°C) and constructed of heat tempered glass or other approved material. If, in the opinion of the authority having jurisdiction, special hazards are present, a lock on the enclosure and other safety precautions shall be permitted to be required.

12-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

12-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes.

12-5.4.1 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

12-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with Section 7-7. (*See Section 7-5.*)

12-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

12-5.4.4 Any incinerator shall not be directly flue-fed, nor shall any floor charging chute directly connect with the combustion chamber.

SECTION 12-6 NEW AMBULATORY HEALTH CARE FACILITIES

12-6.1 General Requirements.

12-6.1.1 Application.

12-6.1.1.1 Ambulatory health care facilities shall comply with the provisions of Chapter 26 and this section, whichever

is more stringent. The provisions of Sections 12-2 through 12-5 shall not apply to this section unless a specific requirement is referenced by this section.

12-6.1.1.2 This section establishes life safety requirements, in addition to those required in Chapter 26, for the design of all ambulatory health care facilities that meet the requirements of 12-1.3.

12-6.1.2 (Reserved.)

12-6.1.3 Special Definitions. (See 12-1.3.)

12-6.1.4 Classification of Occupancy. (See 12-1.3.)

12-6.1.5 (Reserved.)

12-6.1.6 Minimum Construction Requirements.

12-6.1.6.1 For purposes of 12-6.1.6, the number of stories shall be counted starting with the primary level of exit discharge and ending with the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor that is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter.

12-6.1.6.2 Buildings of one story in height housing ambulatory health care facilities shall be of any construction type in accordance with NFPA 220, *Standard on Types of Building Construction*. (See 6-2.1.)

12-6.1.6.3 Buildings of two or more stories in height housing ambulatory health care facilities shall be of Type I(443), Type I(332), Type II(222), Type II(111), Type III(211), Type IV(2HH), or Type V(111) construction. (See 6-2.1.)

Exception: Buildings constructed of Type II(000), Type III(200), or Type V(000), if protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

12-6.1.6.4 Any level below the level of exit discharge shall be separated from the level of exit discharge by at least Type II(111), Type III(211), or Type V(111) construction. (See 6-2.1.)

Exception: Separation shall not be required for such levels if they are under the control of the ambulatory health care facility and any hazardous spaces are protected in accordance with Section 6-4.

12-6.1.6.5 Where new ambulatory health care facilities are located in existing buildings, the authority having jurisdiction shall be permitted to accept construction systems of lesser fire resistance than required by 12-6.1.6.2 through 12-6.1.6.4 if it can be demonstrated to the authority's satisfaction that prompt evacuation of the facility can be achieved in case of fire or that the exposing occupancies and materials of construction present no threat of fire penetration from such occupancy to the ambulatory health care facility or to the collapse of the structure.

12-6.1.7 Occupant Load. (See 26-1.7.)

12-6.2 Means of Egress Requirements.

12-6.2.1 General. Every aisle, passageway, corridor, exit discharge, exit location, and access shall be in accordance with Chapter 5.

Exception: As modified by 12-6.2.2 through 12-6.2.11.

12-6.2.2 Means of Egress Components.

12-6.2.2.1 Components of means of egress shall be limited to the types described in 26-2.2.

12-6.2.2.2 Special locking arrangements complying with 5-2.1.6 shall be permitted on exterior doors.

12-6.2.2.3 Any door in an exit passageway, horizontal exit, smoke barrier, stairway enclosure, or hazardous area enclosure shall be permitted to be held open only by an automatic release device that complies with 5-2.1.8. The required manual fire alarm system and the systems required by 5-2.1.8, Exception(c), shall be arranged to initiate the closing action of all such doors by zone or throughout the entire facility.

12-6.2.2.4 Where doors in a stair enclosure are held open by an automatic device as permitted in 12-6.2.2.3, initiation of a door closing action on any level shall cause all doors at all levels in the stair enclosure to close.

12-6.2.3 Capacity of Means of Egress.

12-6.2.3.1 The capacity of any required means of egress shall be determined in accordance with the provisions of 26-2.3 and shall be based on its width as defined in Section 5-3.

12-6.2.3.2 The minimum width of any corridor or passageway required for exit access shall be 44 in. (112 cm) in clear width.

12-6.2.3.3 Doors in the means of egress from diagnostic or treatment areas, such as X-ray, surgical, or physical therapy, shall provide a minimum clear width of 32 in. (81 cm).

12-6.2.4 Number of Exits.

12-6.2.4.1 At least two exits of the types described in 26-2.2 that are remotely located from each other shall be provided for each floor or fire section of the building.

12-6.2.4.2 Any room and any suite of rooms of more than 2500 sq ft (232 sq m) shall have at least two exit access doors remotely located from each other.

12-6.2.4.3 At least two exits of the types described in 26-2.2 shall be accessible from each smoke compartment. Egress shall be permitted through adjacent compartments, but shall not require return through the compartment of fire origin.

12-6.2.5 Arrangement of Means of Egress. (See 26-2.5.)

12-6.2.6 Travel Distance to Exits.

12-6.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

12-6.2.6.2 Travel Distance.

(a) The travel distance between any room door required as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m).

Exception: The maximum travel distance permitted in (a) or (b) above shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system.

12-6.2.7 Discharge from Exits. (See 26-2.7.)

12-6.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

12-6.2.9 Emergency Lighting and Essential Electrical Systems.

12-6.2.9.1 Emergency lighting shall be provided in accordance with Section 5-9.

12-6.2.9.2 Where general anesthesia or life-support equipment is used, each ambulatory health care facility shall be provided with an essential electrical system in accordance with NFPA 99, *Standard for Health Care Facilities*.

Exception No. 1: Where battery-operated equipment is provided and acceptable to the authority having jurisdiction.

Exception No. 2: This requirement shall not apply to a facility that uses life-support equipment for emergency purposes only.

12-6.2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

12-6.2.11 Special Means of Egress Features. (Reserved.)

12-6.3 Protection.

12-6.3.1 Protection of Vertical Openings. (See 26-3.1.)

12-6.3.2 Protection from Hazards. (See 26-3.2.)

12-6.3.2.1 Laboratories employing quantities of flammable, combustible, or hazardous materials that are considered as severe hazard shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

12-6.3.2.2 Anesthetizing locations shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

12-6.3.3 Interior Finish. (See 26-3.3.)

12-6.3.4 Detection, Alarm, and Communication Systems.

12-6.3.4.1 General. Ambulatory health care facilities shall be provided with fire alarm systems in accordance with Section 7-6, except as modified by 12-6.3.4.2 through 12-6.3.4.5.

12-6.3.4.2 Initiation. Initiation of the required fire alarm systems shall be by manual means in accordance with 7-6.2 and by means of any detection devices or detection systems required.

12-6.3.4.3 Occupant Notification. Occupant notification shall be accomplished automatically, without delay, upon operation of any fire alarm activating device by means of an internal audible alarm in accordance with 7-6.3.

Exception: The presignal system allowed by Exception No. 1 to 7-6.3.2 shall not be permitted.

12-6.3.4.4 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

Exception: Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department unless the alarm condition is reconfirmed after a maximum 120-sec time period.

12-6.3.4.5 Emergency Control. Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically, without delay, any control functions required to be performed by that device. (See 7-6.5.)

12-6.3.5 Extinguishment Requirements. (See 26-3.5.)

12-6.3.5.1 Isolated hazardous areas shall be permitted to be protected in accordance with 7-7.1.2. Where more than two sprinklers are installed in a single area, water flow detection shall be provided to sound the building fire alarm or notify by

a signal any constantly attended location, such as PBX, security, or emergency room, whereby necessary corrective action shall be directed.

12-6.3.5.2 Portable fire extinguishers shall be provided in ambulatory health care facilities in accordance with 7-7.4.1.

12-6.3.6 Corridors. (See 26-3.6.)

12-6.3.6.1 Openings. Miscellaneous openings such as mail slots, pharmacy pass-through windows, laboratory pass-through windows, and cashier pass-through windows shall be permitted to be installed in vision panels or doors without special protection, provided the aggregate area of openings per room does not exceed 20 sq in. (135 sq cm) and the openings are installed at or below half the distance from the floor to the room ceiling.

Exception: For rooms protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, the aggregate area of openings per room shall not exceed 80 sq in. (520 sq cm).

12-6.3.7 Subdivision of Building Space.

12-6.3.7.1 Ambulatory health care facilities shall be separated from other tenants and occupancies by walls having at least a 1-hr fire resistance rating. Such walls shall extend from the floor slab below to the floor or roof slab above. Doors shall be constructed of at least 1¾-in. (4.4-cm) thick, solid bonded wood core or the equivalent and shall be equipped with positive latches. These doors shall be self-closing and shall be kept in the closed position except when in use. Any vision panels shall be of fixed fire window assemblies in accordance with 6-2.3.2.2.

12-6.3.7.2 The ambulatory health care facility shall be divided into at least two smoke compartments on patient treatment floors.

Exception: Facilities of less than 5000 sq ft (465 sq m) and protected by an approved, automatic smoke detection system.

12-6.3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 and shall have a fire resistance rating of at least 1 hr.

Exception: Dampers shall not be required in duct penetrations of smoke barriers in fully ducted heating, ventilating, and air conditioning systems for buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

12-6.3.7.4 Vision panels in the smoke barrier shall be of fixed fire window assemblies in accordance with 6-2.3.2.2.

12-6.3.7.5 At least 15 net sq ft (1.4 net sq m) per ambulatory health care facility occupant shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounges, and other low hazard areas on each side of the smoke compartment for the total number of occupants in adjoining compartments. Smoke barriers shall be provided to limit the size of each smoke compartment to an area not exceeding 22,500 sq ft (2100 sq m), and to limit the travel distance from any point to reach a door in the required smoke barrier to 200 ft (60 m).

Exception: The area of an atrium separated in accordance with 6-2.4.6 shall not be limited in size.

12-6.3.7.6* Doors in smoke barriers shall be at least 1¾-in. (4.4-cm) thick, solid bonded wood core or the equivalent and shall be self-closing. A vision panel shall be required.

12-6.3.7.7 Doors in smoke barriers shall normally be kept closed, or, if held open, they shall be equipped with automatic devices that will release the doors upon activation of:

- (a) The fire alarm system, and either
- (b) A local smoke detector, or
- (c) A complete automatic fire extinguishing system or complete automatic fire detection system.

12-6.4 Special Provisions. (See Section 26-4. For operating features requirements see Section 12-7.)

12-6.5 Building Services.

12-6.5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

12-6.5.2 Heating, Ventilating, and Air Conditioning.

12-6.5.2.1 Heating, ventilating, and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 12-6.5.2.2.

12-6.5.2.2 Any heating device other than a central heating plant shall be designed and installed so that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception: Approved, suspended unit heaters shall be permitted in locations other than means of egress and patient treatment areas, provided such heaters are located high enough to be out of the reach of persons using the area, and provided they are equipped with the safety features required above.

12-6.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

12-6.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 12-7* OPERATING FEATURES

12-7.1 Attendants, Evacuation Plan, Fire Exit Drills.

12-7.1.1 The administration of every hospital, nursing home, and limited care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire and for their evacuation to areas of refuge and for evacuation from the building when necessary. All employees shall be periodically instructed and kept informed with respect to their duties under the plan. A copy of the plan shall be readily available at all times in the telephone operator's position or at the security center.

The provisions of 12-7.1.2 to 12-7.2.3 inclusive shall apply.

12-7.1.2* Fire exit drills in health care occupancies shall include the transmission of a fire alarm signal and simulation of emergency fire conditions. Drills shall be conducted quarterly on each shift to familiarize facility personnel (nurses, interns, maintenance engineers, and administrative staff) with signals and emergency action required under varied conditions. When drills are conducted between 9:00 p.m. (2100 hours) and 6:00 a.m. (0600 hours), a coded announcement shall be permitted to be used instead of audible alarms.

Exception: The movement of infirm or bedridden patients to safe areas or to the exterior of the building shall not be required.

12-7.1.3 Employees of health care facilities shall be instructed in life safety procedures and devices.

12-7.2 Procedure in Case of Fire.

12-7.2.1* For health care occupancies, the proper protection of patients shall require the prompt and effective response of health care personnel. The basic response required of staff shall include the removal of all occupants directly involved with the fire emergency, transmission of an appropriate fire alarm signal to warn other building occupants, confinement of the effects of the fire by closing doors to isolate the fire area, and the execution of those evacuation duties as detailed in the facility's fire safety plan. (See Appendix A for a more detailed suggested emergency plan.)

12-7.2.2 A written facility fire safety plan shall provide for

- (a) Use of alarms,
- (b) Transmission of alarm to fire department,
- (c) Response to alarms,
- (d) Isolation of fire,
- (e) Evacuation of area,
- (f) Preparation of building for evacuation, and
- (g) Extinguishment of fire.

12-7.2.3 All facility personnel shall be instructed in the use of and response to fire alarms, and, in addition, they shall be instructed in the use of the code phrase to ensure transmission of an alarm under the following conditions:

- (a) When the individual who discovers a fire must immediately go to the aid of an endangered person.
- (b) During a malfunction of the building fire alarm system.

Personnel hearing the code announced shall first activate the building fire alarm using the nearest manual alarm station and then shall execute immediately their duties as outlined in the fire safety plan.

12-7.3 Maintenance of Exits. Proper maintenance shall be provided to ensure the dependability of the method of evacuation selected. Facilities that find it necessary to lock exits shall at all times maintain an adequate staff qualified to release locks and conduct occupants from the immediate danger area to a place of safety in case of fire or other emergency.

12-7.4* Smoking. Smoking regulations shall be adopted and shall include the following minimal provisions:

- (a) Smoking shall be prohibited in any room, ward, or compartment where flammable liquids, combustible gases, or oxygen is used or stored and in any other hazardous location. Such areas shall be posted with "NO SMOKING" signs or the international symbol for no smoking.

Exception to (a): In health care facilities where smoking is prohibited and signs are prominently placed at all major entrances, secondary signs with no smoking language shall not be required.

(b) Smoking by patients classified as not responsible shall be prohibited.

Exception to (b): Where the patient is under direct supervision.

(c) Ashtrays of noncombustible material and safe design shall be provided in all areas where smoking is permitted.

(d) Metal containers with self-closing cover devices into which ashtrays can be emptied shall be readily available to all areas where smoking is permitted.

12-7.5 Furnishings, Bedding, and Decorations.

12-7.5.1* Draperies, curtains, including cubicle curtains, and other loosely hanging fabrics and films serving as furnishings or decorations in health care occupancies shall be in accordance with the provisions of 6-6.1. (See 12-3.5.3.)

Exception: Curtains at showers.

12-7.5.2 Newly introduced upholstered furniture within health care occupancies shall meet the criteria specified when tested in accordance with the methods cited in 6-6.2(b) and 6-6.3.

12-7.5.3 Newly introduced mattresses within health care occupancies shall meet the criteria specified when tested in accordance with the methods cited in 6-6.2(c) and 6-6.4.

12-7.5.4 Combustible decorations shall be prohibited in any health care occupancy unless flame-retardant.

Exception: Combustible decorations of such limited quantities that a hazard of fire development or spread is not present, such as photographs and paintings.

12-7.5.5 Soiled linen or trash collection receptacles shall not exceed 32 gal (121 L) in capacity. The average density of container capacity in a room or space shall not exceed 0.5 gal per sq ft (20.4 L per sq m). There shall be not more than 32 gal (121 L) capacity within any 64 sq ft (5.9 sq m) area. Mobile soiled linen or trash collection receptacles with capacities greater than 32 gal (121 L) shall be located in a room protected as a hazardous area when not attended.

Exception: Container size and density shall not be limited in hazardous areas.

12-7.6* Engineered Smoke Control Systems. New engineered smoke control systems shall be tested in accordance with established engineering principles and shall meet the performance requirements of such testing prior to acceptance. Following acceptance, all engineered smoke control systems shall be tested periodically in accordance with recognized engineering principles. Test documentation shall be maintained on the premises at all times.

12-7.7 Portable Space Heating Devices. Portable space heating devices shall be prohibited in all health care and ambulatory health care facilities.

Exception: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas where the heating elements of such devices are limited to not more than 212°F (100°C).

12-7.8 Construction, Repair, and Improvement Operations.

12-7.8.1 Construction, repair, and improvement operations shall comply with 1-3.11.

12-7.8.2 The means of egress in any area undergoing construction, repair, or improvements shall be inspected daily for meeting the requirements of 5-1.9.1 and shall also meet the requirements of NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

CHAPTER 13 EXISTING HEALTH CARE OCCUPANCIES

SECTION 13-1 GENERAL REQUIREMENTS

13-1.1 Application.

13-1.1.1 General.

13-1.1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as health care occupancies. (*See also 12-1.1.1.1.*)

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety has been provided in accordance with Section 1-6.

13-1.1.1.2 This chapter establishes life safety requirements for all existing hospitals, nursing homes, and limited care facilities. Where requirements vary, the specific subclass of health care occupancy is named in the paragraph pertaining thereto. Section 13-6 establishes life safety requirements for all existing ambulatory health care facilities.

13-1.1.1.3 Health care occupancies shall be those that provide medical care and treatment of persons suffering from physical or mental illness, disease, or infirmity, including infants, convalescents, or infirm aged persons.

13-1.1.1.4 Health care facilities provide sleeping accommodations for their occupants and are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

13-1.1.1.5 This chapter also covers ambulatory health care facilities as defined in 13-1.3. (*See Section 13-6 for requirements.*)

13-1.1.1.6 Buildings or sections of buildings that primarily house patients who, in the opinion of the governing body of the facility and the governmental agency having jurisdiction, are capable of judgment and appropriate physical action for self-preservation under emergency conditions shall be permitted to comply with chapters of the *Code* other than Chapter 13.

13-1.1.1.7 It shall be recognized that, in buildings housing certain types of patients or having detention rooms or a security section, it might be necessary to lock doors and bar windows to confine and protect building inhabitants. In such instances, the authority having jurisdiction shall make appropriate modifications to those sections of this *Code* that would otherwise require means of egress to be kept unlocked.

13-1.1.1.8 Buildings or sections of buildings that house older persons and that provide activities that foster continued independence but do not include services distinctive to health care facilities (as defined in 13-1.3) might be subject to the requirements of other sections of this *Code*, such as Chapters 19 or 23.

13-1.1.1.9 Health care occupancies shall include all buildings or parts thereof with occupancy as described in 13-1.3.

13-1.1.1.10 Except for ambulatory health care facilities, facilities that do not provide housing on a 24-hr basis for their occupants shall be classified as other occupancies and shall be covered by other chapters of this *Code*.

13-1.1.1.11* The requirements of this chapter are based on the assumption that staff is available in all patient occupied areas to perform certain fire safety functions as required in other paragraphs of this chapter.

13-1.1.2* Objective. The objective of this chapter is to provide a reasonable level of safety by reducing the probability of injury and loss of life from the effects of fire with due consideration for functional requirements. This is accomplished by limiting the development and spread of a fire emergency to the room of fire origin and reducing the need for occupant evacuation, except from the room of fire origin.

13-1.1.3 Total Concept. All health care facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire emergency requiring the evacuation of occupants. Because the safety of health care occupants cannot be ensured adequately by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate staffing, and development of operating and maintenance procedures composed of the following:

- (a) Design, construction, and compartmentation; and
- (b) Provision for detection, alarm, and extinguishment; and
- (c) Fire prevention and the planning, training, and drilling in programs for the isolation of fire, transfer of occupants to areas of refuge, or evacuation of the building.

13-1.1.4 Additions, Conversions, Modernization, Renovation, and Construction Operations. (*See also 1-3.6 and 1-3.7.*)

13-1.1.4.1 Additions. Additions shall be separated from any existing structure not conforming to the provisions within Chapter 13 by a fire barrier having at least a 2-hr fire resistance rating and constructed of materials as required for the addition.

13-1.1.4.2 Communicating openings in dividing fire barriers required by 13-1.1.4.1 shall occur only in corridors and shall be protected by approved self-closing fire doors. (*See also Section 6-2.*)

13-1.1.4.3 Doors in barriers required by 13-1.1.4.1 shall normally be kept closed.

Exception: Doors shall be permitted to be held open if they meet the requirements of 13-2.2.2.6.

13-1.1.4.4 Conversions. Conversions shall comply with 1-3.12. A conversion from a hospital to a nursing home or from a nursing home to a hospital shall not be considered a change in occupancy or occupancy subclassification.

13-1.1.4.5* Renovations, Alterations, and Modernizations. Renovations, alterations, and modernizations shall comply, to the extent practical, with requirements for new construction in accordance with 1-3.7. Where major renovations, alterations, or modernizations are made in a nonsprinklered facility, the automatic sprinkler requirements of Chapter 12 shall apply to the smoke compartment undergoing the renovation, alteration, or modernization. However, in cases where the building is not protected throughout by an approved, automatic sprinkler system, the requirements of 13-1.6 and 13-2.3.2 shall also apply. Exception No. 2 to 12-3.7.3 shall be permitted only where adjacent smoke compartments are protected throughout by an approved, supervised automatic sprinkler system in accordance with 12-3.5.2. Where minor

renovations, alterations, modernizations, or repairs are done in a nonsprinklered facility, the requirements of 12-3.5.1 shall not apply, but, in such cases, the renovations, alterations, modernizations, or repairs shall not reduce life safety below that which existed before, nor below the requirements of Chapter 13 for nonsprinklered buildings.

13-1.1.4.6 Construction Operations. See 1-3.11 for life safety provisions during construction.

13-1.1.5 Modification of Retroactive Provisions. (See also Sections 1-3 and 1-6.) The requirements of this chapter shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and if the resulting arrangement could be considered as presenting minimum hazard to the life safety of the occupants. The requirements shall be permitted to be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life from fire as practicable.

13-1.2 Mixed Occupancies. (See also 4-1.12.)

13-1.2.1* Sections of health care facilities shall be permitted to be classified as other occupancies if they meet all of the following conditions:

(a) They are not intended to serve health care occupants for purposes of housing, treatment, or customary access by patients incapable of self-preservation;

(b) They are separated from areas of health care occupancies by construction having a fire resistance rating of at least 2 hr.

13-1.2.2* Ambulatory care facilities, medical clinics, and similar facilities that are contiguous to health care occupancies but are primarily intended to provide outpatient services shall be permitted to be classified as business occupancies or ambulatory health care facilities, provided the facilities are separated from the health care occupancy by not less than 2-hr fire resistance-rated construction and the facility is not intended to provide services simultaneously for four or more health care patients who are litter-borne.

13-1.2.3 Health care occupancies in buildings housing other occupancies shall be completely separated from them by construction having a fire resistance rating of at least 2 hr as provided for additions in 13-1.1.4.

13-1.2.4 All means of egress from health care occupancies that traverse non-health care spaces shall conform to requirements of this Code for health care occupancies.

Exception: It shall be permissible to exit through a horizontal exit into other contiguous occupancies that do not conform with health care egress provisions but that do comply with requirements set forth in the appropriate occupancy chapter of this Code, provided the occupancy does not contain high hazard contents. The horizontal exit shall comply with the requirements of 13-2.2.5.

13-1.2.5 Egress provisions for areas of health care facilities that correspond to other occupancies shall meet the corresponding requirements of this Code for such occupancies. Where the clinical needs of the occupant necessitate the locking of means of egress, staff shall be present for the supervised release of occupants during all times of use.

13-1.2.6 Auditoriums, chapels, staff residential areas, or other occupancies provided in connection with health care fa-

cilities shall have means of egress provided in accordance with other applicable sections of the Code.

13-1.2.7 Any area with a hazard of contents classified higher than that of the health care occupancy and located in the same building shall be protected as required in 13-3.2.

13-1.2.8 Non-health care related occupancies classified as containing high hazard contents shall not be permitted in buildings housing health care occupancies.

13-1.3* Special Definitions.

Ambulatory Health Care Facilities. A building or part of a building used to provide services or treatment to four or more patients at the same time that meets the criteria of either (a) or (b) below.

(a) Facilities that provide, on an outpatient basis, treatment for patients incapable of taking action for self-preservation under emergency conditions without assistance from others.

(b) Facilities that provide, on an outpatient basis, surgical treatment requiring general anesthesia.

Hospital. A building or part thereof used on a 24-hr basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. The term hospital, wherever used in this Code, shall include general hospitals, psychiatric hospitals, and specialty hospitals.

Limited Care Facility. A building or part of a building used on a 24-hr basis for the housing of four or more persons who are incapable of self-preservation because of age, physical limitations due to accident or illness, or mental limitations such as mental retardation/developmental disability, mental illness, or chemical dependency.

Nursing Home. A building or part of a building used on a 24-hr basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. The term "nursing home," wherever used in this Code, shall include nursing and convalescent homes, skilled nursing facilities, intermediate care facilities, and infirmaries in homes for the aged.

13-1.4 Classification of Occupancy. (See 13-1.3.)

13-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

13-1.6 Minimum Construction Requirements.

13-1.6.1 For the purpose of 13-1.6, the number of stories shall be counted starting with the primary level of exit discharge and ending with the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be the lowest story whose floor is level with or above finished grade on the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story.

13-1.6.2 Health care occupancies shall be limited to the types of building construction permitted by Table 13-1.6.2 (see 6-2.1).

Exception. Any building of Type I, Type II(222), or Type II(111) construction shall be permitted to include roofing systems involving combustible supports, decking, or roofing, provided that*

(a) The roof covering meets Class C requirements in accordance with NFPA 256, *Standard Methods of Fire Tests of Roof Coverings*; and

(b) The roof is separated from all occupied portions of the building by a noncombustible floor assembly that includes at least 2½ in. (6.4 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved, automatic sprinkler system.

Table 13-1.6.2 Construction Type Limitations

Construction Type	Stories			
	1	2	3	4 or More
I(443)	X	X	X	X
I(332)				
II(222)				
II(111)	X	X†	X†	N.P.
II(000)	X†	X†	N.P.	N.P.
III(211)	X†	X†	N.P.	N.P.
III(200)	X†	N.P.	N.P.	N.P.
IV(2HH)	X†	X†	N.P.	N.P.
V(111)	X†	X†	N.P.	N.P.
V(000)	X†	N.P.	N.P.	N.P.

X: Permitted type of construction

X†: Building requires automatic sprinkler protection (see 13-3.5.1)

N.P.: Not Permitted

13-1.6.3 All interior walls and partitions in buildings of Type I or Type II construction shall be of noncombustible or limited-combustible materials.

Exception. Listed, fire-retardant-treated wood studs shall be permitted within non-load bearing 1-hr fire-rated partitions.*

13-1.6.4 Openings for the passage of pipes or conduit in walls or partitions that are required to have fire-resisting or smoke-resisting capability shall be protected in accordance with 6-2.3.2.4.2 or 6-3.6.1.

13-1.6.5 Firestopping. Each exterior wall of frame construction and all interior stud partitions shall be firestopped to cut off all concealed draft openings, both horizontal and vertical, between any cellar or basement and the first floor. Such fire-stopping shall consist of wood at least 2 in. (5 cm) (nominal) thick or of suitable noncombustible material.

13-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor but not less than one person for each 120 sq ft (11.1 sq m) of gross floor area in health care sleeping departments and not less than one person for each 240 sq ft (22.3 sq m) of gross floor area of inpatient health care treatment departments. Gross floor areas shall be measured within the exterior building walls with no deductions. (See Chapter 3.)

SECTION 13-2 MEANS OF EGRESS REQUIREMENTS

13-2.1 General. Every aisle, passageway, corridor, exit discharge, exit location, and access shall be in accordance with Chapter 5.

Exception: As modified by 13-2.2 through 13-2.11.

13-2.2 Means of Egress Components.

13-2.2.1 Components of means of egress shall be limited to the types described in 13-2.2.2 through 13-2.2.10.

13-2.2.2 Doors.

13-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

13-2.2.2.2 Locks shall not be permitted on patient sleeping room doors.

Exception No. 1: Key locking devices that restrict access to the room from the corridor and that are operable only by staff from the corridor side shall be permitted. Such devices shall not restrict egress from the room.

Exception No. 2: Door locking arrangements shall be permitted in health care occupancies or portions of health care occupancies where the clinical needs of the patients require specialized security measures for their safety, provided keys are carried by staff at all times.

13-2.2.2.3 Doors not in a required means of egress shall be permitted to be subject to locking.

13-2.2.2.4 Doors within a required means of egress shall not be equipped with a latch or lock that requires the use of a tool or key from the egress side.

Exception No. 1: Door locking arrangements shall be permitted in health care occupancies or portions of health care occupancies where the clinical needs of the patients require specialized security measures for their safety, provided staff can readily unlock such doors at all times. (See 13-1.1.1.7 and 13-2.2.2.5.)

Exception No. 2. Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any egress path.*

Exception No. 3: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

13-2.2.2.5 Doors located in the means of egress that are permitted to be locked under other provisions of this chapter shall have adequate provisions made for the rapid removal of occupants by such reliable means as the remote-control of locks, by keying all locks to keys carried by staff at all times, or by other reliable means available to the staff at all times. Only one such locking device shall be permitted on each door.

Exception No. 1: Locks installed in accordance with Exceptions No. 2 and 3 to 13-2.2.2.4.

Exception No. 2: More than one lock shall be permitted on each door subject to approval of the authority having jurisdiction.

13-2.2.2.6* Any door in an exit passageway, stairway enclosure, horizontal exit, smoke barrier, or hazardous area enclosure shall be permitted to be held open only by an automatic release device that complies with 5-2.1.8. The automatic sprinkler system, if provided, the required fire alarm system, and the systems required by 5-2.1.8, Exception(c), shall be arranged to initiate the closing action of all such doors by zone or throughout the entire facility.

13-2.2.2.7 Where doors in a stair enclosure are held open by an automatic device as permitted in 13-2.2.2.6, initiation of a door-closing action on any level shall cause all doors at all levels in the stair enclosure to close.

13-2.2.2.8* Health care occupancies shall be exempt from the reentry provisions of 5-2.1.5.2.

13-2.2.2.9 Horizontal sliding doors, as permitted by 5-2.1.14, that are not automatic-closing shall be limited to a single leaf

and shall have a latch or other mechanism that will ensure that doors will not rebound into a partially open position if forcefully closed in an emergency.

13-2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

13-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

13-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 and the modifications of 13-2.2.5.1 through 13-2.2.5.4 shall be permitted.

13-2.2.5.1 At least 30 net sq ft (2.8 net sq m) per patient in a hospital or nursing home or 15 net sq ft (1.4 net sq m) per resident in a limited care facility shall be provided within the aggregated area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the horizontal exit. On stories not housing bed or litter patients, at least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the horizontal exit for the total number of occupants in adjoining compartments.

13-2.2.5.2* A door in a horizontal exit shall not be required to swing with egress travel as specified in 5-2.4.3.6.

13-2.2.5.3 The total egress capacity of the other exits (stairs, ramps, doors leading outside the building) shall not be reduced below one third that required for the entire area of the building.

13-2.2.5.4 Door openings in horizontal exits shall be protected by a swinging door providing a minimum clear width of 32 in. (81 cm) or a horizontal sliding door complying with 5-2.1.14 and providing a minimum clear width of 32 in. (81 cm).

Exception: Existing 34-in. (86-cm) swinging doors.

13-2.2.6 Ramps.

13-2.2.6.1 Ramps complying with 5-2.5 shall be permitted.

13-2.2.6.2 Ramps enclosed as exits shall be of sufficient width to provide egress capacity in accordance with 13-2.3.2.

13-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

13-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

13-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

13-2.2.10 Areas of Refuge. Areas of refuge used as part of a required accessible means of egress shall comply with 5-2.12.

13-2.3 Capacity of Means of Egress.

13-2.3.1 The capacity of any required means of egress shall be based on its width, as defined in Section 5-3.

13-2.3.2 The capacity of means of egress providing travel by means of stairs shall be 0.6 in. (1.5 cm) per person, and the capacity of means of egress providing horizontal travel (without stairs) by means such as doors, ramps, or horizontal exits shall be 0.5 in. (1.3 cm) per person.

Exception: The capacity of means of egress in health care occupancies protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2 shall be 0.3 in. (0.8 cm) per

person for travel by means of stairs and 0.2 in. (0.5 cm) per person for horizontal travel without stairs.

13-2.3.3 Any required aisle, corridor, or ramp shall be not less than 48 in. (122 cm) in clear width where serving as means of egress from patient sleeping rooms. The aisle, corridor, or ramp shall be arranged to avoid any obstructions to the convenient removal of nonambulatory persons carried on stretchers or on mattresses serving as stretchers.

Exception No. 1: Aisles, corridors, and ramps in adjunct areas not intended for the housing, treatment, or use of inpatients shall be a minimum of 44 in. (112 cm) in clear and unobstructed width.

Exception No. 2: Exit access within a room or suite of rooms complying with the requirements of 13-2.5.

13-2.3.4 The minimum clear width for doors in the means of egress from hospitals; nursing homes; limited care facilities; psychiatric hospital sleeping rooms; and diagnostic and treatment areas, such as X-ray, surgery, or physical therapy shall be at least 32 in. (81 cm) wide.

Exception: Existing 34-in. (86-cm) doors.

13-2.4 Number of Exits.

13-2.4.1 At least two exits of the types described in 13-2.2.2 through 13-2.2.10, remotely located from each other, shall be provided for each floor or fire section of the building.

13-2.4.2 At least one exit from each floor or fire section shall be one of the following:

- (a) A door leading directly outside the building, or
- (b) A stair, or
- (c) A smokeproof enclosure, or
- (d) A ramp, or
- (e) An exit passageway.

Any fire section not meeting these requirements shall be considered part of an adjoining zone. Egress shall not require return through the zone of fire origin.

13-2.4.3* At least two exits of the types described in 13-2.2.2 through 13-2.2.10 shall be accessible from each smoke compartment. Egress shall be permitted through an adjacent compartment(s), but shall not require return through the compartment of fire origin.

13-2.5 Arrangement of Means of Egress.

13-2.5.1 Every habitable room shall have an exit access door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at ground level.

Exception No. 2: Patient sleeping rooms shall be permitted to have one intervening room if the intervening room is not used as an exit access for more than eight patient sleeping beds.

Exception No. 3: Special nursing suites shall be permitted to have one intervening room where the arrangement allows for direct and constant visual supervision by nursing personnel.

Exception No. 4: For rooms other than patients' sleeping rooms, one or more adjacent rooms shall be permitted to intervene in accordance with 13-2.5.7.

13-2.5.2 Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1000 sq ft (93 sq m) shall have at least two exit access doors remotely located from each other.

13-2.5.3 Any room or any suite of rooms, other than patient sleeping rooms, of more than 2500 sq ft (230 sq m) shall have at least two exit access doors remotely located from each other.

13-2.5.4 Any suite of rooms that complies with the requirements of 13-2.5 shall be permitted to be subdivided with non-fire-rated, noncombustible or limited-combustible partitions.

13-2.5.5 Intervening rooms shall not be hazardous areas as defined by 13-3.2.

13-2.5.6 Suites of sleeping rooms shall not exceed 5000 sq ft (460 sq m).

13-2.5.7 Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 sq ft (930 sq m).

13-2.5.8 Suites of rooms, other than patient sleeping rooms, shall be permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 ft (30 m) and shall be permitted to have two intervening rooms where the travel distance within the suite to the exit access door is not greater than 50 ft (15 m).

13-2.5.9* Every corridor shall provide access to at least two approved exits in accordance with Sections 5-4 and 5-5 without passing through any intervening rooms or spaces other than corridors or lobbies.

Exception: Existing dead-end corridors shall be permitted to be continued to be used if it is impractical and unfeasible to alter them so that exits will be accessible in at least two different directions from all points in aisles, passageways, and corridors.

13-2.6 Travel Distance to Exits.

13-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

13-2.6.2 Travel Distance. Travel distance shall comply with 13-2.6.2.1 through 13-2.6.2.4.

13-2.6.2.1 The travel distance between any room door required as an exit access and an exit shall not exceed 100 ft (30 m).

Exception: The maximum permitted travel distance shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, supervised automatic sprinkler system.

13-2.6.2.2 The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m).

Exception: The maximum permitted travel distance shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, supervised automatic sprinkler system.

13-2.6.2.3 The travel distance between any point in a health care sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

13-2.6.2.4 The travel distance between any point in a suite of sleeping rooms as permitted by 13-2.5 and an exit access door of that suite shall not exceed 100 ft (30 m) and shall meet the requirements of 13-2.6.2.2.

13-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

13-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

13-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

13-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Where the path of egress travel is obvious, signs shall not be required in one-story buildings with an occupant load of fewer than 30 persons.

13-2.11 Special Means of Egress Features. (Reserved.)

SECTION 13-3 PROTECTION

13-3.1 Protection of Vertical Openings.

13-3.1.1 Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute, or other vertical opening between stories shall be enclosed in accordance with 6-2.4 with construction having a 1-hr fire resistance rating.

Exception No. 1: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: Where a full enclosure of a stairway that is not a required exit is impracticable, the required enclosure shall be permitted to be limited to that necessary to prevent a fire originating in any story from spreading to any other story.

Exception No. 3: An atrium shall be permitted in accordance with 6-2.4.6. *Exception No. 1* to 6-2.4.6(a) shall not apply to patient sleeping and treatment rooms in new or existing atriums.

Exception No. 4: Multilevel patient sleeping areas in psychiatric facilities shall be permitted without enclosure protection between levels provided all the following conditions are met:

(a) The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed that a fire or other dangerous condition in any part shall be obvious to the occupants or supervisory personnel in the area.

(b) Egress capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, with all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required egress capacity.

(c) The height between the highest and lowest finished floor levels shall not exceed 13 ft (4 m). The number of levels shall not be restricted.

13-3.1.2 A door in a stair enclosure shall be self-closing and shall normally be kept in a closed position.

Exception: Doors in stair enclosures held open under the conditions specified by 13-2.2.2.6 and 13-2.2.2.7.

13-3.2 Protection from Hazards.

13-3.2.1 Hazardous Areas. Any hazardous areas shall be safeguarded by a fire barrier having a 1-hr fire resistance rating or shall be provided with an automatic extinguishing system in accordance with 6-4.1. The automatic extinguishing shall be permitted to be in accordance with 13-3.5.4. Where the sprinkler option is used, the areas shall be separated from other spaces by smoke-resisting partitions and doors. The

doors shall be equipped with self- or automatic-closers. Hazardous areas include, but shall not be restricted to, the following:

- Boiler and fuel-fired heater rooms
- Central/bulk laundries larger than 100 sq ft (9.3 sq m)
- Paint shops
- Repair shops
- Soiled linen rooms
- Trash collection rooms

Rooms or spaces of more than 50 sq ft (4.6 sq m), including repair shops, used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

Laboratories employing quantities of flammable or combustible materials less than that which would be considered severe.

Exception: Doors in rated enclosures shall be permitted to have non-rated, factory- or field-applied protective plates extending not more than 48 in. (122 cm) above the bottom of the door.

13-3.2.2* Laboratories. Laboratories employing quantities of flammable, combustible, or hazardous materials that are considered as severe hazard shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

13-3.2.3 Anesthetizing Locations. Anesthetizing locations shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

13-3.2.4 Medical Gas. Medical gas storage and administration areas shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

13-3.2.5 Gift Shops. Gift shops shall be protected as hazardous areas where used for the storage or display of combustibles in quantities considered hazardous. Gift shops not considered hazardous and having separately protected storage shall be permitted to be

(a) Open to a lobby or corridor if the gift shop is not greater than 500 sq ft (46.5 sq m) and is protected throughout by an approved, automatic sprinkler system; or

(b) Separated from a lobby with non-fire-rated walls if the gift shop is protected throughout by an approved, automatic sprinkler system; or

(c) Separated from corridors by non-fire-rated walls if the gift shop is protected throughout by an approved, automatic sprinkler system.

13-3.2.6 Cooking Facilities. Cooking facilities shall be protected in accordance with 7-2.3.

Exception: Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities shall not be required.*

13-3.3 Interior Finish.

13-3.3.1 Interior finish shall be in accordance with Section 6-5.

13-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Existing materials: Class A or Class B.

Exception to (a): In smoke compartments protected by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2,

Class C interior finish shall be permitted to be continued to be used on walls and ceilings within rooms separated from the exit access corridors in accordance with 13-3.6.

- (b) Newly installed materials: Class A.

Exception No. 1 to (b): Walls and ceilings shall be permitted to have Class A or Class B interior finish in individual rooms having a capacity of not more than four persons.

Exception No. 2 to (b): Corridor wall finish up to 4 ft (1.2 m) in height that is restricted to the lower half of the wall shall be permitted to be Class A or Class B.

13-3.3.3 Interior Floor Finish. Newly installed interior floor finish complying with 6-5.6 shall be permitted in corridors and exits if Class I. No restrictions shall apply to existing interior floor finish.

Exception: In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2, no interior floor finish requirements shall apply.

13-3.4 Detection, Alarm, and Communication Systems.

13-3.4.1 General. Health care occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

13-3.4.2* Initiation. Initiation of the required fire alarm systems shall be by manual means in accordance with 7-6.2 and by means of any required detection devices or detection systems.

Exception No. 1: Fire alarm pull stations in patient sleeping areas shall not be required at exits if located at all nurses' control stations or other continuously attended staff location, provided such pull stations are visible and continuously accessible and that travel distances required by 7-6.2.4 are not exceeded.

Exception No. 2: Fixed extinguishing systems protecting commercial cooking equipment in kitchens that are protected by a complete automatic sprinkler system shall not be required to initiate the fire alarm system.

Exception No. 3: Detectors required by the Exceptions to 13-7.5.2 and 13-7.5.3.

13-3.4.3 Notification.

13-3.4.3.1 Occupant Notification. Occupant notification shall be accomplished automatically in accordance with 7-6.3. Presignal systems shall be prohibited.

Exception No. 1: In lieu of audible alarm signals, visible alarm-indicating appliances shall be permitted to be used in critical care areas.*

Exception No. 2: Where visual devices have been installed in patient sleeping areas in place of the audible alarm, they shall be permitted to be accepted by the authority having jurisdiction.

13-3.4.3.2 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

Exception: Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department unless the alarm condition is reconfirmed after a maximum 120-sec time period.

13-3.4.4 Emergency Control. Operation of any activating device in the required fire alarm system shall be arranged to

accomplish automatically any control functions to be performed by that device. (See 7-6.5.)

13-3.4.5 Detection.

13-3.4.5.1 Corridors. An approved, automatic smoke detection system shall be installed in all corridors of limited care facilities. Such system shall be installed in accordance with Section 7-6.

Exception No. 1: Where each patient sleeping room is protected by an approved smoke detection system, and a smoke detector is provided at smoke barriers and horizontal exits in accordance with Section 7-6, such corridor systems shall not be required on the patient sleeping room floors.

Exception No. 2: Smoke compartments protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 13-3.5.2.

13-3.4.5.2 Spaces Open to Corridors. (See 13-3.6.1.)

13-3.5 Extinguishment Requirements.

13-3.5.1 Where required by 13-1.6, health care facilities shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception: In Type I and Type II construction, where approved by the authority having jurisdiction, alternative protection measures shall be permitted to be substituted for sprinkler protection in specified areas where the authority having jurisdiction has prohibited sprinklers, without causing a building to be classified as nonsprinklered.

13-3.5.2* Where this Code permits exceptions for fully sprinklered buildings or smoke compartments, the sprinkler system shall be

- (a) In complete accordance with Section 7-7,
- (b) Electrically connected to the fire alarm system, and
- (c) Fully supervised.

Exception: In Type I and Type II construction, where approved by the authority having jurisdiction, alternative protection measures shall be permitted to be substituted for sprinkler protection in specified areas where the authority having jurisdiction has prohibited sprinklers, without causing a building to be classified as nonsprinklered.

13-3.5.3* Where this Code permits exceptions for fully sprinklered buildings or smoke compartments and specifically references this paragraph, the sprinkler system shall be

- (a) Installed throughout the building in accordance with Section 7-7, and
- (b) Electrically connected to the fire alarm system, and
- (c) Fully supervised, and
- (d) Equipped with listed quick response or listed residential sprinklers throughout all smoke compartments containing patient sleeping rooms.

Exception No. 1 to (d): Standard response sprinklers shall be permitted to be continued to be used in existing approved sprinkler systems where quick response and residential sprinklers were not listed for use in that location at the time of installation.

Exception No. 2 to (d): Standard response sprinklers shall be permitted for use in hazardous areas protected in accordance with Section 13-3.2.1.

13-3.5.4 Isolated hazardous areas shall be permitted to be protected in accordance with 7-7.1.2. For new installations in existing buildings, where more than two sprinklers are installed in a single area, water flow detection shall be provided to sound the building fire alarm or notify by a signal any constantly attended location, such as PBX, security, or emergency room, whereby necessary corrective action shall be directed.

13-3.5.5* Newly introduced cubicle curtains in sprinklered areas shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*.

13-3.5.6 Portable fire extinguishers shall be provided in all health care occupancies in accordance with 7-7.4.1.

13-3.6 Corridors.

13-3.6.1 Corridors shall be separated from all other areas by partitions complying with 13-3.6.2 through 13-3.6.5. (See also 13-2.5.8.)

Exception No. 1: Smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.3 shall be permitted to have spaces that are unlimited in size open to the corridor, provided that

- (a) The spaces are not used for patient sleeping rooms, treatment rooms, or hazardous areas; and
- (b) The corridors onto which the spaces open in the same smoke compartment are protected by an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4, or the smoke compartment in which the space is located is protected throughout by quick response sprinklers; and
- (c) The open space is protected by an electrically supervised automatic smoke detection system installed in accordance with 13-3.4, or the entire space is arranged and located to permit direct supervision by the facility staff from a nurses' station or similar space; and
- (d) The space does not obstruct access to required exits.

Exception No. 2: In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.3, waiting areas shall be permitted to be open to the corridor, provided that

- (a) The aggregate waiting area in each smoke compartment does not exceed 600 sq ft (55.7 sq m); and
- (b) Each area is protected by an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4, or each area is arranged and located to permit direct supervision by the facility staff from a nursing station or similar space; and
- (c) The area does not obstruct access to required exits.

*Exception No. 3:** Spaces for nurses' stations.

Exception No. 4: Gift shops open to the corridor where protected in accordance with 13-3.2.5.

Exception No. 5: Limited care facilities in smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.3 shall be permitted to have group meeting or multipurpose therapeutic spaces open to the corridor, provided that

- (a) The space is not a hazardous area; and

(b) The space is protected by an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4, or the space is arranged and located to permit direct supervision by the facility staff from the nurses' station or similar location; and

(c) The area does not obstruct access to required exits.

Exception No. 6: Spaces other than patient sleeping rooms, treatment rooms, and hazardous areas shall be permitted to be open to the corridor and unlimited in area, provided:

(a) The space and corridors that the space opens onto in the same smoke compartment are protected by an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4; and

(b)* Each space is protected by automatic sprinklers, or the furnishings and furniture in combination with all other combustibles within the area are of such a minimum quantity and are arranged so that a fully developed fire is unlikely to occur; and

(c) The space does not obstruct access to required exits.

Exception No. 7:* Waiting areas shall be permitted to be open to the corridor, provided that

(a) Each area does not exceed 600 sq ft (55.7 sq m); and

(b) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4; and

(c) The area does not obstruct any access to required exits.

Exception No. 8: In a limited care facility, group meeting or multi-purpose therapeutic spaces, other than hazardous areas, under continuous supervision by facility staff shall be permitted to be open to the corridor, provided that

(a) Each area does not exceed 1500 sq ft (140 sq m); and

(b) Not more than one such space is permitted per smoke compartment; and

(c) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4; and

(d) The area does not obstruct access to required exits.

13-3.6.2 Construction of Corridor Walls.

13-3.6.2.1* Corridor walls shall be continuous from the floor to the underside of the floor or roof deck above, through any concealed spaces, such as those above the suspended ceilings, and through interstitial structural and mechanical spaces, and shall have a fire resistance rating of at least ½ hr.

Exception No. 1: In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2, a corridor shall be permitted to be separated from all other areas by nonfire-rated partitions and shall be permitted to terminate at the ceiling where the ceiling is constructed to limit the transfer of smoke.

Exception No. 2: Existing corridor partitions shall be permitted to terminate at ceilings that are not an integral part of a floor construction if 5 ft (1.5 m) or more of space exists between the top of the ceiling subsystem and the bottom of the floor or roof above, provided that

(a) The ceiling shall be part of a fire-rated assembly tested to have a minimum fire resistance rating of 1 hr in compliance with the provisions of 6-2.3.1; and

(b) Corridor partitions form smoketight joints with the ceilings (joint filler, if used, shall be noncombustible); and

(c) Each compartment of interstitial space that constitutes a separate smoke area is vented, in case of smoke emergency, to the outside by mechanical means having sufficient capacity to provide at least two air changes per hour, but in no case having a capacity less than 5000 cfm (2.36 cu m/s); and

(d) The interstitial space shall not be used for storage; and

(e) The space shall not be used as a plenum for supply, exhaust, or return air except as noted in (c).

Exception No. 3:* Existing corridor partitions shall be permitted to terminate at monolithic ceilings that resist the passage of smoke where there is a smoketight joint between the top of the partition and the bottom of the ceiling.

13-3.6.2.2* Corridor walls shall form a barrier to limit the transfer of smoke.

13-3.6.2.3 Fixed fire window assemblies in accordance with 6-2.3.2.2 shall be permitted in corridor walls.

Exception: There shall be no restrictions in area and fire resistance of glass and frames in smoke compartments protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 13-3.5.2.

13-3.6.3 Corridor Doors.

13-3.6.3.1* Doors protecting corridor openings in other than required enclosures of vertical openings, exits, or hazardous areas shall be substantial doors, such as those constructed of 1¾-in. (4.4-cm) thick, solid bonded core wood or of construction that will resist fire for at least 20 min and shall be constructed to resist the passage of smoke.

Exception No. 1: In smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2, the door construction requirements noted above shall not be mandatory, but the doors shall be constructed to resist the passage of smoke.

Exception No. 2: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

13-3.6.3.2* Doors shall be provided with means suitable for keeping the door closed that is acceptable to the authority having jurisdiction. The device used shall be capable of keeping the door fully closed if a force of 5 lbf (22 N) is applied at the latch edge of the door. Roller latches are prohibited on corridor doors in buildings not fully protected by an approved, automatic sprinkler system in accordance with 13-3.5.2.

Exception No. 1: Existing roller latches demonstrated to keep the door closed against a force of 5 lbf (22 N) shall be permitted to be kept in service if acceptable to the authority having jurisdiction.

Exception No. 2: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

13-3.6.3.3 Door-closing devices shall not be required on doors in corridor wall openings other than those serving required exits, smoke barriers, or enclosures of vertical openings and hazardous areas.

13-3.6.3.4 Nonrated, factory- or field-applied protective plates extending not more than 48 in. (122 cm) above the bottom of the door shall be permitted.

13-3.6.3.5 Door frames shall be labeled, or shall be of steel construction, or shall be of other materials in compliance with the provisions of 6-2.3.2.1.

Exception: Door frames in smoke compartments protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

13-3.6.3.6 Fixed fire window assemblies in accordance with 6-2.3.2.1 shall be permitted in these doors.

Exception: There shall be no restrictions in area and fire resistance of glass and frames in smoke compartments protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 13-3.5.2.

13-3.6.3.7 Dutch doors shall be permitted where they conform to 13-3.6.3, and, in addition, both upper leaf and lower leaf shall be equipped with a latching device, and the meeting edges of the upper and lower leaves shall be equipped with an astragal, rabbet, or bevel.

Dutch doors protecting openings in enclosures around hazardous areas shall comply with NFPA 80, *Standard for Fire Doors and Fire Windows*.

13-3.6.4 Transfer Grilles. Transfer grilles, whether or not protected by fusible link-operated dampers, shall not be used in these walls or doors.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials shall be permitted to have ventilating louvers or to be undercut.

13-3.6.5 Openings. In other than smoke compartments containing patient bedrooms, miscellaneous openings such as mail slots, pharmacy pass-through windows, laboratory pass-through windows, and cashier pass-through windows shall be permitted to be installed in vision panels or doors without special protection, provided the aggregate area of openings per room does not exceed 20 sq in. (130 sq cm) and the openings are installed at or below half the distance from the floor to the room ceiling.

Exception: For rooms protected throughout by an approved, supervised automatic sprinkler system in accordance with 13-3.5.2, the aggregate area of openings per room shall not exceed 80 sq in. (520 sq cm).

13-3.7 Subdivision of Building Spaces.

13-3.7.1 Smoke barriers shall be provided to divide every story used for sleeping rooms for more than 30 patients into at least two smoke compartments. The maximum size of any such smoke compartment shall not exceed 22,500 sq ft (2100 sq m), and the travel distance from any point to reach a door in the required smoke barrier shall not exceed 200 ft (60 m).

Exception No. 1: Where neither the length nor width of the smoke compartment exceeds 150 ft (45 m), the travel distance to reach the smoke barrier door shall not be limited.

Exception No. 2: The area of an atrium separated in accordance with 6-2.4.6 shall not be limited in size.

13-3.7.2 For purposes of the requirements of 13-3.7, the number of health care occupants shall be determined by actual count of patient bed capacity.

13-3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 and shall have a fire resistance rating of at least ½ hr.

Exception No. 1: Where an atrium is used, smoke barriers shall be permitted to terminate at an atrium wall constructed in accordance with Exception No. 2 to 6-2.4.6(a). A minimum of two separate smoke compartments shall be provided on each floor.

*Exception No. 2:** Dampers shall not be required in duct penetrations of smoke barriers in fully ducted heating, ventilating, and air conditioning systems where an approved, supervised automatic sprinkler system in accordance with 13-3.5.3 has been provided for smoke compartments adjacent to the smoke barrier.

13-3.7.4 At least 30 net sq ft (2.8 net sq m) per patient in a hospital or nursing home or 15 net sq ft (1.4 net sq m) per resident in a limited care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other low hazard areas on each side of the smoke barrier. On stories not housing bed or litter patients, at least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

13-3.7.5 Openings in smoke barriers shall be protected by fire-rated glazing; by wired glass panels and steel frames; by substantial doors such as 1¾-in. (4.4-cm) thick, solid bonded wood core; or by construction that will resist fire for at least 20 min. Nonrated, factory- or field-applied protective plates extending not more than 48 in. (122 cm) above the bottom of the door shall be permitted.

Exception: Doors shall be permitted to have fixed fire window assemblies in accordance with 6-2.3.2.2.

13-3.7.6* Doors in smoke barriers shall comply with 6-3.4 and shall be self-closing or automatic-closing in accordance with 13-2.2.2.6. Such doors in smoke barriers shall not be required to swing with egress travel. Positive latching hardware shall not be required.

13-3.7.7 Door openings in smoke barriers shall be protected by a swinging door providing a minimum clear width of 32 in. (81 cm) or by a horizontal sliding door complying with 5-2.1.14 and providing a minimum clear width of at least 32 in. (81 cm).

Exception: Existing 34-in. (86-cm) doors.

13-3.8 Special Protection Features.

13-3.8.1 Outside Window or Door. Every patient sleeping room shall have an outside window or outside door. The maximum allowable sill height shall not exceed 44 in. (112 cm) above the floor.

Exception No. 1: The window sill in special nursing care areas, such as those housing ICU, CCU, hemodialysis, and neonatal patients, shall not exceed 60 in. (152 cm) above the floor.

Exception No. 2: Newborn nurseries and rooms intended for occupancy for less than 24 hr, such as those housing obstetrical labor beds, recovery beds, and observation beds in the emergency department.

Exception No. 3: Windows in atrium walls shall be considered outside windows for the purposes of this requirement.

Exception No. 4: Sill height shall not be limited in sprinklered smoke compartments.

SECTION 13-4 SPECIAL PROVISIONS

13-4.1 Windowless Buildings. (See Section 32-7 for requirements for windowless buildings.)

13-4.2 High-Rise Buildings. (Reserved.)

SECTION 13-5 BUILDING SERVICES

13-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

Exception: Existing installations shall be permitted to be continued in service provided the systems do not present a serious hazard to life.

13-5.2 Heating, Ventilating, and Air Conditioning.

13-5.2.1 Heating, ventilating, and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 13-5.2.2.

13-5.2.2* Any heating device other than a central heating plant shall be designed and installed so that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception No. 1: Approved, suspended unit heaters shall be permitted in locations other than means of egress and patient sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area, and provided they are equipped with the safety features required above.

Exception No. 2: Fireplaces shall be permitted and used only in areas other than patient sleeping areas, provided these areas are separated from patient sleeping spaces by construction having a minimum 1-hr fire resistance rating and such fireplaces comply with the provisions of 7-2.2. In addition, the fireplace shall be equipped with a fireplace enclosure guaranteed against breakage up to a temperature of 650°F (343°C) and constructed of heat tempered glass or other approved material. If, in the opinion of the authority having jurisdiction, special hazards are present, a lock on the enclosure and other safety precautions shall be permitted to be required.

13-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

13-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes.

13-5.4.1 Any existing linen and trash chute, including pneumatic rubbish and linen systems, that opens directly onto any

corridor shall be sealed by fire-resistive construction to prevent further use or shall be provided with a fire door assembly having a fire protection rating of 1 hr. All new chutes shall comply with Section 7-5.

13-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with Section 7-7. (See Section 7-5.)

13-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

13-5.4.4 Existing flue-fed incinerators shall be sealed by fire-resistive construction to prevent further use.

SECTION 13-6 EXISTING AMBULATORY HEALTH CARE FACILITIES

13-6.1 General Requirements.

13-6.1.1 Application.

13-6.1.1.1 Existing ambulatory health care facilities shall comply with the provisions of Chapter 27 and this section, whichever is more stringent. The provisions of Sections 13-2 through 13-5 shall not apply to this section unless a specific requirement is referenced by this section.

13-6.1.1.2 This section establishes life safety requirements, in addition to those required in Chapter 27, for all ambulatory health care facilities that meet the requirements of 13-1.3.

13-6.1.1.3 Modification of Retroactive Provisions. The requirements of this section shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and if the resulting arrangement could be considered as presenting minimum hazard to the life safety of the occupants. The requirements shall be permitted to be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life from fire as practicable.

13-6.1.2 (Reserved.)

13-6.1.3 Special Definitions. (See 13-1.3.)

13-6.1.4 Classification of Occupancy. (See 13-1.3.)

13-6.1.5 (Reserved.)

13-6.1.6 Minimum Construction Requirements.

13-6.1.6.1 For purposes of 13-6.1.6, the number of stories shall be counted starting with the primary level of exit discharge and ending with the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor that is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter.

13-6.1.6.2 Buildings of one story in height housing ambulatory health care facilities shall be of any construction type in accordance with NFPA 220, *Standard on Types of Building Construction*. (See 6-2.1.)

13-6.1.6.3 Buildings of two or more stories in height housing ambulatory health care facilities shall be of Type I(443), Type I(332), Type II(222), Type II(111), Type III(211), Type IV(2HH), or Type V(111) construction. (See 6-2.1.)

Exception: Buildings constructed of Type II(000), Type III(200), or Type V(000), if protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

13-6.1.6.4 Any level below the level of exit discharge shall be separated from the level of exit discharge by at least Type II(111), Type III(211), or Type V(111) construction. (See 6-2.1.)

Exception: Separation shall not be required for such levels if they are under the control of the ambulatory health care facility and any hazardous spaces are protected in accordance with Section 6-4.

13-6.1.6.5 In existing buildings, the authority having jurisdiction shall be permitted to accept construction systems of lesser fire resistance than required by 13-6.1.6.2 through 13-6.1.6.4 if it can be demonstrated to the authority's satisfaction that prompt evacuation of the facility can be achieved in case of fire or that the exposing occupancies and materials of construction present no threat of fire penetration from such occupancy to the ambulatory health care facility or to the collapse of the structure.

13-6.1.7 Occupant Load. (See 27-1.7.)

13-6.2 Means of Egress Requirements.

13-6.2.1 General. Every aisle, passageway, corridor, exit discharge, exit location, and access shall be in accordance with Chapter 5.

Exception: As modified by 13-6.2.2 through 13-6.2.11.

13-6.2.2 Means of Egress Components.

13-6.2.2.1 Components of means of egress shall be limited to the types described in 27-2.2.

13-6.2.2.2 Special locking arrangements complying with 5-2.1.6 shall be permitted on exterior doors.

13-6.2.2.3 Any door in an exit passageway, horizontal exit, smoke barrier, stairway enclosure, or hazardous area enclosure shall be permitted to be held open only by an automatic release device that complies with 5-2.1.8. The required manual fire alarm system and the systems required by 5-2.1.8, Exception(c), shall be arranged to initiate the closing action of all such doors by zone or throughout the entire facility.

13-6.2.2.4 Where doors in a stair enclosure are held open by an automatic device as permitted in 13-6.2.2.3, initiation of a door closing action on any level shall cause all doors at all levels in the stair enclosure to close.

13-6.2.3 Capacity of Means of Egress.

13-6.2.3.1 The capacity of any required means of egress shall be determined in accordance with the provisions of 27-2.3 and shall be based on its width as defined in Section 5-3.

13-6.2.3.2 The minimum width of any corridor or passageway required for exit access shall be 44 in. (112 cm) in clear width.

13-6.2.3.3 Doors in the means of egress from diagnostic or treatment areas, such as X-ray, surgical, or physical therapy, shall provide a minimum clear width of 32 in. (81 cm).

Exception: Existing 34-in. (86-cm) doors.

13-6.2.4 Number of Exits.

13-6.2.4.1 At least two exits of the types described in 27-2.2 that are remotely located from each other shall be provided for each floor or fire section of the building.

13-6.2.4.2 Any room and any suite of rooms of more than 2500 sq ft (232 sq m) shall have at least two exit access doors remotely located from each other.

13-6.2.4.3 At least two exits of the types described in 27-2.2 shall be accessible from each smoke compartment. Egress shall be permitted through adjacent compartments, but shall not require return through the compartment of fire origin.

13-6.2.5 Arrangement of Means of Egress. (See 27-2.5.)

13-6.2.6 Travel Distance to Exits.

13-6.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

13-6.2.6.2 Travel Distance.

(a) The travel distance between any room door required as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m).

Exception: The maximum travel distance permitted in (a) or (b) above shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system.

13-6.2.7 Discharge from Exits. (See 27-2.7.)

13-6.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

13-6.2.9 Emergency Lighting and Essential Electrical Systems.

13-6.2.9.1 Emergency lighting shall be provided in accordance with Section 5-9.

13-6.2.9.2 Where general anesthesia or life-support equipment is used, each ambulatory health care facility shall be provided with an essential electrical system in accordance with NFPA 99, *Standard for Health Care Facilities*.

Exception No. 1: Where battery-operated equipment is provided and acceptable to the authority having jurisdiction.

Exception No. 2: This requirement shall not apply to a facility that uses life-support equipment for emergency purposes only.

13-6.2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

13-6.2.11 Special Means of Egress Features. (Reserved.)

13-6.3 Protection.

13-6.3.1 Protection of Vertical Openings. (See 27-3.1.)

13-6.3.2 Protection from Hazards. (See 27-3.2.)

13-6.3.2.1 Laboratories employing quantities of flammable, combustible, or hazardous materials that are considered as severe hazard shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

13-6.3.2.2 Anesthetizing locations shall be protected in accordance with NFPA 99, *Standard for Health Care Facilities*.

13-6.3.3 Interior Finish. (See 27-3.3.)

13-6.3.4 Detection, Alarm, and Communication Systems.

13-6.3.4.1 General. Ambulatory health care facilities shall be provided with fire alarm systems in accordance with Section 7-6, except as modified by 13-6.3.4.2 through 13-6.3.4.5.

13-6.3.4.2 Initiation. Initiation of the required fire alarm systems shall be by manual means in accordance with 7-6.2 and by means of any detection devices or detection systems required.

13-6.3.4.3 Occupant Notification. Occupant notification shall be accomplished automatically, without delay, upon operation of any fire alarm activating device by means of an internal audible alarm in accordance with 7-6.3.

Exception: The presignal system allowed by Exception No. 1 to 7-6.3.2 shall not be permitted.

13-6.3.4.4 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

Exception: Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department unless the alarm condition is reconfirmed after a maximum 120-sec time period.

13-6.3.4.5 Emergency Control. Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically, without delay, any control functions required to be performed by that device. (See 7-6.5.)

13-6.3.5 Extinguishment Requirements. (See 27-3.5.)

13-6.3.5.1 Isolated hazardous areas shall be permitted to be protected in accordance with 7-7.1.2. For new installations in existing buildings where more than two sprinklers are installed in a single area, water flow detection shall be provided to sound the building fire alarm or notify by a signal any constantly attended location, such as PBX, security, or emergency room, whereby necessary corrective action shall be directed.

13-6.3.5.2 Portable fire extinguishers shall be provided in ambulatory health care facilities in accordance with 7-7.4.1.

13-6.3.6 Corridors. (No requirements.)

13-6.3.7 Subdivision of Building Space.

13-6.3.7.1 Ambulatory health care facilities shall be separated from other tenants and occupancies by walls having at least a 1-hr fire resistance rating. Such walls shall extend from the floor slab below to the floor or roof slab above. Doors shall be constructed of at least 1¾-in. (4.4-cm) thick, solid bonded wood core or the equivalent and shall be equipped with positive latches. These doors shall be self-closing and shall be kept in the closed position except when in use. Any vision panels shall be of fixed fire window assemblies in accordance with 6-2.3.2.2.

13-6.3.7.2 The ambulatory health care facility shall be divided into at least two smoke compartments.

Exception: Facilities of less than 5000 sq ft (465 sq m) and protected by an approved, automatic smoke detection system.

13-6.3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 and shall have a fire resistance rating of at least 1 hr.

Exception: Dampers shall not be required in duct penetrations of smoke barriers in fully ducted heating, ventilating, and air conditioning systems where an approved, supervised automatic sprinkler system installed in accordance with Section 7-7 has been provided for smoke compartments adjacent to the smoke barrier.

13-6.3.7.4 Vision panels in the smoke barrier shall be of fixed fire window assemblies in accordance with 6-2.3.2.2.

13-6.3.7.5 (Reserved.)

13-6.3.7.6* Doors in smoke barriers shall be at least 1¾-in. (4.4-cm) thick, solid bonded wood core or the equivalent and shall be self-closing. A vision panel shall be required.

13-6.3.7.7 Doors in smoke barriers shall normally be kept closed, or, if held open, they shall be equipped with automatic devices that will release the doors upon activation of

(a) The fire alarm system, and either

(b) A local smoke detector, or

(c) A complete automatic fire extinguishing system or complete automatic fire detection system.

13-6.4 Special Provisions. (See Section 27-4. For operating features requirements see Section 13-7.)

13-6.5 Building Services.

13-6.5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

Exception: Existing installations shall be permitted to be continued in service provided the systems do not present a serious hazard to life.

13-6.5.2 Heating, Ventilating, and Air Conditioning.

13-6.5.2.1 Heating, ventilating, and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 13-6.5.2.2.

13-6.5.2.2 Any heating device other than a central heating plant shall be designed and installed so that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception: Approved, suspended unit heaters shall be permitted in locations other than means of egress and patient treatment areas, provided such heaters are located high enough to be out of the reach of persons using the area, and provided they are equipped with the safety features required above.

13-6.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

13-6.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 13-7* OPERATING FEATURES

13-7.1 Attendants, Evacuation Plan, Fire Exit Drills.

13-7.1.1 The administration of every hospital, nursing home, and limited care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire and for their

evacuation to areas of refuge and for evacuation from the building when necessary. All employees shall be periodically instructed and kept informed with respect to their duties under the plan. A copy of the plan shall be readily available at all times in the telephone operator's position or at the security center.

The provisions of 13-7.1.2 to 13-7.2.3 inclusive shall apply.

13-7.1.2* Fire exit drills in health care occupancies shall include the transmission of a fire alarm signal and simulation of emergency fire conditions. Drills shall be conducted quarterly on each shift to familiarize facility personnel (nurses, interns, maintenance engineers, and administrative staff) with signals and emergency action required under varied conditions. When drills are conducted between 9:00 p.m. (2100 hours) and 6:00 a.m. (0600 hours), a coded announcement shall be permitted to be used instead of audible alarms.

Exception: The movement of infirm or bedridden patients to safe areas or to the exterior of the building shall not be required.

13-7.1.3 Employees of health care facilities shall be instructed in life safety procedures and devices.

13-7.2 Procedure in Case of Fire.

13-7.2.1* For health care occupancies, the proper protection of patients shall require the prompt and effective response of health care personnel. The basic response required of staff shall include the removal of all occupants directly involved with the fire emergency, transmission of an appropriate fire alarm signal to warn other building occupants, confinement of the effects of the fire by closing doors to isolate the fire area, and the execution of those evacuation duties as detailed in the facility's fire safety plan. (See Appendix A for a more detailed suggested emergency plan.)

13-7.2.2 A written facility fire safety plan shall provide for

- (a) Use of alarms,
- (b) Transmission of alarm to fire department,
- (c) Response to alarms,
- (d) Isolation of fire,
- (e) Evacuation of area,
- (f) Preparation of building for evacuation, and
- (g) Extinguishment of fire.

13-7.2.3 All facility personnel shall be instructed in the use of and response to fire alarms, and, in addition, they shall be instructed in the use of the code phrase to ensure transmission of an alarm under the following conditions:

- (a) When the individual who discovers a fire must immediately go to the aid of an endangered person.
- (b) During a malfunction of the building fire alarm system.

Personnel hearing the code announced shall first activate the building fire alarm using the nearest manual alarm station and then shall execute immediately their duties as outlined in the fire safety plan.

13-7.3 Maintenance of Exits. Proper maintenance shall be provided to ensure the dependability of the method of evacuation selected. Facilities that find it necessary to lock exits shall at all times maintain an adequate staff qualified to release locks and conduct occupants from the immediate danger area to a place of safety in case of fire or other emergency.

13-7.4* Smoking. Smoking regulations shall be adopted and shall include the following minimal provisions:

(a) Smoking shall be prohibited in any room, ward, or compartment where flammable liquids, combustible gases, or oxygen is used or stored and in any other hazardous location. Such areas shall be posted with "NO SMOKING" signs or the international symbol for no smoking.

Exception to (a): In health care facilities where smoking is prohibited and signs are prominently placed at all major entrances, secondary signs with no smoking language shall not be required.

(b) Smoking by patients classified as not responsible shall be prohibited.

Exception to (b): Where the patient is under direct supervision.

(c) Ashtrays of noncombustible material and safe design shall be provided in all areas where smoking is permitted.

(d) Metal containers with self-closing cover devices into which ashtrays can be emptied shall be readily available to all areas where smoking is permitted.

13-7.5 Furnishings, Bedding, and Decorations.

13-7.5.1* Draperies, curtains, including cubicle curtains, and other loosely hanging fabrics and films serving as furnishings or decorations in health care occupancies shall be in accordance with the provisions of 6-6.1. (See 13-3.5.5.)

Exception: Curtains at showers.

13-7.5.2 Newly introduced upholstered furniture within health care occupancies shall meet the criteria specified when tested in accordance with the methods cited in 6-6.2(b) and 6-6.3.

Exception: Upholstered furniture belonging to the patient in sleeping rooms of nursing homes, provided that a smoke detector is installed in such rooms. Battery-powered single-station smoke detectors shall be permitted.

13-7.5.3 Newly introduced mattresses within health care occupancies shall meet the criteria specified when tested in accordance with the methods cited in 6-6.2(c) and 6-6.4.

Exception: Mattresses belonging to the patient in sleeping rooms of nursing homes, provided that a smoke detector is installed in such rooms. Battery-powered single-station smoke detectors shall be permitted.

13-7.5.4 Combustible decorations shall be prohibited in any health care occupancy unless flame-retardant.

Exception: Combustible decorations of such limited quantities that a hazard of fire development or spread is not present, such as photographs and paintings.

13-7.5.5 Soiled linen or trash collection receptacles shall not exceed 32 gal (121 L) in capacity. The average density of container capacity in a room or space shall not exceed 0.5 gal per sq ft (20.4 L per sq m). There shall be not more than 32 gal (121 L) capacity within any 64 sq ft (5.9 sq m) area. Mobile soiled linen or trash collection receptacles with capacities greater than 32 gal (121 L) shall be located in a room protected as a hazardous area when not attended.

Exception: Container size and density shall not be limited in hazardous areas.

13-7.6* Engineered Smoke Control Systems. Existing engineered smoke control systems, unless specifically exempted by the authority having jurisdiction, shall be tested in accordance with established engineering principles. Systems not meeting the performance requirements of such testing shall be continued in operation only with the specific approval of the authority having jurisdiction.

13-7.7 Portable Space Heating Devices. Portable space heating devices shall be prohibited in all health care and ambulatory health care facilities.

Exception: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas where the heating

elements of such devices are limited to not more than 212°F (100°C).

13-7.8 Construction, Repair, and Improvement Operations.

13-7.8.1 Construction, repair, and improvement operations shall comply with 1-3.11.

13-7.8.2 The means of egress in any area undergoing construction, repair, or improvements shall be inspected daily for meeting the requirements of 5-1.9.1 and shall also meet the requirements of NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

CHAPTER 14 NEW DETENTION AND CORRECTIONAL OCCUPANCIES

SECTION 14-1 GENERAL REQUIREMENTS

14-1.1 Application.

14-1.1.1 The requirements of this chapter apply to:

- (a) New buildings or portions thereof used as detention or correctional occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, a detention or correctional occupancy (*see 1-3.6 and 14-1.1.6*); and
- (c) Alterations, modernizations, or renovations of existing detention or correctional care occupancies (*see 1-3.7 and 14-1.1.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a detention or correctional occupancy (*see 1-3.12*).

14-1.1.2 This chapter establishes life safety requirements for the design of all new detention and correctional facilities.

Exception No. 1: Use Condition I facilities protected as residential occupancies in accordance with 14-1.4.3.

Exception No. 2: Facilities determined to have equivalent safety provided in accordance with Section 1-6.*

14-1.1.3 Detention and correctional occupancies shall be those used for purposes such as correctional institutions, detention facilities, community residential centers, training schools, work camps, and substance abuse centers where occupants are confined or housed under some degree of restraint or security.

14-1.1.4 Detention and correctional occupancies provide sleeping facilities for four or more residents and are occupied by persons who are generally prevented from taking self-preservation action because of security measures not under the occupants' control.

14-1.1.5 Total Concept. All detention and correctional facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire emergency. Because the safety of all occupants in detention and correctional facilities cannot be adequately ensured solely by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities; adequate trained staff; and development of operating, security, and maintenance procedures composed of the following:

- (a) Design, construction, and compartmentation; and
- (b) Provision for detection, alarm, and extinguishment; and
- (c) Fire prevention and planning, training, and drilling in programs for the isolation of fire and transfer of occupants to areas of refuge, or evacuation of the building, or protection of the occupants in place; and
- (d) Provision of security to the degree necessary for the safety of the public and the occupants of the facility.

14-1.1.6 Additions. Additions shall be separated from any existing structure not conforming with the provisions of Chapter 15 by a fire barrier having a minimum 2-hr fire resistance rating constructed to the requirements of the addition. Doors in these partitions shall normally be kept closed.

Exception: Doors shall be permitted to be held open if they meet the requirements of the Exception to 5-2.1.8.

14-1.1.7 Modernizations or Renovations. Modernizations and renovations shall be in accordance with 1-3.7.

Exception: In nonsprinklered existing buildings, modernizations or renovations shall be permitted to comply with the nonsprinklered options contained in Chapter 14 in lieu of the sprinkler requirement of 14-3.5.2.

14-1.2* Mixed Occupancies. (*See also 4-1.12.*)

14-1.2.1* Egress provisions for areas of detention and correctional facilities that correspond to other occupancies shall meet the corresponding requirements of this *Code* for such occupancies. Where security operations necessitate the locking of required means of egress, staff shall be provided for the supervised release of occupants during all times of use.

14-1.2.2 Sections of detention and correctional facilities shall be permitted to be classified as other occupancies provided they meet all of the following conditions:

- (a) They are not intended to serve residents for sleeping purposes, and
- (b) They are separated from areas of detention or correctional occupancies by construction having a minimum 2-hr fire resistance rating.

14-1.2.3 Detention and correctional occupancies in buildings housing other occupancies shall be completely separated from the other occupancies by construction having a minimum 2-hr fire resistance rating, as provided for additions in 14-1.1.6.

14-1.2.4 All means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to the requirements of this *Code* for detention and correctional occupancies.

Exception: Egress through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions, but that do comply with requirements set forth in the appropriate occupancy chapter of this Code, shall be permitted provided the occupancy does not contain high hazard contents. The horizontal exit shall comply with the requirements of 14-2.2.5.

14-1.2.5 Any area with a hazard of contents classified higher than that of the detention or correctional occupancy and located in the same building shall be protected as required in 14-3.2.

14-1.2.6 Nondetention or noncorrectional related occupancies classified as containing high hazard contents shall not be permitted in buildings housing detention or correctional occupancies.

14-1.3 Special Definitions.

Direct Exit. An exit that serves only one area; the direct exit has no openings to other areas.

Fire Barrier. (*See Chapters 3 and 6.*)

Fire Compartment. (*See Chapters 3 and 6.*)

Residential Housing Area. Includes sleeping areas and any contiguous day room, group activity space, or other common spaces for customary access of residents.

Sally Port (Security Vestibule). A compartment provided with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.

Smoke Barrier. (See Chapters 3 and 6.)

Smoke Compartment. (See Chapters 3 and 6.)

14-1.4 Classification of Occupancy.

14-1.4.1* For applications of the life safety requirements that follow, the resident user category is divided into five groups:

Use Condition I — Free Egress

Free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior via means of egress that meet the requirements of the *Code*.

Use Condition II — Zoned Egress

Free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments.

Use Condition III — Zoned Impeded Egress

Free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity space, with egress impeded by remote controlled release of means of egress from such smoke compartment to another smoke compartment.

Use Condition IV — Impeded Egress

Free movement is restricted from an occupied space. Remote controlled release is provided to permit movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment.

Use Condition V — Contained

Free movement is restricted from an occupied space. Staff controlled manual release at each door is provided to permit movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment.

14-1.4.2* To classify as Use Condition III or IV, the arrangement, accessibility, and security of the release mechanism(s) used for emergency egress shall be such that the minimum available staff, at any time, can promptly release the locks.

14-1.4.3 Areas housing occupancies corresponding to Use Condition I shall conform to the requirements of residential occupancies under this *Code*.

*Exception:** Use Condition I facilities shall be permitted to conform to the requirements of this chapter for Use Condition II facilities, provided the staffing requirements of Section 14-7 are met.

14-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

14-1.6 Minimum Construction Requirements.

14-1.6.1 For the purpose of 14-1.6, the number of stories shall be counted starting with the primary level of exit discharge. For the purposes of this section, the primary level of exit discharge of a building shall be that floor that is level with or above finished grade on the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of the building.

14-1.6.2 A residential housing area complying with 14-3.1.2 shall be considered as a one-story building for purposes of applying 14-1.6.3.

14-1.6.3 Detention and correctional occupancies shall be limited to the types of building construction permitted by Table 14-1.6.3. (See 6-2.1.)

14-1.6.4 All interior walls and partitions in Type I or Type II construction shall be of noncombustible or limited-combustible materials.

14-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.1 sq m) of gross floor area.

SECTION 14-2 MEANS OF EGRESS REQUIREMENTS

14-2.1 General. Means of egress shall comply with Chapter 5.

Exception: As otherwise provided or modified in this section.

14-2.2 Means of Egress Components.

14-2.2.1 Components of means of egress shall be limited to the types described in 14-2.2.2 through 14-2.2.10.

14-2.2.2 Doors. Doors complying with 5-2.1 shall be permitted.

Exception: As provided in 14-2.11.

Table 14-1.6.3 Construction Type Limitations

Type of Construction	1 Story with Basement	1 Story without Basement	2 Story	3 Story	>3 Story and not High Rise	High Rise
I(443) I(332) II(222)	X	X	X	X	X	X
II(111) III(211) IV(2HH) V(111)	X††	X	X††	N.P.	N.P.	N.P.
II(000) III(200) V(000)	X†	X†	X†	N.P.	N.P.	N.P.

X: Permitted types of construction

X†: Permitted if the entire building is protected throughout by an approved supervised automatic sprinkler system in accordance with Section 7-7

X††: X† applies in buildings where Use Condition V is used

N.P.: Not Permitted

14-2.2.3 Stairs.

14-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

Exception: Noncombustible grated stair treads and landing floors shall be permitted.

14-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted for access to and between staff locations.

14-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

14-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 and the modifications of 14-2.2.5.1 through 14-2.2.5.3 shall be permitted.

14-2.2.5.1 At least 6 sq ft (0.56 sq m) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

14-2.2.5.2 Horizontal exits shall be permitted to comprise 100 percent of the exits required, provided that an exit, other than a horizontal exit, is accessible in some other (not necessarily adjacent) fire compartment without requiring return through the compartment of fire origin.

14-2.2.5.3* Ducts shall be allowed to penetrate horizontal exits in accordance with Exception No. 3 to 5-2.4.3.3 if protected by combination fire dampers/smoke leakage-rated dampers that meet the smoke damper actuation requirements of 6-3.5.

14-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

14-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

14-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

14-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

14-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

14-2.3 Capacity of Means of Egress.

14-2.3.1 The capacity of any required means of egress shall be in accordance with Section 5-3.

14-2.3.2 Aisles, corridors, and ramps required for egress shall be a minimum of 4 ft (1.2 m) in width.

14-2.3.3 For residents' sleeping room door widths, see 14-2.11.3.

14-2.4 Number of Exits. (See also Section 5-4.)

14-2.4.1* A minimum of two separate exits shall be

(a) Provided on every story; and

(b) Accessible from every part of every story, fire compartment, or smoke compartment.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common path of travel by 14-2.5.3.

14-2.4.2* A minimum of one approved exit shall be accessible from each fire compartment and each required smoke compartment into which residents are potentially moved in a

fire emergency, with the exits arranged so that egress shall not require return through the zone of fire origin.

14-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

14-2.5.1 Every sleeping room shall have a door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at the ground level.

Exception No. 2: One adjacent room, such as a day room, group activity space, or other common space shall be permitted to intervene. Where sleeping rooms directly adjoin a day room or group activity space that is utilized for access to an exit, such sleeping rooms shall be permitted to open directly to the day room or space and shall be permitted to be separated in elevation by a one-half or full story height. (See 14-3.1.2.)

14-2.5.2 No exit or exit access shall contain a corridor, hallway, or aisle having a pocket or dead end exceeding 50 ft (15 m) for Use Conditions II, III, or IV and 20 ft (6.1 m) for Use Condition V.

14-2.5.3 No common path of travel shall exceed 50 ft (15 m).

Exception: A common path of travel shall be permitted for the first 100 ft (30 m) in smoke compartments protected throughout by an approved, automatic sprinkler system installed in accordance with 14-3.5.3.

14-2.5.4 A sally port shall be permitted in a means of egress where there are provisions for continuous and unobstructed travel through the sally port during an emergency egress condition.

14-2.6 Travel Distance to Exits. Travel distance shall comply with 14-2.6.1 through 14-2.6.3.

14-2.6.1 The travel distance between any room door required as an exit access and an exit shall not exceed 100 ft (30 m).

Exception: The maximum permitted travel distance shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system or smoke control system.

14-2.6.2 The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m).

Exception: The maximum permitted travel distance shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system or smoke control system.

14-2.6.3 The travel distance between any point in a sleeping room to the door in that room shall not exceed 50 ft (15 m).

Exception: The maximum permitted travel distance shall be increased to 100 ft (30 m) in open dormitories where the enclosing walls of the dormitory space are of smoketight construction. Where travel distance to the exit access door from any point within the dormitory exceeds 50 ft (15 m), a minimum of two exit access doors remotely located from each other shall be provided.

14-2.7 Discharge from Exits.

14-2.7.1 Exits shall be permitted to discharge into a fenced or walled courtyard, provided that not more than two walls of the courtyard are the building walls from which egress is being made. Enclosed yards or courts shall be of sufficient size to accommodate all occupants at a minimum distance of 50 ft

(15 m) from the building with a net area of 15 sq ft (1.4 sq m) per person.

14-2.7.2 All exits shall be permitted to discharge through the level of exit discharge. The requirements of 5-7.2 shall be waived provided that not more than 50 percent of the exits discharge into a single fire compartment separated from other compartments by construction having a minimum 1-hr fire resistance rating.

14-2.8 Illumination of Means of Egress. Illumination shall be provided in accordance with Section 5-8.

14-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

14-2.10 Marking of Means of Egress. Exit marking shall be provided in areas accessible to the public in accordance with Section 5-10.

Exception: Exit signs shall not be required in residential housing areas. (See 14-1.3.)

14-2.11 Special Features.

14-2.11.1 Doors within means of egress shall be as required in Chapter 5.

Exception: As provided in 14-2.11.2 through 14-2.11.10.

14-2.11.2 Doors shall be permitted to be locked in accordance with the applicable use condition.

14-2.11.3* Doors to resident sleeping rooms shall be a minimum of 28 in. (71 cm) in clear width.

14-2.11.4 Doors in a means of egress shall be permitted to be of the horizontal sliding type, provided the force to slide the door to its fully open position does not exceed 50 lbf (222 N) with a perpendicular force against the door of 50 lbf (222 N).

14-2.11.5 Doors from areas of refuge to the exterior shall be permitted to be locked with key locks in lieu of locking methods described in 14-2.11.6. The keys to unlock such doors shall be maintained and available at the facility at all times, and the locks shall be operable from the outside.

14-2.11.6* Any remote control release used in a means of egress shall be provided with a reliable means of operation, remotely located from the resident living areas, to release locks on all doors. The remote location shall have sight and sound supervision of the resident living areas.

Exception: Provisions for remote control locking and unlocking of occupied rooms in Use Condition IV shall not be required provided not more than 10 locks are necessary to be unlocked in order to move all occupants from one smoke compartment to an area of refuge as promptly as required to relocate occupants when remote control unlocking is used. Unlocking of all necessary locks shall be accomplished with not more than two separate keys. (See 14-3.7.7 for requirements for smoke barrier doors.)

14-2.11.7 All remote control release operated doors shall be provided with a redundant means of operation as follows:

(a) Power-operated sliding doors or power-operated locks shall be constructed so that in the event of power failure, a manual mechanical means to release and open the doors is provided at each door, and either emergency power arranged in accordance with 5-9.2.2 is provided for the power operation or a remote control manual mechanical release is provided.

(b) Mechanically operated sliding doors or mechanically operated locks shall be provided with a manual mechanical means at each door to release and open the door.

14-2.11.8 Doors unlocked by means of remote control under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote control location to enable doors to relock.

14-2.11.9 Emergency power shall be provided for all electrically power-operated sliding doors and power-operated locks. Power shall be arranged to automatically operate within 10 sec upon failure of normal power and to maintain the necessary power source for a minimum of 1½ hr.

Exception: This provision shall not be applicable for facilities with 10 or fewer locks complying with the Exception to 14-2.11.6.

14-2.11.10 The provisions of 5-2.1.5.2 for stairway reentry shall not apply.

SECTION 14-3 PROTECTION

14-3.1 Protection of Vertical Openings.

14-3.1.1 Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute, or other vertical opening between stories shall be enclosed in accordance with Section 6-2.

Exception No. 1: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: Multilevel residential housing areas in accordance with 14-3.1.2.

Exception No. 3: In residential housing area smoke compartments protected throughout by an approved, automatic sprinkler system, unprotected vertical openings shall be permitted in accordance with the conditions of 6-2.4.5, provided that the height between the lowest and highest finished floor levels does not exceed 23 ft (7 m). The number of levels shall not be restricted. Residential housing areas subdivided in accordance with 14-3.8.1 shall be permitted to be considered as part of the communicating space. The separation shall not be required to have a fire resistance rating. [See Exception No. 2 to 6-2.4.5(d).]

Exception No. 4: Atriums in accordance with 6-2.4.6 shall be permitted.

14-3.1.2 Multilevel residential housing areas shall be permitted without enclosure protection between levels, provided the conditions of 14-3.1.2.1 through 14-3.1.2.3 are met.

14-3.1.2.1* The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed that a fire or other dangerous condition in any part shall be obvious to the occupants or supervisory personnel in the area.

14-3.1.2.2 Egress capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, with all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required egress capacity.

14-3.1.2.3* The height between the highest and lowest finished floor levels shall not exceed 13 ft (4 m). The number of levels shall not be restricted.

14-3.2 Protection from Hazards.

14-3.2.1* Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in the Table 14-3.2.1 shall be protected as indicated.

Table 14-3.2.1 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Areas not incidental to resident housing	2-hr
Boiler and fuel-fired heater rooms	2-hr or 1-hr and sprinklers
Commercial cooking equipment	In accordance with 7-2.3
Commissaries	1-hr or sprinklers
Employee locker rooms	1-hr or sprinklers
Hobby/handicraft shops	1-hr or sprinklers
Central or bulk laundries over 100 sq ft (9.3 sq m)	1-hr and sprinklers
Maintenance shops	1-hr or sprinklers
Padded cells	1-hr and sprinklers
Soiled linen rooms	1-hr and sprinklers
Storage rooms > 50 sq ft (4.6 sq m) in area but ≤ 100 sq ft (9.3 sq m) in area storing combustible material	1-hr or sprinklers
Storage rooms > 100 sq ft (9.3 sq m) storing combustible materials	1-hr and sprinklers
Trash collection rooms	1-hr and sprinklers

14-3.2.2 Hazardous areas determined by the authority having jurisdiction as not incidental to residents' housing shall be separated by 2-hr fire resistance-rated barriers in conjunction with automatic sprinkler protection.

14-3.2.3 Where cooking facilities are protected in accordance with 7-2.3, kitchens shall not be required to be provided with roomwide protection.

14-3.3 Interior Finish.

14-3.3.1 Interior finish shall be in accordance with Section 6-5.

14-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A in corridors, exits, and any space not separated from corridors and exits by partitions capable of retarding the passage of smoke; and Class A, Class B, or Class C in all other areas.

14-3.3.3 Interior Floor Finish. Interior floor finish complying with 6-5.6 shall be Class I in corridors and exits.

14-3.4 Detection, Alarm, and Communication Systems.

14-3.4.1 General.

14-3.4.1.1 Detention and correctional occupancies shall be provided with a fire alarm system in accordance with Section 7-6, except as modified by 14-3.4.1.2 through 14-3.4.4.

14-3.4.1.2 All required fire alarm systems shall be electrically supervised.

14-3.4.1.3 All fire alarm systems and detection systems required in this section shall be provided with a secondary power supply, and the installation shall be in accordance with NFPA 72, *National Fire Alarm Code*.

14-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2 and by means of any required detection devices or detection systems.

Exception No. 1: Manual fire alarm boxes shall be permitted to be locked, provided that staff is present within the subject area when occupied and has keys readily available to unlock the boxes.

Exception No. 2: Manual fire alarm boxes shall be permitted to be located in a staff location, provided that the staff location is attended when the building is occupied and that the staff attendant has direct supervision of the sleeping area.

14-3.4.3 Notification.

14-3.4.3.1 Occupant Notification. Occupant notification shall be accomplished automatically in accordance with 7-6.3. Presignal systems shall be prohibited. A positive alarm sequence shall be permitted in accordance with Exception No. 2 to 7-6.3.2.

*Exception:** Any smoke detectors required by this chapter shall be permitted to be arranged to alarm at a constantly attended location only and shall not be required to accomplish general alarm indication.

14-3.4.3.2 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4. A positive alarm sequence shall be permitted in accordance with Exception No. 2 to 7-6.3.2.

Exception: Any smoke detectors required by this chapter shall not be required to transmit an alarm to the fire department.

14-3.4.4* Detection. An approved, automatic smoke detection system shall be installed in accordance with Section 7-6 throughout all resident sleeping areas and adjacent day rooms, activity rooms, or contiguous common spaces.

Exception No. 1: Smoke detectors shall not be required in sleeping rooms with four or fewer occupants in Use Condition II or III.

Exception No. 2: In smoke compartments protected throughout by an approved, automatic sprinkler system installed in accordance with 14-3.5.3, smoke detectors shall not be required in sleeping rooms with four or fewer occupants.

Exception No. 3: Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering, or for other purposes, provided the function for detecting any fire is fulfilled and the placement of detectors is such that the speed of detection shall be equivalent to that provided by the spacing and arrangements described in Section 7-6. This shall be permitted to include the location of detectors in exhaust ducts from cells, behind grilles, or in other locations. The equivalent performance of the design, however, shall be acceptable to the authority having jurisdiction in accordance with the equivalency concepts specified in Section 1-6 of this Code.

14-3.5 Extinguishment Requirements.

14-3.5.1* High-rise buildings shall comply with 14-4.3.

14-3.5.2* All buildings classified as Use Condition II, III, IV, or V shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

14-3.5.3 Where this Code permits exceptions for fully sprinklered detention and correctional occupancies or sprinklered smoke compartments, the sprinkler system shall be

- (a) In complete accordance with Section 7-7, and

- (b) Electrically connected to the fire alarm system, and
- (c) Fully supervised.

14-3.5.4 Portable fire extinguishers shall be provided in accordance with 7-7.4.1.

*Exception No. 1:** Access to portable fire extinguishers shall be permitted to be locked.

Exception No. 2: Portable fire extinguishers shall be permitted to be located at staff locations only.

14-3.5.5 Standpipe and hose systems shall be provided in accordance with 7-7.4.2 as follows:

(a) Class I standpipe systems shall be provided for any building over two stories in height, and

(b) Class III standpipe and hose systems shall be provided for all nonsprinklered buildings over two stories in height.

Exception No. 1: One-inch (2.5-cm) diameter formed hose on hose reels shall be permitted to provide Class II service.

Exception No. 2: Separate Class I and Class II systems shall be permitted in lieu of Class III.

14-3.6 Corridors. (See 14-3.8.1.)

14-3.7 Subdivision of Building Spaces.

14-3.7.1 Smoke barriers shall be provided to divide every story used for sleeping by residents, or any other story having an occupant load of 50 or more persons, into a minimum of two compartments.

Exception No. 1: Protection shall be permitted to be accomplished with horizontal exits. (See 5-2.4.)

*Exception No. 2:** Smoke compartments having direct exit to a public way; a building separated from the resident housing area by a 2-hr fire resistance rating or 50 ft (15 m) of open space; or a secured open area having a holding space located 50 ft (15 m) from the housing area that provides 15 sq ft (1.4 sq m) or more of refuge area for each person (resident, staff, visitors) potentially present at the time of a fire fulfills the requirements for subdivision of such spaces, provided the locking arrangement of the direct exit doors involved meets the requirements for doors at the smoke barrier for the applicable use condition.

14-3.7.2 Where smoke barriers are required by 14-3.7.1, smoke barriers shall be provided

(a) To limit the housing to a maximum of 200 residents in any smoke compartment, and

(b) To limit the travel distance to a door in a smoke barrier

1. From any room door required as exit access to a maximum of 100 ft (30 m), and

2. From any point in a room to a maximum of 150 ft (45 m).

Exception to (b): The maximum permitted travel distance shall be increased by 50 ft (15 m) in smoke compartments protected throughout by an approved, automatic sprinkler system or smoke control system.

14-3.7.3* Any required smoke barrier shall be constructed in accordance with Section 6-3. Barriers shall be of substantial construction and shall have structural fire resistance.

14-3.7.4 Openings in smoke barriers shall be protected in accordance with Section 6-3.

*Exception No. 1:** There shall be no restriction on the total number of vision panels in any barrier.

Exception No. 2: Sliding doors in smoke barriers that are designed to normally be kept closed and are remotely operated from a continuously attended location shall not be required to be self-closing.

14-3.7.5 At least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments. This space shall be readily available wherever occupants are moved across the smoke barrier in a fire emergency.

14-3.7.6 Doors shall provide resistance to the passage of smoke. Swinging doors shall be self-latching, or the opening resistance of the door shall be a minimum of 5 lbf (22 N).

14-3.7.7 Doors in smoke barriers shall conform with the requirements for doors in means of egress as specified in Section 14-2 and shall have locking and release arrangements according to the applicable use condition. The provisions of the Exception to 14-2.11.6 shall not be used for smoke barrier doors serving a smoke compartment containing more than 20 persons.

14-3.7.8 Vision panels shall be provided in smoke barriers at points where the barrier crosses an exit access corridor.

14-3.7.9 Smoke dampers shall be provided in accordance with 6-3.5.

Exception: Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering or to be used for other purposes, provided the function of detecting any fire is fulfilled, and the placement of detectors is such that the speed of detection shall be equivalent to that provided by the required spacing and arrangement.

14-3.8 Special Protection Features.

14-3.8.1* Subdivision of Resident Housing Spaces. Subdivision of facility spaces shall comply with Table 14-3.8.1.

SECTION 14-4 SPECIAL PROVISIONS

14-4.1 Windowless Structures.

14-4.1.1 Windowless structures used as detention and correctional occupancies shall comply with 14-4.1.2. The provisions of Section 32-7 for windowless structures shall not be applicable.

Exception: Buildings protected throughout by an approved, automatic sprinkler system in accordance with 14-3.5.3.

14-4.1.2 Means shall be provided to evacuate smoke from the smoke compartment of fire origin. Any of the following means shall be acceptable:

(a) Operable windows on at least two sides of the building, spaced not more than 30 ft (9.1 m) apart, that provide openings with minimum dimensions of not less than 22 in. (56 cm) in width and 24 in. (61 cm) in height.

(b)* Manual or automatic smoke vents.

(c) Engineered smoke-control system.

(d) Mechanical exhaust system providing at least six air changes per hr.

(e) Another method acceptable to the authority having jurisdiction.

Table 14-3.8.1 Subdivision of Resident Housing Spaces

USE CONDITION Feature	II		III				IV			V	
	NS	AS	NS		AS		NS	AS		NS	AS
Room to Room Separation	NR	NR	NR		NR		SR	NR		FR(½)	SR
Room Face to Corridor Separation	SR	NR	SR		NR		SR	NR		FR	SR
Room Face to Common Space Separation	NR	NR	NR	SR	NR	SR	SR	NR	SR	FR	SR
			≤50 ft† (15 m)	>50 ft† (15m)	≤50 ft† (15 m)	>50 ft† (15 m)		≤50 ft† (15 m)	>50 ft† (15 m)		
Common Space to Corridor Separation	FR	NR	FR		NR		FR	NR		FR	SR
Total Openings in Solid Room Face When Room Face Is Required to Be Smoke Resistant or Fire Rated	120 sq in. (0.08 sq m)		120 sq in. (0.08 sq m)				120 sq in. (0.08 sq m)			120 sq in. (0.08 sq m) Closable from inside or 120 sq in. (0.08 sq m) w/smoke control	

AS: Protected by automatic sprinklers

NS: Not protected by automatic sprinklers

NR: No Requirement

†This is the travel distance through the common space to the exit access corridor.

NOTE 1: Doors in openings in partitions required to be fire resistive in accordance with this chart in other than required enclosures of exits or hazardous areas shall be substantial doors and of construction that resists fire for a minimum of 20 minutes. Wired glass or minimum 45-min fire-rated glazing vision panels are permitted. Latches and door closers are not required on cell doors.

NOTE 2: Doors in openings in partitions required to be smoke resistant in accordance with this chart shall be substantial doors and of construction that resists the passage of smoke. Latches and door closers are not required on cell doors.

NOTE 3: "Total Openings in Solid Room Face" includes all openings (undercuts, food passes, grilles, etc.), the total of which shall not exceed 120 sq in. (.08 sq m). All openings shall be 36 in. (91 cm) or less above the floor.

NOTE 4: Under Use Condition II, III, or IV, a space subdivided by open construction (any combination of grating doors and grating walls or solid walls) shall be permitted to be considered one room if housing not more than 16 persons. The perimeter walls of such space shall be of smoke resistant construction. Smoke detection shall be provided in such space. Under Use Condition IV, common walls between sleeping areas within the space shall be smoke resistant, and grating doors and fronts shall be permitted to be used. In Use Conditions II and III, open dormitories shall be permitted to house more than 16 persons as permitted by other sections of this chapter.

SR: Smoke Resistant

FR: Fire Rated — 1 hour

FR($\frac{1}{2}$): Fire Rated — $\frac{1}{2}$ hour

14-4.2 Underground Buildings. (See Chapter 32 for requirements for underground buildings.)

14-4.3 High-Rise Buildings. High-rise buildings shall comply with 32-8.2.

SECTION 14-5 BUILDING SERVICES

14-5.1 Utilities.

14-5.1.1 Utilities shall comply with the provisions of Section 7-1.

14-5.1.2 Alarms, emergency communication systems, and the illumination of generator set locations shall be provided with emergency power in accordance with NFPA 70, *National Electrical Code*.

14-5.2 Heating, Ventilating, and Air Conditioning.

14-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 14-5.2.2.

14-5.2.2 Portable space heating devices shall be prohibited. Any heating device other than a central heating plant shall be designed and installed so that combustible material shall not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air

for combustion directly from outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. The heating system shall have safety devices to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception: Approved, suspended unit heaters shall be permitted in locations other than means of egress and sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area, and provided they are vent connected and equipped with the safety devices required above.

14-5.2.3 Combustion and ventilation air for boiler, incinerator, or heater rooms shall be taken directly from and discharged directly to the outside air.

14-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

14-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes.

14-5.4.1 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

14-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with Section 7-7.

14-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

14-5.4.4 Any incinerator shall not be directly flue-fed, nor shall any floor chute directly connect with the combustion chamber.

SECTION 14-6 RESERVED

SECTION 14-7 OPERATING FEATURES

14-7.1 Attendants, Evacuation Plan, Fire Exit Drills.

14-7.1.1 Detention and correctional facilities or those portions of facilities having such occupancy shall be provided with 24-hr staffing. Staff shall be within three floors or 300 ft (91 m) horizontal distance of the access door of each resident housing area.

In addition, for Use Conditions III, IV, and V, the arrangement shall be such that the staff involved starts release of locks necessary for emergency evacuation or rescue and initiates other necessary emergency actions within 2 min of alarm.

Exception: For areas in which all locks are unlocked remotely in compliance with 14-2.11.6, staff shall not be required to be within three floors or 300 ft (104 m).

14-7.1.2* Provisions shall be made so that residents in Use Conditions III, IV, and V shall be able to notify staff of an emergency.

14-7.1.3* The administration of every detention or correctional facility shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire and for their evacuation to areas of refuge and for evacuation from the building when necessary. All employees shall be instructed and drilled with respect to their duties under the plan. The plan shall be coordinated with and reviewed by the fire department legally committed to serve the facility.

14-7.1.4 Employees of detention and correctional occupancies shall be instructed in the proper use of portable fire ex-

tinguishers and other manual fire suppression equipment. With respect to new staff, such training shall be provided promptly upon commencement of duty. With respect to existing staff, refresher training shall be provided at a minimum annually.

14-7.2 Books, clothing, and other combustible personal property allowed in sleeping rooms shall be stored in closable metal lockers or a fire-resistant container.

14-7.3 The number of heat-producing appliances, such as toasters and hot plates, and the overall use of electrical power within a sleeping room shall be controlled by facility administration.

14-7.4* Furnishings, Bedding, and Decorations.

14-7.4.1 Draperies and curtains, including privacy curtains, in detention and correctional occupancies shall be in accordance with the provisions of 6-6.1.

14-7.4.2 Newly introduced upholstered furniture within detention and correctional occupancies shall be tested in accordance with the provisions of 6-6.2(b) and 6-6.3.

14-7.4.3* Newly introduced mattresses within detention and correctional occupancies shall be tested in accordance with the provisions of 6-6.2(c) and 6-6.4.

14-7.4.4 Combustible decorations shall be prohibited in any detention or correctional occupancy unless flame-retardant.

14-7.4.5 Wastebaskets and other waste containers shall be of noncombustible or other approved materials. Waste containers with a capacity greater than 20 gal (76 L) shall be provided with a noncombustible lid or lid of other approved material.

14-7.5 Keys. All keys necessary for unlocking doors installed in means of egress shall be individually identified by both touch and sight.

14-7.6 Portable Space Heating Devices. Portable space heating devices shall be prohibited in all detention and correctional occupancies.

CHAPTER 15 EXISTING DETENTION AND CORRECTIONAL OCCUPANCIES

SECTION 15-1 GENERAL REQUIREMENTS

15-1.1 Application.

15-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as detention or correctional occupancies. (See also 14-1.1.1.) In addition to meeting the requirements of this chapter, detention and correctional occupancies shall comply with the applicable requirements of Chapter 31.

15-1.1.2 This chapter establishes life safety requirements for all existing detention and correctional facilities.

Exception No. 1: Use Condition I facilities protected as residential occupancies in accordance with 15-1.4.3.

Exception No. 2: Facilities determined to have equivalent safety provided in accordance with Section 1-6.*

15-1.1.3 Detention and correctional occupancies shall be those used for purposes such as correctional institutions, detention facilities, community residential centers, training schools, work camps, and substance abuse centers where occupants are confined or housed under some degree of restraint or security.

15-1.1.4 Detention and correctional occupancies provide sleeping facilities for four or more residents and are occupied by persons who are generally prevented from taking self-preservation action because of security measures not under the occupants' control.

15-1.1.5 Total Concept. All detention and correctional facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire emergency. Because the safety of all occupants in detention and correctional facilities cannot be adequately ensured solely by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities; adequate trained staff; and development of operating, security, and maintenance procedures composed of the following:

- (a) Design, construction, and compartmentation; and
- (b) Provision for detection, alarm, and extinguishment; and
- (c) Fire prevention and planning, training, and drilling in programs for the isolation of fire and transfer of occupants to areas of refuge, or evacuation of the building, or protection of the occupants in place; and
- (d) Provision of security to the degree necessary for the safety of the public and the occupants of the facility.

15-1.1.6 Additions. Additions shall be separated from any existing structure not conforming with the provisions of Chapter 15 by a fire barrier having a minimum 2-hr fire resistance rating constructed to the requirements of the addition. Doors in these partitions shall normally be kept closed.

Exception: Doors shall be permitted to be held open if they meet the requirements of the Exception to 5-2.1.8.

15-1.1.7 Modernizations or Renovations. Modernizations and renovations shall be in accordance with 1-3.7.

Exception: In nonsprinklered existing buildings, modernizations or renovations shall be permitted to comply with the nonsprinklered op-

tions contained in Chapter 14 in lieu of the sprinkler requirement of 14-3.5.2.

15-1.2* Mixed Occupancies. (See also 4-1.12.)

15-1.2.1* Egress provisions for areas of detention and correctional facilities that correspond to other occupancies shall meet the corresponding requirements of this Code for such occupancies. Where security operations necessitate the locking of required means of egress, staff shall be provided for the supervised release of occupants during all times of use.

15-1.2.2 Sections of detention and correctional facilities shall be permitted to be classified as other occupancies provided they meet all of the following conditions:

- (a) They are not intended to serve residents for sleeping purposes, and
- (b) They are separated from areas of detention or correctional occupancies by construction having a minimum 2-hr fire resistance rating.

15-1.2.3 Detention and correctional occupancies in buildings housing other occupancies shall be completely separated from the other occupancies by construction having a minimum 2-hr fire resistance rating, as provided for additions in 15-1.1.6.

15-1.2.4 All means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to the requirements of this Code for detention and correctional occupancies.

Exception: Egress through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions, but that do comply with requirements set forth in the appropriate occupancy chapter of this Code, shall be permitted provided the occupancy does not contain high hazard contents. The horizontal exit shall comply with the requirements of 15-2.2.5.

15-1.2.5 Any area with a hazard of contents classified higher than that of the detention or correctional occupancy and located in the same building shall be protected as required in 15-3.2.

15-1.2.6 Nondetention or noncorrectional related occupancies classified as containing high hazard contents shall not be permitted in buildings housing detention or correctional occupancies.

15-1.3 Special Definitions.

Direct Exit. An exit that serves only one area; the direct exit has no openings to other areas.

Fire Barrier. (See Chapters 3 and 6.)

Fire Compartment. (See Chapters 3 and 6.)

Residential Housing Area. Includes sleeping areas and any contiguous day room, group activity space, or other common spaces for customary access of residents.

Sally Port (Security Vestibule). A compartment provided with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.

Smoke Barrier. (See Chapters 3 and 6.)

Smoke Compartment. (See Chapters 3 and 6.)

15-1.4 Classification of Occupancy.

15-1.4.1* For applications of the life safety requirements that follow, the resident user category is divided into five groups:

Use Condition I — Free Egress

Free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior via means of egress meeting the requirements of this *Code*.

Use Condition II — Zoned Egress

Free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments.

Use Condition III — Zoned Impeded Egress

Free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity space, with egress impeded by remote controlled release of means of egress from such smoke compartment to another smoke compartment.

Use Condition IV — Impeded Egress

Free movement is restricted from an occupied space. Remote controlled release is provided to permit movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment.

Use Condition V — Contained

Free movement is restricted from an occupied space. Staff controlled manual release at each door is provided to permit movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment.

15-1.4.2* To classify as Use Condition III or IV, the arrangement, accessibility, and security of the release mechanism(s) used for emergency egress shall be such that the minimum available staff, at any time, can promptly release the locks.

15-1.4.3 Areas housing occupancies corresponding to Use Condition I shall conform to the requirements of residential occupancies under this *Code*.

*Exception:** Use Condition I facilities shall be permitted to conform to the requirements of this chapter for Use Condition II facilities, provided the staffing requirements of Section 15-7 are met.

15-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

15-1.6 Minimum Construction Requirements.

15-1.6.1 For the purpose of 15-1.6, the number of stories shall be counted starting with the primary level of exit discharge. For the purposes of this section, the primary level of exit discharge of a building shall be that floor that is level with or above finished grade on the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of the building.

15-1.6.2 A residential housing area complying with 15-3.1.2 shall be considered as a one-story building for purposes of applying 15-1.6.3.

15-1.6.3 Detention and correctional occupancies shall be limited to the types of building construction permitted by Table 15-1.6.3. (*See 6-2.1.*)

Exception No. 1: Any building of Type I, Type II(222), or Type II(111) construction shall be permitted to include roofing systems involving combustible or steel supports, decking, or roofing provided:

(a) *The roof covering, at a minimum, meets Class C requirements in accordance with NFPA 256, Standard Methods of Fire Tests of Roof Coverings; and*

(b) *The roof is separated from all occupied portions of the building by a noncombustible floor assembly that includes a minimum of 2½ in. (6.4 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved, automatic sprinkler system.*

Exception No. 2: In determining building construction type, exposed steel roof members located 16 ft (4.9 m) or more above the floor of the highest cell shall be disregarded.

15-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.1 sq m) of gross floor area.

SECTION 15-2 MEANS OF EGRESS REQUIREMENTS

15-2.1 General. Means of egress shall comply with Chapter 5.

Exception: As otherwise provided or modified in this section.

Table 15-1.6.3 Construction Type Limitations

Type of Construction	1 Story with Basement	1 Story without Basement	2 Story	3 Story	4 Story and Higher
I(443)	X	X	X	X	X
I(332)					
II(222)					
II(111)	X††	X	X††	X†	X†
III(211)	X††	X	X††	X†	X†
IV(2HH)					
V(111)					
II(000)	X††	X††	X†	X†	X†
III(200)					
V(000)					

X: Permitted types of construction

X†: Permitted if the entire building is protected throughout by an approved supervised automatic sprinkler system in accordance with Section 7-7

X††: X† applies in buildings where Use Condition V is used

15-2.2 Means of Egress Components.

15-2.2.1 Components of means of egress shall be limited to the types described in 15-2.2.2 through 15-2.2.11.

15-2.2.2 Doors. Doors complying with 5-2.1 shall be permitted.

Exception: As provided in 15-2.11.

15-2.2.3 Stairs.

15-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

Exception: Noncombustible grated stair treads and landing floors shall be permitted.

15-2.2.3.2 Spiral stairs complying with 5-2.2.4 shall be permitted for access to and between staff locations.

15-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

15-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 and the modifications of 15-2.2.5.1 through 15-2.2.5.4 shall be permitted.

15-2.2.5.1 At least 6 sq ft (0.56 sq m) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

15-2.2.5.2* Horizontal exits shall be permitted to comprise 100 percent of the exits required, provided that an exit, other than a horizontal exit, is accessible in some other (not necessarily adjacent) fire compartment without requiring return through the compartment of fire origin.

15-2.2.5.3* Ducts shall be allowed to penetrate horizontal exits in accordance with Exception No. 3 to 5-2.4.3.3 if protected by combination fire dampers/smoke leakage-rated dampers that meet the smoke damper actuation requirements of 6-3.5.

15-2.2.5.4 A door in a horizontal exit shall not be required to swing with egress travel as specified in 5-2.4.3.6.

15-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

15-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

15-2.2.8 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

15-2.2.9 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

15-2.2.10 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

15-2.2.11 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

15-2.3 Capacity of Means of Egress.

15-2.3.1 The capacity of any required means of egress shall be in accordance with Section 5-3.

15-2.3.2 Aisles, corridors, and ramps required for egress shall be a minimum of 3 ft (0.9 m) in width.

15-2.3.3 For residents' sleeping room door widths, see 15-2.11.3.

15-2.4 Number of Exits. (See also Section 5-4.)

15-2.4.1* A minimum of two separate exits shall be:

- (a) Provided on every story; and
- (b) Accessible from every part of every story, fire compartment, or smoke compartment.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common path of travel by 15-2.5.3.

15-2.4.2* A minimum of one approved exit shall be accessible from each fire compartment and each required smoke compartment into which residents are potentially moved in a fire emergency, with the exits arranged so that egress shall not require return through the zone of fire origin.

15-2.5 Arrangement of Means of Egress. (See also Section 5-5.)

15-2.5.1 Every sleeping room shall have a door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at the ground level.

Exception No. 2: One adjacent room, such as a day room, group activity space, or other common space shall be permitted to intervene. Where sleeping rooms directly adjoin a day room or group activity space that is utilized for access to an exit, such sleeping room shall be permitted to open directly to the day room or space and shall be permitted to be separated in elevation by a one-half or full story height. (See 15-3.1.2.)

15-2.5.2* Existing dead-end corridors are undesirable and shall be altered wherever possible so that exits will be accessible in at least two different directions from all points in aisles, passageways, and corridors.

15-2.5.3 No common path of travel shall exceed 50 ft (15 m).

Exception No. 1: A common path of travel shall be permitted for the first 100 ft (30 m) in smoke compartments protected throughout by an approved, automatic sprinkler system in accordance with 15-3.5.3.

Exception No. 2: Multilevel residential housing units in which each floor level, considered separately, has at least one half of its individual required egress capacity accessible by exit access leading directly out of that level without traversing another communicating floor level.

Exception No. 3: Existing excessive common paths of travel shall be permitted to continue to be used subject to the approval of the authority having jurisdiction and the travel distance requirements of 15-2.6.

15-2.5.4 A sally port shall be permitted in a means of egress where there are provisions for continuous and unobstructed travel through the sally port during an emergency egress condition.

15-2.6 Travel Distance to Exits. Travel distance shall comply with 15-2.6.1 through 15-2.6.3.

15-2.6.1 The travel distance between any room door required as an exit access and an exit or smoke barrier shall not exceed 100 ft (30 m).

Exception: The maximum permitted travel distance shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system or smoke control system.

15-2.6.2 The travel distance between any point in a room and an exit or smoke barrier shall not exceed 150 ft (45 m).

Exception: The maximum permitted travel distance in shall be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system or smoke control system.

15-2.6.3 The travel distance between any point in a sleeping room to the door of that room shall not exceed 50 ft (15 m).

Exception: The maximum permitted travel distance shall be increased to 100 ft (30 m) in open dormitories where the enclosing walls of the dormitory space are of smoketight construction. Where travel distance to the exit access door from any point within the dormitory exceeds 50 ft (15 m), a minimum of two exit access doors remotely located from each other shall be provided.

15-2.7 Discharge from Exits.

15-2.7.1 Exits shall be permitted to discharge into a fenced or walled courtyard, provided that not more than two walls of the courtyard are the building walls from which egress is being made. Enclosed yards or courts shall be of sufficient size to accommodate all occupants at a minimum distance of 50 ft (15 m) from the building with a net area of 15 sq ft (1.4 sq m) per person.

15-2.7.2 All exits shall be permitted to discharge through the level of exit discharge. The requirements of 5-7.2 shall be waived provided that not more than 50 percent of the exits discharge into a single fire compartment separated from other compartments by construction having a minimum 1-hr fire resistance rating.

Exception: Where all exits discharge through areas on the level of discharge, a smoke barrier shall be provided to divide that level into a minimum of two compartments with a minimum of one exit discharging into each compartment, and each smoke compartment shall have an exit discharge to the building exterior. The level of discharge shall be provided with automatic sprinkler protection, and any other portion of the level of discharge area with access to the discharge area shall be provided with automatic sprinkler protection or shall be separated from the discharge area in accordance with the requirements for the enclosure of exits. (See 5-1.3.2.1.)

15-2.8 Illumination of Means of Egress. Illumination shall be provided in accordance with Section 5-8.

15-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

Exception: Emergency lighting of a minimum of 1-hr duration shall be permitted to be provided.

15-2.10 Marking of Means of Egress. Exit marking shall be provided in areas accessible to the public in accordance with Section 5-10.

Exception: Exit signs shall not be required in residential housing areas. (See 15-1.3.)

15-2.11 Special Features.

15-2.11.1 Doors within means of egress shall be as required in Chapter 5.

Exception: As provided in 15-2.11.2 through 15-2.11.8.

15-2.11.2 Doors shall be permitted to be locked in accordance with the applicable use condition.

15-2.11.3* Doors to resident sleeping rooms shall be a minimum of 28 in. (71 cm) in clear width.

Exception: Existing doors to resident sleeping rooms housing four or fewer residents shall be permitted to be a minimum of 19 in. (48.3 cm) in clear width.

15-2.11.4 Doors in a means of egress shall be permitted to be of the horizontal sliding type, provided the force to slide the door to its fully open position does not exceed 50 lbf (222 N) with a perpendicular force against the door of 50 lbf (222 N).

15-2.11.5 Doors from areas of refuge to the exterior shall be permitted to be locked with key locks in lieu of locking methods described in 15-2.11.6. The keys to unlock such doors shall be maintained and available at the facility at all times, and the locks shall be operable from the outside.

15-2.11.6* Any remote control release used in means of egress shall be provided with a reliable means of operation, remotely located from the resident living area, to release locks on all doors. The remote location shall have sight and sound supervision of the resident living areas.

Exception: Provisions for remote control locking and unlocking of occupied rooms in Use Condition IV shall not be required provided not more than 10 locks are necessary to be unlocked in order to move all occupants from one smoke compartment to an area of refuge as promptly as required to relocate occupants when remote control unlocking is used. Unlocking of all necessary locks shall be accomplished with not more than two separate keys. (See 15-3.7.7 for requirements for smoke barrier doors.)

15-2.11.7 All remote control release operated doors shall be provided with a redundant means of operation as follows:

(a) Power-operated sliding doors or power-operated locks shall be constructed so that in the event of power failure, a manual mechanical means to release and open the doors is provided at each door, and either emergency power arranged in accordance with 5-9.2.2 is provided for the power operation or a remote control manual mechanical release is provided.

Exception to (a): The combination of emergency power-operated release of selected individual doors and remote control manual mechanical ganged release shall be allowed without mechanical release means at each door.

(b) Mechanically operated sliding doors or mechanically operated locks shall be provided with a manual mechanical means at each door to release and open the door.

15-2.11.8 The provisions of 5-2.1.5.2 for stairway reentry shall not apply.

SECTION 15-3 PROTECTION

15-3.1 Protection of Vertical Openings.

15-3.1.1 Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute or other vertical opening between stories shall be enclosed in accordance with Section 6-2.

Exception No. 1: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: Multilevel residential housing areas in accordance with 15-3.1.2.

Exception No. 3: In residential housing area smoke compartments protected throughout by an approved, automatic sprinkler system, unprotected vertical openings shall be permitted in accordance with the conditions of 6-2.4.5, provided that the height between the lowest and highest finished floor levels does not exceed 23 ft (7 m). The number of levels shall not be restricted. Residential housing areas subdivided in accordance with 15-3.8.1 shall be permitted to be considered as part of the communicating space. The separation shall not be required to have a fire resistance rating. [See Exception No. 2 to 6-2.4.5(d).]

Exception No. 4: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 5: Where full enclosure is impractical, the required enclosure shall be permitted to be limited to that necessary to prevent a fire originating in any story from spreading to any other story.

Exception No. 6: The required minimum fire resistance rating of enclosures in detention and correctional occupancies protected throughout by an approved, automatic sprinkler system shall be 1 hr.

15-3.1.2 Multilevel residential housing areas shall be permitted without enclosure protection between levels provided the conditions of 15-3.1.2.1 through 15-3.1.2.3 are met.

15-3.1.2.1* The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed that a fire or other dangerous condition in any part shall be obvious to the occupants or supervisory personnel in the area.

15-3.1.2.2 Egress capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, with all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required egress capacity.

15-3.1.2.3* The height between the highest and lowest finished floor levels shall not exceed 13 ft (4 m). The number of levels shall not be restricted.

15-3.1.3* A multitiered, open cell block shall be considered as a single-story building, provided:

(a) A smoke control system is provided (*see recommended design criteria in A-15-3.1.3*) to maintain the level of smoke filling from potential cell fires a minimum of 5 ft (152 cm) above the floor level of any occupied tier involving space that is

1. Use Condition IV or V,
2. Use Condition III, unless all persons housed in such space can pass through a free access smoke barrier or freely pass below the calculated smoke level with not more than 50 ft (15 m) of travel from their cells; or

(b) The entire building, including cells, is provided with complete automatic sprinkler protection in accordance with 15-3.5.

15-3.2 Protection from Hazards.

15-3.2.1* Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in Table 15-3.2.1 shall be protected as indicated.

15-3.2.2 Hazardous areas determined by the authority having jurisdiction as not incidental to residents' housing shall be separated by 2-hr fire resistance-rated barriers in conjunction with automatic sprinkler protection.

Table 15-3.2.1 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Areas not incidental to resident housing	2-hr
Boiler and fuel-fired heater rooms	1-hr or sprinklers
Commercial cooking equipment	In accordance with 7-2.3
Commissaries	1-hr or sprinklers
Employee locker rooms	1-hr or sprinklers
Hobby/handicraft shops	1-hr or sprinklers
Central or bulk laundries over 100 sq ft (9.3 sq m)	1-hr or sprinklers
Maintenance shops	1-hr or sprinklers
Padded cells	1-hr and sprinklers
Soiled linen rooms	1-hr or sprinklers
Storage rooms > 50 sq ft (4.6 sq m) in area storing combustible material	1-hr or sprinklers
Trash collection rooms	1-hr or sprinklers

15-3.2.3 Where cooking facilities are protected in accordance with 7-2.3, kitchens shall not be required to be provided with roomwide protection.

15-3.3 Interior Finish.

15-3.3.1 Interior finish shall be in accordance with Section 6-5.

15-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A or Class B in corridors, exits, and any space not separated from corridors and exits by partitions capable of retarding the passage of smoke; and Class A, Class B, or Class C in all other areas.

15-3.3.3 Interior Floor Finish. Interior floor finish complying with 6-5.6 shall be Class I or Class II in corridors and exits.

Exception: Existing floor finish material of Class A or Class B in nonsprinklered smoke compartments and Class A, Class B, or Class C in sprinklered smoke compartments shall be permitted to be continued in use provided it has been evaluated based on tests performed in accordance with 6-5.5.

15-3.4 Detection, Alarm, and Communication Systems.

15-3.4.1 General.

15-3.4.1.1 Detention and correctional occupancies shall be provided with a fire alarm system in accordance with Section 7-6, except as modified by 15-3.4.1.2 through 15-3.4.4.

15-3.4.1.2 All required fire alarm systems shall be electrically supervised.

Exception: Existing nonelectrically supervised systems shall be permitted in buildings protected by a complete automatic extinguishing system.

15-3.4.1.3 All fire alarm systems and detection systems required in this section shall be provided with a secondary power supply, and the installation shall be in accordance with NFPA 72, *National Fire Alarm Code*.

15-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2 and by means of any required detection devices or detection systems.

Exception No. 1: Manual fire alarm boxes shall be permitted to be locked, provided that staff is present within the subject area when occupied and has keys readily available to unlock the boxes.

Exception No. 2: Manual fire alarm boxes shall be permitted to be located in a staff location, provided that the staff location is attended when the building is occupied and that the staff attendant has direct supervision of the sleeping area.

15-3.4.3 Notification.

15-3.4.3.1 Occupant Notification. Occupant notification shall be accomplished automatically in accordance with 7-6.3. Presignal systems shall be prohibited. A positive alarm sequence shall be permitted in accordance with Exception No. 2 to 7-6.3.2.

Exception: Any smoke detectors required by this chapter shall be permitted to be arranged to alarm at a constantly attended location only and shall not be required to accomplish general alarm indication.*

15-3.4.3.2 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4. A positive alarm sequence shall be permitted in accordance with Exception No. 2 to 7-6.3.2.

Exception No. 1: Any smoke detectors required by this chapter shall not be required to transmit an alarm to the fire department.

Exception No. 2: Where staff is provided at a constantly attended location that has the capability to promptly notify the fire department or has direct communication with a control room having direct access to the fire department. The fire plan as required by 15-7.1.3 shall include procedures for logging of alarms and immediate notification of the fire department.

15-3.4.4 Detection. An approved, automatic smoke detection system shall be installed in accordance with Section 7-6 throughout all resident housing areas.

Exception No. 1: Smoke detectors shall not be required in sleeping rooms with four or fewer occupants in Use Condition II or III.

Exception No. 2: In smoke compartments protected throughout by an approved, automatic sprinkler system installed in accordance with 15-3.5.3, smoke detectors shall not be required except in corridors, common spaces, and sleeping rooms with more than four occupants.

Exception No. 3: Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering, or for other purposes, provided the function for detecting any fire is fulfilled and the placement of detectors is such that the speed of detection shall be equivalent to that provided by the spacing and arrangements described in Section 7-6. This shall be permitted to include the location of detectors in exhaust ducts from cells, behind grilles, or in other locations. The equivalent performance of the design, however, shall be acceptable to the authority having jurisdiction in accordance with the equivalency concepts specified in Section 1-6 of this Code.

15-3.5 Extinguishment Requirements.

15-3.5.1 (Reserved.)

15-3.5.2* Where required by 15-1.6, facilities shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

15-3.5.3 Where this Code permits exceptions for fully sprinklered detention and correctional occupancies or sprinklered smoke compartments, the sprinkler system shall be

- (a) In complete accordance with Section 7-7, and

- (b) Electrically connected to the fire alarm system, and
- (c) Fully supervised.

15-3.5.4 Portable fire extinguishers shall be provided in accordance with 7-7.4.1.

Exception No. 1: Access to portable fire extinguishers shall be permitted to be locked.*

Exception No. 2: Portable fire extinguishers shall be permitted to be located at staff locations only.

15-3.5.5 Standpipe and hose systems shall be provided in accordance with 7-7.4.2 as follows:

(a) Class I standpipe systems shall be provided for any building over two stories in height, and

(b) Class III standpipe and hose systems shall be provided for all nonsprinklered buildings over two stories in height.

Exception No. 1: One-inch (2.5-cm) diameter formed hose on hose reels shall be permitted to provide Class II service.

Exception No. 2: Separate Class I and Class II systems shall be permitted in lieu of Class III.

15-3.6 Corridors. (See 15-3.8.1.)

15-3.7 Subdivision of Building Spaces.

15-3.7.1* Smoke barriers shall be provided to divide every story used for sleeping by 10 or more residents, or any other story having an occupant load of 50 or more persons, into a minimum of two compartments.

Exception No. 1: Protection shall be permitted to be accomplished with horizontal exits. (See 5-2.4.)

Exception No. 2: Smoke compartments having direct exit to a public way; a building separated from the resident housing area by a 2-hr fire resistance rating or 50 ft (15 m) of open space; or a secured open area having a holding space located 50 ft (15 m) from the housing area that provides 15 sq ft (1.4 sq m) or more of refuge area for each person (resident, staff, visitors) potentially present at the time of a fire fulfills the requirements for subdivision of such spaces, provided the locking arrangement of the direct exit doors involved meets the requirements for doors at the smoke barrier for the applicable use condition.*

15-3.7.2 Where smoke barriers are required by 15-3.7.1, smoke barriers shall be provided

(a) To limit the housing to a maximum of 200 residents in any smoke compartment, and

(b)* To limit the travel distance to a door in a smoke barrier

1. From any room door required as exit access to a maximum of 100 ft (30 m), and

2. From any point in a room to a maximum of 150 ft (45 m).

Exception to (b): The maximum permitted travel distance shall be increased by 50 ft (15 m) in smoke compartments protected throughout by an approved, automatic sprinkler or smoke control system.

15-3.7.3* Any required smoke barrier shall be constructed in accordance with Section 6-3. Barriers shall be of substantial construction and shall have a structural fire resistance.

15-3.7.4 Openings in smoke barriers shall be protected in accordance with Section 6-3.

*Exception No. 1:** There shall be no restriction on the total number of vision panels in any barrier.

Exception No. 2: Sliding doors in smoke barriers that are designed to normally be kept closed and are remotely operated from a continuously attended location shall not be required to be self-closing.

15-3.7.5 At least 6 net sq ft (0.56 net sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments. This space shall be readily available wherever occupants are moved across the smoke barrier in a fire emergency.

15-3.7.6 Doors shall provide resistance to the passage of smoke. Swinging doors shall be self-latching, or the opening resistance of the door shall be a minimum of 5 lbf (22 N). Such doors shall not be required to swing in the direction of egress travel.

15-3.7.7 Doors in smoke barriers shall conform with the requirements for doors in means of egress as specified in Section 15-2 and shall have locking and release arrangements according to the applicable use condition. The provisions of the Exception to 15-2.11.6 shall not be used for smoke barrier doors serving a smoke compartment containing more than 20 persons.

15-3.7.8 Vision panels shall be provided in smoke barriers at points where the barrier crosses an exit access corridor.

15-3.7.9 Smoke dampers shall be provided in accordance with 6-3.5.

Exception: Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering or to be used for other purposes, provided the function of detecting any fire is fulfilled, and the placement of detectors is such that the speed of detection shall be equivalent to that provided by the required spacing and arrangement.

15-3.8 Special Protection Features.

15-3.8.1* **Subdivision of Resident Housing Spaces.** Subdivision of facility spaces shall comply with Table 15-3.8.1.

SECTION 15-4 SPECIAL PROVISIONS

15-4.1 Windowless Structures.

15-4.1.1 Windowless structures used as detention and correctional occupancies shall comply with 15-4.1.2. The provisions of Section 32-7 for windowless structures shall not be applicable.

Exception: Buildings protected throughout by an approved, automatic sprinkler system in accordance with 15-3.5.3.

Table 15-3.8.1 Subdivision of Resident Housing Spaces

USE CONDITION	II		III				IV			V	
Feature	NS	AS	NS		AS		NS	AS		NS	AS
Room to Room Separation	NR	NR	NR		NR		SR	NR		SR	SR++
Room Face to Corridor Separation	NR	NR	SR+++		NR		SR+++	NR		FR+++	SR++
Room Face to Common Space Separation	NR	NR	NR	SR+++	NR	SR+++	SR+++	NR	SR++	SR++	SR++
			≤50 ft† (15 m)	>50 ft† (15 m)	≤50 ft† (15 m)	>50 ft† (15 m)		≤50 ft† (15 m)	>50 ft† (15 m)		
Common Space to Corridor Separation	SR	NR	SR		NR		SR	NR		FR	SR++
Total Openings in Solid Room Face When Room Face is Required to be Smoke Resistant or Fire Rated	120 sq in. (0.08 sq m)		120 sq in. (0.08 sq m)				120 sq in. (0.08 sq m)			120 sq in. (0.08 sq m) Closable from inside or 120 sq in. (0.08 sq m) w/smoke control	

AS: Protected by automatic sprinklers
NS: Not protected by automatic sprinklers
NR: No Requirement

SR: Smoke Resistant
FR: Fire Rated — 1 hour

†This is the travel distance through the common space to the exit access corridor.

++May be NR where there is either:

- (a) An approved automatic smoke detection system installed in all corridors and common spaces, or
- (b) Multitiered cell blocks meeting the requirements of 15-3.1.3.

+++May be NR in multitiered open cell blocks meeting the requirements of 15-3.1.3.

NOTE 1: Doors in openings in partitions required to be fire resistive in accordance with this chart in other than required enclosures of exits or hazardous areas shall be substantial doors and of construction that resists fire for a minimum of 20 minutes. Wired glass or minimum 45-min fire-rated glazing vision panels are permitted. Latches and door closers are not required on cell doors.

NOTE 2: Doors in openings in partitions required to be smoke resistant in accordance with the chart shall be substantial doors and of construction that resists the passage of smoke. Latches and door closers are not required on cell doors.

NOTE 3: "Total Openings in Solid Room Face" includes all openings (undercuts, food passes, grilles, etc.), the total of which shall not exceed 120 sq in. (.08 sq m). All openings shall be 36 in. (91 cm) or less above the floor.

NOTE 4: Under Use Condition II, III, or IV, a space subdivided by open construction (any combination of grating doors and grating walls or solid walls) shall be permitted to be considered one room if housing not more than 16 persons. The perimeter walls of such space shall be of smoke resistant construction. Smoke detection shall be provided in such space. Under Use Condition IV, common walls between sleeping areas within the space shall be smoke resistant, and grating doors and fronts shall be permitted to be used. In Use conditions II and III, open dormitories shall be permitted to house more than 16 persons as permitted by other sections of this chapter.

15-4.1.2 Means shall be provided to evacuate smoke from the smoke compartment of fire origin. Any of the following means shall be acceptable:

- (a) Operable windows on at least two sides of the building, spaced not more than 30 ft (9.1 m) apart, that provide openings with minimum dimensions of not less than 22 in. (56 cm) in width and 24 in. (61 cm) in height.
- (b)* Manual or automatic smoke vents.
- (c) Engineered smoke-control system.
- (d) Mechanical exhaust system providing at least six air changes per hr.
- (e) Another method acceptable to the authority having jurisdiction.

15-4.2 Underground Buildings. (See Chapter 32 for requirements for underground buildings.)

15-4.3 High-Rise Buildings. Existing high-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7. A sprinkler control valve and a water flow device shall be provided for each floor.

SECTION 15-5 BUILDING SERVICES

15-5.1 Utilities.

15-5.1.1 Utilities shall comply with the provisions of Section 7-1.

15-5.1.2 Alarms, emergency communication systems, and the illumination of generator set installations shall be provided with emergency power in accordance with NFPA 70, *National Electrical Code*.

Exception: Systems complying with earlier editions of NFPA 70, *National Electrical Code*, and not presenting a life safety hazard shall be permitted to continue to be used.

15-5.2 Heating, Ventilating, and Air Conditioning.

15-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception No. 1: As modified in 15-5.2.2.

Exception No. 2: Systems complying with earlier editions of the applicable codes and not presenting a life safety hazard shall be permitted to continue to be used.

15-5.2.2 Portable space heating devices shall be prohibited. Any heating device other than a central heating plant shall be designed and installed so that combustible material shall not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from outside, and shall be designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. The heating system shall have safety devices to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception: Approved, suspended unit heaters shall be permitted in locations other than means of egress and sleeping areas, provided such heaters are located high enough to be out of the reach of persons using

the area, and provided they are vent connected and equipped with the safety devices required above.

15-5.2.3 Combustion and ventilation air for boiler, incinerator, or heater rooms shall be taken directly from and discharged directly to the outside air.

15-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

15-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes.

15-5.4.1 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

15-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with Section 7-7.

15-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

15-5.4.4 Any incinerator shall not be directly flue-fed, nor shall any floor chute directly connect with the combustion chamber.

SECTION 15-6 RESERVED

SECTION 15-7 OPERATING FEATURES

15-7.1 Attendants, Evacuation Plan, Fire Exit Drills.

15-7.1.1 Detention and correctional facilities or those portions of facilities having such occupancy shall be provided with 24-hr staffing. Staff shall be within three floors or 300 ft (91 m) horizontal distance of the access door of each resident housing area.

In addition, for Use Conditions III, IV, and V, the arrangement shall be such that the staff involved starts release of locks necessary for emergency evacuation or rescue and initiates other necessary emergency actions within 2 min of alarm.

Exception: For areas in which all locks are unlocked remotely in compliance with 15-2.11.6, staff shall not be required to be within three floors or 300 ft (194 m).

15-7.1.2* Provisions shall be made so that residents in Use Conditions III, IV, and V shall be able to notify staff of an emergency.

15-7.1.3* The administration of every detention or correctional facility shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire and for their evacuation to areas of refuge and for evacuation from the building when necessary. All employees shall be instructed and drilled with respect to their duties under the plan. The plan shall be coordinated with and reviewed by the fire department legally committed to serve the facility.

15-7.1.4 Employees of detention and correctional occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment. With respect to new staff, such training shall be provided promptly upon commencement of duty. With respect to existing staff, refresher training shall be provided at a minimum annually.

15-7.2 Books, clothing, and other combustible personal property allowed in sleeping rooms shall be stored in closable metal lockers or a fire-resistant container.

15-7.3 The number of heat-producing appliances, such as toasters and hot plates, and the overall use of electrical power within a sleeping room shall be controlled by facility administration.

15-7.4* Furnishings, Bedding, and Decorations.

15-7.4.1 Draperies and curtains, including privacy curtains, in detention and correctional occupancies shall be in accordance with the provisions of 6-6.1.

15-7.4.2 Newly introduced upholstered furniture within detention and correctional occupancies shall be tested in accordance with the provisions of 6-6.2(b) and 6-6.3.

15-7.4.3* Newly introduced mattresses within detention and correctional occupancies shall be tested in accordance with the provisions of 6-6.2(c) and 6-6.4.

15-7.4.4 Combustible decorations shall be prohibited in any detention or correctional occupancy unless flame-retardant.

15-7.4.5 Wastebaskets and other waste containers shall be of noncombustible or other approved materials. Waste containers with a capacity greater than 20 gal (76 L) shall be provided with a noncombustible lid or lid of other approved material.

15-7.5 Keys. All keys necessary for unlocking doors installed in means of egress shall be individually identified by both touch and sight.

15-7.6 Portable Space Heating Devices. Portable space heating devices shall be prohibited in all detention and correction occupancies.

CHAPTER 16 NEW HOTELS AND DORMITORIES

SECTION 16-1 GENERAL REQUIREMENTS

16-1.1 Application. The requirements of this chapter apply to

- (a) New buildings or portions thereof used as hotel or dormitory occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, a hotel or dormitory occupancy (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing hotel or dormitory occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a hotel or dormitory occupancy (*see 1-3.12*).

Exception: Any dormitory divided into suites of rooms, with one or more bedrooms opening into a living room or study that has a door opening into a common corridor serving a number of suites, shall be classified as an apartment building.

16-1.2 Mixed Occupancies.

16-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

16-1.2.2 For requirements on mixed assembly and residential occupancies, see 8-1.2; for mixed mercantile and residential occupancies, see 24-1.2; and for mixed business and residential occupancies, see 26-1.2.

16-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

Dormitories. Buildings or spaces in buildings where group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room or a series of closely associated rooms under joint occupancy and single management, with or without meals, but without individual cooking facilities. Examples are college dormitories, fraternity houses, and military barracks. Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes shall be deemed "guest rooms" or "guest suites" as indicated in this chapter unless specifically excepted.

Guest Room. An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment.

Guest Suite. An accommodation with two or more contiguous rooms comprising a compartment with or without doors between such rooms providing living, sleeping, sanitary, and storage facilities.

Hotels. Buildings or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons primarily used by transients (those who occupy accommodations for less than 30 days) for lodging with or without meals, whether designated as a hotel, inn, club, motel, or by any other name. So-called apartment hotels shall be classified as hotels because they are potentially subject to the same transient occupancy as hotels.

16-1.4 Classification of Occupancy. (*See 16-1.3*.)

16-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary haz-

ard in accordance with Section 4-2. For the design of automatic sprinkler systems, the classification of contents in NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall apply.

16-1.6 Minimum Construction Requirements. (No special requirements.)

16-1.7* Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater.

SECTION 16-2 MEANS OF EGRESS REQUIREMENTS

16-2.1 General. Means of egress from guest rooms or guest suites to the outside of the building shall be in accordance with Chapter 5 and this chapter. Means of escape within the guest room or guest suite shall comply with the provisions of Section 21-2 for one- and two-family dwellings. For the purpose of application of the requirements of Chapter 21, guest room and guest suite shall be synonymous with dwelling or living unit.

16-2.2 Means of Egress Components.

16-2.2.1 General.

16-2.2.1.1 Components of means of egress shall be limited to the types described in 16-2.2.2 through 16-2.2.10.

16-2.2.1.2 In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5, exit enclosures shall have a fire resistance rating of not less than 1 hr, and the fire protection rating of doors shall be not less than 1 hr.

16-2.2.2 Doors.

16-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

16-2.2.2.2 No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1: Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any one egress path.

Exception No. 2: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

16-2.2.2.3 Revolving doors complying with 5-2.1.10 shall be permitted.

16-2.2.2.4 Horizontal sliding doors, as permitted by 5-2.1.14, shall not be used across corridors.

16-2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

16-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

16-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

16-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

16-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

16-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

16-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

16-2.2.10* Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with 16-3.5, the two accessible rooms or spaces separated from each other by smoke-resistive partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

16-2.3 Capacity of Means of Egress.

16-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

16-2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

16-2.3.3 The minimum corridor width shall be sufficient to accommodate the required occupant load, but shall be not less than 44 in. (112 cm).

*Exception:** Corridors within individual guest rooms or individual guest suites.

16-2.4 Number of Exits. (See also Section 5-4.) At least two separate exits shall be provided on each story.

Exception: Any building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5 having four stories or less with not more than four guest rooms or guest suites per floor shall be permitted to have a single exit under the following conditions:

(a) The stairway is completely enclosed or separated by barriers having a fire resistance rating of at least 1 hr with self-closing 1-hr fire protection-rated doors protecting all openings between the stairway enclosure and the building.

(b) The stairway does not serve more than one-half story below the level of exit discharge.

(c) All corridors serving as access to exits have at least a 1-hr fire resistance rating.

(d) There is not more than 35 ft (10.7 m) of travel distance from the entrance door of any guest room or guest suite to an exit.

(e) One-half-hour fire-rated horizontal and vertical separation between guest rooms or guest suites is provided.

16-2.5 Arrangement of Means of Egress.

16-2.5.1 Access to all required exits shall be in accordance with Section 5-5.

Exception: The distance between exits addressed by 5-5.1.4 shall not be applicable to common nonlooped exit access corridors in buildings that have corridor doors from the guest room or guest suite that are arranged such that the exits are located in opposite directions from such doors.

16-2.5.2 No common path of travel shall exceed 35 ft (10.7 m). Travel within a guest room or guest suite shall not be included when calculating common path of travel.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5, common path of travel shall not exceed 50 ft (15 m).

16-2.5.3 No dead-end corridor shall exceed 35 ft (10.7 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5, dead-end corridors shall not exceed 50 ft (15 m).

16-2.5.4 Any guest room or any guest suite of rooms in excess of 2000 sq ft (185 sq m) shall be provided with at least two exit access doors remotely located from each other.

16-2.6 Travel Distance to Exits.

16-2.6.1 Travel distance within a guest room or guest suite to a corridor door shall not exceed 75 ft (23 m).

Exception: One hundred twenty-five-foot (38-m) travel distance shall be allowed in buildings protected by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5.

16-2.6.2 Travel distance, measured in accordance with Section 5-6, from the corridor door of any guest room or guest suite to the nearest exit shall not exceed 100 ft (30 m).

Exception No. 1: Maximum permitted travel distance to exits shall be 200 ft (60 m) for exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 2: Maximum permitted travel distance to exits shall be 200 ft (60 m) if the exit access and any portion of the building that is tributary to the exit access are protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5. In addition, the portion of the building in which the 200-ft (60-m) travel distance is permitted shall be separated from the remainder of the building by construction having a fire resistance rating of not less than 1 hr for buildings not more than three stories in height, and 2 hr for buildings more than three stories in height.

16-2.7 Discharge from Exits.

16-2.7.1 Exit discharge shall comply with Section 5-7.

16-2.7.2* Any required exit stair that is located so that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to a level of exit discharge or to a mezzanine within a lobby at a level of exit discharge.

16-2.7.3 The distance of travel from the termination of the exit enclosure to an exterior door leading to a public way shall not exceed 100 ft (30 m).

16-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

16-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 25 rooms.

Exception: Where each guest room or guest suite has an exit direct to the outside of the building at street or ground level emergency lighting shall not be required.

16-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

16-2.11 Special Means of Egress Features. (Reserved.)

SECTION 16-3 PROTECTION

16-3.1 Protection of Vertical Openings.

16-3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors in accordance with 6-2.4.5 shall be permitted.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Convenience openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 4: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5, fire resistance of walls shall be not less than 1 hr, and the fire protection rating of doors shall be not less than 1 hr.

16-3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purposes other than residential occupancy shall have unprotected openings to floors used for residential purposes.

16-3.2 Protection from Hazards.

16-3.2.1 Any room containing high-pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or directly adjacent to exits. All such rooms shall be effectively cut off from other parts of the building as specified in Section 6-4.

16-3.2.2 Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in Table 16-3.2.2 shall be protected as indicated. Where sprinkler protection without fire-rated separation is used, areas shall be separated from other spaces by partitions complying with 6-3.2 and with doors complying with 6-3.4.

Table 16-3.2.2 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Boiler and fuel-fired heater rooms serving more than a single guest room or guest suite	1-hr and sprinklers
Employee locker rooms	1-hr or sprinklers
Gift or retail shops	1-hr or sprinklers
Bulk laundries	1-hr and sprinklers
Guest laundries not more than 100 sq ft (9.3 sq m) outside of guest rooms or guest suites	1-hr or sprinklers ¹
Guest laundries more than 100 sq ft (9.3 sq m) outside of guest rooms or guest suites	1-hr and sprinklers
Maintenance shops	1-hr and sprinklers
Storage rooms ²	1-hr or sprinklers
Trash rooms	1-hr and sprinklers

¹Where automatic sprinkler protection is provided, no enclosure shall be required.

²Where storage areas not exceeding 24 sq ft (2.2 sq m) are directly accessible from the guest room or guest suite, no separation or protection shall be required.

16-3.3 Interior Finish.

16-3.3.1 Interior finish shall be in accordance with Section 6-5.

16-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Exit enclosures — Class A;
- (b) Lobbies and corridors — Class A or Class B;
- (c) Other spaces — Class A, Class B, or Class C.

16-3.3.3 Interior Floor Finish. Interior floor finish in accordance with 6-5.6 shall be in accordance with Table 16-3.3.3.

Table 16-3.3.3 Interior Floor Finish

	Sprinklered	Not Sprinklered
Corridors	No Requirement	Class II
Exits	No Requirement	Class II

16-3.3.4* Furnishings and Decorations. New draperies, curtains, and other similar loosely hanging furnishings and decorations in hotels and dormitories shall be in accordance with the provisions of 6-6.1.

16-3.4 Detection, Alarm, and Communication Systems.

16-3.4.1 General. A fire alarm system in accordance with Section 7-6, except as modified by 16-3.4.2 through 16-3.4.4, shall be provided.

16-3.4.2 Initiation. The required fire alarm system shall be initiated by

- (a) Manual means in accordance with 7-6.2, and
- (b) A manual fire alarm station located at the hotel desk or other convenient central control point under continuous supervision by responsible employees, and
- (c) Any automatic sprinkler system, and
- (d) Any required automatic detection system.

Exception to (d): Sleeping room smoke detectors shall not be required to initiate the building fire alarm system.

16-3.4.3 Notification.

16-3.4.3.1* Occupant notification shall be provided automatically in accordance with 7-6.3.

Exception No. 1: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5.1, a presignal system installed in accordance with Exception No. 1 to 7-6.3.2 shall be permitted to be used.

Exception No. 2: A delay for positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

16-3.4.3.2* Guest rooms and guest suites specifically required and equipped to accommodate hearing impaired individuals shall be provided with a visible notification appliance.

16-3.4.3.3 In occupiable areas other than guest rooms and guest suites visible notification appliances shall be provided.

16-3.4.3.4 Annunciation in accordance with 7-6.7 shall be provided.

Exception: Buildings not more than two stories in height and with not more than 50 rooms.

16-3.4.3.5* Provisions shall be made for the immediate notification of the public fire department by telephone or other means in case of fire. Where there is no public fire department, this notification shall be made to the private fire brigade.

16-3.4.4 Detection.

16-3.4.4.1 A corridor smoke detection system in accordance with Section 7-6 shall be provided.

Exception: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5.1.

16-3.4.4.2* An approved, single-station smoke alarm shall be installed in accordance with 7-6.2.10 in every guest room and every living area and sleeping room within a guest suite.

16-3.5 Extinguishment Requirements.

16-3.5.1 Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be installed in accordance with Section 7-7. In buildings up to and including four stories in height, systems installed in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height*, shall be permitted.

Exception: The draft stop and closely spaced sprinkler requirements of NFPA 13, Standard for the Installation of Sprinkler Systems, shall not be required for convenience openings complying with 6-2.4.8 where the convenience opening is within the guest room or guest suite.

16-3.5.2 All buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5.1.

Exception: Buildings other than high rise, where all guest sleeping rooms have a door that opens directly to the outside at street or ground level or to exterior exit access arranged in accordance with 5-5.3.

16-3.5.3 Listed quick response or listed residential sprinklers shall be used throughout guest rooms and guest room suites.

16-3.5.4 Open air parking structures complying with NFPA 88A, *Standard for Parking Structures*, shall not be required to be sprinklered under this Code.

16-3.5.5 Portable fire extinguishers shall be provided in hazardous areas. Where provided, portable fire extinguishers shall be installed and maintained in accordance with 7-7.4.1.

16-3.6 Corridors.

16-3.6.1 Walls. Exit access corridor walls shall consist of fire barriers in accordance with 6-2.3 having a minimum 1-hr fire resistance rating.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 16-3.5, corridor walls shall have a minimum ½-hr fire resistance rating.

16-3.6.2 Doors. Doors that open onto exit access corridors shall have a minimum 20 min fire protection rating in accordance with 6-2.3.

16-3.6.3 Doors that open onto exit access corridors shall be self-closing and self-latching.

16-3.6.4 Unprotected openings shall be prohibited in exit access corridor walls and doors.

Exception: Spaces shall be permitted to be unlimited in area and open to the corridor provided:

(a) The spaces are not used for guest rooms or guest suites or hazardous areas, and

(b) The building is protected throughout by an automatic sprinkler system installed in accordance with 16-3.5, and

(c) The space does not obstruct access to required exits.

16-3.6.5 Transoms, louvers, or transfer grilles shall be prohibited in walls or doors of exit access corridors.

16-3.7 Subdivision of Building Spaces. (Reserved.)

16-3.8 Special Protection Features. (Reserved.)

SECTION 16-4 SPECIAL PROVISIONS

16-4.1 High-Rise Buildings. High-rise buildings shall comply with Section 32-8.

SECTION 16-5 BUILDING SERVICES

16-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

16-5.2 Heating, Ventilating, and Air Conditioning.

16-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2, except as otherwise required in this chapter.

16-5.2.2 Unvented fuel-fired heaters shall not be used.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

16-5.3* Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4. In high-rise buildings, one elevator shall be provided with a protected power supply and shall be available for use by the fire department in case of emergency.

16-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 16-6 RESERVED**SECTION 16-7 OPERATING FEATURES****16-7.1 Hotel Emergency Organization.**

16-7.1.1* Employees of hotels shall be instructed and drilled in the duties they are to perform in the event of fire, panic, or other emergency.

16-7.1.2* Drills of the emergency organization shall be held at quarterly intervals, covering such points as the operation and maintenance of the available first aid fire appliances, the testing of devices to alert guests, and a study of instructions for emergency duties.

16-7.2 Emergency Duties. Upon discovery of a fire, employees shall

(a) Activate the facility fire protection signaling system, if provided, and

(b) Notify the public fire department, and

(c) Take other action as previously instructed.

16-7.3 Dormitories.

16-7.3.1 Drills. Fire exit drills shall be regularly conducted in accordance with Section 1-7.

16-7.4 Emergency Instructions for Residents or Guests.

16-7.4.1* A floor diagram reflecting the actual floor arrangement, exit locations, and room identification shall be posted in

a location and manner acceptable to the authority having jurisdiction on or immediately adjacent to every guest room door in hotels and in every resident room in dormitories.

16-7.4.2* Fire safety information shall be provided to allow guests to decide either to evacuate to the outside, evacuate to an area of refuge, remain in place, or any combination of the three.

CHAPTER 17 EXISTING HOTELS AND DORMITORIES

SECTION 17-1 GENERAL REQUIREMENTS

17-1.1 Application. The requirements of this chapter apply to existing buildings or portions thereof currently occupied as hotel or dormitory occupancies. (*See also 16-1.1.*)

Exception: Any dormitory divided into suites of rooms, with one or more bedrooms opening into a living room or study that has a door opening into a common corridor serving a number of suites, shall be classified as an apartment building.

17-1.2 Mixed Occupancies.

17-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

17-1.2.2 For requirements on mixed assembly and residential occupancies, see 9-1.2; for mixed mercantile and residential occupancies, see 25-1.2.

17-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

Dormitories. Buildings or spaces in buildings where group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room or a series of closely associated rooms under joint occupancy and single management, with or without meals, but without individual cooking facilities. Examples are college dormitories, fraternity houses, and military barracks. Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes shall be deemed "guest rooms" or "guest suites" as indicated in this chapter unless specifically excepted.

Guest Room. An accommodation in a hotel combining living, sleeping, sanitary, and storage facilities within a compartment.

Guest Suite. An accommodation with two or more contiguous rooms comprising a compartment with or without doors between such rooms providing living, sleeping, sanitary, and storage facilities.

Hotels. Buildings or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons primarily used by transients (those who occupy accommodations for less than 30 days) for lodging with or without meals, whether designated as a hotel, inn, club, motel, or by any other name. So-called apartment hotels shall be classified as hotels because they are potentially subject to the same transient occupancy as hotels.

17-1.4 Classification of Occupancy. (*See 17-1.3.*)

17-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary hazard in accordance with Section 4-2. For the design of automatic sprinkler systems, the classification of contents in NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall apply.

17-1.6 Minimum Construction Requirements. (No special requirements.)

17-1.7* Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater.

SECTION 17-2 MEANS OF EGRESS REQUIREMENTS

17-2.1 General. Means of egress from guest rooms or guest suites to the outside of the building shall be in accordance with Chapter 5 and this chapter. Means of escape within the guest room or guest suite shall comply with the provisions of Section 21-2 for one- and two-family dwellings. For the purpose of application of the requirements of Chapter 21, guest room and guest suite shall be synonymous with dwelling or living unit.

17-2.2 Means of Egress Components.

17-2.2.1 General.

17-2.2.1.1 Components of means of egress shall be limited to the types described in 17-2.2.2 through 17-2.2.12.

17-2.2.1.2 In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 17-3.5, exit enclosures shall have a fire resistance rating of not less than 1 hr, and the fire protection rating of doors shall be not less than 1 hr.

17-2.2.2 Doors.

17-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

17-2.2.2.2 No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1: Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any one egress path.

Exception No. 2: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

17-2.2.2.3 Revolving doors complying with 5-2.1.10 shall be permitted.

17-2.2.2.4 Horizontal sliding doors, as permitted by 5-2.1.14, shall not be used across corridors.

17-2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

17-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

17-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

17-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

17-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

17-2.2.8* Escalators. Escalators previously approved as a component in the means of egress shall be permitted to continue to be given credit for compliance.

17-2.2.9 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

17-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

17-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

17-2.2.12* Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 17-3.5, the two accessible rooms or spaces separated from each other by smoke-resistive partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

17-2.3 Capacity of Means of Egress.

17-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

17-2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

17-2.4 Number of Exits. Not less than two exits shall be accessible from every floor, including floors below the level of exit discharge and occupied for public purposes.

Exception: Any building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 17-3.5 having four stories or less with not more than four guest rooms or guest suites per floor shall be permitted to have a single exit under the following conditions:

(a) The stairway is completely enclosed or separated by barriers having a fire resistance rating of at least 1 hr with self-closing 1-hr fire protection-rated doors protecting all openings between the stairway enclosure and the building.

(b) The stairway does not serve more than one-half story below the level of exit discharge.

(c) All corridors serving as access to exits have at least a 1-hr fire resistance rating.

(d) There is not more than 35 ft (10.7 m) of travel distance from the entrance door of any guest room or guest suite to an exit.

(e) One-half-hr fire-rated horizontal and vertical separation between guest rooms or guest suites is provided.

17-2.5 Arrangement of Means of Egress.

17-2.5.1 Access to all required exits shall be in accordance with Section 5-5.

17-2.5.2 No common path of travel shall exceed 35 ft (10.7 m). Travel within a guest room or guest suite shall not be included when calculating common path of travel.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 17-3.5, common path of travel shall not exceed 50 ft (15 m).

17-2.5.3 No dead-end corridor shall exceed 50 ft (15 m).

17-2.6 Travel Distance to Exits.

17-2.6.1 Travel distance within a guest room or guest suite to a corridor door shall not exceed 75 ft (23 m).

Exception: One hundred twenty-five-foot (38-m) travel distance shall be allowed in buildings protected by an automatic sprinkler system installed in accordance with 17-3.5.

17-2.6.2 Travel distance, measured in accordance with Section 5-6, from the corridor door of any guest room or guest suite to the nearest exit shall not exceed 100 ft (30 m).

Exception No. 1: Maximum permitted travel distance to exits shall be 200 ft (60 m) for exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 2: Maximum permitted travel distance to exits shall be 200 ft (60 m) if the exit access and any portion of the building that is tributary to the exit access are protected throughout by an approved, automatic sprinkler system installed in accordance with 17-3.5. In addition, the portion of the building in which the 200-ft (60-m) travel distance is permitted shall be separated from the remainder of the building by construction having a fire resistance rating of not less than 1 hr for buildings not more than three stories in height, and 2 hr for buildings more than three stories in height.

17-2.7 Discharge from Exits.

17-2.7.1 Exit discharge shall comply with Section 5-7.

17-2.7.2* Any required exit stair that is located so that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to a level of exit discharge or to a mezzanine within a lobby at a level of exit discharge.

17-2.7.3 The distance of travel from the termination of the exit enclosure to an exterior door leading to a public way shall not exceed 150 ft (45 m) in buildings protected throughout by an approved, automatic sprinkler system in accordance with 17-3.5 and shall not exceed 100 ft (30 m) in all other buildings.

17-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

17-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 25 rooms.

Exception: Where each guest room or guest suite has an exit direct to the outside of the building at street or ground level.

17-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

17-2.11 Special Means of Egress Features. (Reserved.)

SECTION 17-3 PROTECTION

17-3.1 Protection of Vertical Openings.

17-3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4 or provide means of satisfying the requirements of Section 2-9.

Exception No. 1: Unprotected vertical openings connecting not more than three floors in accordance with 6-2.4.5 shall be permitted.

Exception No. 2: An atrium in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Convenience openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 4: In any building protected throughout by an approved, automatic sprinkler system installed in accordance with 17-3.5, and where exits and required ways of travel thereto are adequately safeguarded against fire and smoke within the building or where every individual room has direct access to an exterior exit without passing through any public corridor, the protection of vertical

openings not part of required exits shall be permitted to be waived by the authority having jurisdiction to such extent as such openings do not endanger required means of egress.

Exception No. 5: In existing buildings not more than two stories in height, unprotected openings shall be permitted by the authority having jurisdiction to continue to be used where the building is protected throughout by an approved, automatic sprinkler system installed in accordance with 17-3.5.

17-3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purposes other than residential occupancy shall have unprotected openings to floors used for residential purposes.

17-3.2 Protection from Hazards.

17-3.2.1 Any room containing high pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or directly adjacent to exits. All such rooms shall be effectively cut off from other parts of the building as specified in Section 6-4.

17-3.2.2 Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in Table 17-3.2.2 shall be protected as indicated. Where sprinkler protection without fire-rated separation is used, areas shall be separated from other spaces by partitions complying with 6-3.2 and with doors complying with 6-3.4.

Table 17-3.2.2 Hazardous Area Protection

Hazardous Area Description	Separation/ Protection
Boiler and fuel-fired heater rooms serving more than a single guest room or guest suite	1-hr or sprinklers
Employee locker rooms	1-hr or sprinklers
Gift or retail shops more than 100 sq ft (9.3 sq m)	1-hr or sprinklers ¹
Bulk laundries	1-hr or sprinklers
Guest laundries more than 100 sq ft (9.3 sq m) outside of guest rooms or guest suites	1-hr or sprinklers ¹
Maintenance shops	1-hr and sprinklers
Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction ²	1-hr or sprinklers
Trash rooms	1-hr and sprinklers

¹Where sprinkler protection is provided, no enclosure shall be required.

²Where storage areas not exceeding 24 sq ft (2.2 sq m) are directly accessible from the guest room or guest suite, no separation or protection shall be required.

17-3.3 Interior Finish.

17-3.3.1 Interior finish shall be in accordance with Section 6-5.

17-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Exit enclosures — Class A or Class B;
- (b) Lobbies and corridors that are part of an exit access — Class A or Class B;
- (c) Other spaces — Class A, Class B, or Class C.

17-3.3.3 Interior Floor Finish. Interior floor finish in accordance with 6-5.6 shall be in accordance with Table 17-3.3.3.

Exception: Previously installed and approved floor covering.

Table 17-3.3.3 Interior Floor Finish

	Sprinklered	Not Sprinklered
Corridors	No Requirement	Class II
Exits	No Requirement	Class II

17-3.3.4* Furnishings and Decorations. New draperies, curtains, and other similar loosely hanging furnishings and decorations in hotels and dormitories shall be in accordance with the provisions of 6-6.1.

17-3.4 Detection, Alarm, and Communication Systems.

17-3.4.1 General. A fire alarm system in accordance with Section 7-6, except as modified by 17-3.4.2 through 17-3.4.4, shall be provided.

Exception: Buildings where each guest room has exterior exit access in accordance with 5-5.3, and the building is not more than three stories in height.

17-3.4.2 Initiation. The required fire alarm system shall be initiated by:

- (a) Manual means in accordance with 7-6.2, and

Exception to (a): Manual means as specified in 7-6.2, other than as required by (b) below, shall not be required where there are other effective means, such as complete automatic sprinkler or automatic detection systems, to activate the fire alarm system.

- (b) A manual fire alarm station located at the hotel desk or other convenient central control point under continuous supervision by responsible employees, and

- (c) Any required automatic sprinkler system, and

- (d) Any required detection system.

Exception to (d): Sleeping room smoke detectors shall not be required to initiate the building fire alarm system.

17-3.4.3 Notification.

17-3.4.3.1 Occupant notification shall be provided automatically in accordance with 7-6.3.

Exception No. 1: A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

Exception No. 2: A delay for positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

17-3.4.3.2* Provisions shall be made for the immediate notification of the public fire department by telephone or other means in case of fire. Where there is no public fire department, this notification shall be made to the private fire brigade.

17-3.4.4 Detection.

17-3.4.4.1 (Reserved.)

17-3.4.4.2* An approved, single-station smoke alarm shall be installed in accordance with 7-6.2.10 in every guest room and every living area and sleeping room within a guest suite.

Exception No. 1: These alarms shall not be required to be interconnected.

Exception No. 2: Single-station smoke alarms without a secondary (standby) power source shall be permitted.

17-3.5 Extinguishment Requirements.

17-3.5.1* Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be installed in accordance with Section 7-7. In buildings up to and including four stories in height, systems installed in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, shall be permitted.

Exception No. 1: In guest rooms and in guest room suites, sprinkler installations shall not be required in closets not over 24 sq ft (2.2 sq m) and bathrooms not over 55 sq ft (5.1 sq m).

Exception No. 2: The draft stop and closely spaced sprinkler requirements of NFPA 13, Standard for the Installation of Sprinkler Systems, shall not be required for convenience openings complying with 6-2.4.8 where the convenience opening is within the guest room or guest suite.

17-3.5.2 All high-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 17-3.5.1.

Exception: Where each guest room or guest suite has exterior exit access in accordance with 5-5.3.

17-3.5.3 Portable fire extinguishers shall be provided in hazardous areas. Where provided, portable fire extinguishers shall be installed and maintained in accordance with 7-7.4.1.

17-3.6 Corridors.

17-3.6.1 Walls. Exit access corridor walls shall consist of fire barriers in accordance with 6-2.3 having a minimum ½-hr fire resistance rating.

Exception: In buildings protected throughout by an approved, automatic sprinkler system in accordance with 17-3.5, no fire resistance rating shall be required, but the walls and all openings therein shall resist the passage of smoke.

17-3.6.2 Doors. Doors that open onto exit access corridors shall have a minimum 20-min fire protection rating in accordance with 6-2.3.

Exception No. 1: Doors complying with 6-2.3.2.3.

Exception No. 2: Where automatic sprinkler protection is provided in the corridor in accordance with 19-3.5.2 through 19-3.5.4, doors shall not be required to have a fire protection rating but shall resist the passage of smoke. Doors shall be equipped with latches for keeping doors tightly closed.

17-3.6.3 Doors that open onto exit access corridors shall be self-closing and self-latching.

17-3.6.4 Unprotected openings shall be prohibited in exit access corridor walls and doors.

Exception: Spaces shall be permitted to be unlimited in area and open to the corridor provided:

(a) *The spaces are not used for guest rooms or guest suites or hazardous areas, and*

(b) *The space is protected by an automatic sprinkler system installed in accordance with 17-3.5, and*

(c) *The space does not obstruct access to required exits.*

17-3.6.5 Transoms, louvers, or transfer grilles shall be prohibited in walls or doors of exit access corridors.

Exception No. 1: Existing transoms shall be permitted to remain but shall be fixed in the closed position and shall be covered or otherwise protected to provide a fire resistance rating at least equivalent to that of the wall in which they are installed.

Exception No. 2: Where a corridor smoke detection system is provided that, when sensing smoke, will sound the building alarm and shut down return or exhaust fans that draw air into the corridor from the guest rooms. The grilles shall be located in the lower one third of the wall or door height.

Exception No. 3: Buildings protected throughout by an approved, automatic sprinkler system complying with 17-3.5 or buildings with corridor sprinkler protection in accordance with 19-3.5.2 through 19-3.5.4, and where the transfer grille is located in the lower one third of the wall or door height.

17-3.7 Subdivision of Building Spaces. Every guest room floor shall be divided into at least two smoke compartments of approximately the same size with smoke barriers in accordance with Section 6-3. Smoke dampers shall not be required.

Additional smoke barriers shall be provided such that the maximum travel distance from a guest room corridor door to a smoke barrier shall not exceed 150 ft (45 m).

Exception No. 1: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 17-3.5 or a corridor sprinkler system conforming to 19-3.5.2 through 19-3.5.4.

Exception No. 2: Smoke barriers shall not be required where each guest room is provided with exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 3: Smoke barriers shall not be required where the aggregate corridor length on each floor is not more than 150 ft (45 m).

17-3.8 Special Protection Features. (Reserved.)

SECTION 17-4 SPECIAL PROVISIONS

17-4.1 High-Rise Buildings. (See 17-3.5.2.)

SECTION 17-5 BUILDING SERVICES

17-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

17-5.2 Heating, Ventilating, and Air Conditioning.

17-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2, except as otherwise required in this chapter.

17-5.2.2 Unvented fuel-fired heaters shall not be used.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

17-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

17-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 17-6 RESERVED

SECTION 17-7 OPERATING FEATURES

17-7.1 Hotel Emergency Organization.

17-7.1.1* Employees of hotels shall be instructed and drilled in the duties they are to perform in the event of fire, panic, or other emergency.

17-7.1.2* Drills of the emergency organization shall be held at quarterly intervals, covering such points as the operation and maintenance of the available first aid fire appliances, the testing of devices to alert guests, and a study of instructions for emergency duties.

17-7.2 Emergency Duties. Upon discovery of a fire, employees shall:

- (a) Activate the facility fire protection signaling system, if provided, and
- (b) Notify the public fire department, and
- (c) Take other action as previously instructed.

17-7.3 Dormitories.

17-7.3.1 Drills. Fire exit drills shall be regularly conducted in accordance with Section 1-7.

17-7.4 Emergency Instructions for Residents or Guests.

17-7.4.1* A floor diagram reflecting the actual floor arrangement, exit locations, and room identification shall be posted in a location and manner acceptable to the authority having jurisdiction on or immediately adjacent to every guest room door in hotels and in every resident room in dormitories.

17-7.4.2* Fire safety information shall be provided to allow guests to decide either to evacuate to the outside, evacuate to an area of refuge, remain in place, or any combination of the three.

CHAPTER 18 NEW APARTMENT BUILDINGS

SECTION 18-1 GENERAL REQUIREMENTS

18-1.1 Application. The requirements of this chapter apply to:

- (a) New buildings or portions thereof used as apartment occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, an apartment occupancy (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing apartment occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to an apartment occupancy (*see 1-3.12*).

18-1.2 Mixed Occupancies.

18-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

18-1.2.2 For requirements on mixed assembly and residential occupancies, see 8-1.2; for mixed mercantile and residential occupancies, see 24-1.2; and for mixed business and residential occupancies, see 26-1.2.

18-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

Apartment Buildings.* Buildings containing three or more dwelling units with independent cooking and bathroom facilities, whether designated as apartment houses, tenements, garden apartments, or by any other name.

18-1.4 Classification of Occupancy. (*See 18-1.3.*)

18-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

18-1.6 Minimum Construction Requirements. (No special requirements.)

18-1.7* Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater.

SECTION 18-2 MEANS OF EGRESS REQUIREMENTS

18-2.1 General.

18-2.1.1 Means of egress from dwelling units to the outside of the building shall be in accordance with Chapter 5 and this chapter. Means of escape within the dwelling unit shall comply with the provisions of Section 21-2 for one- and two-family dwellings.

18-2.2 Means of Egress Components.

18-2.2.1 General.

18-2.2.1.1 Components of means of egress shall be limited to the types described in 18-2.2.2 through 18-2.2.10.

18-2.2.1.2 In buildings protected throughout by an approved, supervised automatic sprinkler system installed in ac-

cordance with 18-3.5, exit enclosures shall have a fire resistance rating of not less than 1 hr, with doors having a fire protection rating of not less than 1 hr.

18-2.2.2 Doors.

18-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

18-2.2.2.2* No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1: Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any one egress path.

Exception No. 2: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

18-2.2.2.3 Revolving doors complying with 5-2.1.10 shall be permitted.

18-2.2.2.4 Horizontal sliding doors, as permitted by 5-2.1.14, shall not be used across corridors.

18-2.2.3 Stairs.

18-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

18-2.2.3.2 Within any individual dwelling unit, stairs more than one story above or below the entrance floor level of the dwelling unit shall not be permitted.

18-2.2.3.3 Spiral stairs complying with 5-2.2.2.4 shall be permitted within a single dwelling unit.

18-2.2.3.4 Winders complying with 5-2.2.2.5 shall be permitted within a single dwelling unit.

18-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

18-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

18-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

18-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

18-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

18-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

18-2.2.10* Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, the two accessible rooms or spaces separated from each other by smoke-resistive partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

18-2.3 Capacity of Means of Egress.

18-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

18-2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

18-2.3.3 The minimum corridor width shall be sufficient to accommodate the required occupant load, but not less than 44 in. (112 cm).

Exception: Corridors with a required capacity of not more than 50 persons as defined in Section 5-3 shall be not less than 36 in. (91 cm) in width.

18-2.4 Number of Exits. (See also Section 5-4.) Every dwelling unit shall have access to at least two separate exits remotely located from each other as required by 5-5.1.

Exception No. 1: Any dwelling unit shall be permitted to have a single exit provided:

(a) That dwelling unit has an exit door opening directly to the street or yard at ground level, or

(b) That dwelling unit has direct access to an outside stair complying with 5-2.2 that serves a maximum of two units both of which are located on the same floor, or

(c) That dwelling unit has direct access to an interior stair serving only that unit and separated from all other portions of the building by fire barriers having a minimum 1-hr fire resistance rating with no opening therein.

Exception No. 2: Any building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5 having four or fewer stories and with not more than four dwelling units per story shall be permitted to have a single exit under the following conditions:

(a) The stairway is separated from the rest of the building by barriers having a minimum 1-hr fire resistance rating with self-closing minimum 1-hr fire protection-rated doors protecting all openings between the stairway enclosure and the building, and

(b) The stairway does not serve more than one-half story below the level of exit discharge, and

(c) All corridors serving as access to exits have a minimum 1-hr fire resistance rating, and

(d) There is not more than 35 ft (10.7 m) of travel distance from the entrance door of any dwelling unit to an exit, and

(e) One-half-hour fire-rated horizontal and vertical separation between dwelling units is provided.

18-2.5 Arrangement of Means of Egress.

18-2.5.1 Access to all required exits shall be in accordance with Section 5-5.

Exception: The distance between exits addressed by 5-5.1.4 shall not be applicable to nonlooped exit access corridors in buildings that have corridor doors from the dwelling units that are arranged such that the exits are located in opposite directions from such doors.

18-2.5.2 No common path of travel shall exceed 35 ft (10.7 m). Travel within a dwelling unit shall not be included when calculating common path of travel.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, common path of travel shall not exceed 50 ft (15 m).

18-2.5.3 No dead-end corridor shall exceed 35 ft (10.7 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, dead-end corridors shall not exceed 50 ft (15 m).

18-2.6 Travel Distance to Exits.

18-2.6.1 Travel distance within a dwelling unit (apartment) to a corridor door shall not exceed 75 ft (23 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, the travel distance shall not exceed 125 ft (38 m).

18-2.6.2 The travel distance from a dwelling unit (apartment) entrance door to the nearest exit shall not exceed 100 ft (30 m).

Exception No. 1: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, the travel distance shall not exceed 200 ft (60 m).

Exception No. 2: Travel distance to exits shall not exceed 200 ft (60 m) for exterior ways of exit access arranged in accordance with 5-5.3.

18-2.6.3 The travel distance from areas other than those within living units to the exit measured in accordance with Section 5-6 shall not exceed 200 ft (67 m).

Exception: Travel distance shall not exceed 250 ft (83 m) in buildings protected throughout by an approved, supervised, automatic sprinkler system installed in accordance with Section 7-7.

18-2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

18-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

18-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 12 dwelling units or more than three stories in height.

Exception: Where every dwelling unit has a direct exit to the outside of the building at grade level.

18-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10 in all buildings requiring more than one exit.

18-2.11 Special Means of Egress Features. (Reserved.)

SECTION 18-3 PROTECTION

18-3.1 Protection of Vertical Openings.

18-3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Convenience openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: An atrium in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, the fire resistance of walls shall be not less than 1 hr, and the fire protection rating of doors shall be not less than 1 hr.

Exception No. 4: There shall be no unprotected vertical opening in any building or fire section with only one exit.

Exception No. 5: In buildings protected throughout by an approved, supervised sprinkler system in accordance with 18-3.5, unprotected vertical openings connecting not more than three floors shall be permitted in accordance with the provisions of 6-2.4.5.

18-3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purposes other than residential occupancy open to the public shall have unprotected openings to floors used for residential purposes.

18-3.2 Protection from Hazards.

18-3.2.1 Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in Table 18-3.2.1 shall be protected as indicated. Where sprinkler protection without fire-rated separation is used, areas shall be separated from other spaces by partitions complying with 6-3.2 and with doors complying with 6-3.4.

Table 18-3.2.1 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Boiler and fuel-fired heater rooms serving more than a single dwelling unit	1-hr and sprinklers
Employee locker rooms	1-hr or sprinklers
Gift or retail shops	1-hr or sprinklers
Bulk laundries	1-hr and sprinklers
Laundries not more than 100 sq ft (9.3 sq m) outside of dwelling units	1-hr or sprinklers ¹
Laundries more than 100 sq ft (9.3 sq m) outside of dwelling units	1-hr and sprinklers
Maintenance shops	1-hr and sprinklers
Storage rooms outside of dwelling units	1-hr or sprinklers
Trash rooms	1-hr and sprinklers

¹Where sprinklers are provided, separation shall not be required.

18-3.3 Interior Finish.

18-3.3.1 Interior finish shall be in accordance with Section 6-5.

18-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Exit enclosures — Class A;
- (b) Lobbies and corridors — Class A or Class B;
- (c) Other spaces — Class A, Class B, or Class C.

18-3.3.3 Interior Floor Finish. Interior floor finish in accordance with 6-5.6 shall be in accordance with Table 18-3.3.3.

Table 18-3.3.3 Interior Floor Finish

	Sprinklered	Not Sprinklered
Corridors	No Requirement	Class II
Exits	No Requirement	Class II

18-3.4 Detection, Alarm, and Communication Systems.

18-3.4.1 General. Apartment buildings with more than three stories or with more than 11 dwelling units shall be provided with a fire alarm system in accordance with Section 7-6, except as modified by 18-3.4.2 through 18-3.4.4.

Exception No. 1: Where each dwelling unit is separated from other contiguous dwelling units by fire barriers (see Section 6-2) having a fire resistance rating of not less than 1 hr, and where each dwelling unit has either its own independent exit or its own independent stairway or ramp discharging at grade.

Exception No. 2: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 18-3.5.1, not exceeding four stories in height, and containing not more than 16 dwelling units.

18-3.4.2 Initiation.

18-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.

Exception: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5.1, not exceeding four stories in height, and containing not more than 16 dwelling units.

18-3.4.2.2 In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, required fire alarm systems shall be initiated upon operation of the automatic sprinkler system.

18-3.4.3 Notification.

18-3.4.3.1 Occupant notification shall be provided automatically in accordance with Section 7-6. Presignal systems shall be prohibited. Visible signals shall be installed in units designed for the hearing impaired.

18-3.4.3.2 Annunciation in accordance with 7-6.7 shall be provided.

Exception No. 1: Buildings not more than two stories in height and having not more than 50 dwelling units.

Exception No. 2: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5.1, not exceeding four stories in height, and containing not more than 16 dwelling units.

18-3.4.4 Detection.

18-3.4.4.1* Approved, single-station smoke alarms shall be installed in accordance with 7-6.2.10 outside every sleeping area in the immediate vicinity of the bedrooms and on all levels of the dwelling unit including basements.

18-3.4.4.2 Approved, single-station smoke alarms shall be installed in accordance with 7-6.2.10 in every sleeping room.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5.

18-3.5 Extinguishment Requirements.

18-3.5.1 Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be installed in accordance with Section 7-7. In buildings up to and including four stories in height, systems installed in accordance with NFPA 13R, *Standard for the Installation of Sprinkler*

Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted.

Exception No. 1: In individual dwelling units, sprinkler installation shall not be required in closets not over 12 sq ft (1.1 sq m). Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.

Exception No. 2: The draft stop and closely spaced sprinkler requirements of NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall not be required for convenience openings complying with 6-2.4.8 where the convenience opening is within the dwelling unit.

18-3.5.2 All buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5.1.

Exception: Buildings where every dwelling unit has either:

(a) An exit door opening directly to the street or yard at ground level, or

(b) Direct access to an outside stair complying with 5-2.2 that serves a maximum of two units both of which are located on the same floor, or

(c) Direct access to an interior stair serving only that unit and separated from all other portions of the building by fire barriers having a 1-hr fire resistance rating with no openings therein.

18-3.5.3 Listed quick response or listed residential sprinklers shall be used throughout all dwelling units.

18-3.5.4 Portable fire extinguishers shall be provided in hazardous areas. Where provided, portable fire extinguishers shall be installed and maintained as specified in 7-7.4.1.

18-3.5.5 Open air parking structures complying with NFPA 88A, *Standard for Parking Structures*, shall not be required to be sprinklered under this Code.

18-3.6 Corridors.

18-3.6.1 Walls. Exit access corridor walls shall consist of fire barriers in accordance with 6-2.3 having a minimum 1-hr fire resistance rating.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 18-3.5, corridor walls shall have a minimum ½-hr fire resistance rating.

18-3.6.2 Doors. Doors that open onto exit access corridors shall have a minimum 20-min fire protection rating in accordance with 6-2.3.

18-3.6.3 Doors that open onto exit access corridors shall be self-closing and self-latching.

18-3.6.4 Unprotected openings shall be prohibited in exit access corridor walls and doors.

Exception: Spaces shall be permitted to be unlimited in area and open to the corridor, provided that

(a) The spaces are not used for dwelling units or hazardous areas, and

(b) The space is protected by an automatic sprinkler system installed in accordance with 18-3.5, and

(c) The space does not obstruct access to required exits.

18-3.6.5 Transoms, louvers, or transfer grilles shall be prohibited in walls or doors of exit access corridors.

18-3.7 Subdivisions of Building Spaces. (Reserved.)

18-3.8 Special Protection Features. (Reserved.)

SECTION 18-4 SPECIAL PROVISIONS

18-4.1 High-Rise Buildings. High-rise buildings shall comply with Section 32-8. Exceptions No. 1 and No. 2 to 18-3.5.1 shall be permitted.

SECTION 18-5 BUILDING SERVICES

18-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

18-5.2 Heating, Ventilating, and Air Conditioning.

18-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

18-5.2.2 Unvented fuel-fired heaters shall not be used.

Exception: Gas space heaters installed in compliance with NFPA 54, *National Fuel Gas Code*.

18-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

18-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 18-6 RESERVED

SECTION 18-7 OPERATING FEATURES

18-7.1 Emergency Instructions for Residents of Apartment Buildings. Emergency instructions shall be provided to each dwelling unit on a yearly basis indicating the location of alarms, egress paths, and actions to be taken, both in response to a fire in the dwelling unit and in response to the sounding of the alarm system.

CHAPTER 19 EXISTING APARTMENT BUILDINGS

SECTION 19-1* GENERAL REQUIREMENTS

19-1.1 Application. The requirements of this chapter apply to existing buildings or portions thereof currently occupied as apartment occupancies. (*See also 18-1.1.*) In addition, the building shall meet the requirements of one of the following options:

Option 1: Buildings without fire suppression or detection systems;

Option 2: Buildings provided with a complete automatic fire detection and notification system;

Option 3: Buildings provided with automatic sprinkler protection in selected areas;

Option 4: Buildings protected throughout by an approved, automatic sprinkler system.

19-1.2 Mixed Occupancies.

19-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

19-1.2.2 For requirements on mixed assembly and residential occupancies, see 9-1.2; for mixed mercantile and residential occupancies, see 25-1.2.

19-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

Apartment Buildings.* Buildings containing three or more dwelling units with independent cooking and bathroom facilities, whether designated as apartment houses, tenements, garden apartments, or by any other name.

19-1.4 Classification of Occupancy. (*See 19-1.3.*)

19-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

19-1.6 Minimum Construction Requirements. (No special requirements.)

19-1.7* Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater.

SECTION 19-2 MEANS OF EGRESS REQUIREMENTS

19-2.1 General.

19-2.1.1 Means of egress from dwelling units to the outside of the building shall be in accordance with Chapter 5 and this chapter. Means of escape within the dwelling unit shall comply with the provisions of Section 21-2 for one- and two-family dwellings.

19-2.2 Means of Egress Components.

19-2.2.1 General.

19-2.2.1.1 Components of means of egress shall be limited to the types described in 19-2.2.2 through 19-2.2.12.

19-2.2.1.2 In buildings utilizing Option 4, exit enclosures shall have a fire resistance rating of not less than 1 hr, with doors having a fire protection rating of not less than 1 hr.

19-2.2.1.3 In non-high-rise buildings utilizing Options 2, 3, or 4, exit stair doors shall be permitted to be 1¾ in. (4.4 cm) thick, solid bonded wood core doors, self-closing and self-latching, and in wood frames at least ¾ in. (1.9 cm) thick. In order for buildings utilizing Option 3 to use this provision, sprinklers shall also be provided within the exit enclosure in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*.

19-2.2.2 Doors.

19-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

19-2.2.2.2 No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1: Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any one egress path.

Exception No. 2: Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

19-2.2.2.3 Revolving doors complying with 5-2.1.10 shall be permitted.

19-2.2.2.4 Horizontal sliding doors, as permitted by 5-2.1.14, shall not be used across corridors.

19-2.2.3 Stairs.

19-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

19-2.2.3.2 Within any individual dwelling unit, stairs more than one story above or below the entrance floor level of the dwelling unit shall not be permitted.

19-2.2.3.3 Spiral stairs complying with 5-2.2.2.4 shall be permitted within a single dwelling unit.

19-2.2.3.4 Winders complying with 5-2.2.2.5 shall be permitted.

19-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted. (*See also 19-2.11.*)

19-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

19-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

19-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

19-2.2.8* Escalators. Escalators previously approved as a component in the means of egress shall be permitted to continue to be given credit for compliance.

19-2.2.9 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

19-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

19-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

19-2.2.12* Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5, the two accessible rooms or spaces separated from each other by smoke-resistive partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

19-2.3 Capacity of Means of Egress.

19-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

19-2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

19-2.4 Number of Exits. (See also Section 5-4.) Every dwelling unit shall have access to at least two separate exits remotely located from each other as required by 5-5.1.

Exception No. 1: Any dwelling unit shall be permitted to have a single exit, provided that

(a) The dwelling unit has an exit door opening directly to the street or yard at ground level, or

(b) The dwelling unit has direct access to an outside stair complying with 5-2.2 that serves a maximum of two units both of which are located on the same floor, or

(c) The dwelling unit has direct access to an interior stair serving only that unit and separated from all other portions of the building by fire barriers having a minimum 1-hr fire resistance rating with no opening therein.

Exception No. 2: Any building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5.1 having four or fewer stories shall be permitted to have a single exit under the following conditions:

(a) The stairway is separated from the rest of the building by barriers having a minimum 1-hr fire resistance rating with self-closing minimum 1-hr fire protection-rated doors protecting all openings between the stairway enclosure and the building, and

(b) The stairway does not serve more than one-half story below the level of exit discharge, and

(c) All corridors serving as access to exits have a minimum ½-hr fire resistance rating, and

(d) There is not more than 35 ft (10.7 m) of travel distance from the entrance door of any dwelling unit to an exit, and

(e) One half-hour fire resistance-rated horizontal and vertical separation between dwelling units is provided.

Exception No. 3: Any building of three stories or less in its entirety shall be permitted to have a single exit under the following conditions:

(a) The stairway is separated from the rest of the building by barriers having a minimum 1-hr fire resistance rating with self-closing minimum 1-hr fire protection-rated doors protecting all openings between the stair enclosure and the building, and

(b) The stairway does not serve more than one-half story below the level of exit discharge, and

(c) All corridors serving as access to exits have a minimum 20-min fire resistance rating, and

(d) There is not more than 35 ft (10.7 m) of travel distance from the entrance door of any dwelling unit to an exit, and

(e) Twenty-minute fire resistance-rated horizontal and vertical separation between dwelling units is provided.

Exception No. 4: A building of any height with not more than four dwelling units per floor, with a smokeproof enclosure or outside stair in accordance with the requirements of 5-2.3 as the exit, and such exit is immediately accessible to all dwelling units served thereby, shall be permitted to have a single exit. Immediately accessible means there shall not be more than 20 ft (6.1 m) of travel distance from the entrance door of any dwelling unit to an exit.

19-2.5 Arrangement of Means of Egress.

19-2.5.1 Access to all required exits shall be in accordance with Section 5-5.

19-2.5.2 No common path of travel shall exceed 35 ft (10.7 m). Travel within a dwelling unit shall not be included when calculating common path of travel.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5, common path of travel shall not exceed 50 ft (15 m).

19-2.5.3 No dead-end corridor shall exceed 50 ft (15 m).

19-2.6 Travel Distance to Exits.

19-2.6.1 Travel distance within a dwelling unit (apartment) to a corridor door shall not exceed the following limits:

(a) For buildings using Option 1 or 3 — 75 ft (23 m).

(b) For buildings using Option 2 or 4 — 125 ft (38 m).

19-2.6.2 The travel distance from a dwelling unit (apartment) entrance door to the nearest exit shall not exceed the following limits:

(a) For buildings using Option 1 — 100 ft (30 m).

(b) For buildings using Option 2 or 3 — 150 ft (45 m).

(c) For buildings using Option 4 — 200 ft (60 m).

Exception: Travel distance to exits shall not exceed 200 ft (60 m) for exterior ways of exit access arranged in accordance with 5-5.3.

19-2.7 Discharge from Exits.

19-2.7.1 Exit discharge shall comply with Section 5-7.

19-2.7.2 Any required exit stair that is located so that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed to a level of exit discharge or to a mezzanine within a lobby at a level of exit discharge.

19-2.7.3 The distance of travel from the termination of the exit enclosure to an exterior door leading to a public way shall not exceed 150 ft (45 m) in buildings protected throughout by an approved, automatic sprinkler system and shall not exceed 100 ft (30 m) in all other buildings.

19-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

19-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 12 dwelling units or more than three stories in height.

Exception: Where every dwelling unit has a direct exit to the outside of the building at grade level.

19-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10 in all buildings requiring more than one exit.

19-2.11* Special Means of Egress Features. In high-rise buildings using Option 1, 2, or 3, smokeproof enclosures shall be provided in accordance with 5-2.3.

SECTION 19-3 PROTECTION

19-3.1 Protection of Vertical Openings.

19-3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4 or provide means of satisfying the requirements of Section 2-9.

Exception No. 1: Convenience openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 2: An atrium in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Unprotected vertical openings connecting not more than three floors shall be permitted in accordance with the conditions of 6-2.4.5.

Exception No. 4: In any building protected throughout by an automatic sprinkler system in accordance with 19-3.5, and where exits and required ways of travel thereto are adequately safeguarded against fire and smoke within the building, or where every individual room has direct access to an exterior exit without passing through any public corridor, the protection of vertical openings not part of required exits shall not be required.

19-3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purpose other than residential occupancy open to the public shall have unprotected openings to floors used for residential purposes.

19-3.2 Protection from Hazards.

19-3.2.1 Hazardous Areas. Any hazardous area shall be protected in accordance with Section 6-4. The areas described in Table 19-3.2.1 shall be protected as indicated. Where sprin-

Table 19-3.2.1 Hazardous Area Protection

Hazardous Area Description	Separation/Protection
Boiler and fuel-fired heater rooms serving more than a single dwelling unit	1-hr or sprinklers
Employee locker rooms	1-hr or sprinklers
Gift or retail shops more than 100 sq ft (9.3 sq m)	1-hr or sprinklers ¹
Bulk laundries	1-hr or sprinklers
Laundries more than 100 sq ft (9.3 sq m) outside of dwelling units	1-hr or sprinklers ¹
Maintenance shops	1-hr or sprinklers
Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction	1-hr or sprinklers
Trash rooms	1-hr or sprinklers

¹Where sprinklers are provided, separation shall not be required.

kler protection without fire-rated separation is used, areas shall be separated from other spaces by partitions complying with 6-3.2 and with doors complying with 6-3.4.

19-3.3 Interior Finish.

19-3.3.1 Interior finish shall be in accordance with Section 6-5.

19-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Exit enclosures — Class A or Class B;
- (b) Lobbies and corridors — Class A or Class B;
- (c) Other spaces — Class A, Class B, or Class C.

19-3.3.3 Interior Floor Finish. Interior floor finish in accordance with 6-5.6 shall be in accordance with Table 19-3.3.3.

Exception: Previously installed and approved floor coverings.

Table 19-3.3.3 Interior Floor Finish

	Option 3 and 4	Option 1 and 2
Corridors	No Requirement	Class II
Exits	No Requirement	Class II

19-3.4 Detection, Alarm, and Communication Systems.

19-3.4.1 General. Apartment buildings with more than three stories or with more than 11 dwelling units shall be provided with a fire alarm system in accordance with Section 7-6, except as modified by 19-3.4.2 through 19-3.4.4.

Exception: Where each dwelling unit is separated from other contiguous dwelling units by fire barriers (see Section 6-2) having a fire resistance rating of not less than 1/2 hr, and where each dwelling unit has either its own independent exit or its own independent stairway or ramp discharging at grade.

19-3.4.2 Initiation.

19-3.4.2.1 Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.

Exception: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5.1, not exceeding four stories in height, and containing not more than 16 dwelling units.

19-3.4.2.2 In buildings using Option 2, the required fire alarm system shall be initiated by the automatic fire detection system in addition to the manual initiation means of 19-3.4.2.1.

19-3.4.2.3 In buildings using Option 3, the required fire alarm system shall be initiated upon operation of the automatic sprinkler system in addition to the manual initiation means of 19-3.4.2.1.

19-3.4.2.4 In buildings using Option 4, the required fire alarm system shall be initiated upon operation of the automatic sprinkler system in addition to the manual initiation means of 19-3.4.2.1.

19-3.4.3 Notification.

19-3.4.3.1 Occupant notification shall be provided automatically in accordance with Section 7-6. Visible signals shall be installed in units designed for the hearing impaired.

Exception: Existing approved presignal systems shall be permitted in accordance with Exception No. 1 to 7-6.3.2.

19-3.4.3.2 An annunciator panel connected with the required fire alarm system shall be provided. The location of the annunciator panel shall be approved by the authority having jurisdiction.

Exception No. 1: Buildings not more than two stories in height and having not more than 50 dwelling units.

Exception No. 2: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5.1, not exceeding four stories in height, and not containing more than 16 dwelling units.

19-3.4.4 Detection.

19-3.4.4.1 Approved, single-station smoke alarms shall be installed in accordance with 7-6.2.10 outside every sleeping area in the immediate vicinity of the bedrooms and on all levels of the dwelling unit including basements.

Exception No. 1: The single-station smoke alarm shall not be required where the building is equipped throughout with an existing total automatic smoke detection system.

Exception No. 2: Single-station smoke alarms without a secondary (standby) power source shall be permitted.

19-3.4.4.2 In buildings using Option 2, a complete automatic fire detection system in accordance with 7-6.1.4 shall be required.

19-3.5 Extinguishment Requirements.

19-3.5.1* Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be installed in accordance with Section 7-7. In buildings up to and including four stories in height, systems installed in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, shall be permitted.

Exception No. 1: In individual dwelling units, sprinkler installation shall not be required in closets not over 24 sq ft (2.2 sq m) and bathrooms not over 55 sq ft (5.1 sq m). Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.

Exception No. 2: The draft stop and closely spaced sprinkler requirements of NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall not be required for convenience openings complying with 6-2.4.8 where the convenience opening is within the dwelling unit.

19-3.5.2 In buildings using Option 3, automatic sprinklers shall be installed in corridors along the corridor ceiling, and one sprinkler shall be opposite the center of and inside any dwelling unit door that opens into the corridor.

Exception: The sprinkler inside dwelling units shall not be required if the door to the dwelling unit has a minimum 20-min fire protection rating and is self-closing.

19-3.5.3 The sprinkler installation required in 19-3.5.2 shall meet the requirements of Section 7-7 in terms of workmanship and materials.

19-3.5.4 The installation of the corridor sprinklers required in 19-3.5.2 shall not exceed the maximum spacing and protection area requirements of the installation standards referenced in Section 7-7.

19-3.5.5 Buildings using Option 4 shall be protected throughout by an approved, automatic sprinkler system installed in accordance with 19-3.5.1. The automatic sprinkler system shall meet the requirements of Section 7-7 for supervision for buildings more than six stories in height.

19-3.5.6 All high-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 19-3.5.1.

Exception No. 1: Where every dwelling unit has exterior exit access in accordance with 5-5.3.

*Exception No. 2:** Buildings in which an engineered life safety system has been approved by the authority having jurisdiction.

19-3.5.7 Portable fire extinguishers shall be provided in hazardous areas. Where provided, portable fire extinguishers shall be installed and maintained as specified in 7-7.4.1.

19-3.6 Corridors.

19-3.6.1* Walls. Exit access corridor walls shall consist of fire barriers in accordance with 6-2.3 having a minimum ½-hr fire resistance rating.

19-3.6.2 Doors. Doors that open onto exit access corridors shall have a minimum 20-min fire protection rating in accordance with 6-2.3.

Exception No. 1: Doors complying with 6-2.3.2.3.

Exception No. 2: In buildings using Option 3 or Option 4, doors shall be constructed so as to resist the passage of smoke.

19-3.6.3 Doors that open onto exit access corridors shall be self-closing and self-latching.

19-3.6.4 Unprotected openings shall be prohibited in exit access corridor walls and doors.

Exception: Spaces shall be permitted to be unlimited in area and open to the corridor, provided that

- (a) The spaces are not used for dwelling units or hazardous areas, and
- (b) The space is protected by an automatic sprinkler system installed in accordance with 19-3.5, and
- (c) The space does not obstruct access to required exits.

19-3.6.5 Transoms, louvers, or transfer grilles shall be prohibited in walls or doors of exit access corridors.

19-3.7 Subdivision of Building Spaces.

19-3.7.1 Smoke Barriers. Smoke barriers in accordance with Section 6-3 shall be provided in exit access corridors to establish at least two compartments approximately equal in size. The maximum length of each smoke compartment measured along the corridor shall not exceed 200 ft (60 m). Smoke dampers shall not be required.

Exception No. 1: Buildings using Option 4.

Exception No. 2: Exterior exit access in accordance with 5-5.3 that provides access to two exits.

Exception No. 3: Buildings complying with one of the Exceptions to 19-2.4.

Exception No. 4: Buildings with exits not more than 50 ft (15 m) apart.

Exception No. 5: Where each dwelling unit has direct access to the exterior at grade.

19-3.8 Special Protection Features. (Reserved.)

SECTION 19-4 SPECIAL PROVISIONS

19-4.1 High-Rise Buildings. (See 19-2.11 and 19-3.5.6.)

SECTION 19-5 BUILDING SERVICES

19-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

19-5.2 Heating, Ventilating, and Air Conditioning.

19-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

19-5.2.2 Unvented fuel-fired heaters shall not be used.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

19-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

19-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 19-6 RESERVED

SECTION 19-7 OPERATING FEATURES

19-7.1 Emergency Instructions for Residents of Apartment Buildings. Emergency instructions shall be provided to each dwelling unit on a yearly basis indicating the location of alarms, egress paths, and actions to be taken, both in response to a fire in the dwelling unit and in response to the sounding of the alarm system.

CHAPTER 20 LODGING OR ROOMING HOUSES

SECTION 20-1 GENERAL REQUIREMENTS

20-1.1 Application.

20-1.1.1 This chapter applies to buildings that provide sleeping accommodations for a total of 16 or fewer persons on either a transient or permanent basis, with or without meals, but without separate cooking facilities for individual occupants except as provided in Chapter 21.

20-1.1.2 The requirements of this chapter are applicable to new buildings and to existing or modified buildings according to the provisions of Section 1-3 of this *Code*.

20-1.2 Mixed Occupancies.

20-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

20-1.2.2 For requirements on mixed assembly and residential occupancies, see 8-1.2 or 9-1.2; for mixed mercantile and residential occupancies, see 24-1.2 or 25-1.2; and for mixed business and residential occupancies, see 26-1.2.

20-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

20-1.4 Classification of Occupancy. (See 20-1.1.1.)

20-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

20-1.6 Minimum Construction Requirements. (No special requirements.)

20-1.7 Occupant Load. (See 20-1.1.1.)

SECTION 20-2 MEANS OF ESCAPE REQUIREMENTS

20-2.1 Number and Types of Means of Escape.

20-2.1.1 Every sleeping room and living area shall have access to a primary means of escape, complying with Chapter 21, located to provide a safe path of travel to the outside. Where the sleeping room is above or below the level of exit discharge, the primary means of escape shall be an interior stair in accordance with 20-2.2, an exterior stair, or a horizontal exit in accordance with 5-2.4, or an existing fire escape stair in accordance with 5-2.8.

20-2.1.2 In addition to the primary route, each sleeping room and living area shall have a second means of escape in accordance with 21-2.2.3.

Exception: If the sleeping room or living area has a door leading directly outside the building with access to grade or to a stairway that meets the requirements for exterior stairs in 20-2.1.1, that escape shall be considered as meeting all of the escape requirements for that sleeping room or living area.

20-2.1.3 Every story more than 2000 sq ft (185 sq m) in area or with travel distance to the primary means of escape more than 75 ft (23 m) shall be provided with two primary means of escape remotely located from each other.

Exception No. 1: Existing buildings.

Exception No. 2: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 20-3.5.

20-2.2 Interior stairways shall be enclosed by ½-hr fire barriers with all openings protected with smoke-actuated automatic-closing or self-closing doors having a fire resistance comparable to that required for the enclosure. The stairway shall comply with 5-2.2.5.3.

Exception No. 1: Where an interior stair connects the street floor with the story next above or below only, but not both, the interior stair shall be required to be enclosed only on the street floor.

Exception No. 2: Stairways shall be permitted to be unprotected in accordance with the Exception to 20-3.1.1.

20-2.3 No door or path of travel in a means of escape shall be less than 28 in. (71 cm) wide.

Exception: Bathroom doors shall be not less than 24 in. (61 cm) wide.

20-2.4 Every closet door latch shall be such that it can be readily opened from the inside in case of emergency.

20-2.5 Every bathroom door shall be designed to allow opening from the outside during an emergency when locked.

20-2.6 Winders in accordance with 5-2.2.2.5 shall be permitted.

20-2.7* No door in any means of escape shall be locked against egress when the building is occupied.

Exception: Delayed egress locks complying with 5-2.1.6.1 shall be permitted, provided not more than one such device is located in any one escape path.

20-2.8 Doors serving a single dwelling unit shall be permitted to be provided with a lock in accordance with Exception No. 3 to 5-2.1.5.1.

SECTION 20-3 PROTECTION

20-3.1 Protection of Vertical Openings.

20-3.1.1 Vertical openings shall be protected so that no primary escape route is exposed to an unprotected vertical opening. The vertical opening shall be considered protected if the opening is cut off and enclosed in a manner that provides a smoke- and fire-resisting capability of not less than ½ hr. Any doors or openings shall have fire and smoke resisting capability equivalent to that of the enclosure and shall be automatic-closing on detection of smoke or shall be self-closing.

Exception: In buildings three or fewer stories in height that are protected throughout by an approved, automatic sprinkler system installed in accordance with 20-3.5, unprotected vertical openings shall be permitted. However, in such cases, there shall still remain a primary means of escape from each sleeping area that does not require occupants to pass through a portion of a lower floor, unless that route is separated from all spaces on that floor by construction having a ½-hr fire resistance rating.

20-3.1.2 Exterior stairs shall be reasonably protected against blockage caused by fire that would simultaneously expose both the interior and exterior means of escape. This shall be permitted to be accomplished through separation by physical

distance, arrangement of the stairs, protection of the openings exposing the stairs, or other means acceptable to the authority having jurisdiction.

20-3.2 Interior Finish.

20-3.2.1 Interior finish shall be in accordance with Section 6-5.

20-3.2.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.4 shall be Class A, Class B, or Class C in occupied spaces.

20-3.2.3 Interior Floor Finish. No requirement.

20-3.3 Detection, Alarm, and Communication Systems.

20-3.3.1 General. Lodging and rooming houses shall be provided with a fire alarm system in accordance with Section 7-6.

Exception: Buildings that have a smoke detection system meeting or exceeding the requirements of 20-3.3.4 and where that detection system includes at least one manual fire alarm station per floor arranged to initiate the smoke detection alarm.

20-3.3.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.

Exception: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 20-3.5, with alarm initiation in accordance with 7-6.2.1(c).

20-3.3.3 Notification. Occupant notification shall be provided automatically in accordance with 7-6.3. Presignal systems shall be prohibited.

*Exception:** Visible signals for the hearing impaired shall not be required where the proprietor resides in the building and there are 5 or fewer rooms for rent.

20-3.3.4 Detection. Approved, single-station smoke alarms shall be installed in accordance with 7-6.2.10 in every sleeping room.

Exception No. 1: These detectors shall not be required to be interconnected.

Exception No. 2: Existing battery-powered smoke alarms, rather than house electric-powered smoke alarms, shall be permitted where the facility has demonstrated to the authority having jurisdiction that the testing, maintenance, and battery replacement programs will ensure reliability of power to the smoke alarms.

20-3.4 Separation of Sleeping Rooms. All sleeping rooms shall be separated from escape route corridors by walls and doors that are smoke resistant. There shall be no louvers or operable transoms or other air passages penetrating the wall except properly installed heating and utility installations other than transfer grilles. Transfer grilles shall be prohibited. Doors shall be provided with latches or other mechanisms

suitable for keeping the doors closed. No doors shall be arranged to prevent the occupant from closing the door. Doors shall be self-closing or automatic-closing upon detection of smoke.

Exception: Door-closing devices shall not be required in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 20-3.5.

20-3.5 Extinguishment Requirements.

20-3.5.1* Where an automatic sprinkler system is required or is used as an alternative method of protection, either for total or partial building coverage, the system shall be installed in accordance with Section 7-7 and shall actuate the fire alarm system in accordance with Section 7-6. In buildings up to and including four stories in height, systems installed in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, shall be permitted.

Exception No. 1: In individual living units, sprinkler installation shall not be required in closets not over 12 sq ft (1.1 sq m). Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size.

Exception No. 2: In existing lodging and rooming houses, sprinkler installations shall not be required in closets not over 24 sq ft (2.2 sq m) and bathrooms not over 55 sq ft (5.1 sq m).

20-3.5.2 All new lodging or rooming houses shall be protected throughout by an approved, automatic sprinkler system installed in accordance with 20-3.5.1.

Exception: If every sleeping room has a door opening directly to the outside of the building at street or ground level, or has a door opening directly to the outside leading to an exterior stairway that meets the requirements of 20-2.1.1.

SECTION 20-4 RESERVED

SECTION 20-5 BUILDING SERVICES

20-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

20-5.2 Heating, Ventilating, and Air Conditioning.

20-5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

20-5.2.2 Unvented fuel-fired heaters shall not be used.

Exception: Gas space heaters installed in compliance with NFPA 54, *National Fuel Gas Code*.

20-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

CHAPTER 21 ONE- AND TWO-FAMILY DWELLINGS

SECTION 21-1 GENERAL REQUIREMENTS

21-1.1 Application.

21-1.1.1* This chapter establishes life safety requirements for all one- and two-family dwellings. One- and two-family dwellings include buildings containing not more than two dwelling units in which each dwelling unit is occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms.

21-1.1.2 The requirements of this chapter are applicable to new buildings and to existing or modified buildings according to the provisions of Section 1-3 of this *Code*.

21-1.2 Mixed Occupancies.

21-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 4-1.12 of this *Code* shall apply.

21-1.2.2 For requirements on mixed assembly and residential occupancies, see 8-1.2 or 9-1.2; for mixed mercantile and residential occupancies, see 24-1.2 or 25-1.2; and for mixed business and residential occupancies, see 26-1.2.

21-1.3 Definitions. Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they occur.

21-1.4 Classification of Occupancy. (See 21-1.1.1.)

21-1.5 Classification of Hazard of Contents. The contents of residential occupancies shall be classified as ordinary hazard in accordance with 4-2.2.

21-1.6 Minimum Construction Requirements. (No special requirements.)

21-1.7 Occupant Load. (No requirements.)

SECTION 21-2* MEANS OF ESCAPE REQUIREMENTS

21-2.1 General. The provisions of Chapter 5 shall not be applicable to means of escape unless specifically referenced in this chapter.

21-2.2 Number and Types of Means of Escape.

21-2.2.1 Number of Means of Escape. In any dwelling or dwelling unit of two rooms or more, every sleeping room and every living area shall have at least one primary means of escape and one secondary means of escape.

Exception: A secondary means of escape shall not be required

(a) If the bedroom or living area has a door leading directly to the outside of the building at or to grade level, or

(b) If the dwelling unit is protected throughout by an approved, automatic sprinkler system in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, or NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, as applicable.

21-2.2.2 Primary Means of Escape. The primary means of escape shall be a door, stairway, or ramp providing a means of unobstructed travel to the outside of the dwelling unit at street or ground level.

21-2.2.3* Secondary Means of Escape. The secondary means of escape shall be one of the following:

(a) A door, stairway, passage, or hall providing a way of unobstructed travel to the outside of the dwelling at street or ground level that is independent of and remote from the primary means of escape;

(b) A passage through an adjacent nonlockable space, independent of and remote from the primary means of escape, to any approved means of escape;

(c)* An outside window or door operable from the inside without the use of tools, keys, or special effort and providing a clear opening of not less than 5.7 sq ft (0.53 sq m) with the width not less than 20 in. (51 cm) and the height not less than 24 in. (61 cm). The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. Such means of escape shall be acceptable if

1. The window is within 20 ft (6.1 m) of grade, or
2. The window is directly accessible to fire department rescue apparatus as approved by the authority having jurisdiction, or
3. The window or door opens onto an exterior balcony.

Exception: Existing approved means of escape.

21-2.2.4 Every story more than 2000 sq ft (185 sq m) in area or with a travel distance to the primary means of escape of more than 75 ft (23 m) shall be provided with two primary means of escape remotely located from each other.

Exception No. 1: Existing buildings.

Exception No. 2: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

21-2.3 Arrangement of Means of Escape. No required path of travel in a means of escape from any room to the outside shall be through another room or apartment not under the immediate control of the occupant of the first room or through a bathroom or other space subject to locking.

21-2.4 Doors.

21-2.4.1 No door in the path of travel of a means of escape shall be less than 28 in. (71 cm) wide.

Exception: Bathroom doors shall be not less than 24 in. (61 cm) wide.

21-2.4.2 Doors shall be a minimum of 6 ft 6 in. (2 m) in nominal height.

21-2.4.3 Every closet door latch shall be such that children can open the door from inside the closet.

21-2.4.4 Every bathroom door shall be designed to allow opening from the outside during an emergency when locked.

21-2.4.5 Doors shall be swinging or sliding.

21-2.4.6* No door in any means of escape shall be locked against egress when the building is occupied. All locking de-

vices that impede or prohibit egress or that cannot be easily disengaged shall be prohibited.

21-2.5 Stairs, Landings, Ramps, Balconies, or Porches.

NOTICE: Following issuance of this edition, an appeal was filed with respect to 21-2.5.1. Refer to page 101-16.

21-2.5.1 Stairs, ramps, guards, and handrails shall be in accordance with 5-2.2 for stairs and 5-2.5 for ramps.

Exception No. 1: The provisions of 5-2.2.5, 5-2.5.5, and 5-7.3 shall not apply.

Exception No. 2: If serving as a secondary means of escape, stairs complying with fire escape requirements of Table 5-2.8.4(a) or (b) and ramps complying with the existing ramp requirements of Exception No. 2 to 5-2.5.2 shall be permitted.

Exception No. 3: Maximum riser heights of 7¾ in. (19.7 cm) and minimum tread depths of 10 in. (25.4 cm) shall be permitted for stairs in new construction.

21-2.5.2 The minimum clear width of stairs, landings, ramps, balconies, and porches shall be 36 in. (91 cm) measured in accordance with 5-3.2.

21-2.5.3 Spiral stairs and winders in accordance with 5-2.2 shall be permitted within a single dwelling unit.

21-2.5.4 No sleeping rooms or living rooms shall be accessible by only a ladder, stair ladder, alternating tread device, folding stairs, or through a trap door.

21-2.6 Hallways. The minimum width of hallways shall be 36 in. (91 cm). The minimum height shall be not less than 7 ft (2.1 m) nominal height with projections from the ceiling providing not less than 6 ft 8 in. (203 cm) nominal height.

Exception: Existing approved hallways shall be permitted to be continued to be used.

SECTION 21-3 PROTECTION

21-3.1 Protection of Vertical Openings. (No requirements.)

21-3.2 Interior Finish.

21-3.2.1 Interior Wall and Ceiling Finish. Interior finish on walls and ceilings of occupied spaces shall be Class A, Class B, or Class C as defined in Section 6-5.

21-3.2.2 Interior Floor Finish. (No requirements.)

21-3.3 Detection, Alarm, and Communication Systems.

21-3.3.1 Approved, single-station smoke alarms shall be installed in accordance with 7-6.2.10 in the following locations:

- (a) All sleeping rooms;

Exception: Smoke alarms shall not be required in sleeping rooms in existing construction.

- (b) Outside of each separate sleeping area, in the immediate vicinity of the sleeping rooms;

- (c) On each additional story of the dwelling unit including basements.

Exception No. 1: Dwelling units protected by an approved smoke detection system installed in accordance with Section 7-6, having an approved means of occupant notification.

Exception No. 2: In existing construction, approved smoke alarms powered by batteries shall be permitted.

SECTION 21-4 RESERVED

SECTION 21-5 BUILDING SERVICES

21-5.1 Heating, Ventilating, and Air Conditioning.

21-5.1.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

21-5.1.2 Unvented fuel-fired heaters shall not be used.

Exception: Listed and approved unvented fuel-fired heaters in one- and two-family dwellings.

CHAPTER 22 NEW RESIDENTIAL BOARD AND CARE OCCUPANCIES

SECTION 22-1 GENERAL REQUIREMENTS

22-1.1* Application.

22-1.1.1 The requirements of this chapter apply to

- (a) New buildings or portions thereof used as residential board and care occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, residential board and care occupancies (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing residential board and care occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a residential board and care occupancy (*see 1-3.12*).

22-1.1.2 This chapter is divided into four sections as follows:

- (a) Section 22-1 — General Requirements.
- (b) Section 22-2 — Small Facilities (i.e., sleeping accommodations for not more than 16 residents).
- (c) Section 22-3 — Large Facilities (i.e., sleeping accommodations for more than 16 residents).
- (d) Section 22-4 — Suitability of an Apartment Building to House a Board and Care Occupancy.

22-1.2 Mixed Occupancies. Where another type of occupancy occurs in the same building as a residential board and care occupancy, the requirements of 4-1.12 of this *Code* shall apply.

Exception No. 1: Occupancies that are completely separated from all portions of the building used for a residential board and care facility and its egress system by construction having a fire resistance rating of at least 2 hr.

Exception No. 2: Apartment buildings housing residential board and care occupancies in conformance with Section 22-4. In such facilities, any safeguards required by Section 22-4 that are more restrictive than those for other housed occupancies shall apply only to the extent prescribed by Section 22-4.

22-1.3 Definitions.

Conversion. For the purposes of this chapter, exceptions for conversions shall apply only for a change of occupancy from an existing residential or health care occupancy to a residential board and care occupancy.

Evacuation Capability.* The ability of the occupants, residents, and staff as a group either to evacuate a building or to relocate from the point of occupancy to a point of safety. If the occupants of the residential board and care facility include family members of the owners or operators, it is intended that the needs of the family members be considered in determining evacuation capability.

Following are the levels of evacuation capability covered by this chapter:

- (a) *Prompt.* The ability of a group to move reliably to a point of safety in a timely manner that is equivalent to the capacity of a household in the general population.

- (b) *Slow.* The ability of a group to move reliably to a point of safety in a timely manner, but not as rapidly as members of a household in the general population.

- (c) *Impractical.* The inability of a group to reliably move to a point of safety in a timely manner.

Hazardous Area. Any space where there is storage or activity having fuel conditions exceeding that of a one- or two-family dwelling and that possesses the potential for a fully involved fire. Hazardous areas include, but are not limited to, areas for cartoned storage, food or household maintenance items in wholesale or institutional-type quantities and concentrations, or mass storage of residents' belongings. Areas containing approved, properly installed and maintained furnaces and heating equipment, furnace rooms, and cooking and laundry facilities shall not be classified as hazardous areas solely on the basis of such equipment.

Personal Care. The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building. Personal care might include daily awareness by the management of the resident's functioning and whereabouts, making and reminding a resident of appointments, the ability and readiness for intervention in the event of a resident experiencing a crisis, supervision in the areas of nutrition and medication, and actual provision of transient medical care.

Point of Safety. A location that meets one of the following criteria:

- (a) It is exterior to and away from the building.
- (b) It is within a building of any type construction protected throughout by an approved, automatic sprinkler system and is either

1. Within an exit enclosure meeting the requirements of this *Code*, or

2. Within another portion of the building that is separated by smoke barriers in accordance with Section 6-3, with at least a ½-hr fire resistance rating, and that portion of the building has access to a means of escape or exit that conforms to the requirements of this *Code* and that does not require return to the area of fire involvement.

- (c) It is within a building of Type I, Type II(222), Type II(111), Type III(211), Type IV, or Type V(111) construction (*see 6-2.1*) and is either

1. Within an exit enclosure meeting the requirements of this *Code*, or

2. Within another portion of the building that is separated by smoke barriers in accordance with Section 6-3, with at least a ½-hr fire resistance rating, and that portion of the building has access to a means of escape or exit that conforms to the requirements of this *Code* and that does not require return to the area of fire involvement.

Resident. A person who receives personal care and resides in a residential board and care facility.

Residential Board and Care Occupancy.* A building or part thereof that is used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services.

Staff. Persons who provide personal care services, supervision, or assistance.

Thermal Barrier.* A material that limits the average temperature rise of the unexposed surface to not more than 250°F (120°C) for a specified fire exposure complying with the standard time-temperature curve of NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*.

22-1.4 Acceptability of Means of Egress or Escape. No means of escape or means of egress shall be considered as complying with the minimum criteria for acceptance unless emergency evacuation drills are regularly conducted using that route in accordance with the requirements of 22-7.3.

22-1.5* Fire resistance-rated assemblies shall comply with 6-2.3.

SECTION 22-2 SMALL FACILITIES

22-2.1 General.

22-2.1.1 Scope. This section shall apply to residential board and care occupancies providing sleeping accommodations for not more than 16 residents. Where there are sleeping accommodations for more than 16 residents, the occupancy shall be classified as a large facility. The requirements for large facilities are in Section 22-3.

22-2.1.2 Requirements Based on Evacuation Capability. Small facilities shall comply with the requirements of this section as indicated for the appropriate evacuation capability.

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

22-2.1.3 Minimum Construction Requirements. (No special requirements.)

22-2.2 Means of Escape.

22-2.2.1 Number of Means of Escape. Each normally occupied story of the facility shall have at least two remotely located means of escape that do not involve using windows. At least one of these means of escape shall comply with 22-2.2.2. The provisions of Chapter 5 shall not apply to means of escape unless specifically referenced in this chapter.

Exception No. 1: In prompt evacuation capability facilities, one means of escape shall be permitted to involve windows complying with 22-2.2.3(c).

Exception No. 2: A second means of escape from each story shall not be required where the entire building is protected throughout by an approved, automatic sprinkler system complying with 22-2.3.5 and the facility has two means of escape.

22-2.2.2 Primary Means of Escape. Every sleeping room and living area shall have access to a primary means of escape located to provide a safe path of travel to the outside. Where sleeping rooms or living areas are above or below the level of exit discharge, the primary means of escape shall be an interior stair in accordance with 22-2.2.4, an exterior stair, a horizontal exit, or an existing fire escape stair.

22-2.2.3 Secondary Means of Escape. In addition to the primary route, each sleeping room in facilities that utilize Exception No. 1 to 22-2.3.5.1 shall have a second means of escape that consists of one of the following:

(a) A door, stairway, passage, or hall providing a way of unobstructed travel to the outside of the dwelling at street or ground level that is independent of and remotely located from the primary means of escape;

(b) A passage through an adjacent nonlockable space, independent of and remotely located from the primary means of escape, to any approved means of escape;

(c)* An outside window or door operable from the inside without the use of tools, keys, or special effort, and providing a clear opening of not less than 5.7 sq ft (0.53 sq m) with the width not less than 20 in. (51 cm) and the height not less than 24 in. (61 cm). The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. Such means of escape shall be acceptable if

1. The window is within 20 ft (6.1 m) of grade, or
2. The window is directly accessible to fire department rescue apparatus as approved by the authority having jurisdiction, or
3. The window or door opens onto an exterior balcony.

Exception: If the sleeping room has a door leading directly to the outside of the building with access to grade or to a stairway that meets the requirements of exterior stairs in 22-2.3.1.2, that means of escape shall be considered as meeting all the escape requirements for the sleeping room.

22-2.2.4 Interior Stairs Used for Primary Means of Escape.

Interior stairs shall be enclosed with ½-hr fire barriers with all openings equipped with smoke-actuated automatic-closing or self-closing doors having a fire protection rating comparable to that required for the enclosure. Stairs shall comply with 5-2.2.5.3. The entire primary means of escape shall be arranged so that occupants are not required to pass through a portion of a lower story unless that route is separated from all spaces on that story by construction having a minimum ½-hr fire resistance rating.

The supporting construction shall be protected to afford the required fire resistance rating of the wall supported in buildings of other than construction Type II(000), Type III(200), or Type V(000).

Exception No. 1: Stairs that connect a story at street level to only one other story shall be permitted to be open to the story that is not the street level.

Exception No. 2: For prompt and slow evacuation capability facilities in buildings three or fewer stories in height, having an approved, automatic sprinkler system using quick response or residential sprinklers, stair enclosures shall not be required provided there still remains a primary means of escape from each sleeping area that does not require occupants to pass through a portion of a lower floor, unless that route is separated from all spaces on that floor by construction having a ½-hr fire resistance rating.

Exception No. 3: In buildings two or fewer stories in height that house prompt evacuation capability facilities with not more than eight residents, stair enclosures shall not be required. Exceptions to 22-2.3.4.3.1 and 22-2.3.4.3.2 shall not be used in conjunction with this exception. Exception No. 1 to 22-2.3.5.1 shall not be used in conjunction with this exception.

22-2.2.5 Doors.

22-2.2.5.1 No door or path of travel to a means of escape shall be less than 32 in. (81 cm) wide.

Exception No. 1: In conversions (see definition in 22-1.3), 28-in. (71-cm) doors shall be permitted to continue to be used.

Exception No. 2: Bathroom doors shall be a minimum of 24 in. (61 cm) wide.

22-2.2.5.2 Doors shall be swinging or sliding.

22-2.2.5.3 Every closet door latch shall be readily opened from the inside in case of an emergency.

22-2.2.5.4 Every bathroom door shall be designed to allow opening from the outside during an emergency when locked.

22-2.2.5.5 No door in any means of escape shall be locked against egress when the building is occupied.

Exception: Delayed egress locks complying with 5-2.1.6.1 shall be permitted on exterior doors.

22-2.2.5.6 Doors shall comply with 5-2.1.4.5.

22-2.2.5.7 Doors shall comply with 5-2.1.5.3.

22-2.2.6 Stairs.

22-2.2.6.1 Stairs shall comply with 5-2.2.

22-2.2.6.2 Winders complying with 5-2.2.2.5 shall be permitted.

22-2.3 Protection.

22-2.3.1 Protection of Vertical Openings.

22-2.3.1.1 Vertical openings shall be protected so as not to expose a primary means of escape. Vertical openings shall be considered protected if the opening is cut off such that barriers prevent the passage of smoke from one story to any primary means of escape on another story. Barriers shall resist the passage of smoke and shall have a fire resistance rating of not less than ½ hr. Any doors or openings to the vertical opening shall be capable of resisting fire for not less than 20 min, shall resist the passage of smoke, and shall be self-closing or automatic-closing in accordance with 5-2.1.8.

Exception: Stairs shall be permitted to be open where complying with Exception No. 2 or No. 3 to 22-2.2.4.

22-2.3.1.2 Exterior stairs shall be reasonably protected against blockage caused by fire that would simultaneously expose both the interior and the exterior means of escape. This shall be accomplished through separation by physical distance, arrangement of the stairs, protection of the openings exposing the stairs, or other means acceptable to the authority having jurisdiction.

22-2.3.2 Hazardous Areas. Any hazardous area shall be protected in accordance with 22-2.3.2.1 and 22-2.3.2.2.

22-2.3.2.1 Any hazardous area that is on the same floor as, and is in or abuts, a primary means of escape or a sleeping room shall be protected by either

(a) An enclosure with a fire resistance rating of at least 1 hr with a self-closing or automatic-closing fire door in accordance with 5-2.1.8 having a fire protection rating of at least ¾ hr and protected by an automatic fire detection system connected to the fire alarm system provided in 22-2.3.4.1; or

(b) Automatic sprinkler protection, in accordance with 22-2.3.5, of the hazardous area and a separation that will resist the passage of smoke between the hazardous area and the sleeping area or primary escape route. Any doors in such sep-

aration shall be self-closing or automatic-closing in accordance with 5-2.1.8.

22-2.3.2.2 Other hazardous areas shall be protected by either

(a) An enclosure having a fire resistance rating of at least ½ hr, with a self-closing or automatic-closing door in accordance with 5-2.1.8, equivalent to at least a 1¾-in. (4.4-cm) thick, solid bonded wood core construction and protected by an automatic fire detection system connected to the fire alarm system provided in 22-2.3.4.1, or

(b) Automatic sprinkler protection, in accordance with 22-2.3.5, of the hazardous area regardless of enclosure.

22-2.3.3 Interior Finish.

22-2.3.3.1 Interior finish shall be in accordance with Section 6-5.

22-2.3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be Class A or Class B.

Exception: Class C interior wall and ceiling finish shall be permitted in prompt evacuation capability facilities.

22-2.3.3.3 Interior Floor Finish. (No requirements.)

22-2.3.4 Detection, Alarm, and Communication Systems.

22-2.3.4.1 Fire Alarm Systems. A manual fire alarm system shall be provided in accordance with Section 7-6.

22-2.3.4.2 Occupant Notification. Occupant notification shall be provided automatically, without delay, in accordance with 7-6.3. Presignal systems shall be prohibited.

22-2.3.4.3 Smoke Detectors.

22-2.3.4.3.1 Approved smoke detectors shall be provided in accordance with 7-6.2.10. Detectors shall be installed on all levels, including basements, but excluding crawl spaces and unfinished attics. Additional detectors shall be installed for living areas as defined in Section 3-2.

Exception: Detectors shall not be required in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 22-2.3.5 using quick response or residential sprinklers.

22-2.3.4.3.2 Each sleeping room shall be provided with an approved, listed single-station smoke detector in accordance with 7-6.2.10.

Exception: Rooms protected by quick response or residential sprinklers in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 22-2.3.5. The Exception to 22-2.3.4.3.1 shall not be used in conjunction with this exception.

22-2.3.5 Automatic Extinguishing Systems.

22-2.3.5.1 All facilities shall be protected throughout by an approved, automatic sprinkler system installed in accordance with 22-2.3.5.2. Quick response or residential sprinklers shall be provided.

Exception No. 1: Sprinklers shall not be required in small board and care homes serving eight or fewer residents with a rating of prompt evacuation capability.

Exception No. 2: Standard response sprinklers shall be permitted for use in hazardous areas in accordance with 22-2.3.2.

22-2.3.5.2* Where an automatic sprinkler system is installed, for either total or partial building coverage, the system shall be in accordance with Section 7-7 and shall initiate the fire alarm system in accordance with 22-2.3.4.1. The adequacy of the water supply shall be documented to the authority having jurisdiction.

Exception No. 1: In prompt and slow evacuation capability facilities, a sprinkler system complying with NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, shall be permitted. Facilities with more than eight residents shall be treated as two-family dwellings with regard to water supply. Additionally, entrance foyers shall be sprinklered.

Exception No. 2: In impractical evacuation capability facilities, a sprinkler system complying with NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, with a 30-min water supply shall be permitted. All habitable areas and closets shall be sprinklered. Facilities with more than eight residents shall be treated as two-family dwellings with regard to water supply.

Exception No. 3: In prompt and slow evacuation capability facilities, where an automatic sprinkler system is installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, automatic sprinklers shall not be required in closets not exceeding 24 sq ft (2.7 sq m) and bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or material providing a 15-min thermal barrier.

Exception No. 4: In prompt and slow evacuation capability facilities up to and including four stories in height, systems installed in accordance with NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted.

Exception No. 5: In impractical evacuation capability facilities up to and including four stories in height, systems installed in accordance with NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted. All habitable areas and closets shall be sprinklered.

22-2.3.5.3 Automatic sprinkler systems installed in impractical evacuation capability facilities shall be supervised in accordance with Section 7-7.

22-2.3.5.4 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be installed in accordance with 7-7.1.2. In new installations, where more than two sprinklers are installed in a single area, water flow detection shall be provided to initiate the fire alarm system required by 22-2.3.4.1. Duration of water supplies shall be as required by 22-2.3.5.2.

22-2.3.6 Construction of Corridor Walls.

22-2.3.6.1 The separation walls of sleeping rooms shall be capable of resisting fire for at least ½ hr, which is considered to be achieved if the partitioning is finished on both sides with lath and plaster or material providing a 15-min thermal barrier. Sleeping room doors shall be substantial doors, such as those of 1¾-in. (4.4-cm) thick, solid bonded wood core construction or of other construction of equal or greater stability and fire integrity. Any vision panels shall be fixed fire window

assemblies in accordance with 6-2.3.2.2 or shall be wired glass not exceeding 1296 sq in. (0.84 sq m) each in area and installed in approved frames.

Exception No. 1: In prompt evacuation capability facilities, all sleeping rooms shall be separated from the escape route by walls and doors that are at least smoke resistant.

Exception No. 2: Corridor walls and doors that are capable of resisting the passage of smoke and that are protected by automatic sprinklers in accordance with 22-2.3.5 on both sides of the wall and door. In such instances, there shall be no limitation on the type or size of glass panels.

Exception No. 3: Sleeping arrangements that are not located in sleeping rooms shall be permitted for nonresident staff members, provided the audibility of the alarm in the sleeping area is sufficient to awaken staff who might be sleeping.

22-2.3.6.2 There shall be no louvers or operable transoms or other air passages penetrating the wall except properly installed heating and utility installations other than transfer grilles. Transfer grilles shall be prohibited.

22-2.3.6.3 Doors shall be provided with latches or other mechanisms suitable for keeping the doors closed. No doors shall be arranged to prevent the occupant from closing the door.

22-2.3.6.4 Doors shall be self-closing or automatic-closing in accordance with 5-2.1.8.

Exception: Door-closing devices shall not be required in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 22-2.3.5.1.

22-2.4 (Reserved.)

22-2.5 Building Services.

22-2.5.1 Utilities. Utilities shall comply with Section 7-1.

22-2.5.2 Heating, Ventilating, and Air Conditioning.

22-2.5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of 7-2.1 and 7-2.2, except as otherwise required in this chapter.

22-2.5.2.2 No stove or combustion heater shall be located to block escape in case of fire caused by the malfunction of the stove or heater.

22-2.5.2.3 Unvented fuel-fired heaters shall not be used in any residential board and care facility.

22-2.5.3 Elevators, Escalators, and Conveyors. Any elevators, escalators, and conveyors installed shall comply with the provisions of Section 7-4.

SECTION 22-3 LARGE FACILITIES

22-3.1 General.

22-3.1.1 Scope. This section shall apply to residential board and care occupancies providing sleeping accommodations for more than 16 residents. Facilities having sleeping accommodations for not more than 16 residents shall be evaluated in accordance with Section 22-2.

22-3.1.2 Requirements Based on Evacuation Capability.

22-3.1.2.1 Prompt and Slow. Large facilities classified as prompt or slow evacuation capability shall comply with the requirements of this section as indicated for the appropriate evacuation capability.

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

22-3.1.2.2 Impractical. Large facilities classified as impractical evacuation capability shall meet the requirements for limited care facilities in Chapter 12.

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

22-3.1.3 Minimum Construction Requirements.

22-3.1.3.1 Construction requirements for large facilities shall be as required by this section. Where noted as “fully sheathed,” the interior shall be covered with lath and plaster or materials providing a 15-min thermal barrier.

22-3.1.3.2 For the purpose of construction requirements, stories shall be counted starting with the primary level of exit discharge and ending with the highest occupied level. Where the primary level of exit discharge is not readily apparent, the primary level of exit discharge of a building shall be that story that is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of the building.

22-3.1.3.3 The minimum construction requirements (*see* 6-2.1), based on the highest story normally used by board and care residents, shall be

(a) *One- or Two-Story Facilities.* Any construction type that meets the requirements for 1-hr or greater fire resistance rating, or is Type IV(2HH), or is fully sheathed, or is protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5.

Exception to (a): One-story prompt evacuation capability facilities having 30 or fewer residents shall be permitted to be of any type construction.

(b) *Three- to Six-Story Facilities.* Type I, Type II, or Type III construction that meets the requirements for 1-hr or greater fire resistance rating, Type IV construction that is protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5, or any other type of construction that is both sheathed and protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5, other than Type V(000).

Exception to (b): Three- to four-story facilities of Type V(000) construction that are both fully sheathed and protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 22-3.3.5.

(c) *Facilities More Than Six Stories High.* Any Type I or Type II(222) construction, and any Type II(111), Type III(211), or Type IV(2HH) construction that is protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5.

Exception to (a), (b), and (c): Any building of Type I, Type II(222), or Type II(111) construction shall be permitted to include roofing sys-

tems involving combustible supports, decking, or roofing, provided that

1. The roof covering meets Class A requirements in accordance with NFPA 256, *Standard Methods of Fire Tests of Roof Coverings*, and

2. The roof is separated from all occupied portions of the building by a noncombustible floor assembly having at least a 2-hr fire resistance rating that includes at least 2½ in. (6.4 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall be either unused or protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5.1.

22-3.1.4 Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining egress capacity.

22-3.2 Means of Egress.

22-3.2.1 All means of egress shall be in accordance with Chapter 5.

22-3.2.2 Means of Egress Components.

22-3.2.2.1 Components of means of egress shall be limited to the types described in 22-3.2.2.2 through 22-3.2.2.10.

22-3.2.2.2 Doors.

(a) Doors complying with 5-2.1 shall be permitted.

(b) Doors within individual rooms and suites of rooms shall be permitted to be swinging or sliding.

(c) No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1 to (c): Delayed egress locks in accordance with 5-2.1.6.1 shall be permitted, provided not more than one device occurs in a means of egress.

Exception No. 2 to (c): Access-controlled egress doors in accordance with 5-2.1.6.2 shall be permitted.

(d) Every stairwell door shall allow reentry from the stairwell to the interior of the building, or an automatic release shall be provided to unlock all stairwell doors to allow reentry. Such automatic release shall be activated with the initiation of the building fire alarm system. Also, doors shall unlock upon loss of power controlling the lock or locking mechanism.

(e) Revolving doors complying with 5-2.1.10 shall be permitted.

22-3.2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

22-3.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

22-3.2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

22-3.2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

22-3.2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

22-3.2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

22-3.2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

22-3.2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

22-3.2.3 Capacity of Means of Egress.

22-3.2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

22-3.2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

22-3.2.3.3 The width of corridors shall be sufficient for the occupant load served, but shall not be less than 44 in. (112 cm).

Exception: Corridors serving an occupant load fewer than 50 shall be not less than 36 in. (91 cm) wide.

22-3.2.4 Number of Exits. At least two exits shall be accessible from every story, including floors below the level of exit discharge and occupied for public purposes.

22-3.2.5 Arrangement of Means of Egress.

22-3.2.5.1 Access to all required exits shall be in accordance with Section 5-5.

22-3.2.5.2 No common path of travel shall exceed 125 ft (38.1 m).

22-3.2.5.3 No dead-end corridor shall exceed 50 ft (15 m).

22-3.2.5.4 Any room or any suite of rooms in excess of 2000 sq ft (185 sq m) shall be provided with at least two exit access doors remotely located from each other.

22-3.2.6 Travel Distance to Exits.

22-3.2.6.1 Travel distance within a room, suite, or living unit to a corridor door shall not exceed 125 ft (38.1 m).

22-3.2.6.2 Travel distance, measured in accordance with Section 5-6, from the corridor door of any room to the nearest exit shall not exceed 200 ft (60 m).

22-3.2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

22-3.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

22-3.2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 25 rooms.

Exception: Where each sleeping room has a direct exit to the outside of the building at ground level, no emergency lighting shall be required.

22-3.2.10 Marking of Means of Egress. Means of egress shall be marked in accordance with Section 5-10.

22-3.2.11 Special Means of Egress Features. (Reserved.)

22-3.3 Protection.

22-3.3.1 Protection of Vertical Openings.

22-3.3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums shall be permitted in accordance with 6-2.4.6.

22-3.3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purposes other than residential occupancy shall have unprotected openings to floors used for residential occupancy.

22-3.3.2 Protection from Hazards.

22-3.3.2.1 Any room containing high-pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or adjacent to exits. All such rooms shall be effectively separated from other parts of the building as specified in Section 6-4.

22-3.3.2.2 Every hazardous area shall be separated from other parts of the building by walls and doors that resist the passage of smoke. Doors shall be self-closing. Hazardous areas include, but are not limited to

- (a) Boiler and heater rooms,
- (b) Laundries,
- (c) Repair shops, and
- (d) Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

22-3.3.3 Interior Finish.

22-3.3.3.1 Interior finish shall be in accordance with Section 6-5.

22-3.3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials complying with 6-5.5 shall be permitted as follows:

- (a) Exit enclosures — Class A;
- (b) Lobbies and corridors — Class A or Class B;
- (c) Other spaces — Class A or Class B.

22-3.3.3.3 Interior Floor Finish. Interior floor finish in accordance with 6-5.6 shall be Class I or Class II in corridors and exits.

22-3.3.4 Detection, Alarm, and Communication Systems.

22-3.3.4.1 General. A fire alarm system in accordance with Section 7-6 shall be provided.

22-3.3.4.2 Initiation. The required fire alarm system shall be initiated by

- (a) Manual means in accordance with 7-6.2, and
- (b) A manual fire alarm station located at a convenient central control point under continuous supervision of responsible employees, and
- (c) The automatic sprinkler system, and
- (d) Any required detection system.

22-3.3.4.3 Annunciator Panel. An annunciator panel connected with the fire alarm system shall be provided. The location of the annunciator shall be approved by the authority having jurisdiction.

Exception: Buildings not more than two stories in height and with not more than 50 sleeping rooms.

22-3.3.4.4 Occupant Notification. Occupant notification shall be provided automatically, without delay, in accordance with 7-6.3. Presignal systems shall be prohibited.

22-3.3.4.5 High-rise buildings shall be provided with an approved means of voice communication in accordance with 7-6.3.

Exception: Buildings equipped with a public address system.

22-3.3.4.6* Fire Department Notification. In case of a fire, provisions shall be made for the immediate notification of the public fire department by either telephone or other means. Where there is no public fire department, this notification shall be made to the private fire brigade.

22-3.3.4.7 Smoke Detectors. Each sleeping room shall be provided with an approved, single-station smoke detector in accordance with 7-6.2.10, powered from the building electrical system.

22-3.3.4.8 Smoke Detection Systems. All living areas as defined in Section 3-2 and corridors shall be provided with smoke detectors in accordance with NFPA 72, *National Fire Alarm Code*, arranged to initiate an alarm that is audible in all sleeping areas.

Exception No. 1: Detectors shall not be required in living areas in facilities protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5.

Exception No. 2: Unenclosed corridors, passageways, balconies, colonnades, or other arrangements with one or more sides along the long dimension fully or extensively open to the exterior at all times.

22-3.3.5 Extinguishment Requirements.

22-3.3.5.1* All buildings shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7. Quick response or residential sprinklers shall be provided throughout. Such systems shall initiate the fire alarm system in accordance with Section 7-6.

Exception No. 1: In buildings not more than four stories in height, a sprinkler system complying with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, shall be permitted.

Exception No. 2: Automatic sprinklers shall not be required in small clothes closets where the smallest dimension does not exceed 3 ft (0.9 m), the area does not exceed 24 sq ft (2.2 sq m), and the walls and ceiling are finished with noncombustible or limited-combustible materials.

Exception No. 3: Standard response sprinklers shall be permitted for use in hazardous areas in accordance with 22-3.3.2.

22-3.3.5.2 Automatic sprinkler systems installed in high-rise buildings shall be supervised in accordance with Section 7-7.

22-3.3.5.3 Portable Fire Extinguishers. Portable fire extinguishers in accordance with 7-7.4.1 shall be provided near hazardous areas.

22-3.3.6 Corridors and Separation of Sleeping Rooms.

22-3.3.6.1 Access shall be provided from every resident use area to at least one means of egress that is separated from all sleeping rooms by walls complying with 22-3.3.6.3 through 22-3.3.6.6.

22-3.3.6.2 Sleeping rooms shall be separated from corridors, living areas, and kitchens by walls complying with 22-3.3.6.3 through 22-3.3.6.6.

22-3.3.6.3 Walls required by 22-3.3.6.1 or 22-3.3.6.2 shall have a fire resistance rating of not less than ½ hr.

Exception: In conversions (see definition in 22-1.3), no fire resistance rating shall be required, but the wall shall resist the passage of smoke.

22-3.3.6.4 Doors in walls required by 22-3.3.6.1 or 22-3.3.6.2 shall have a fire protection rating of not less than 20 min.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5, existing doors in renovations and conversions (see definition in 22-1.3) that are nonrated doors that resist the passage of smoke shall be permitted to continue to be used.

Exception No. 2: Walls that are required only to resist the passage of smoke, without a fire resistance rating, shall be permitted to have doors that resist the passage of smoke without a fire protection rating.

22-3.3.6.5 Walls and doors required by 22-3.3.6.1 and 22-3.3.6.2 shall be constructed to resist the passage of smoke. There shall be no louvers, transfer grilles, operable transoms, or other air passages penetrating such walls or doors except properly installed heating and utility installations.

22-3.3.6.6 Doors in walls required by 22-3.3.6.1 and 22-3.3.6.2 shall be self-closing or automatic-closing in accordance with 5-2.1.8. Doors in walls separating sleeping rooms from corridors shall be automatic-closing in accordance with 5-2.1.8.

Exception No. 1: Doors to sleeping rooms that have occupant control locks such that access is normally restricted to the occupants or staff personnel shall be permitted to be self-closing.

Exception No. 2: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 22-3.3.5, doors, other than doors to hazardous areas, vertical openings, and exit enclosures, shall not be required to be self-closing or automatic-closing.

22-3.3.7 Subdivision of Building Spaces. (Reserved.)

22-3.4 Special Provisions. (Reserved.)

22-3.5 (Reserved.)

22-3.6 Building Services.

22-3.6.1 Utilities. Utilities shall comply with provisions of Section 7-1.

22-3.6.2 Heating, Ventilating, and Air Conditioning.

22-3.6.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

22-3.6.2.2 No stove or combustion heater shall be located to block escape in case of fire caused by the malfunction of the stove or heater.

22-3.6.2.3 Unvented fuel-fired heaters shall not be used in any board and care occupancy.

22-3.6.3 Elevators, Dumbwaiters, and Vertical Conveyors.

22-3.6.3.1 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

22-3.6.3.2* In high-rise buildings, one elevator shall be provided with a protected power supply and shall be available for use by the fire department in case of emergency.

22-3.6.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 22-4* SUITABILITY OF AN APARTMENT BUILDING TO HOUSE A BOARD AND CARE OCCUPANCY

22-4.1 General.

22-4.1.1 Scope. This section shall apply to apartment buildings that have one or more individual apartments used as a board and care occupancy. This section determines the suitability of such buildings to house a residential board and care facility. The suitability of such buildings for apartments not used for board and care occupancies is covered in Chapter 18.

Exception: If the new board and care occupancy is created in an existing apartment building, the suitability of such buildings for apartments not used for board and care occupancies shall be covered by Chapter 19.

22-4.1.2 Requirements for individual apartments used as residential board and care occupancies are specified in Section 22-2. Egress from the apartment into the common building corridor shall be considered acceptable egress from the board and care facility.

22-4.1.3 Requirements Based on Evacuation Capability.

22-4.1.3.1 Apartment buildings housing board and care facilities shall comply with the requirements of this section.

*Exception:** Facilities where the authority having jurisdiction has determined that equivalent safety for housing a residential board and care facility is provided in accordance with Section 1-6.

22-4.1.3.2 All facilities shall meet the requirements of Chapter 18 and the additional requirements of this section.

22-4.1.4 Minimum Construction Requirements. In addition to the requirements of Chapter 18, apartment buildings housing residential board and care facilities that house groups classified as prompt or slow evacuation capability shall meet the construction requirements of 22-3.1.3, and those housing groups classified as impractical evacuation capability shall meet the construction requirements of 12-1.6. In applying the construction requirements, the height shall be determined by the height of the residential board and care facility above the primary level of exit discharge.

Exception: If the new board and care occupancy is created in an existing apartment building, the construction requirements of 23-3.1.3 shall be applicable for prompt or slow evacuation capability, and the

construction requirements of 13-1.6 shall be applicable for impractical evacuation capability.

22-4.2 Means of Egress. The requirements of Section 18-2 shall apply only to parts of the means of egress serving the apartment(s) used as a residential board and care occupancy.

Exception: If the new board and care occupancy is created in an existing apartment building, the requirements of Section 19-2 shall be applicable to parts of the means of egress serving the apartment(s) used as a residential board and care occupancy.

22-4.3 Protection.

22-4.3.1 Interior Finish. The requirements of 18-3.3 shall apply only to the parts of means of egress serving the apartment(s) used as a residential board and care occupancy.

Exception: If the new board and care occupancy is created in an existing apartment building, the requirements of 19-3.3 shall be applicable to the parts of the means of egress serving the apartment(s) used as a residential board and care occupancy.

22-4.3.2 Construction of Corridor Walls. The requirements of 18-3.6 shall apply only to corridors serving the residential board and care facility, including that portion of the corridor wall separating the residential board and care facility from the common corridor.

Exception: If the new board and care occupancy is created in an existing apartment building, the requirements of 19-3.6 shall be applicable to the corridor serving the residential board and care facility.

22-4.3.3 Subdivision of Building Spaces. (Reserved.)

SECTION 22-5 RESERVED

SECTION 22-6 RESERVED

SECTION 22-7 OPERATING FEATURES

22-7.1 Emergency Plan. The administration of every residential board and care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for protecting all persons in the event of fire, for keeping persons in place, and for evacuating persons to areas of refuge and from the building when necessary. The plan shall include special staff response, including fire protection procedures needed to ensure the safety of any resident, and shall be amended or revised for use upon admission to the home of any resident with unusual needs. All employees shall be periodically instructed and kept informed with respect to their duties and responsibilities under the plan. Such instruction shall be reviewed by the staff at least every two months. A copy of the plan shall be readily available at all times within the facility.

22-7.2 Resident Training. All residents participating in the emergency plan shall be trained in the proper actions to be taken in the event of fire. This training shall include actions to be taken if the primary escape route is blocked. If the resident is given rehabilitation or habilitation training, training in fire prevention and actions to be taken in the event of a fire shall be a part of the training program. Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

22-7.3 Fire Exit Drills. Fire exit drills shall be conducted at least six times per year on a bimonthly basis with a minimum of two drills conducted during the night when residents are sleeping. The drills shall be permitted to be announced in advance to the residents. The drills shall involve the actual evacuation of all residents to an assembly point as specified in the emergency plan and shall provide residents with experience in egressing through all exits and means of escape required by the *Code*. Exits and means of escape not used in any fire drill shall not be credited in meeting the requirements of this *Code* for board and care facilities.

Exception No. 1: Actual exiting from windows shall not be required to meet the requirements of this section; opening the window and signaling for help shall be an acceptable alternative.

Exception No. 2: If the board and care facility has an evacuation capability rating of impractical, those residents who cannot meaning-

fully assist in their own evacuation or who have special health problems shall not be required to actively participate in the drill. Section 12-7 shall apply in such instances.

22-7.4 Smoking. Where smoking is permitted, noncombustible safety-type ashtrays or receptacles shall be provided in convenient locations.

22-7.5* Furnishings, Bedding, and Decorations.

22-7.5.1 New draperies, curtains, and other similar loosely hanging furnishings and decorations in board and care facilities shall be in accordance with the provisions of 6-6.1.

22-7.5.2* New upholstered furniture within board and care facilities shall be tested in accordance with the provisions of 6-6.2(a).

22-7.5.3* New mattresses within board and care facilities shall be tested in accordance with the provisions of 6-6.2(c).

CHAPTER 23 EXISTING RESIDENTIAL BOARD AND CARE OCCUPANCIES

SECTION 23-1 GENERAL REQUIREMENTS

23-1.1* Application.

23-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as residential board and care occupancies (*see also 22-1.1*).

23-1.1.2 This chapter is divided into four sections as follows:

- (a) Section 23-1 — General Requirements.
- (b) Section 23-2 — Small Facilities (i.e., sleeping accommodations for not more than 16 residents).
- (c) Section 23-3 — Large Facilities (i.e., sleeping accommodations for more than 16 residents).
- (d) Section 23-4 — Suitability of an Apartment Building to House a Board and Care Occupancy.

23-1.2 Mixed Occupancies. Where another type of occupancy occurs in the same building as a residential board and care occupancy, the requirements of 4-1.12 of this *Code* shall apply.

Exception No. 1: Occupancies that are completely separated from all portions of the building used for a residential board and care facility and its egress system by construction having a fire resistance rating of at least 2 hr.

Exception No. 2: Apartment buildings housing residential board and care occupancies in conformance with Section 23-4. In such facilities, any safeguards required by Section 23-4 that are more restrictive than those for other housed occupancies shall apply only to the extent prescribed by Section 23-4.

23-1.3 Definitions.

Conversion. For the purposes of this chapter, a conversion shall be considered to be a change of occupancy from an existing residential or health care occupancy to a residential board and care occupancy.

Evacuation Capability.* The ability of the occupants, residents, and staff as a group either to evacuate a building or to relocate from the point of occupancy to a point of safety. If the occupants of the residential board and care occupancy include family members of the owners or operators, it is intended that the needs of the family members be considered in determining evacuation capability.

Following are the levels of evacuation capability covered by this chapter:

- (a) *Prompt.* The ability of a group to move reliably to a point of safety in a timely manner that is equivalent to the capacity of a household in the general population.
- (b) *Slow.* The ability of a group that can move reliably to a point of safety in a timely manner, but not as rapidly as can members of a household in the general population.
- (c) *Impractical.* The inability of a group to reliably move to a point of safety in a timely manner.

Hazardous Area. Any space where there is storage or activity having fuel conditions exceeding that of a one- or two-family dwelling and that possesses the potential for a fully involved fire. Hazardous areas include, but are not limited to,

areas for cartoned storage, food or household maintenance items in wholesale or institutional-type quantities and concentrations, or mass storage of residents' belongings. Areas containing approved, properly installed and maintained furnaces and heating equipment, furnace rooms, and cooking and laundry facilities shall not be classified as hazardous areas solely on the basis of such equipment.

Personal Care. The care of residents who do not require chronic or convalescent medical or nursing care. Personal care involves responsibility for the safety of the resident while inside the building. Personal care might include daily awareness by the management of the resident's functioning and whereabouts, making and reminding a resident of appointments, the ability and readiness for intervention in the event of a resident experiencing a crisis, supervision in the areas of nutrition and medication, and actual provision of transient medical care.

Point of Safety. A location that meets one of the following criteria:

- (a) It is exterior to and away from the building.
- (b) It is within a building of any type construction protected throughout by an approved, automatic sprinkler system and is either

- 1. Within an exit enclosure meeting the requirements of this *Code*, or

- 2. Within another portion of the building that is separated by smoke barriers in accordance with Section 6-3, with at least a ½-hr fire resistance rating, and that portion of the building has access to a means of escape or exit that conforms to the requirements of this *Code* and that does not require return to the area of fire involvement.

- (c) It is within a building of Type I, Type II(222), Type II(111), Type III(211), Type IV, or Type V(111) construction (*see 6-2.1*) and is either

- 1. Within an exit enclosure meeting the requirements of this *Code*, or

- 2. Within another portion of the building that is separated by smoke barriers in accordance with Section 6-3, with at least a ½-hr fire resistance rating, and that portion of the building has access to a means of escape or exit that conforms to the requirements of this *Code* and that does not require return to the area of fire involvement.

Resident. A person who receives personal care and resides in a residential board and care facility.

Residential Board and Care Occupancy.* A building or part thereof that is used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services.

Staff. Persons who provide personal care services, supervision, or assistance.

Thermal Barrier.* A material that limits the average temperature rise of the unexposed surface to not more than 250°F (120°C) for a specified fire exposure complying with the standard time-temperature curve of NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*.

23-1.4 Acceptability of Means of Egress or Escape. No means of escape or means of egress shall be considered as complying with the minimum criteria for acceptance unless emergency evacuation drills are regularly conducted using that route in accordance with the requirements of 23-7.3.

23-1.5* Fire resistance-rated assemblies shall comply with 6-2.3.

23-1.6* Changes in Group Evacuation Capability. A change in group evacuation capability shall be considered a change in occupancy subclassification. (See 1-3.12.)

Exception: Where the evacuation capability changes to a faster level, the requirements of 1-3.12 shall not apply.

SECTION 23-2 SMALL FACILITIES

23-2.1 General.

23-2.1.1 Scope. This section shall apply to residential board and care occupancies providing sleeping accommodations for not more than 16 residents. Where there are sleeping accommodations for more than 16 residents, the occupancy shall be classified as a large facility. The requirements for large facilities are in Section 23-3.

23-2.1.2 Requirements Based on Evacuation Capability. Small facilities shall comply with the requirements of this section as indicated for the appropriate evacuation capability.

Exception No. 1: Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

Exception No. 2: Facilities that were previously approved as complying with the requirements for a large facility having the same evacuation capability.

23-2.1.3 Minimum Construction Requirements.

23-2.1.3.1 Prompt Evacuation Capability. (No special requirements.)

23-2.1.3.2 Slow Evacuation Capability. The facility shall be housed in a building where the interior is fully sheathed with lath and plaster or other material providing a 15-min thermal barrier, including all portions of bearing walls, bearing partitions, floor construction, and roofs. All columns, beams, girders, and trusses shall be similarly encased or otherwise shall provide a minimum of a ½-hr fire resistance rating.

Exception No. 1: Exposed steel or wood columns, girders, and beams (but not joists) located in the basement.

Exception No. 2: Buildings of Type I, Type II(222), Type II(111), Type III(211), Type IV, or Type V(111) construction. (See 6-2.1.)

Exception No. 3: Areas protected by approved, automatic sprinkler systems installed in accordance with 23-2.3.5.

Exception No. 4: Unfinished, unused, and essentially inaccessible loft, attic, or crawl spaces.

Exception No. 5: Where the facility can demonstrate to the authority having jurisdiction that the group is capable of evacuating the building in 8 min or less or achieves an E-score of three or less using Chapter 5 of NFPA 101A, Guide on Alternative Approaches to Life Safety.

23-2.1.3.3 Impractical Evacuation Capability. Buildings shall be of any construction type in accordance with Section 6-2 other than Type II(000), Type III(200), or Type V(000) construction.

Exception: Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 23-2.3.5 shall be permitted to be of any type of construction.

23-2.2 Means of Escape.

23-2.2.1 Number of Means of Escape. Each normally occupied story of the facility shall have at least two remotely located means of escape that do not involve windows. At least one of these means of escape shall comply with 23-2.2.2. The provisions of Chapter 5 shall not apply to means of escape unless specifically referenced in this chapter.

Exception No. 1: In prompt evacuation capability facilities, one means of escape shall be permitted to involve windows complying with 23-2.2.3(c).

Exception No. 2: A second means of escape from each story shall not be required where the entire building is protected throughout by an approved, automatic sprinkler system complying with 23-2.3.5 and the facility has two means of escape. This exception shall not be permitted to be used in conjunction with Exception No. 2 to 23-2.2.3.

23-2.2.2 Primary Means of Escape.

23-2.2.2.1 Every sleeping room and living area shall have access to a primary means of escape located to provide a safe path of travel to the outside. Where sleeping rooms or living areas are above or below the level of exit discharge, the primary means of escape shall be an interior stair in accordance with 23-2.2.4, an exterior stair, a horizontal exit, or an existing fire escape stair.

23-2.2.2.2 In slow and impractical evacuation capability facilities, the primary means of escape for each sleeping room shall not be exposed to living areas and kitchens.

Exception: Buildings equipped with quick response or residential sprinklers throughout. Standard response sprinklers shall be permitted for use in hazardous areas in accordance with 23-2.3.2.

23-2.2.3 Secondary Means of Escape. In addition to the primary route, each sleeping room shall have a second means of escape that consists of one of the following:

(a) A door, stairway, passage, or hall providing a way of unobstructed travel to the outside of the dwelling at street or ground level that is independent of and remotely located from the primary means of escape;

(b) A passage through an adjacent nonlockable space, independent of and remotely located from the primary means of escape, to any approved means of escape;

(c)* An outside window or door operable from the inside without the use of tools, keys, or special effort, and providing a clear opening of not less than 5.7 sq ft (0.53 sq m) with the width not less than 20 in. (51 cm) and the height not less than 24 in. (61 cm). The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. Such means of escape shall be acceptable if

1. The window is within 20 ft (6.1 m) of grade, or

2. The window is directly accessible to fire department rescue apparatus as approved by the authority having jurisdiction, or

3. The window or door opens onto an exterior balcony.

Exception No. 1: If the sleeping room has a door leading directly to the outside of the building with access to grade or to a stairway that meets the requirements of exterior stairs in 23-2.3.1.2, that means of escape shall be considered as meeting all the escape requirements for the sleeping room.

Exception No. 2: A second means of escape from each sleeping room shall not be required where the facility is protected throughout by an approved, automatic sprinkler system complying with 23-2.3.5.

Exception No. 3: Existing approved means of escape shall be permitted to continue to be used.

23-2.2.4 Interior Stairs Used for Primary Means of Escape.

Interior stairs shall be enclosed with ½-hr fire barriers with all openings equipped with smoke-actuated automatic-closing or self-closing doors having a fire protection rating comparable to that required for the enclosure. Stairs shall comply with 5-2.2.5.3. The entire primary means of escape shall be arranged so that occupants are not required to pass through a portion of a lower story unless that route is separated from all spaces on that story by construction having a minimum ½-hr fire resistance rating. The supporting construction shall be protected to afford the required fire resistance rating of the wall supported in buildings of other than construction Type II(000), Type III(200), or Type V(000).

Exception No. 1: Stairs that connect a story at street level to only one other story shall be permitted to be open to the story that is not the street level.

Exception No. 2: In buildings three or fewer stories in height that house prompt or slow evacuation capability facilities protected throughout by an approved, automatic sprinkler system installed in accordance with 23-2.3.5 using quick response or residential sprinklers, stair enclosures shall not be required provided there remains a primary means of escape from each sleeping area that does not require occupants to pass through a portion of a lower floor; unless that route is separated from all spaces on that floor by construction having a ½-hr fire resistance rating.

Exception No. 3: In buildings two or fewer stories in height that house prompt evacuation capability facilities with not more than eight residents and that are protected by an approved automatic sprinkler system installed in accordance with 23-2.3.5 using quick response or residential sprinklers, stair enclosures shall not be required. Exception No. 2 to 23-2.3.4.3 shall not be used in conjunction with this exception. Exceptions to 23-2.4.3 shall not be used in conjunction with this exception.

Exception No. 4: In buildings three or fewer stories in height that house prompt or slow evacuation capability facilities protected by an approved automatic sprinkler system in accordance with 23-2.3.5, stairs shall be permitted to be open at the topmost story only. The entire primary means of escape of which the stairs are a part shall be separated from all portions of lower stories.

23-2.2.5 Doors.

23-2.2.5.1 No door or path of travel to a means of escape shall be less than 28 in. (71 cm) wide.

Exception: Bathroom doors shall be a minimum of 24 in. (61 cm) wide.

23-2.2.5.2 Doors shall be swinging or sliding.

23-2.2.5.3 Every closet door latch shall be readily opened from the inside in case of an emergency.

23-2.2.5.4 Every bathroom door shall be designed to allow opening from the outside during an emergency when locked.

23-2.2.5.5 No door in any means of escape shall be locked against egress when the building is occupied.

Exception: Delayed egress locks complying with 5-2.1.6.1 shall be permitted on exterior doors.

23-2.2.5.6 Doors shall comply with 5-2.1.4.5.

23-2.2.5.7 Doors shall comply with 5-2.1.5.3.

23-2.2.6 Stairs.

23-2.2.6.1 Stairs shall comply with 5-2.2.

23-2.2.6.2 Winders complying with 5-2.2.2.5 shall be permitted.

23-2.3 Protection.

23-2.3.1 Protection of Vertical Openings.

23-2.3.1.1 Vertical openings shall be protected so as not to expose a primary means of escape. Vertical openings shall be considered protected if the opening is cut off such that barriers prevent the passage of smoke from one story to any primary means of escape on another story. Barriers shall resist the passage of smoke and shall have a fire resistance rating of not less than ½ hr. Any doors or openings to the vertical opening shall be capable of resisting fire for not less than 20 min, shall resist the passage of smoke, and shall be self-closing or automatic-closing in accordance with 5-2.1.8.

Exception: Stairs shall be permitted to be open where complying with Exception No. 2 or No. 3 to 23-2.2.4.

23-2.3.1.2 Exterior stairs shall be reasonably protected against blockage caused by fire that would simultaneously expose both the interior and the exterior means of escape. This shall be accomplished through separation by physical distance, arrangement of the stairs, protection of the openings exposing the stairs, or other means acceptable to the authority having jurisdiction.

23-2.3.2 Hazardous Areas. Any hazardous area shall be protected in accordance with 23-2.3.2.1 and 23-2.3.2.2.

23-2.3.2.1 Any hazardous area that is on the same floor as, and is in or abuts, a primary means of escape or a sleeping room shall be protected by either

(a) An enclosure with a fire resistance rating of at least 1 hr with a self-closing or automatic-closing fire door in accordance with 5-2.1.8 having a fire protection rating of at least ¾ hr; or

(b) Automatic sprinkler protection, in accordance with 23-2.3.5, of the hazardous area and a separation that will resist the passage of smoke between the hazardous area and the sleeping area or primary escape route. Any doors in such separation shall be self-closing or automatic-closing in accordance with 5-2.1.8.

23-2.3.2.2 Other hazardous areas shall be protected by either

(a) An enclosure having a fire resistance rating of at least $\frac{1}{2}$ hr with a self-closing or automatic-closing door in accordance with 5-2.1.8 equivalent to at least a $1\frac{3}{4}$ -in. (4.4-cm) thick, solid bonded wood core construction, or

(b) Automatic sprinkler protection, in accordance with 23-2.3.5, of the hazardous area regardless of enclosure.

23-2.3.3 Interior Finish. Interior wall and ceiling finish shall be Class A or Class B in accordance with Section 6-5. There shall be no requirements for interior floor finish.

Exception: Class C interior wall and ceiling finish shall be permitted in prompt evacuation capability facilities.

23-2.3.4 Detection, Alarm, and Communication Systems.

23-2.3.4.1 Fire Alarm Systems. A manual fire alarm system shall be provided in accordance with Section 7-6.

Exception No. 1: If there are interconnected smoke detectors meeting the requirements of 23-2.3.4.3 and there is at least one manual fire alarm station per floor arranged to continuously sound the smoke detector alarms.

Exception No. 2: Other manually activated continuously sounding alarms acceptable to the authority having jurisdiction.

23-2.3.4.2 Occupant Notification. Occupant notification shall be in accordance with 7-6.3. Presignal systems shall be prohibited.

23-2.3.4.3* Smoke Detectors. Approved smoke detectors shall be provided in accordance with 7-6.2.10. These detectors shall be powered from the building electrical system and, when activated, shall initiate an alarm that is audible in all sleeping areas. Detectors shall be installed on all levels, including basements, but excluding crawlspaces and unfinished attics. Additional detectors shall be installed for living rooms, dens, day rooms, and similar spaces.

Exception No. 1: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-2.3.5 using quick response or residential sprinklers with approved, single-station smoke detectors installed in each sleeping room in accordance with 7-6.2.10 and powered by the building electrical system.

Exception No. 2: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-2.3.5 using quick response or residential sprinklers with existing battery-powered detectors in each sleeping room and where, in the opinion of the authority having jurisdiction, the facility has demonstrated testing, maintenance, and a battery replacement program that ensures the reliability of power to the detectors.

23-2.3.5 Automatic Extinguishing Systems.

23-2.3.5.1* Where an automatic sprinkler system is installed, for either total or partial building coverage, the system shall be in accordance with Section 7-7 and shall activate the fire alarm system in accordance with 23-2.3.4.1. The adequacy of the water supply shall be documented to the authority having jurisdiction.

Exception No. 1: In prompt and slow evacuation capability facilities, a sprinkler system complying with NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, shall be permitted. Automatic sprinklers shall not be required in closets not exceeding 24 sq ft (2.2 sq m) and

bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or materials providing a 15-min thermal barrier.

Exception No. 2: In impractical evacuation capability facilities, a sprinkler system complying with NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, with a 30-min water supply shall be permitted. All habitable areas and closets shall be sprinklered. Automatic sprinklers shall not be required in bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or material providing a 15-min thermal barrier.

Exception No. 3: In prompt and slow evacuation facilities, where an automatic sprinkler system is installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, sprinklers shall not be required in closets not exceeding 24 sq ft (2.2 sq m) and bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or materials providing a 15-min thermal barrier.

Exception No. 4: In prompt and slow evacuation capability facilities up to and including four stories in height, systems installed in accordance with NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted.

Exception No. 5: In impractical evacuation capability facilities up to and including four stories in height, systems installed in accordance with NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted. All habitable areas and closets shall be sprinklered. Automatic sprinklers shall not be required in bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or material providing a 15-min thermal barrier.

23-2.3.5.2 Impractical Evacuation Capability. All impractical evacuation capability facilities shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 23-2.3.5.1.

23-2.3.5.3 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be installed in accordance with 7-7.1.2. In new installations, where more than two sprinklers are installed in a single area, water flow detection shall be provided to initiate the fire alarm system required by 23-2.3.4.1. Duration of water supplies shall be as required by 23-2.3.5.1.

23-2.3.6 Construction of Corridor Walls.

23-2.3.6.1 The separation walls of sleeping rooms shall be capable of resisting fire for at least $\frac{1}{2}$ hr, which is considered to be achieved if the partitioning is finished on both sides with the lath and plaster or material providing a 15-min thermal barrier. Sleeping room doors shall be substantial doors, such as those of $1\frac{3}{4}$ -in. (4.4-cm) thick, solid bonded wood core construction or of other construction of equal or greater stability and fire integrity. Any vision panels shall be fixed fire window assemblies in accordance with 6-2.3.2.2 or shall be wired glass not exceeding 1296 sq in. (0.84 sq m) each in area and installed in approved frames.

Exception No. 1: In prompt evacuation capability facilities, all sleeping rooms shall be separated from the escape route by walls and doors that are at least smoke resistant.

Exception No. 2: Corridor walls and doors that are capable of resisting the passage of smoke and that are protected by automatic sprinklers in accordance with 23-2.3.5 on both sides of the wall and door. In such instances, there shall be no limitation on the type or size of glass panels.

Exception No. 3: Sleeping arrangements that are not located in sleeping rooms shall be permitted for nonresident staff members, provided the audibility of the alarm in the sleeping area is sufficient to awaken staff who might be sleeping.

Exception No. 4: In previously approved facilities where the facility has demonstrated to the authority having jurisdiction that the group is capable of evacuating the building in 8 min or less or achieves an E-score of three or less using Chapter 5 of NFPA 101A, Guide on Alternative Approaches to Life Safety, sleeping rooms shall be separated from escape routes by walls and doors that are at least smoke resistant.

23-2.3.6.2 There shall be no louvers or operable transoms or other air passages penetrating the wall except properly installed heating and utility installations other than transfer grilles. Transfer grilles shall be prohibited.

23-2.3.6.3 Doors shall be provided with latches or other mechanisms suitable for keeping the doors closed. No doors shall be arranged to prevent the occupant from closing the door.

23-2.3.6.4 Doors shall be self-closing or automatic-closing in accordance with 5-2.1.8.

Exception: Door-closing devices shall not be required in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-2.3.5.1.

23-2.4 (Reserved.)

23-2.5 Building Services.

23-2.5.1 Utilities. Utilities shall comply with Section 7-1.

23-2.5.2 Heating, Ventilating, and Air Conditioning.

23-2.5.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of 7-2.1 and 7-2.2, except as otherwise required in this chapter.

23-2.5.2.2 No stove or combustion heater shall be located to block escape in case of fire caused by the malfunction of the stove or heater.

23-2.5.2.3 Unvented fuel-fired heaters shall not be used in any residential board and care facility.

SECTION 23-3 LARGE FACILITIES

23-3.1 General.

23-3.1.1 Scope. This section shall apply to residential board and care occupancies providing sleeping accommodations for more than 16 residents. Facilities having sleeping accommodations for not more than 16 residents shall be evaluated in accordance with Section 23-2. However, existing facilities meeting the requirements of this section shall be considered to meet the requirements of Section 23-2 for prompt evacuation capability or slow evacuation capability.

23-3.1.2 Requirements Based on Evacuation Capability.

23-3.1.2.1 Prompt and Slow. Large facilities classified as prompt or slow evacuation capability shall comply with the re-

quirements of this section as indicated for the appropriate evacuation capability.

Exception No. 1: Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.*

Exception No. 2: Facilities that were previously approved as complying with 23-3.1.2.2.

23-3.1.2.2 Impractical. Large facilities classified as impractical evacuation capability shall meet the requirements for limited care facilities in Chapter 13.

Exception: Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.*

23-3.1.3 Minimum Construction Requirements.

23-3.1.3.1 Construction requirements for large facilities shall be as required by this section. Where noted as “fully sheathed,” the interior shall be covered with lath and plaster or materials providing a 15-min thermal barrier.

23-3.1.3.2 For the purpose of construction requirements, stories shall be counted starting with the primary level of exit discharge and ending with the highest occupied level. Where the primary level of exit discharge is not readily apparent, the primary level of exit discharge of a building shall be that story that is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of the building.

23-3.1.3.3 The minimum construction requirements (see 6-2.1), based on the highest story normally used by board and care residents, shall be:

(a) *One- or Two-Story Facilities.* Any construction type that meets the requirements for 1-hr or greater fire resistance rating, or is Type IV(2HH), or is fully sheathed, or is protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

Exception to (a): One-story prompt evacuation capability facilities having 30 or fewer residents shall be permitted to be of any type construction.

(b) *Three- to Six-Story Facilities.* Type I, Type II, or Type III construction that meets the requirements for 1-hr or greater fire resistance rating, Type IV construction that is protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5, or any other type of construction that is both sheathed and protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5, other than Type V(000).

Exception to (b): Three- to four-story facilities of Type V(000) construction that are both fully sheathed and protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 23-3.3.5.

(c) *Facilities More Than Six Stories High.* Any Type I or Type II(222) construction, and any Type II(111), Type III(211), or Type IV(2HH) construction that is protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

Exception to (a), (b), and (c): Any building of Type I, Type II(222), or Type II(111) construction shall be permitted to include roofing systems involving combustible supports, decking, or roofing, provided:

1. The roof covering meets Class A requirements in accordance with NFPA 256, *Standard Methods of Fire Tests of Roof Coverings*, and

2. The roof is separated from all occupied portions of the building by a noncombustible floor assembly having at least a 2-hr fire resistance rating that includes at least 2½ in. (6.4 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall be either unused or protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.1.

23-3.1.4 Occupant Load. The occupant load in numbers of persons for whom egress is to be provided shall be determined on the basis of one person per 200 sq ft (18.6 sq m) of gross floor area or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining egress capacity.

23-3.2 Means of Egress.

23-3.2.1 All means of egress shall be in accordance with Chapter 5.

23-3.2.2 Means of Egress Components.

23-3.2.2.1 Components of means of egress shall be limited to the types described in 23-3.2.2.2 through 23-3.2.2.10.

23-3.2.2.2 Doors.

(a) Doors complying with 5-2.1 shall be permitted.

(b) Doors within individual rooms and suites of rooms shall be permitted to be swinging or sliding.

(c) No door in any means of egress shall be locked against egress when the building is occupied.

Exception No. 1 to (c): Delayed egress locks in accordance with 5-2.1.6.1 shall be permitted, provided not more than one device occurs in a means of egress.

Exception No. 2 to (c): Access-controlled egress doors in accordance with 5-2.1.6.2 shall be permitted.

(d) Every stairwell door shall allow reentry from the stairwell to the interior of the building, or an automatic release shall be provided to unlock all stairwell doors to allow reentry. Such automatic release shall be activated with the initiation of the building fire alarm system. Also, doors shall unlock upon loss of power controlling the lock or locking mechanism.

(e) Revolving doors complying with 5-2.1.10 shall be permitted.

23-3.2.2.3 Stairs. Stairs complying with 5-2.2 shall be permitted.

23-3.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

23-3.2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

23-3.2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

23-3.2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

23-3.2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

23-3.2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

23-3.2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

23-3.2.3 Capacity of Means of Egress.

23-3.2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

23-3.2.3.2 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging onto the street floor.

23-3.2.3.3 The width of corridors shall be sufficient for the occupant load served, but shall be not less than 44 in. (112 cm).

Exception: Corridors serving an occupant load fewer than 50 shall be not less than 36 in. (91 cm) wide.

23-3.2.4 Number of Exits. At least two exits shall be accessible from every story, including floors below the level of exit discharge and occupied for public purposes.

23-3.2.5 Arrangement of Means of Egress.

23-3.2.5.1 Access to all required exits shall be in accordance with Section 5-5.

23-3.2.5.2 No common path of travel shall exceed 110 ft (33.5 m).

Exception: In buildings protected throughout by automatic sprinkler systems installed in accordance with 23-3.3.5, common path of travel shall not exceed 160 ft (48.8 m).

23-3.2.5.3 No dead-end corridor shall exceed 50 ft (15 m).

23-3.2.6 Travel Distance to Exits.

23-3.2.6.1 Travel distance from the door within a room, suite, or living unit to a corridor door shall not exceed 75 ft (23 m).

Exception: Travel distance shall not exceed 125 ft (48 m) in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

23-3.2.6.2 Travel distance, measured in accordance with Section 5-6, from the corridor door of any room to the nearest exit shall not exceed 100 ft (30 m).

Exception No. 1: Travel distance to exits shall not exceed 200 ft (60 m) for exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 2: Travel distance to exits shall not exceed 200 ft (60 m) if the exit access and any portion of the building that is tributary to the exit access are protected throughout by approved, automatic sprinkler systems. In addition, the portion of the building in which the 200-ft (60-m) travel distance is permitted shall be separated from the remainder of the building by construction having a fire resistance rating of not less than 1 hr for buildings not more than three stories in height and 2 hr for buildings more than three stories in height.

23-3.2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

23-3.2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

23-3.2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided in all buildings with more than 25 rooms.

Exception: Where each sleeping room has a direct exit to the outside of the building at ground level, no emergency lighting shall be required.

23-3.2.10 Marking of Means of Egress. Means of egress shall be marked in accordance with Section 5-10.

23-3.2.11 Special Means of Egress Features. (Reserved.)

23-3.3 Protection.

23-3.3.1 Protection of Vertical Openings.

23-3.3.1.1 Every stairway, elevator shaft, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums shall be permitted in accordance with 6-2.4.6.

Exception No. 3: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.1, and where exits and required ways of travel thereto are adequately safeguarded against fire and smoke within the building, or where every individual room has direct access to an exterior exit without passing through a public corridor, the protection of vertical openings not part of required egress shall be permitted to be waived by the authority having jurisdiction to the extent that such openings do not endanger required means of egress.

Exception No. 4: In buildings not more than two stories in height, unprotected vertical openings shall be permitted by the authority having jurisdiction if the building is protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.1.

23-3.3.1.2 No floor below the level of exit discharge used only for storage, heating equipment, or purposes other than residential occupancy shall have unprotected openings to floors used for residential occupancy.

23-3.3.2 Protection from Hazards.

23-3.3.2.1 Any room containing high-pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or adjacent to exits. All such rooms shall be effectively separated from other parts of the building as specified in Section 6-4.

23-3.3.2.2 Every hazardous area shall be separated from other parts of the building by construction having a fire resistance rating of at least 1 hr with communicating openings protected by approved self-closing fire doors, or such area shall be equipped with automatic fire extinguishing systems. Hazardous areas include, but are not limited to

- (a) Boiler and heater rooms,
- (b) Laundries,
- (c) Repair shops, and
- (d) Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

23-3.3.3 Interior Finish. Interior wall and ceiling finish shall be Class A or Class B in accordance with Section 6-5. Interior floor finish shall be Class I or Class II in corridors and exits.

Exception: Previously installed floor coverings, subject to the approval of the authority having jurisdiction.

23-3.3.4 Detection, Alarm, and Communication Systems.

23-3.3.4.1 General. A fire alarm system in accordance with Section 7-6 shall be provided.

Exception: Where each sleeping room has exterior exit access in accordance with 5-5.3, and the building is not more than three stories in height.

23-3.3.4.2 Initiation. The required fire alarm system shall be initiated by

- (a) Manual means in accordance with 7-6.2, and

Exception to (a): A manual means, as specified in 7-6.2, in excess of the alarm station at a constantly attended location per (b) below shall not be required where there are other effective means (such as a complete automatic sprinkler or automatic detection system) for notification of fire as required.

(b) A manual fire alarm station located at a convenient central control point under continuous supervision of responsible employees, and

- (c) Any automatic sprinkler system, and

Exception to (c): Automatic sprinkler systems that are not required by another section of this Code shall not be required to initiate the fire alarm system.

- (d) Any required detection system.

Exception to (d): Sleeping room smoke detectors shall not be required to initiate the building fire alarm system.

23-3.3.4.3 Occupant Notification. Occupant notification shall be provided automatically, without delay, by internal audible alarm in accordance with 7-6.3. Presignal systems shall be prohibited.

23-3.3.4.4* Fire Department Notification. In case of a fire, provisions shall be made for the immediate notification of the public fire department by either telephone or other means. Where there is no public fire department, this notification shall be made to the private fire brigade.

23-3.3.4.5 Smoke Detectors. Each sleeping room shall be provided with an approved, single-station smoke detector in accordance with 7-6.2.10, powered from the building electrical system.

Exception No. 1: Existing battery-powered detectors, rather than building electrical service-powered detectors, shall be accepted where, in the opinion of the authority having jurisdiction, the facility has demonstrated testing, maintenance, and battery replacement programs that ensure the reliability of power to the detectors.

Exception No. 2: Facilities having an existing corridor smoke detection system in accordance with Section 7-6 connected to the building fire alarm system.

23-3.3.4.6 Smoke Detection Systems. All living areas as defined in Section 3-2 and corridors shall be provided with smoke detectors in accordance with NFPA 72, *National Fire Alarm Code*, arranged to initiate an alarm that is audible in all sleeping areas.

Exception No. 1: Detectors shall not be required in living areas and kitchens in facilities protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

Exception No. 2: Unenclosed corridors, passageways, balconies, colonnades, or other arrangements with one or more sides along the long dimension fully or extensively open to the exterior at all times.

23-3.3.5 Extinguishment Requirements.

23-3.3.5.1* Automatic Extinguishment Systems. Where an automatic sprinkler system is installed either for total or partial building coverage, the system shall be installed in accordance with Section 7-7 and shall initiate the fire alarm system in accordance with Section 7-6.

Exception No. 1: In buildings not more than four stories in height, a sprinkler system complying with NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, shall be permitted.

Exception No. 2: Automatic sprinklers shall not be required in closets not exceeding 24 sq ft (2.2 sq m) and bathrooms not exceeding 55 sq ft (5.1 sq m), provided such spaces are finished with lath and plaster or material with a 15-min thermal barrier.

23-3.3.5.2 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area in accordance with 7-7.1.2 shall be permitted. In new installations where more than two sprinklers are installed in a single area, water flow detection shall be provided to initiate the fire alarm system required by 23-3.3.4.1.

23-3.3.5.3 Portable Fire Extinguishers. Portable fire extinguishers in accordance with 7-7.4.1 shall be provided near hazardous areas.

23-3.3.6 Corridors and Separation of Sleeping Rooms.

23-3.3.6.1 Access shall be provided from every resident use area to at least one means of egress that is separated from all other rooms or spaces by walls complying with 23-3.3.6.3 through 23-3.3.6.6.

Exception No. 1: Rooms or spaces, other than sleeping rooms, protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

Exception No. 2: Prompt evacuation capability facilities in buildings not over two stories in height where at least one required means of egress from each sleeping room provides a path of travel to the outside without traversing any corridor or other spaces exposed to unprotected vertical openings, living areas, and kitchens.

Exception No. 3: Rooms or spaces, other than sleeping rooms, provided with a smoke detection and alarm system connected to activate the building evacuation alarm. Furnishings, finishes, and furniture, in combination with all other combustibles within the spaces, shall be

of minimum quantity and arranged so that a fully developed fire is unlikely to occur.

23-3.3.6.2 Sleeping rooms shall be separated from corridors, living areas, and kitchens by walls complying with 23-3.3.6.3 through 23-3.3.6.6.

23-3.3.6.3 Walls required by 23-3.3.6.1 or 23-3.3.6.2 shall have a fire resistance rating of not less than ½ hr.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5, no fire resistance rating shall be required, but walls shall resist the passage of smoke.

Exception No. 2: In buildings classified as prompt evacuation capability, not more than two stories in height, and with a maximum of 30 residents, no fire resistance rating shall be required, but walls shall resist the passage of smoke.

23-3.3.6.4 Doors in walls required by 23-3.3.6.1 or 23-3.3.6.2 shall have a fire protection rating of not less than 20 min.

Exception No. 1: Existing 1¾-in. (4.4-cm) thick, solid bonded wood core doors shall be permitted to continue to be used.

Exception No. 2: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5, doors that are nonrated shall be permitted to continue to be used.

Exception No. 3: Where automatic sprinkler protection is provided in the corridor in accordance with 19-3.5.2 through 19-3.5.4, doors shall not be required to have a fire protection rating but shall resist the passage of smoke. Doors shall be equipped with latches for keeping the doors tightly closed.

23-3.3.6.5 Walls and doors required by 23-3.3.6.1 and 23-3.3.6.2 shall be constructed to resist the passage of smoke. There shall be no louvers, transfer grilles, operable transoms, or other air passages penetrating such walls or doors except properly installed heating and utility installations.

23-3.3.6.6 Doors in walls required by 23-3.3.6.1 and 23-3.3.6.2 shall be self-closing or automatic-closing in accordance with 5-2.1.8. Doors in walls separating sleeping rooms from corridors shall be automatic-closing in accordance with 5-2.1.8.

Exception No. 1: Doors to sleeping rooms that have occupant control locks such that access is normally restricted to the occupants or staff personnel shall be permitted to be self-closing.

Exception No. 2: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5, doors, other than doors to hazardous areas, vertical openings, and exit enclosures, shall not be required to be self-closing or automatic-closing.

23-3.3.7 Subdivision of Building Spaces. Every sleeping room floor shall be divided into at least two smoke compartments of approximately the same size, with smoke barriers in accordance with Section 6-3. Smoke dampers shall not be required.

Additional smoke barriers shall be provided such that the maximum travel distance from a sleeping room corridor door to a smoke barrier shall not exceed 150 ft (45 m).

Exception No. 1: Buildings protected throughout by an approved, automatic sprinkler system installed in accordance with 23-3.3.5.

Exception No. 2: Where each sleeping room is provided with exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 3: Smoke barriers shall not be required where the aggregate corridor length on each floor is not more than 150 ft (45 m).

23-3.4 Special Provisions. (Reserved.)

23-3.5 (Reserved.)

23-3.6 Building Services.

23-3.6.1 Utilities. Utilities shall comply with provisions of Section 7-1.

23-3.6.2 Heating, Ventilating, and Air Conditioning.

23-3.6.2.1 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

23-3.6.2.2 No stove or combustion heater shall be located to block escape in case of fire caused by the malfunction of the stove or heater.

23-3.6.2.3 Unvented fuel-fired heaters shall not be used in any board and care occupancy.

23-3.6.3 Elevators, Dumbwaiters, and Vertical Conveyors. Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

23-3.6.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 23-4* SUITABILITY OF AN APARTMENT BUILDING TO HOUSE A BOARD AND CARE OCCUPANCY

23-4.1 General.

23-4.1.1 Scope. This section shall apply to apartment buildings that have one or more individual apartments used as a board and care occupancy. This section determines the suitability of such buildings to house a residential board and care facility. The suitability of such buildings for apartments not used for board and care occupancies is covered in Chapter 19.

23-4.1.2 Requirements for individual apartments used as residential board and care occupancies are specified in Section 23-2. Egress from the apartment into the common building corridor shall be considered acceptable egress from the board and care facility.

23-4.1.3 Requirements Based on Evacuation Capability.

23-4.1.3.1 Apartment buildings housing board and care facilities shall comply with the requirements of this section.

Exception: Facilities where the authority having jurisdiction has determined that equivalent safety for housing a residential board and care facility is provided in accordance with Section 1-6.*

23-4.1.3.2 All facilities shall meet the requirements of Chapter 19 and the additional requirements of this section.

23-4.1.4 Minimum Construction Requirements. In addition to the requirements of Chapter 19, apartment buildings housing residential board and care facilities that house groups classified as prompt or slow evacuation capability shall meet the construction requirements of 23-3.1.3, and those housing

groups classified as impractical evacuation capability shall meet the construction requirements of 13-1.6. In applying the construction requirements, the height shall be determined by the height of the residential board and care facility above the primary level of exit discharge.

23-4.2 Means of Egress. The requirements of Section 19-2 shall apply only to parts of the means of egress serving the apartment(s) used as a residential board and care occupancy.

23-4.3 Protection.

23-4.3.1 Interior Finish. The requirements of 19-3.3 shall apply only to the parts of means of egress serving the apartment(s) used as a residential board and care occupancy.

23-4.3.2 Construction of Corridor Walls. The requirements of 19-3.6 shall apply only to corridors serving the residential board and care facility, including that portion of the corridor wall separating the residential board and care facility from the common corridor.

23-4.3.3 Subdivision of Building Spaces. The requirements of 19-3.7 shall apply to those stories with an apartment(s) used as a residential board and care occupancy.

SECTION 23-5 RESERVED

SECTION 23-6 RESERVED

SECTION 23-7 OPERATING FEATURES

23-7.1 Emergency Plan. The administration of every residential board and care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for protecting all persons in the event of fire, for keeping persons in place, and for evacuating persons to areas of refuge and from the building when necessary. The plan shall include special staff response, including fire protection procedures needed to ensure the safety of any resident, and shall be amended or revised for use upon admission to the home of any resident with unusual needs. All employees shall be periodically instructed and kept informed with respect to their duties and responsibilities under the plan. Such instruction shall be reviewed by the staff at least every two months. A copy of the plan shall be readily available at all times within the facility.

23-7.2 Resident Training. All residents participating in the emergency plan shall be trained in the proper actions to be taken in the event of fire. This training shall include actions to be taken if the primary escape route is blocked. If the resident is given rehabilitation or habilitation training, training in fire prevention and actions to be taken in the event of a fire shall be a part of the training program. Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

23-7.3 Fire Exit Drills. Fire exit drills shall be conducted at least six times per year on a bimonthly basis with a minimum of two drills conducted during the night when residents are sleeping. The drills shall be permitted to be announced in advance to the residents. The drills shall involve the actual evacuation of all residents to an assembly point as specified in the emergency plan and shall provide residents with experience in egressing through all exits and means of escape required

by the *Code*. Exits and means of escape not used in any fire drill shall not be credited in meeting the requirements of this *Code* for board and care facilities.

Exception No. 1: Actual exiting from windows shall not be required to meet the requirements of this section; opening the window and signaling for help shall be an acceptable alternative.

Exception No. 2: If the board and care facility has an evacuation capability rating of impractical, those residents who cannot meaningfully assist in their own evacuation or who have special health problems shall not be required to actively participate in the drill. Section 13-7 shall apply in such instances.

23-7.4 Smoking. Where smoking is permitted, noncombustible safety-type ashtrays or receptacles shall be provided in convenient locations.

23-7.5* Furnishings, Bedding, and Decorations.

23-7.5.1 New draperies, curtains, and other similar loosely hanging furnishings and decorations in board and care facilities shall be in accordance with the provisions of 6-6.1.

23-7.5.2* New upholstered furniture within board and care facilities shall be tested in accordance with the provisions of 6-6.2(a).

23-7.5.3* New mattresses within board and care facilities shall be tested in accordance with the provisions of 6-6.2(c).

CHAPTER 24 NEW MERCANTILE OCCUPANCIES

SECTION 24-1 GENERAL REQUIREMENTS

24-1.1 Application.

24-1.1.1 The requirements of this chapter apply to

(a) New buildings or portions thereof used as mercantile occupancies (*see Section 1-3*); and

(b) Additions made to, or used as, a mercantile occupancy (*see 1-3.6 and 24-1.1.3*); and

(c) Alterations, modernizations, or renovations of existing mercantile occupancies (*see 1-3.7*); and

(d) Existing buildings or portions thereof upon change of occupancy to a mercantile occupancy (*see 1-3.12*).

24-1.1.2 This chapter establishes life safety requirements for all new mercantile buildings. Specific requirements for sub-occupancy groups such as Class A, Class B, and Class C stores, covered malls, and bulk merchandising retail buildings are contained in paragraphs pertaining thereto.

24-1.1.3 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure need not be modified, provided that the new construction has not diminished the fire safety features of the facility. Existing portions shall be upgraded if the addition results in a change of mercantile subclassification. (*See 24-1.4.2*.)

24-1.2 Mixed Occupancies.

24-1.2.1 Mixed occupancies shall comply with 4-1.12.

24-1.2.2 Combined Mercantile and Residential Occupancies.

24-1.2.2.1 No dwelling unit shall have its sole means of egress through any mercantile occupancy in the same building.

24-1.2.2.2 No multiple dwelling occupancy shall be located above a mercantile occupancy.

Exception No. 1: Where the dwelling occupancy and exits therefrom are separated from the mercantile occupancy by construction having a fire resistance rating of at least 1 hr.

Exception No. 2: Where the mercantile occupancy is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

24-1.2.3 Combined Mercantile Occupancies and Parking Structures. Walls separating parking structures from mercantile occupancies shall have a fire resistance rating of not less than 2 hr.

Exception: In enclosed parking structures that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 or in open-air parking structures, non-rated glazing and opening protectives shall be permitted if all of the following conditions are met:

(a) *The openings do not exceed 25 percent of the area of the wall in which they are located; and*

(b) *The openings are used for main entrance and associated side-light functions; and*

(c) *The enclosed connecting mercantile building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7; and*

(d) *The floor elevation of the mercantile occupancy is at least 4 in. (10.2 cm) above the floor level of the parking structure; and*

(e) *No vehicle is able to park or drive within 10 ft (3 m) of the openings; and*

(f) *The openings have a minimum of a glass membrane; and*

(g) *Any doors in the glass membrane are self-closing.*

24-1.3 Special Definitions.

Anchor Store. A department store or major merchandising center having direct access to the covered mall but having all required means of egress independent of the covered mall.

Bulk Merchandising Retail Building. A building where the sales area includes the storage of combustible materials on pallets, in solid piles, or in racks in excess of 12 ft (3.7 m) in storage height.

Class A Store. [*See 24-1.4.2.1(a).*]

Class B Store. [*See 24-1.4.2.1(b).*]

Class C Store. [*See 24-1.4.2.1(c).*]

Covered Mall. A covered or roofed interior area used as a pedestrian way and connected to a building(s) or portions of a building housing single or multiple tenants.

Covered Mall Building. A building, including the covered mall, enclosing a number of tenants and occupancies, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses, wherein two or more tenants have a main entrance into the covered mall.

Gross Leasable Area. The total floor area designated for tenant occupancy and exclusive use, expressed in square feet (square meters), measured from centerlines of adjoining partitions and exteriors of outside walls.

Open-Air Mercantile Operations. Operations conducted outside of all structures with the operations area devoid of all walls and roofs except for small, individual, weather canopies.

24-1.4 Classification of Occupancy.

24-1.4.1 Mercantile occupancies shall include all buildings and structures or parts thereof with occupancy as described in 4-1.7.

24-1.4.2 Subclassification of Occupancy.

24-1.4.2.1 Mercantile occupancies shall be subclassified as follows:

(a) *Class A.* All stores having an aggregate gross area of more than 30,000 sq ft (2800 sq m) or utilizing more than three levels, excluding mezzanines, for sales purposes.

(b) *Class B.* All stores of more than 3000 sq ft (280 sq m) but not more than 30,000 sq ft (2800 sq m) aggregate gross area, or utilizing floors above or below the street floor level for sales purposes. Mezzanines shall be permitted. (*See 24-1.4.2.3.*)

Exception to (b): If more than three floors, excluding mezzanines, are utilized, the store shall be Class A regardless of area.

(c) *Class C.* All stores of not more than 3000 sq ft (280 sq m) gross area used for sales purposes on one story only, excluding mezzanines.

24-1.4.2.2 For the purpose of the classification required in 24-1.4.2.1, the aggregate gross area shall be the total gross area of all floors used for mercantile purposes and, where a store is divided into sections, regardless of fire separation, shall include the area of all sections used for sales purposes. Areas of floors not used for sales purposes, such as an area used only for storage and not open to the public, shall not be counted for the purposes of the above classifications, but means of egress shall be provided for such nonsales areas in accordance with their occupancy as specified by other chapters of this *Code*.

24-1.4.2.3 The floor area of a mezzanine or the aggregate floor area of multiple mezzanines shall not exceed one third of the floor area of the room or story in which the mezzanines are located. A mezzanine or aggregated mezzanines in excess of the one-third area limitation shall be treated as a story or stories.

24-1.4.2.4 Where a number of stores under different management are located in the same building, the aggregate gross area (see 24-1.4.2.2) of all such stores shall be used in determining classification per 24-1.4.2.1.

Exception No. 1: Covered mall buildings. (See 24-4.4.)

Exception No. 2: Where individual stores are separated by fire barriers with a 2-hr fire resistance rating.

Exception No. 3: Where stores are separated by fire barriers with a 1-hr fire resistance rating, and the building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

24-1.5 Classification of Hazard of Contents. The contents of mercantile occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

Exception: Mercantile occupancies shall be classified as high hazard if high hazard commodities are displayed or handled without protective wrappings or containers, in which case the following additional provisions shall apply:

(a) Exits shall be located so that not more than 75 ft (23 m) of travel from any point is required to reach the nearest exit.

(b) From every point there shall be at least two exits accessible by travel in different directions (no common path of travel).

(c) All vertical openings shall be enclosed.

24-1.6 Minimum Construction Requirements. (No special requirements.)

24-1.7* Occupant Load. For purposes of determining required means of egress, the occupant load of mercantile buildings or parts of buildings used for mercantile purposes shall be not less than required in the following:

(a) *Street floor.* One person for each 30 sq ft (2.8 sq m) of gross floor area of sales space. In stores with no street floor, as defined in Chapter 3, but with access directly from the street by stairs or escalators, the principal floor at the point of entrance to the store shall be considered the street floor.

Exception to (a): In mercantile occupancies where, due to differences in grade of streets on different sides, there are two or more floors directly accessible from streets (not including alleys or similar back streets), for the purpose of determining occupant load, each such floor shall be considered a street floor. The occupant load factor shall be one person for each 40 sq ft (3.7 sq m) of gross floor area of sales space.

(b) *Sales floors below the street floor.* Same as street floor.

(c) *Upper floors used for sales.* One person for each 60 sq ft (5.6 sq m) of gross floor area of sales space.

(d) *Floors or portions of floors used only for offices.* One person for each 100 sq ft (9.3 sq m) of gross floor area of office space.

(e) *Floors or portions of floors used only for storage, receiving, or shipping and not open to the general public.* One person per each 300 sq ft (27.9 sq m) of gross area of storage, receiving, or shipping space.

(f) *Floors or portions of floors used for assembly purposes.* Occupant load determined in accordance with Chapter 8 for such assembly occupancies.

(g)* *Covered mall buildings.* Occupant load determined in accordance with 24-1.7(a) through (f).

Exception: The portions of the covered mall, where considered a pedestrian way (see 24-4.4.1 Exception) and not used as gross leasable area, shall not be assessed an occupant load. However, means of egress from a covered mall pedestrian way shall be provided for an occupant load determined by dividing the gross leasable area (not including anchor stores) by the appropriate lowest whole number occupant load factor from Figure 24-1.7(g).

Each individual tenant space shall have means of egress to the outside or to the covered mall based on occupant loads figured by using 24-1.7(a) through (f).

Each individual anchor store shall have means of egress independent of the covered mall.

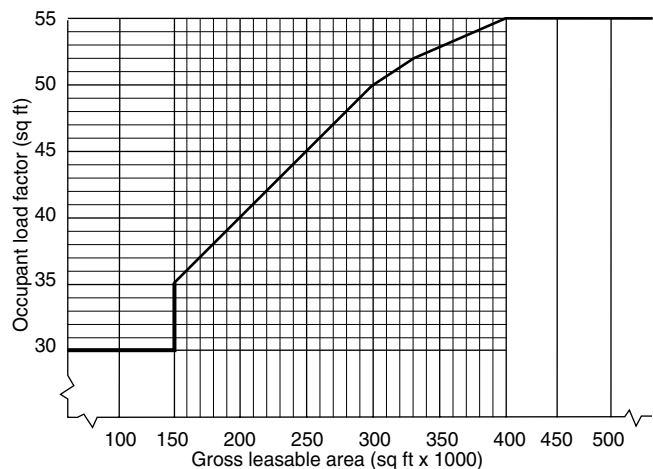


Figure 24-1.7(g) Covered mall occupant load factors.

SECTION 24-2 MEANS OF EGRESS REQUIREMENTS

24-2.1 General.

24-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter.

24-2.1.2 No inside open stairway or inside open ramp shall be permitted to serve as a component of the required means of egress system for more than one floor.

24-2.1.3 Where there are two or more floors below the street floor, the same stair or other exit shall be permitted to serve all floors, but all required exits from such areas shall be independent of any open stairways between the street floor and the floor below it.

24-2.1.4 Where a level, outside exit from upper floors is possible owing to hills, such outside exits shall be permitted to serve instead of horizontal exits. If, however, such outside exits from the upper floor also serve as an entrance from a principal street, the upper floor shall be classified as a street floor in accordance with the definition in Chapter 3 and shall be subject to the requirements of this chapter for street floors.

24-2.1.5 For special considerations for high hazard contents, see 24-1.5.

24-2.2 Means of Egress Components.

24-2.2.1 Components of means of egress shall be limited to the types described in 24-2.2.2 through 24-2.2.10.

24-2.2.2 Doors.

24-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

24-2.2.2.2* Locks complying with Exception No. 2 to 5-2.1.5.1 shall be permitted only on principal entrance/exit doors.

24-2.2.2.3 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

24-2.2.2.4 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted in buildings protected throughout by an approved, supervised fire detection system installed in accordance with Section 7-6 or an approved, automatic sprinkler system installed in accordance with Section 7-7.

24-2.2.2.5 Where horizontal or vertical security grilles or doors are used as a part of the required means of egress from a tenant space, such grilles or doors shall comply with Exception No. 2 to 5-2.1.4.1.

24-2.2.2.6 All doors at the foot of stairs from upper floors or at the head of stairs leading to floors below the street floor shall swing in the direction of egress travel.

24-2.2.2.7 Revolving doors complying with 5-2.1.10 shall be permitted.

24-2.2.3 Stairs.

24-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

24-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

24-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

24-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

24-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

24-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

*Exception:** In lieu of the provisions of 5-2.6.2, an exit passageway in a covered mall building shall be permitted to accommodate independently

(a) Its assigned occupant load from only the covered mall/pedestrian way, and

(b) The largest occupant load assigned to it from a single tenant space/store.

24-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

24-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

24-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, two rooms or spaces separated from each other by smoke-resistant partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

24-2.3 Capacity of Means of Egress.

24-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

24-2.3.2 In Class A and Class B stores, street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging through the street floor.

24-2.4 Number of Exits. (See also Section 5-4.) At least two separate exits shall be

(a) Provided on every story, and

(b) Accessible from every part of every story or mezzanine.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common paths of travel by 24-2.5.3.

Exception No. 1: A single means of egress shall be permitted in a Class C mercantile occupancy provided that one of the following conditions is met:

(a) The travel distance does not exceed 75 ft (23 m) to the exit or to a covered mall (if it is considered a pedestrian way); or

(b) The travel distance does not exceed 100 ft (30 m) to the exit or to a covered mall (if it is considered a pedestrian way), and the story on which the occupancy is located and all communicating levels that must be traversed to reach the exit or covered mall are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: A single means of egress to an exit or to a covered mall (if it is considered a pedestrian way) shall be permitted from a mezzanine within any Class A, Class B, or Class C mercantile occupancy, provided that the common path of travel does not exceed 75 ft (23 m), or 100 ft (30 m) if protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

24-2.5 Arrangement of Means of Egress.

24-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

24-2.5.2 No dead-end corridor shall exceed 20 ft (6.1 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, dead-end corridors shall not exceed 50 ft (15 m).

24-2.5.3 No common path of travel shall exceed 75 ft (23 m).

Exception: A common path of travel shall be permitted for the first 100 ft (30 m) in a building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

24-2.5.4 Aisles leading to each exit shall be required. The aggregate width of such aisles shall be equal to at least the required width of the exit.

24-2.5.5 In no case shall any required aisle be less than 36 in. (91 cm) in clear width.

24-2.5.6 In Class A stores, at least one aisle of 5 ft (1.5 m) minimum width shall lead directly to an exit.

24-2.5.7 If the only means of customer entrance is through one exterior wall of the building, two thirds of the required egress width shall be located in this wall.

Exception: Bulk merchandising retail buildings. (See 24-4.5.2.)

24-2.5.8 At least one half of the required exits shall be located so as to be reached without passing through checkout stands. In no case shall checkout stands or associated railings or barriers obstruct exits, required aisles, or approaches thereto.

24-2.5.9* Where wheeled carts or buggies are used by customers, adequate provision shall be made for the transit and parking of such carts to minimize the possibility that they might obstruct means of egress.

24-2.5.10 Exit access in Class A and Class B stores that are protected throughout by an approved, automatic sprinkler system and exit access in all Class C stores shall be permitted to pass through storerooms, provided the following conditions are met:

(a) Not more than 50 percent of exit access shall be provided through the storeroom.

(b) The storeroom shall not be subject to locking.

(c) The main aisle through the storeroom shall be not less than 44 in. (112 cm) wide.

(d) The path of travel, defined with fixed barriers, through the storeroom shall be direct and continuously maintained in an unobstructed condition.

24-2.6 Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall not exceed 100 ft (30 m).

Exception: Travel distance shall not exceed 200 ft (60 m) in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

24-2.7 Discharge from Exits.

24-2.7.1 Exit discharge shall comply with Section 5-7 and 24-2.7.2.

24-2.7.2* Fifty percent of the exits shall be permitted to discharge through the level of exit discharge in accordance with 5-7.2 only where the building is protected throughout by an approved, automatic sprinkler system installed in accordance

with Section 7-7, and the distance of travel from the termination of the exit enclosure to an outside street door shall not exceed 50 ft (15 m).

24-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

24-2.9 Emergency Lighting. Class A and Class B mercantile occupancies and covered mall buildings shall have emergency lighting facilities in accordance with Section 5-9.

24-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Where an exit is immediately apparent from all portions of the sales area, the exit marking shall not be required.

24-2.11 Special Means of Egress Features. (Reserved.)

SECTION 24-3 PROTECTION

24-3.1 Protection of Vertical Openings. Every stairway, elevator shaft, escalator opening, or other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: In Class A or Class B mercantile occupancies protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings shall be permitted as follows:

(a) Between any two floors, or

(b) Between the street floor and the first adjacent floor below and the first adjacent floor (or mezzanines) above, or

(c) In accordance with 6-2.4.5.

Exception No. 2: In Class C mercantile occupancies, unprotected openings shall be permitted between the street floor and mezzanine.

Exception No. 3: Atriums in accordance with 6-2.4.6 shall be permitted.

24-3.2 Protection from Hazards.

24-3.2.1* Hazardous areas, including, but not limited to, areas used for general storage, boiler or furnace rooms, and maintenance shops including woodworking and painting areas, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by ¾-hr fire protection-rated self-closing fire doors, or

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

Exception: In general storage and stock areas protected by an automatic extinguishing system installed in accordance with Section 7-7, an enclosure, if provided, shall be exempt from the provisions of 6-4.1.2.

24-3.2.2* High hazard content areas, as defined in Section 4-2, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by ¾-hr fire protection-rated self-closing fire doors, and

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

24-3.3 Interior Finish.

24-3.3.1 Interior finish shall be in accordance with Section 6-5.

24-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5 shall be Class A or Class B.

24-3.3.3 Interior Floor Finish. (No requirements.)

24-3.4 Detection, Alarm, and Communication Systems.

24-3.4.1 General. Class A mercantile occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

24-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means per 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted to be by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted to be by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

24-3.4.3 Notification.

24-3.4.3.1 Occupant Notification. During all times that the store is occupied (*see 5-2.1.1.3*) the required fire alarm system, once initiated, shall:

(a) Activate a general alarm in accordance with 7-6.3 throughout the store, or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

24-3.4.3.2 Emergency Forces Notification. Emergency forces notification shall be provided and shall include notifying:

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

24-3.5 Extinguishment Requirements.

24-3.5.1 Mercantile occupancies shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 as follows:

(a) In all mercantile occupancies three or more stories in height.

(b) In all mercantile occupancies exceeding 12,000 sq ft (1115 sq m) in gross area.

(c) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 sq ft (230 sq m) where used for the sale, storage, or handling of combustible goods and merchandise.

(d) In mixed occupancies in accordance with 4-1.12 where the conditions of (a), (b), or (c) above apply to the mercantile occupancy.

24-3.5.2 Automatic sprinkler systems in Class A mercantile occupancies shall be supervised in accordance with 7-7.2.

24-3.5.3 Portable fire extinguishers shall be provided in all mercantile occupancies in accordance with 7-7.4.1.

24-3.6 Corridors.

24-3.6.1 Where access to exits is provided by corridors, such corridors shall be separated from use areas by walls having a fire resistance rating of at least 1 hr in accordance with 6-2.3.

Exception No. 1: Where exits are available from an open floor area.

Exception No. 2: Corridors shall not be required to have a fire resistance rating within a space occupied by a single tenant.

Exception No. 3: Corridors shall not be required to have a fire resistance rating within buildings protected throughout by an approved, automatic sprinkler system.

24-3.6.2 Openings in corridor walls required to have a fire resistance rating by 24-3.6.1 shall be protected in accordance with 6-2.3.

24-3.7 Subdivision of Building Spaces. (No special requirements.)

24-3.8 Special Protection Features. Nonrated glazing and opening protectives per the Exception to 24-1.2.3 shall be permitted between mercantile occupancies and parking structures.

SECTION 24-4 SPECIAL PROVISIONS

24-4.1 Windowless or Underground Buildings. (*See Section 32-7.*)

24-4.2 High-Rise Buildings. High-rise buildings shall comply with the automatic sprinkler requirements of 32-8.2.1.

24-4.3 Open-Air Mercantile Operations.

24-4.3.1 Open-air mercantile operations, such as open-air markets, gasoline filling stations, roadside stands for the sale of farm produce, and other outdoor mercantile operations shall be arranged and conducted so as to maintain free and unobstructed ways of travel at all times to permit prompt escape from any point of danger in case of fire or other emergency, with no dead ends in which persons might be trapped due to display stands, adjoining buildings, fences, vehicles, or other obstructions.

24-4.3.2 If mercantile operations are conducted in roofed-over areas, they shall be treated as mercantile buildings, provided that canopies over individual small stands to protect merchandise from the weather shall not be construed to constitute buildings for the purpose of this Code.

24-4.4 Covered Mall Buildings. The purpose of this section is to establish minimum standards of life safety for covered mall buildings having not more than three levels. (*See 24-1.3.*)

24-4.4.1 The covered mall building shall be treated as a single building for the purpose of calculation of means of egress and shall be subject to the requirements for appropriate occupancies. The covered mall shall be at least of sufficient clear

width to accommodate egress requirements as set forth in other sections of this Code.

Exception: The covered mall shall be permitted to be considered a pedestrian way, in which case the distance of travel within a tenant space to an exit or to the covered mall shall be a maximum of 200 ft (60 m) (see 24-2.6 Exception) or shall be the maximum for the appropriate occupancy; plus, an additional 200 ft (60 m) shall be permitted for travel through the covered mall space if all the following requirements are met:

(a) The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this chapter, but in no case shall be less than 20 ft (6.1 m) wide in its narrowest dimension.

(b)* On each side of the mall floor area, the covered mall shall be provided with an unobstructed exit access of not less than 10 ft (3 m) in clear width parallel to and adjacent to the mall tenant front. Such exit access shall lead to an exit having a minimum width of 66 in. (168 cm). (See 24-4.4.2.)

(c) The covered mall and all buildings connected thereto shall be protected throughout by an approved, electrically supervised automatic sprinkler system installed in accordance with Section 7-7. The system shall be installed in such a manner that any portion of the system serving tenant spaces can be taken out of service without affecting the operation of the portion of the system serving the covered mall.

(d) Walls dividing stores from each other shall extend from the floor to the underside of the roof deck, floor deck above, or ceiling where the ceiling is constructed to limit the transfer of smoke. Where the tenant areas are provided with an engineered smoke control system, walls shall not be required to divide stores from each other. No separation shall be required between a tenant space and the covered mall.

(e)* The covered mall shall be provided with a smoke control system.

24-4.4.2 Means of Egress Details.

24-4.4.2.1 Every floor of a covered mall shall be provided with a number of means of egress specified by Section 5-4 with no less than two means of egress remotely located from each other.

24-4.4.2.2 Class A and Class B stores connected to a covered mall shall be provided with the number of means of egress required by Section 5-4 with no less than two means of egress remotely located from one another.

24-4.4.2.3* Each individual anchor store shall have means of egress independent of the covered mall.

24-4.4.2.4 Every covered mall shall be provided with unobstructed exit access parallel to and adjacent to the mall tenant fronts. This exit access shall extend to each mall exit.

24-4.4.2.5* Rooms housing building service equipment, janitor closets, and service elevators shall be permitted to open directly onto exit passageways, provided

(a) The required fire resistance rating between such rooms or areas and the exit passageway is maintained in accordance with 5-1.3.2;

(b) Such rooms or areas are protected by an approved automatic sprinkler system installed in accordance with Section 7-7. The exceptions in NFPA 13, *Standard for the Install-*

tion of Sprinkler Systems, that would permit the omission of sprinklers from such rooms shall not be permitted;

(c) Service elevators opening into the exit passageway shall not open into areas other than exit passageways; and

(d) Where exit stair enclosures discharge into the exit passageway, Exception No. 2 to 5-2.1.5.2 shall not apply.

24-4.4.2.6 Emergency Lighting. (See 24-2.9.)

24-4.4.3 Detection, Alarm, and Communication Systems.

24-4.4.3.1 General. Covered malls shall be provided with a fire alarm system installed in accordance with Section 7-6.

24-4.4.3.2 Initiation. Initiation of the required fire alarm system shall be by means of the approved, automatic sprinkler system installed in accordance with 7-6.2.1(c).

24-4.4.3.3 Notification.

24-4.4.3.3.1 Occupant Notification. During all times that the covered mall is occupied (see 5-2.1.1.3) the required fire alarm system, once initiated, shall

(a) Activate a general alarm in accordance with 7-6.3 throughout the covered mall; or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

24-4.4.3.3.2 Emergency Forces Notification. Emergency forces notification shall be provided and shall include notifying

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

24-4.4.3.4 Emergency Control. The fire alarm system shall be arranged to automatically actuate smoke management or smoke control systems in accordance with 7-6.5.2(c).

24-4.5 Bulk Merchandising Retail Buildings. New bulk merchandising retail buildings exceeding 12,000 sq ft (1100 sq m) in area shall comply with the requirements of this chapter as modified by 24-4.5.1 through 24-4.5.6.

24-4.5.1 Minimum Construction Requirements. Bulk merchandising retail buildings shall have a minimum of 16 ft (4.9 m) from the floor to ceiling, floor above, or roof of any story.

24-4.5.2 Means of Egress Requirements. All means of egress shall be in accordance with Chapter 5 and this chapter. Not less than 50 percent of the required egress capacity shall be located independent of the main entrance/exit doors.

24-4.5.3 Storage, Arrangement, Protection, and Quantities of Hazardous Commodities.

24-4.5.3.1 The storage, arrangement, protection, and quantities of hazardous commodities shall be in accordance with the applicable portions of

- (a) NFPA 30, *Flammable and Combustible Liquids Code*;
- (b) NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*;
- (c) NFPA 43B, *Code for the Storage of Organic Peroxide Formulations*;
- (d) NFPA 43D, *Code for the Storage of Pesticides*;
- (e) NFPA 231, *Standard for General Storage*;
- (f) NFPA 231C, *Standard for Rack Storage of Materials*;
- (g) NFPA 231D, *Standard for Storage of Rubber Tires*.

24-4.5.3.2* High hazard commodities without protective containers shall not be stored or displayed within 100 ft (30 m) of the main entrance/exit doors.

24-4.5.4 Detection, Alarm, and Communication Systems.

24-4.5.4.1 General. Bulk merchandising retail buildings shall be provided with a fire alarm system in accordance with Section 7-6.

24-4.5.4.2 Initiation. Initiation of the required fire alarm system shall be by means of the required approved automatic sprinkler system (*see 24-4.5.5*) in accordance with 7-6.2.1(c).

24-4.5.4.3 Occupant Notification. During all times that the building is occupied (*see 5-2.1.1.3*) the required fire alarm system, once initiated, shall

- (a) Activate a general alarm in accordance with 7-6.3 throughout the building; or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

- (b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

24-4.5.4.4 Emergency Forces Notification. Emergency forces notification shall include notifying

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

24-4.5.5 Extinguishing Requirements. Bulk merchandising retail buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7 and in accordance with the applicable provisions of

- (a) NFPA 231, *Standard for General Storage*;
- (b) NFPA 231C, *Standard for Rack Storage of Materials*;
- (c) NFPA 231D, *Standard for Storage of Rubber Tires*;
- (d) NFPA 30, *Flammable and Combustible Liquids Code*; and
- (e) NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*.

24-4.5.6 Emergency Plan and Employee Training. There shall be in effect an approved written plan for the evacuation of occupants. All employees shall be instructed and periodically drilled with respect to their duties under the plan.

SECTION 24-5 BUILDING SERVICES

24-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

24-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

24-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

24-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 24-6 RESERVED**SECTION 24-7 OPERATING FEATURES**

24-7.1 Drills. In every Class A or Class B mercantile occupancy, employees shall be periodically trained in fire exit drill procedures in conformance with Section 1-7.

24-7.2 Extinguisher Training. Employees of mercantile occupancies shall be periodically instructed in the use of portable fire extinguishers.

CHAPTER 25 EXISTING MERCANTILE OCCUPANCIES

SECTION 25-1 GENERAL REQUIREMENTS

25-1.1 Application.

25-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as mercantile occupancies. (See also 24-1.1.1.)

25-1.1.2 This chapter establishes life safety requirements for all existing mercantile buildings. Specific requirements for suboccupancy groups, such as Class A, Class B, and Class C stores, covered malls, and bulk merchandising retail buildings, are contained in paragraphs pertaining thereto.

25-1.1.3 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure need not be modified, provided that the new construction has not diminished the fire safety features of the facility. Existing portions shall be upgraded if the addition results in a change of mercantile subclassification. (See 25-1.4.2.)

25-1.2 Mixed Occupancies.

25-1.2.1 Mixed occupancies shall comply with 4-1.12.

25-1.2.2 Combined Mercantile and Residential Occupancies.

25-1.2.2.1 No dwelling unit shall have its sole means of egress through any mercantile occupancy in the same building.

25-1.2.2.2 No multiple dwelling occupancy shall be located above a mercantile occupancy.

Exception No. 1: Where the dwelling occupancy and exits therefrom are separated from the mercantile occupancy by construction having a fire resistance rating of at least 1 hr.

Exception No. 2: Where the mercantile occupancy is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: As permitted in 25-1.2.2.3.

25-1.2.2.3 A building with not more than two dwelling units above a mercantile occupancy shall be permitted, provided the mercantile occupancy is protected by an automatic fire detection system in accordance with Section 7-6.

25-1.2.3 Combined Mercantile Occupancies and Parking Structures. Walls separating parking structures from mercantile occupancies shall have a fire resistance rating of not less than 2 hr.

Exception: In enclosed parking structures that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 or in open-air parking structures, non-rated glazing and opening protectives shall be permitted if all of the following conditions are met:

(a) *The openings do not exceed 25 percent of the area of the wall in which they are located; and*

(b) *The openings are used for main entrance and associated side-light functions; and*

(c) *The enclosed connecting mercantile building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7; and*

(d) *The floor elevation of the mercantile occupancy is at least 4 in. (10.2 cm) above the floor level of the parking structure; and*

(e) *No vehicle is able to park or drive within 10 ft (3 m) of the openings; and*

(f) *The openings have a minimum of a glass membrane; and*

(g) *Any doors in the glass membrane are self-closing.*

25-1.3 Special Definitions.

Anchor Store. A department store or major merchandising center having direct access to the covered mall but having all required means of egress independent of the covered mall.

Bulk Merchandising Retail Building. A building where the sales area includes the storage of combustible materials on pallets, in solid piles, or in racks in excess of 12 ft (3.7 m) in storage height.

Class A Store. [See 25-1.4.2.1(a).]

Class B Store. [See 25-1.4.2.1(b).]

Class C Store. [See 25-1.4.2.1(c).]

Covered Mall. A covered or roofed interior area used as a pedestrian way and connected to a building(s) or portions of a building housing single or multiple tenants.

Covered Mall Building. A building, including the covered mall, enclosing a number of tenants and occupancies, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses, wherein two or more tenants have a main entrance into the covered mall.

Gross Leasable Area. The total floor area designated for tenant occupancy and exclusive use, expressed in square feet (square meters), measured from centerlines of adjoining partitions and exteriors of outside walls.

Open-Air Mercantile Operations. Operations conducted outside of all structures with the operations area devoid of all walls and roofs except for small, individual, weather canopies.

25-1.4 Classification of Occupancy.

25-1.4.1 Mercantile occupancies shall include all buildings and structures or parts thereof with occupancy as described in 4-1.7.

25-1.4.2 Subclassification of Occupancy.

25-1.4.2.1 Mercantile occupancies shall be subclassified as follows:

(a) *Class A.* All stores having an aggregate gross area of more than 30,000 sq ft (2800 sq m) or utilizing more than three levels, excluding mezzanines, for sales purposes.

(b) *Class B.* All stores of more than 3000 sq ft (280 sq m) but not more than 30,000 sq ft (2800 sq m) aggregate gross area, or utilizing floors above or below the street floor level for sales purposes. Mezzanines shall be permitted. (See 25-1.4.2.3.)

Exception to (b): If more than three floors, excluding mezzanines, are utilized, the store shall be Class A regardless of area.

(c) *Class C.* All stores of not more than 3000 sq ft (280 sq m) gross area used for sales purposes on one story only, excluding mezzanines.

25-1.4.2.2 For the purpose of the classification required in 25-1.4.2.1, the aggregate gross area shall be the total gross area of all floors used for mercantile purposes and, where a store is divided into sections, regardless of fire separation, shall include the area of all sections used for sales purposes. Areas of floors not used for sales purposes, such as an area used only for storage and not open to the public, shall not be counted for the purposes of the above classifications, but means of egress shall be provided for such nonsales areas in accordance with their occupancy as specified by other chapters of this *Code*.

25-1.4.2.3 The floor area of a mezzanine or the aggregate floor area of multiple mezzanines shall not exceed one half of the floor area of the room or story in which the mezzanines are located. A mezzanine or aggregated mezzanines in excess of the one-half area limitation shall be treated as floors.

25-1.4.2.4 Where a number of stores under different management are located in the same building, the aggregate gross area (see 25-1.4.2.2) of all such stores shall be used in determining classification per 25-1.4.2.1.

Exception No. 1: Covered mall buildings. (See 25-4.4.)

Exception No. 2: Where individual stores are separated by fire barriers with a 1-hr fire resistance rating.

25-1.5 Classification of Hazard of Contents. The contents of mercantile occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

Exception: Mercantile occupancies shall be classified as high hazard if high hazard commodities are displayed or handled without protective wrappings or containers, in which case the following additional provisions shall apply:

(a) Exits shall be located so that not more than 75 ft (23 m) of travel from any point is required to reach the nearest exit.

(b) From every point there shall be at least two exits accessible by travel in different directions (no common path of travel).

(c) All vertical openings shall be enclosed.

25-1.6 Minimum Construction Requirements. (No special requirements.)

25-1.7* Occupant Load. For purposes of determining required means of egress, the occupant load of mercantile buildings or parts of buildings used for mercantile purposes shall be not less than required in the following:

(a) *Street floor.* One person for each 30 sq ft (2.8 sq m) of gross floor area of sales space. In stores with no street floor, as defined in Chapter 3, but with access directly from the street by stairs or escalators, the principal floor at the point of entrance to the store shall be considered the street floor.

Exception to (a): In mercantile occupancies where, due to differences in grade of streets on different sides, there are two or more floors directly accessible from streets (not including alleys or similar back streets), for the purpose of determining occupant load, each such floor shall be considered a street floor. The occupant load factor shall be one person for each 40 sq ft (3.7 sq m) of gross floor area of sales space.

(b) *Sales floors below the street floor.* Same as street floor.

(c) *Upper floors used for sales.* One person for each 60 sq ft (5.6 sq m) of gross floor area of sales space.

(d) *Floors or portions of floors used only for offices.* One person for each 100 sq ft (9.3 sq m) of gross floor area of office space.

(e) *Floors or portions of floors used only for storage, receiving, or shipping and not open to the general public.* One person per each 300 sq ft (27.9 sq m) of gross area of storage, receiving, or shipping space.

(f) *Floors or portions of floors used for assembly purposes.* Occupant load determined in accordance with Chapter 9 for such assembly occupancies.

(g)* *Covered mall buildings.* Occupant load determined in accordance with 25-1.7(a) through (f).

Exception: The portions of the covered mall, where considered a pedestrian way (see 25-4.4.1 Exception) and not used as gross leasable area, shall not be assessed an occupant load. However, means of egress from a covered mall pedestrian way shall be provided for an occupant load determined by dividing the gross leasable area (not including anchor stores) by the appropriate lowest whole number occupant load factor from Figure 25-1.7(g).

Each individual tenant space shall have means of egress to the outside or to the covered mall based on occupant loads figured by using 25-1.7(a) through (f).

Each individual anchor store shall have means of egress independent of the covered mall.

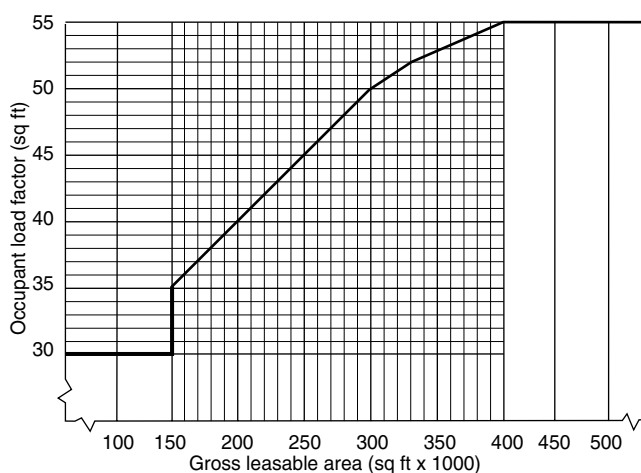


Figure 25-1.7(g) Covered mall occupant load factors.

SECTION 25-2 MEANS OF EGRESS REQUIREMENTS

25-2.1 General.

25-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter.

25-2.1.2 No inside open stairway, inside open escalator, or inside open ramp shall be permitted to serve as a component of the required means of egress system for more than one floor.

25-2.1.3 Where there are two or more floors below the street floor, the same stair or other exit shall be permitted to serve

all floors, but all required exits from such areas shall be independent of any open stairways between the street floor and the floor below it.

25-2.1.4 Where a level, outside exit from upper floors is possible owing to hills, such outside exits shall be permitted to serve instead of horizontal exits. If, however, such outside exits from the upper floor also serve as an entrance from a principal street, the upper floor shall be classified as a street floor in accordance with the definition in Chapter 3 and shall be subject to the requirements of this chapter for street floors.

25-2.1.5 For special considerations for high hazard contents, see 25-1.5.

25-2.2 Means of Egress Components.

25-2.2.1 Components of means of egress shall be limited to the types described in 25-2.2.2 through 25-2.2.12.

25-2.2.2 Doors.

25-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

25-2.2.2.2* Locks complying with Exception No. 2 to 5-2.1.5.1 shall be permitted only on principal entrance/exit doors.

25-2.2.2.3 The reentry provisions of 5-2.1.5.2 shall not apply. (See 5-2.1.5.2 Exception No. 1.)

25-2.2.2.4 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

25-2.2.2.5 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted in buildings protected throughout by an approved, supervised fire detection system installed in accordance with Section 7-6 or an approved, automatic sprinkler system installed in accordance with Section 7-7.

25-2.2.2.6 Where horizontal or vertical security grilles or doors are used as a part of the required means of egress from a tenant space, such grilles or doors shall comply with Exception No. 2 to 5-2.1.4.1.

25-2.2.2.7 All doors at the foot of stairs from upper floors or at the head of stairs leading to floors below the street floor shall swing in the direction of egress travel.

25-2.2.2.8 Revolving doors complying with 5-2.1.10 shall be permitted.

25-2.2.2.9 In Class C mercantile occupancies, doors shall be permitted to swing inward against the direction of egress travel where such doors serve only the street floor area.

25-2.2.3 Stairs.

25-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

25-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

25-2.2.3.3 Winders complying with 5-2.2.2.5 shall be permitted.

25-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

25-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

25-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

25-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

*Exception:** In lieu of the provisions of 5-2.6.2, an exit passageway in a covered mall building shall be permitted to accommodate independently the following:

(a) Its assigned occupant load from only the covered mall/pedestrian way, and

(b) The largest occupant load assigned to it from a single tenant space/store.

25-2.2.8 Escalators and Moving Walks. Escalators and moving walks complying with 5-2.7 shall be permitted.

25-2.2.9 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

25-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

25-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

25-2.2.12 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, two rooms or spaces separated from each other by smoke-resistant partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

25-2.3 Capacity of Means of Egress.

25-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

25-2.3.2 In Class A and Class B stores, street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs, ramps, escalators, and moving walks discharging through the street floor.

25-2.4 Number of Exits. At least two separate exits shall be

(a) Provided on every story, and

(b) Accessible from every part of every story or mezzanine.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common paths of travel by 25-2.5.3.

Exception No. 1: A single means of egress shall be permitted in a Class C mercantile occupancy provided that one of the following conditions is met:

(a) The travel distance does not exceed 75 ft (23 m) to the exit or to a covered mall (if it is considered a pedestrian way); or

(b) The travel distance does not exceed 100 ft (30 m) to the exit or to a covered mall (if it is considered a pedestrian way) and the story on which the occupancy is located and all communicating levels that must be traversed to reach the exit or covered mall are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: A single means of egress to an exit or to a covered mall (if it is considered a pedestrian way) shall be permitted from a mezzanine within any Class A, Class B, or Class C mercantile occupancy, provided that the common path of travel does not exceed 75 ft

(23 m), or 100 ft (30 m) if protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

25-2.5 Arrangement of Means of Egress.

25-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

25-2.5.2* No dead-end corridor shall exceed 50 ft (15 m).

25-2.5.3* No common path of travel shall exceed 75 ft (23 m).

Exception: A common path of travel shall be permitted for the first 100 ft (30 m) on a story protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

25-2.5.4 Aisles leading to each exit shall be required. The aggregate width of such aisles shall be equal to at least the required width of the exit.

25-2.5.5 In no case shall any required aisle be less than 28 in. (71 cm) in clear width.

25-2.5.6 In Class A stores, at least one aisle of 5 ft (1.5 m) minimum width shall lead directly to an exit.

25-2.5.7 If the only means of customer entrance is through one exterior wall of the building, two thirds of the required egress width shall be located in this wall.

Exception: Bulk merchandising retail buildings. (See 25-4.5.2.)

25-2.5.8 At least one half of the required exits shall be located so as to be reached without passing through checkout stands. In no case shall checkout stands or associated railings or barriers obstruct exits, required aisles, or approaches thereto.

25-2.5.9* Where wheeled carts or buggies are used by customers, adequate provision shall be made for the transit and parking of such carts to minimize the possibility that they might obstruct means of egress.

25-2.5.10 Exit access in Class A stores protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 7-7 and exit access in all Class B or Class C stores shall be permitted to pass through storerooms provided the following conditions are met:

(a) Not more than 50 percent of exit access shall be provided through the storeroom.

(b) The storeroom shall not be subject to locking.

(c) The main aisle through the storeroom shall be not less than 44 in. (112 cm) wide.

(d) The path of travel, defined with fixed barriers, through the storeroom shall be direct and continuously maintained in an unobstructed condition.

25-2.6 Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall not exceed 150 ft (45 m).

Exception: Travel distance shall not exceed 200 ft (60 m) in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

25-2.7 Discharge from Exits.

25-2.7.1 Exit discharge shall comply with Section 5-7 and 25-2.7.2.

25-2.7.2* Fifty percent of the exits shall be permitted to discharge through the level of exit discharge in accordance with 5-7.2 only where the building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, and the distance of travel from the termination of the exit enclosure to an outside street door shall not exceed 50 ft (15 m).

25-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

25-2.9 Emergency Lighting. Class A and Class B mercantile occupancies and covered mall buildings shall have emergency lighting facilities in accordance with Section 5-9.

25-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

Exception: Where an exit is immediately apparent from all portions of the sales area, the exit marking shall not be required.

25-2.11 Special Means of Egress Features. (Reserved.)

SECTION 25-3 PROTECTION

25-3.1 Protection of Vertical Openings. Every stairway, elevator shaft, escalator opening, or other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: In Class A or Class B mercantile occupancies, unprotected openings shall be permitted between any two floors, such as between the street floor and the floor below, or between the street floor and mezzanine, or between the street floor and second floor.

Exception No. 2: In Class A or Class B mercantile occupancies protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings shall be permitted as follows:

(a) Between the street floor and floor below and above the street floor, or to mezzanines above the street floor; or

(b) Between the street floor and street floor mezzanine and second floor, but not among more than three floor levels; or

(c) In accordance with 6-2.4.5; or

(d) Among all floors permitted in Class B mercantile occupancies; or

(e) One floor above those permitted shall be permitted to be open if such floor is not used for sales purposes.

Exception No. 3: In Class C mercantile occupancies, unprotected vertical openings shall be permitted as follows:

(a) Between the street floor and mezzanine, or

(b) Between the street floor and the floor below or the second floor, if not used for sales purposes.

Exception No. 4: Atriums in accordance with 6-2.4.6 shall be permitted.

25-3.2 Protection from Hazards.

25-3.2.1* Hazardous areas, including, but not limited to, areas used for general storage, boiler or furnace rooms, and maintenance shops including woodworking and painting areas, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr

with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, or

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

Exception: In general storage and stock areas protected by an automatic extinguishing system installed in accordance with Section 7-7, an enclosure, if provided, shall be exempt from the provisions of 6-4.1.2.

25-3.2.2* High hazard content areas, as defined in Section 4-2, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, and

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

25-3.3 Interior Finish.

25-3.3.1 Interior finish shall be in accordance with Section 6-5.

25-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A or Class B.

Exception: Existing Class C interior wall and ceiling finish complying with 6-5.5 shall be permitted as follows:

- (a) On walls, and
- (b) Throughout Class C stores.

25-3.3.3 Interior Floor Finish. (No requirements.)

25-3.4 Detection, Alarm, and Communication Systems.

25-3.4.1 General. Class A mercantile occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

25-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means per 7-6.2.1 (a).

Exception No. 1: Initiation shall be permitted to be by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

25-3.4.3 Notification.

25-3.4.3.1 Occupant Notification. During all times that the store is occupied (see 5-2.1.1.3) the required fire alarm system, once initiated, shall

(a) Activate a general alarm in accordance with 7-6.3 throughout the store, or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be per-

mitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

25-3.4.3.2 Emergency Forces Notification. Emergency forces notification shall be provided and shall include notifying the following:

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

25-3.5 Extinguishment Requirements.

25-3.5.1 Mercantile occupancies shall be protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 as follows:

(a) In all mercantile occupancies with a story over 15,000 sq ft (1400 sq m) in area.

(b) In all mercantile occupancies exceeding 30,000 sq ft (2800 sq m) in gross area.

(c) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 sq ft (230 sq m) where used for the sale, storage, or handling of combustible goods and merchandise.

(d) In mixed occupancies in accordance with 4-1.12 where the conditions of (a), (b), or (c) above apply to the mercantile occupancy.

Exception: Single-story buildings that meet the requirements of a street floor as defined in Section 3-2.

25-3.5.2 Portable fire extinguishers shall be provided in all mercantile occupancies in accordance with 7-7.4.1.

25-3.6 Corridors. (No requirements.)

25-3.7 Subdivision of Building Spaces. (No special requirements.)

25-3.8 Special Protection Features. Nonrated glazing and opening protectives per the Exception to 25-1.2.3 shall be permitted between mercantile occupancies and parking structures.

SECTION 25-4 SPECIAL PROVISIONS

25-4.1 Windowless or Underground Buildings. (See Section 32-7.)

25-4.2 High-Rise Buildings. (No additional requirements.)

25-4.3 Open-Air Mercantile Operations.

25-4.3.1 Open-air mercantile operations, such as open-air markets, gasoline filling stations, roadside stands for the sale of farm produce, and other outdoor mercantile operations shall be arranged and conducted so as to maintain free and unobstructed ways of travel at all times to permit prompt escape from any point of danger in case of fire or other emergency, with no dead ends in which persons might be trapped due to display stands, adjoining buildings, fences, vehicles, or other obstructions.

25-4.3.2 If mercantile operations are conducted in roofed-over areas, they shall be treated as mercantile buildings, provided that canopies over individual small stands to protect

merchandise from the weather shall not be construed to constitute buildings for the purpose of this *Code*.

25-4.4 Covered Mall Buildings. The purpose of this section is to establish minimum standards of life safety for covered mall buildings. (See 25-1.3.)

25-4.4.1 The covered mall building shall be treated as a single building for the purpose of calculation of means of egress and shall be subject to the requirements for appropriate occupancies. The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this *Code*.

Exception: The covered mall shall be permitted to be considered a pedestrian way, in which case the distance of travel within a tenant space to an exit or to the covered mall shall be a maximum of 200 ft (60 m) (see 25-2.6 *Exception*) or shall be the maximum for the appropriate occupancy; plus, an additional 200 ft (60 m) shall be permitted for travel through the covered mall space if all the following requirements are met:

(a) The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this chapter, but in no case shall be less than 20 ft (6.1 m) wide in its narrowest dimension.

(b)* On each side of the mall floor area, the covered mall shall be provided with an unobstructed exit access of not less than 10 ft (3 m) in clear width parallel to and adjacent to the mall tenant front. Such exit access shall lead to an exit having a minimum width of 66 in. (168 cm). (See 25-4.4.2.)

(c) The covered mall and all buildings connected thereto shall be protected throughout by an approved, electrically supervised automatic sprinkler system installed in accordance with Section 7-7.

(d) Walls dividing stores from each other shall extend from the floor to the underside of the roof deck, floor deck above, or ceiling where the ceiling is constructed to limit the transfer of smoke. Where the tenant areas are provided with an engineered smoke control system, walls shall not be required to divide stores from each other. No separation shall be required between a tenant space and the covered mall.

(e)* The covered mall shall be provided with a smoke control system.

25-4.4.2 Means of Egress Details.

25-4.4.2.1 Every floor of a covered mall shall be provided with a number of means of egress specified by Section 5-4 with no less than two means of egress remotely located from each other.

25-4.4.2.2 Class A and Class B stores connected to a covered mall shall be provided with the number of means of egress required by Section 5-4 with no less than two means of egress remotely located from one another.

25-4.4.2.3* Each individual anchor store shall have means of egress independent of the covered mall.

25-4.4.2.4 Every covered mall shall be provided with unobstructed exit access parallel to and adjacent to the mall tenant fronts. This exit access shall extend to each mall exit.

25-4.4.2.5* Rooms housing building service equipment, janitor closets, and service elevators shall be permitted to open directly onto exit passageways, provided

(a) The required fire resistance rating between such rooms or areas and the exit passageway is maintained in accordance with 5-1.3.2;

(b) Such rooms or areas are protected by an approved automatic sprinkler system installed in accordance with Section 7-7. The exceptions in NFPA 13, *Standard for the Installation of Sprinkler Systems*, that would permit the omission of sprinklers from such rooms shall not be permitted;

(c) Service elevators opening into the exit passageway shall not open into areas other than exit passageways; and

(d) Where exit stair enclosures discharge into the exit passageway, Exception No. 2 to 5-2.1.5.2 shall not apply.

25-4.4.2.6 Emergency Lighting. (See 25-2.9.)

25-4.4.3 Detection, Alarm, and Communication Systems.

25-4.4.3.1 General. Covered malls shall be provided with a fire alarm system installed in accordance with Section 7-6.

25-4.4.3.2 Initiation. Initiation of the required fire alarm system shall be by means of the approved, automatic sprinkler system installed in accordance with 7-6.2.1(c).

25-4.4.3.3 Notification.

25-4.4.3.3.1 Occupant Notification. During all times that the covered mall is occupied (see 5-2.1.1.3) the required fire alarm system, once initiated, shall

(a) Activate a general alarm in accordance with 7-6.3 throughout the covered mall; or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

25-4.4.3.3.2 Emergency Forces Notification. Emergency forces notification shall be provided and shall include notifying the following:

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

25-4.4.3.4 Emergency Control. The fire alarm system shall be arranged to automatically actuate smoke management or smoke control systems in accordance with 7-6.5.2(c).

25-4.5 Bulk Merchandising Retail Buildings. Existing bulk merchandising retail buildings exceeding 15,000 sq ft (1400 sq m) in area shall comply with the requirements of this chapter as modified by 25-4.5.1 through 25-4.5.6.

25-4.5.1 Minimum Construction Requirements. (No requirement.)

25-4.5.2 Means of Egress Requirements. All means of egress shall be in accordance with Chapter 5 and this chapter. Not less than 50 percent of the required egress capacity shall be located independent of the main entrance/exit doors.

25-4.5.3 Storage, Arrangement, Protection, and Quantities of Hazardous Commodities.

25-4.5.3.1 The storage, arrangement, protection, and quantities of hazardous commodities shall be in accordance with the applicable portions of the following:

- (a) NFPA 30, *Flammable and Combustible Liquids Code*;
- (b) NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*;
- (c) NFPA 43B, *Code for the Storage of Organic Peroxide Formulations*;
- (d) NFPA 43D, *Code for the Storage of Pesticides*;
- (e) NFPA 231, *Standard for General Storage*;
- (f) NFPA 231C, *Standard for Rack Storage of Materials*;
- (g) NFPA 231D, *Standard for Storage of Rubber Tires*.

25-4.5.3.2* High hazard commodities without protective containers shall not be stored or displayed within 100 ft (30 m) of the main entrance/exit doors.

25-4.5.4 Detection, Alarm, and Communication Systems.

25-4.5.4.1 General. Bulk merchandising retail buildings shall be provided with a fire alarm system in accordance with Section 7-6.

25-4.5.4.2 Initiation. Initiation of the required fire alarm system shall be by means of the required approved automatic sprinkler system (*see 25-4.5.5*) in accordance with 7-6.2.1(c).

25-4.5.4.3 Occupant Notification. During all times that the building is occupied (*see 5-2.1.1.3*) the required fire alarm system, once initiated, shall

- (a) Activate a general alarm in accordance with 7-6.3 throughout the building; or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

- (b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

25-4.5.4.4 Emergency Forces Notification. Emergency forces notification shall include notifying the following:

- (a) The fire department in accordance with 7-6.4, and
- (b) The local emergency organization, if provided.

25-4.5.5 Extinguishing Requirements. Bulk merchandising retail buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7 and the applicable portions of the following:

- (a) NFPA 231, *Standard for General Storage*;
- (b) NFPA 231C, *Standard for Rack Storage of Materials*;
- (c) NFPA 231D, *Standard for Storage of Rubber Tires*;
- (d) NFPA 30, *Flammable and Combustible Liquids Code*; and
- (e) NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*.

25-4.5.6 Emergency Plan and Employee Training. There shall be in effect an approved written plan for the evacuation of occupants. All employees shall be instructed and periodically drilled with respect to their duties under the plan.

SECTION 25-5 BUILDING SERVICES

25-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

25-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

25-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

25-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 25-6 RESERVED

SECTION 25-7 OPERATING FEATURES

25-7.1 Drills. In every Class A or Class B mercantile occupancy, employees shall be periodically trained in fire exit drill procedures in conformance with Section 1-7.

25-7.2 Extinguisher Training. Employees of mercantile occupancies shall be periodically instructed in the use of portable fire extinguishers.

CHAPTER 26 NEW BUSINESS OCCUPANCIES

SECTION 26-1 GENERAL REQUIREMENTS

26-1.1 Application.

26-1.1.1 The requirements of this chapter apply to the following:

- (a) New buildings or portions thereof used as business occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, a business occupancy (*see 1-3.6 and 26-1.1.3*); and
- (c) Alterations, modernizations, or renovations of existing business occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a business occupancy (*see 1-3.12*).

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

26-1.1.2 This chapter establishes life safety requirements for all new business buildings. Specific requirements for high-rise buildings (*see Section 3-2 definition*) are contained in paragraphs pertaining thereto.

26-1.1.3 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure shall not be required to be modified, provided that the new construction has not diminished the fire safety features of the facility.

26-1.2 Mixed Occupancies.

26-1.2.1 Mixed occupancies shall comply with 4-1.12.

26-1.2.2 Combined Business and Residential Occupancies.

26-1.2.2.1 No dwelling unit shall have its sole means of egress through any business occupancy in the same building.

26-1.2.2.2 No multiple dwelling occupancy shall be located above a business occupancy.

Exception No. 1: Where the dwelling occupancy and exits therefrom are separated from the business occupancy by construction having a fire resistance rating of at least 1 hr.

Exception No. 2: Where the business occupancy is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

26-1.2.3 Combined Business Occupancies and Parking Structures. Walls separating parking structures from business occupancies shall have a fire resistance rating of not less than 2 hr.

Exception: In enclosed parking structures that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 or in open-air parking structures, non-rated glazing and opening protectives shall be permitted if all of the following conditions are met:

- (a) The openings do not exceed 25 percent of the area of the wall in which they are located; and
- (b) The openings are used for main entrance and associated side-light functions; and

(c) The enclosed connecting business building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7; and

(d) The floor elevation of the business occupancy is at least 4 in. (10.2 cm) above the floor level of the parking structure; and

(e) No vehicle is able to park or drive within 10 ft (3 m) of the openings; and

(f) The openings have a minimum of a glass; and

(g) Any doors in the glass membrane are self-closing.

26-1.3 Special Definitions. (None.)

26-1.4 Classification of Occupancy. Business occupancies shall include all buildings and structures or parts thereof with occupancy described in 4-1.8.

26-1.5 Classification of Hazard of Contents.

26-1.5.1 The contents of business occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

26-1.5.2 For purposes of the design of an automatic sprinkler system, a business occupancy shall be classified as "light hazard occupancy," as identified by NFPA 13, *Standard for the Installation of Sprinkler Systems*.

26-1.6 Minimum Construction Requirements. (No requirements.)

26-1.7* Occupant Load. For purposes of determining required means of egress, the occupant load of business buildings or parts of buildings used for business purposes shall be not less than one person per 100 sq ft (9.3 sq m) of gross floor area. The occupant load for parts of buildings used for other purposes shall be calculated using occupant load factors associated with the use.

SECTION 26-2 MEANS OF EGRESS REQUIREMENTS

26-2.1 General.

26-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter.

26-2.1.2 If, owing to differences in grade, any street floor exits are at points above or below the street or ground level, such exits shall comply with the provisions for exits from upper floors or floors below the street floor.

26-2.1.3 Where two or more floors below the street floor are occupied for business use, the same stairs or ramps shall be permitted to serve each.

Exception: No inside open stairway or inside open ramp shall be permitted to serve as a required egress facility from more than one floor level.

26-2.1.4 Floor levels below the street floor used only for storage, heating, and other service equipment and not subject to business occupancy shall have means of egress in accordance with Chapter 29.

26-2.2 Means of Egress Components.

26-2.2.1 Components of means of egress shall be limited to the types described in 26-2.2.2 through 26-2.2.10.

26-2.2.2 Doors.

26-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

26-2.2.2.2* Locks complying with Exception No. 2 to 5-2.1.5.1 shall be permitted only on principal entrance/exit doors.

26-2.2.2.3 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

26-2.2.2.4 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

26-2.2.2.5 Where horizontal or vertical security grilles or doors are used as part of the required means of egress from a tenant space, such grilles or doors shall comply with Exception No. 2 to 5-2.1.4.1.

26-2.2.2.6 Revolving doors complying with 5-2.1.10 shall be permitted.

26-2.2.3 Stairs.

26-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

26-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

26-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

26-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

26-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

26-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

26-2.2.8 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

26-2.2.9 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

26-2.2.10 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, two rooms or spaces separated from each other by smoke-resistant partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

26-2.3 Capacity of Means of Egress.

26-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

26-2.3.2* The minimum width of any corridor or passageway shall be 44 in. (112 cm) in the clear.

26-2.3.3 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs and ramps discharging through the street floor.

26-2.4 Number of Exits. At least two separate exits shall be

- (a) Provided on every story, and
- (b) Accessible from every part of every story and mezzanine.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common paths of travel by 26-2.5.3.

Exception No. 1: For a room or area with a total occupant load of fewer than 100 persons having an exit that discharges directly to the

outside at the level of exit discharge for the building, with a total distance of travel, including travel within the exit, from any point not over 100 ft (30 m), a single exit shall be permitted. Such travel shall be on the same floor level or, if traversing of stairs is required, such stairs shall be not more than 15 ft (4.5 m) in height, and the stairs shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein. A single outside stair in accordance with 5-2.2 shall be permitted to serve all floors allowed within the 15-ft (4.5-m) vertical travel limitation.

Exception No. 2: Any business occupancy not over three stories and not exceeding an occupant load of 30 people per floor shall be permitted a single separate exit to each floor if the total travel distance to the outside of the building does not exceed 100 ft (30 m) and, if such exit is enclosed in accordance with 5-1.3, serves no other levels, and discharges directly to the outside. A single outside stair in accordance with 5-2.2 shall be permitted to serve all floors.

Exception No. 3: A single means of egress shall be permitted from a mezzanine within a business occupancy, provided that the common path of travel does not exceed 75 ft (23 m), or 100 ft (30 m) if protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 4: A single exit shall be permitted for a maximum two-story single tenant space/building protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 if the total travel to the outside does not exceed 100 ft (30 m).

26-2.5 Arrangement of Means of Egress.

26-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

26-2.5.2 No dead-end corridor shall exceed 20 ft (6.1 m).

Exception: In buildings protected throughout by an approved supervised automatic sprinkler system installed in accordance with Section 7-7, dead-end corridors shall not exceed 50 ft (15 m).

26-2.5.3 No common path of travel shall exceed 75 ft (23 m).

Exception No. 1: A common path of travel shall be permitted for the first 100 ft (30 m) in a building protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: A common path of travel shall be permitted for the first 100 ft (30 m) for single tenant spaces with an occupant load of not more than 30 persons.

26-2.6 Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall not exceed 200 ft (60 m).

Exception: Travel distance shall not exceed 300 ft (91 m) in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

26-2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

26-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

26-2.9 Emergency Lighting.

26-2.9.1 Emergency lighting shall be provided in accordance with Section 5-9 in any building where

- (a) The building is two or more stories in height above the level of exit discharge, or
- (b) The occupancy is subject to 50 or more occupants above or below the level of exit discharge, or
- (c) The occupancy is subject to 300 or more total occupants.

26-2.9.2 Emergency lighting in accordance with Section 5-9 shall be provided for all windowless or underground structures as defined in 32-7.2.

26-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

26-2.11 Special Means of Egress Features. (Reserved.)

SECTION 26-3 PROTECTION**26-3.1 Protection of Vertical Openings.**

26-3.1.1 Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for business occupancy only shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 4: Exit access stairs shall be permitted to be unenclosed in two-story single tenant spaces provided with a single exit in accordance with the provisions of Exception No. 4 to 26-2.4.

26-3.1.2 Floors below the street floor used for storage or other than business occupancy shall have no unprotected openings to business occupancy floors.

26-3.2 Protection from Hazards.

26-3.2.1* Hazardous areas, including, but not limited to, areas used for general storage, boiler or furnace rooms, and maintenance shops including woodworking and painting areas, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, or

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

26-3.2.2* High hazard content areas, as defined in Section 4-2, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, and

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

26-3.2.3 Laboratories that use chemicals shall comply with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*.

26-3.3 Interior Finish.

26-3.3.1 Interior finish shall be in accordance with Section 6-5.

26-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A or Class B in exits and enclosed corridors furnishing access to exits; and Class A, Class B, or Class C in office areas.

26-3.3.3 Interior Floor Finish. Interior floor finish complying with 6-5.6 shall be Class I or Class II in corridors and exits.

26-3.4 Detection, Alarm, and Communication Systems.

26-3.4.1 General. A fire alarm system in accordance with Section 7-6 shall be provided in any business occupancy where

- (a) The building is two or more stories in height above the level of exit discharge, or
- (b) The occupancy is subject to 50 or more occupants above or below the level of exit discharge, or
- (c) The occupancy is subject to 300 or more total occupants.

26-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

26-3.4.3 Notification.

26-3.4.3.1 Occupant Notification. During all times that the building is occupied (*see 5-2.1.1.3*) the required fire alarm system, once initiated, shall

(a) Activate a general alarm in accordance with 7-6.3 throughout the building, or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

26-3.5 Extinguishment Requirements. Portable fire extinguishers shall be provided in every business occupancy in accordance with 7-7.4.1. (*See also Section 26-4.*)

26-3.6 Corridors.

26-3.6.1 Where access to exits is provided by corridors, such corridors shall be separated from use areas by walls having a fire resistance rating of at least 1 hr in accordance with 6-2.3.

*Exception No. 1:** Where exits are available from an open floor area.

*Exception No. 2:** Corridors shall not be required to have a fire resistance rating within a space occupied by a single tenant.

Exception No. 3: Corridors shall not be required to have a fire resistance rating within buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

26-3.6.2 Openings in corridor walls required to have a fire resistance rating by 26-3.6.1 shall be protected in accordance with 6-2.3.

26-3.7 Subdivision of Building Spaces. (No special requirements.)

26-3.8 Special Protection Features. Nonrated glazing and opening protectives per the Exception to 26-1.2.3 shall be permitted between business occupancies and parking structures.

SECTION 26-4 SPECIAL PROVISIONS

26-4.1 Windowless or Underground Buildings. (See Section 32-7.)

26-4.2* High-Rise Buildings. High-rise buildings shall comply with Section 32-8.

SECTION 26-5 BUILDING SERVICES

26-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

26-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

26-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

26-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 26-6 RESERVED**SECTION 26-7 OPERATING FEATURES**

26-7.1 Drills. In any business occupancy building occupied by more than 500 persons or more than 100 persons above or below the street level, employees and supervisory personnel shall be periodically instructed in fire exit drill procedures in accordance with Section 1-7 and shall hold drills periodically where practicable.

26-7.2 Extinguisher Training. Employees of business occupancies shall be periodically instructed in the use of portable fire extinguishers.

CHAPTER 27 EXISTING BUSINESS OCCUPANCIES

SECTION 27-1 GENERAL REQUIREMENTS

27-1.1 Application.

27-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as business occupancies. (See also 26-1.1.1.)

*Exception:** Facilities where the authority having jurisdiction has determined equivalent safety is provided in accordance with Section 1-6.

27-1.1.2 This chapter establishes life safety requirements for existing business buildings. Specific requirements for high-rise buildings (see Section 3-2 definition) are contained in paragraphs pertaining thereto.

27-1.2 Mixed Occupancies.

27-1.2.1 Mixed occupancies shall comply with 4-1.12.

27-1.2.2 (Reserved.)

27-1.2.3 Combined Business Occupancies and Parking Structures. Walls separating parking structures from business occupancies shall have a fire resistance rating of not less than 2 hr.

Exception: In enclosed parking structures that are protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 or in open-air parking structures, non-rated glazing and opening protectives shall be permitted if all of the following conditions are met:

- (a) The openings do not exceed 25 percent of the area of the wall in which they are located; and
- (b) The openings are used for main entrance and associated side-light functions; and
- (c) The enclosed connecting business building is protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7; and
- (d) The floor elevation of the business occupancy is at least 4 in. (10.2 cm) above the floor level of the parking structure; and
- (e) No vehicle is able to park or drive within 10 ft (3 m) of the openings; and
- (f) The openings have a minimum of a glass membrane; and
- (g) Any doors in the glass membrane are self-closing.

27-1.3 Special Definitions. (None.)

27-1.4 Classification of Occupancy. Business occupancies shall include all buildings and structures or parts thereof with occupancy described in 4-1.8.

27-1.5 Classification of Hazard of Contents.

27-1.5.1 The contents of business occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

27-1.5.2 For purposes of the design of an automatic sprinkler system, a business occupancy shall be classified as "light hazard occupancy," as identified by NFPA 13, *Standard for the Installation of Sprinkler Systems*.

27-1.6 Minimum Construction Requirements. (No requirements.)

27-1.7* Occupant Load. For purposes of determining required means of egress, the occupant load of business buildings or parts of buildings used for business purposes shall be not less than one person per 100 sq ft (9.3 sq m) of gross floor area. The occupant load for parts of buildings used for other purposes shall be calculated using occupant load factors associated with the use.

SECTION 27-2 MEANS OF EGRESS REQUIREMENTS

27-2.1 General.

27-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter.

27-2.1.2 If, owing to differences in grade, any street floor exits are at points above or below the street or ground level, such exits shall comply with the provisions for exits from upper floors or floors below the street floor.

27-2.1.3 Where two or more floors below the street floor are occupied for business use, the same stairs, escalators, or ramps shall be permitted to serve each.

Exception: No inside open stairway, inside open escalator, or inside open ramp shall be permitted to serve as a required egress facility from more than one floor level.

27-2.1.4 Floor levels below the street floor used only for storage, heating, and other service equipment and not subject to business occupancy shall have means of egress in accordance with Chapter 29.

27-2.2 Means of Egress Components.

27-2.2.1 Components of means of egress shall be limited to the types described in 27-2.2.2 through 27-2.2.12.

27-2.2.2 Doors.

27-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

27-2.2.2.2* Locks complying with Exception No. 2 to 5-2.1.5.1 shall be permitted only on principal entrance/exit doors.

27-2.2.2.3 The reentry provisions of 5-2.1.5.2 shall not apply. (See 5-2.1.5.2 Exception No. 3.)

27-2.2.2.4 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

27-2.2.2.5 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

27-2.2.2.6 Where horizontal or vertical security grilles or doors are used as part of the required means of egress from a tenant space, such grilles or doors shall comply with Exception No. 2 to 5-2.1.4.1.

27-2.2.2.7 Existing horizontal sliding or vertical rolling fire doors shall be permitted in existing means of egress under the following conditions:

- (a) They are held open by fusible links,
- (b) The links are rated at not less than 165°F (74°C),
- (c) The fusible links are located not more than 10 ft (3 m) above the floor,
- (d) The fusible link is in immediate proximity to the door opening,
- (e) The fusible link is not located above a ceiling, and

(f) The door is not credited with providing any protection under this *Code*.

27-2.2.2.8 Revolving doors complying with 5-2.1.10 shall be permitted.

27-2.2.3 Stairs.

27-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

27-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

27-2.2.3.3 Winders complying with 5-2.2.2.5 shall be permitted.

27-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

27-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

27-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

27-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

27-2.2.8 Escalators and Moving Walks. Escalators and moving walks complying with 5-2.7 shall be permitted.

27-2.2.9 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted.

27-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

27-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

27-2.2.12 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, two rooms or spaces separated from each other by smoke-resistant partitions in accordance with the 5-1.2 definition of area of refuge shall not be required.

27-2.3 Capacity of Means of Egress.

27-2.3.1 The capacity of means of egress shall be in accordance with Section 5-3.

27-2.3.2 The minimum width of any corridor or passageway shall be 44 in. (112 cm) in the clear.

27-2.3.3 Street floor exits shall be sufficient for the occupant load of the street floor plus the required capacity of stairs, ramps, escalators, and moving walks discharging through the street floor.

27-2.4 Number of Exits.

27-2.4.1 The number of exits shall be in accordance with 27-2.4.2. The requirements of 5-4.1.2 shall not apply.

27-2.4.2 At least two separate exits shall be

- (a) Provided on every story, and
- (b) Accessible from every part of every story and mezzanine.

Exception to (b): Exit access travel shall be permitted to be common for the distances allowed as common paths of travel by 27-2.5.3.

Exception No. 1: For a room or area with a total occupant load of fewer than 100 persons having an exit that discharges directly to the outside at the level of exit discharge for the building, with a total distance of travel, including travel within the exit, from any point not over 100 ft (30 m), a single exit shall be permitted. Such travel shall be on the same floor level or, if traversing of stairs is required, such stairs shall be not more than 15 ft (4.5 m) in height, and the stairs shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein. A single outside stair in accordance with 5-2.2 shall be permitted to serve all floors allowed within the 15-ft (4.5-m) vertical travel limitation.

Exception No. 2: Any business occupancy not over three stories and not exceeding an occupant load of 30 people per floor shall be permitted a single separate exit to each floor if the total travel distance to the outside of the building does not exceed 100 ft (30 m) and, if such exit is enclosed in accordance with 5-1.3, serves no other levels, and discharges directly to the outside. A single outside stair in accordance with 5-2.2 shall be permitted to serve all floors.

Exception No. 3: A single means of egress shall be permitted from a mezzanine within a business occupancy, provided that the common path of travel does not exceed 75 ft (23 m), or 100 ft (30 m) if protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 4: A single exit shall be permitted for a maximum two-story single tenant space/building protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7 if the total travel to the outside does not exceed 100 ft (30 m).

27-2.5 Arrangement of Means of Egress.

27-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

27-2.5.2* No dead-end corridor shall exceed 50 ft (15 m).

27-2.5.3* No common path of travel shall exceed 75 ft (23 m).

Exception No. 1: A common path of travel shall be permitted for the first 100 ft (30 m) on a story protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: A single tenant space that does not exceed an occupant load of 30 people shall be permitted to have a single exit access, provided the corridor to which that exit access leads does not have a dead end in excess of 50 ft (15 m).

27-2.6 Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall not exceed 200 ft (60 m).

Exception: Travel distance shall not exceed 300 ft (91 m) in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

27-2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

27-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

27-2.9 Emergency Lighting.

27-2.9.1 Emergency lighting shall be provided in accordance with Section 5-9 in any building where

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1000 or more total occupants.

27-2.9.2 Emergency lighting in accordance with Section 5-9 shall be provided for all windowless or underground structures as defined in 32-7.2.

27-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

27-2.11 Special Means of Egress Features. (Reserved.)

SECTION 27-3 PROTECTION

27-3.1 Protection of Vertical Openings.

27-3.1.1 Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for business occupancy only shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: Unprotected vertical openings in accordance with 6-2.4.8 shall be permitted.

Exception No. 4: Exit access stairs shall be permitted to be unenclosed in two-story single tenant spaces provided with a single exit in accordance with the provisions of Exception No. 4 to 27-2.4.2.

Exception No. 5: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings shall be permitted if no unprotected vertical opening serves as any part of any required means of egress and all required exits consist of outside stairs in accordance with 5-2.2, smokeproof enclosures in accordance with 5-2.3, or horizontal exits in accordance with 5-2.4.

27-3.1.2 Floors below the street floor used for storage or other than business occupancy shall have no unprotected openings to business occupancy floors.

27-3.2 Protection from Hazards.

27-3.2.1* Hazardous areas, including, but not limited to, areas used for general storage, boiler or furnace rooms, and maintenance shops including woodworking and painting areas, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, or

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

27-3.2.2* High hazard content areas, as defined in Section 4-2, shall

(a) Be separated from other parts of the building by fire barriers having a fire resistance rating of not less than 1 hr

with all openings therein protected by $\frac{3}{4}$ -hr fire protection-rated self-closing fire doors, and

(b) The area shall be protected by an automatic extinguishing system installed in accordance with Section 7-7.

27-3.3 Interior Finish.

27-3.3.1 Interior finish shall be in accordance with Section 6-5.

27-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A or Class B in exits and enclosed corridors furnishing access to exits; and Class A, Class B, or Class C in office areas.

27-3.3.3 Interior Floor Finish. (No requirements.)

27-3.4 Detection, Alarm, and Communication Systems.

27-3.4.1 General. A fire alarm system in accordance with Section 7-6 shall be provided in any business occupancy where

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1000 or more total occupants.

27-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

27-3.4.3 Notification.

27-3.4.3.1 Occupant Notification. During all times that the building is occupied (*see* 5-2.1.1.3) the required fire alarm system, once initiated, shall

(a) Activate a general alarm in accordance with 7-6.3 throughout the building, or

Exception to (a): A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

(b) Activate an alarm signal in a continuously attended location for the purpose of initiating emergency action by personnel trained to respond to emergencies. Emergency action shall be initiated by means of live voice public address system announcements originating from the attended location where the alarm signal is received. The system shall be permitted to be used for other announcements provided the fire alarm use takes precedence over any other use.

Exception to (b): Any other occupant notification means allowed by 7-6.3 shall be permitted in lieu of live voice public address system announcements.

27-3.5 Extinguishment Requirements. Portable fire extinguishers shall be provided in every business occupancy in accordance with 7-7.4.1. (See also Section 27-4.)

27-3.6 Corridors. (No requirements.)

27-3.7 Subdivision of Building Spaces. (No special requirements.)

27-3.8 Special Protection Features. Nonrated glazing and opening protectives per the Exception to 27-1.2.3 shall be permitted between business occupancies and parking structures.

SECTION 27-4 SPECIAL PROVISIONS

27-4.1 Windowless or Underground Buildings. (See Section 32-7.)

27-4.2 High-Rise Buildings.

27-4.2.1 All high-rise business occupancy buildings shall be provided with a reasonable degree of safety from fire that shall be accomplished by the installation of a complete, approved, automatic sprinkler system installed in accordance with Section 7-7 or an engineered life safety system prepared by a registered professional engineer who is experienced in fire and life safety systems design and approved by the authority having jurisdiction, which might consist of a combination of any or all of the following systems:

- (a) Partial automatic sprinkler protection.
- (b) Smoke detection alarms.
- (c) Smoke control.
- (d) Compartmentation.
- (e) Other approved systems.

27-4.2.2* A limited but reasonable time shall be allowed for compliance with any part of 27-4.2.1 commensurate with the magnitude of expenditure and the disruption of services.

27-4.2.3 In addition to the above requirements, all buildings, regardless of height, shall comply with all other applicable provisions of this chapter.

SECTION 27-5 BUILDING SERVICES

27-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

27-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

27-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

27-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 27-6 RESERVED

SECTION 27-7 OPERATING FEATURES

27-7.1 Drills. In any business occupancy building occupied by more than 500 persons or more than 100 persons above or below the street level, employees and supervisory personnel shall be periodically instructed in fire exit drill procedures in accordance with Section 1-7 and shall hold drills periodically where practicable.

27-7.2 Extinguisher Training. Employees of business occupancies shall be periodically instructed in the use of portable fire extinguishers.

CHAPTER 28 INDUSTRIAL OCCUPANCIES

SECTION 28-1 GENERAL REQUIREMENTS

28-1.1 Application. The requirements of this chapter shall apply to both new and existing industrial occupancies. Industrial occupancies shall include factories making products of all kinds and properties used for operations such as processing, assembling, mixing, packaging, finishing or decorating, repairing, and similar operations.

28-1.2 Mixed Occupancies. In any building occupied for both industrial and other purposes, means of egress shall comply with 4-1.12.

28-1.3 Special Definitions. (None.)

28-1.4 Classification of Occupancy. (See 4-1.9.)

28-1.4.1 Subclassification of Industrial Occupancies. Each industrial occupancy shall be subclassified according to its use as follows:

(a) *General Industrial Occupancy.* Ordinary and low hazard industrial operations conducted in buildings of conventional design suitable for various types of industrial processes. Included are multistory buildings where floors are occupied by different tenants or buildings suitable for such occupancy and, therefore, subject to possible use for types of industrial processes with a high density of employee population.

(b) *Special Purpose Industrial Occupancy.* Includes ordinary and low hazard industrial operations in buildings designed for and suitable only for particular types of operations, characterized by a relatively low density of employee population, with much of the area occupied by machinery or equipment.

(c)* *High Hazard Industrial Occupancy.* Includes buildings having high hazard materials, processes, or contents. Incidental high hazard operations in low or ordinary occupancies and protected in accordance with Section 4-2 and 28-3.2 shall not be the basis for overall occupancy classification.

28-1.5 Classification of Hazard of Contents. Classification of hazard of contents shall be as defined in Section 4-2.

28-1.6 Minimum Construction Requirements. (No requirements.)

28-1.7* Occupant Load. The occupant load for which means of egress shall be provided from any floor of an industrial occupancy shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 100 sq ft (9.3 sq m) of gross floor area.

Exception: In a special purpose industrial occupancy, the occupant load shall be the maximum number of persons to occupy the area under any probable conditions.

SECTION 28-2 MEANS OF EGRESS REQUIREMENTS

28-2.1 General. Each required means of egress shall be in accordance with the applicable portions of Chapter 5.

28-2.2 Means of Egress Components.

28-2.2.1 Components of means of egress shall be limited to the types described in 28-2.2.2 through 28-2.2.13.

28-2.2.2 Doors.

28-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

28-2.2.2.2 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

28-2.2.2.3 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

28-2.2.2.4 Existing horizontal sliding fire doors shall be permitted in the means of egress under the following conditions:

- (a) They are held open by fusible links,
- (b) The links are rated at not less than 165°F (74°C),
- (c) The fusible links are located not more than 10 ft (3 m) above the floor,
- (d) The fusible link is in immediate proximity to the door opening,
- (e) The fusible link is not located above a ceiling, and
- (f) The door is not credited with providing any protection under this Code.

28-2.2.3 Stairs.

28-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

Exception No. 1: Noncombustible grated stair treads and landing floors.

Exception No. 2: Industrial equipment access in accordance with 28-2.5.6.

28-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

28-2.2.3.3 In existing buildings, winders complying with 5-2.2.2.5 shall be permitted.

28-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

28-2.2.5 Horizontal Exits.

28-2.2.5.1 Horizontal exits complying with 5-2.4 shall be permitted.

28-2.2.5.2* In horizontal exits where the doorway is protected by a fire door on each side of the wall in which it is located, one fire door shall be of the swinging type as provided in 5-2.4.3.6 and the other shall be permitted to be an automatic sliding fire door that shall be kept open whenever the building is occupied.

28-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

Exception: Industrial equipment access in accordance with 28-2.5.6.

28-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

28-2.2.8 Escalators and Moving Walks. In existing buildings, previously approved escalators and moving walks complying with 5-2.7 and located within the required means of egress shall be permitted.

28-2.2.9 Fire Escape Stairs. Existing fire escape stairs complying with 5-2.8 shall be permitted.

28-2.2.10 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

Exception: Fixed industrial stairs in accordance with ANSI A1264.1, Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railings Systems, minimum requirements for fixed stairs shall be permitted where fire escape ladders are permitted in accordance with 5-2.9.1.

28-2.2.11 Slide Escapes. Approved slide escapes complying with 5-2.10 shall be permitted as components in 100 percent of the required means of egress for both new and existing high hazard industrial occupancies. Slide escapes shall be counted as means of egress only where regularly used in drills so that occupants are familiar with their use through practice.

28-2.2.12 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

28-2.2.13 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

28-2.3 Capacity of Means of Egress. The capacity of means of egress shall be in accordance with Section 5-3.

Exception: In special purpose industrial occupancies, means of egress shall be sized to accommodate the occupant load as determined in accordance with the Exception to 28-1.7; spaces not subject to human occupancy because of the presence of machinery or equipment shall be excluded from consideration.

28-2.4 Number of Means of Egress. (See also Section 5-4.)

28-2.4.1 There shall be not less than two means of egress from every story or section, and at least one exit must be reached without traversing another story.

Exception: In low and ordinary hazard industrial occupancies, a single means of egress shall be permitted from any story or section, provided that the exit can be reached within the distance allowed as common path of travel. (See 28-2.5.3.)

28-2.4.2 Floors or portions thereof with an occupant load of more than 500 shall have the minimum number of separate and remote means of egress specified by 5-4.1.2.

Exception: Existing buildings.

28-2.4.3 Areas with high hazard contents shall comply with Section 5-11.

28-2.5 Arrangement of Means of Egress.

28-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

28-2.5.2 Dead-end corridors in general industrial and special purpose industrial occupancies shall not exceed 50 ft (15 m).

28-2.5.3 Common paths of travel in general industrial and special purpose industrial occupancies shall not exceed 50 ft (15 m).

Exception: In buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, common paths of travel shall not exceed 100 ft (30 m).

28-2.5.4 Common paths of travel shall be prohibited in high hazard industrial occupancies.

Exception: As permitted by the Exception to 5-11.3.

28-2.5.5 Ancillary Facilities.

28-2.5.5.1* Means of egress from ancillary facilities shall be arranged to permit travel in independent directions such that both means of egress paths are not compromised by the same fire or similar emergency.

Exception: Existing facilities.

28-2.5.5.2* Ancillary facilities in special purpose industrial occupancies where delayed evacuation is anticipated shall have minimum 2-hr fire resistance-rated separation from the predominant industrial occupancy, and shall have one means of egress that is separated from the predominant industrial occupancy by 2-hr fire resistance-rated construction.

Exception: Existing facilities.

28-2.5.6 Industrial equipment access walkways, platforms, ramps, and stairs that serve as a component of the means of egress from the involved equipment shall be permitted in accordance with the applicable provisions of Chapter 5 as modified by Table 28-2.5.6. Any such means of egress component shall not serve more than 20 people.

Table 28-2.5.6 Equipment Access Dimensional Criteria

Minimum horizontal dimension of any walkway, landing, or platform	22 in. (55.9 cm) clear
Minimum stair or ramp width	22 in. (55.9 cm) clear between rails
Minimum tread width	22 in. (55.9 cm) clear
Minimum tread depth	10 in. (25.4 cm)
Maximum riser height	9 in. (22.9 cm)
Maximum height between landings	12 ft (3.7 m)
Headroom, minimum	6 ft 8 in. (203 cm)

28-2.6 Travel Distance to Exits.

28-2.6.1 Travel distance, measured in accordance with Section 5-6, shall not exceed 200 ft (60 m).

Exception No. 1: Travel distance shall not exceed 250 ft (76 m) in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: As permitted by 28-2.6.2.

Exception No. 3: As permitted by 28-2.6.3.

Exception No. 4: Travel distance to exits in high hazard industrial occupancies shall not exceed 75 ft (23 m).

28-2.6.2 In low or ordinary hazard general industrial occupancies, travel distance shall not exceed 400 ft (122 m) if the following additional provisions are met in full:

(a) Application shall be limited to one-story buildings.

(b)* Smoke and heat venting shall be provided by engineered means or by building configuration to ensure that occupants shall not be overtaken by spread of fire or smoke within 6 ft (183 cm) of floor level before they have time to reach exits.

(c) Automatic sprinkler or other automatic fire extinguishing systems installed in accordance with Section 7-7 shall be provided. The extinguishing system shall be supervised.

28-2.6.3 In low or ordinary hazard special purpose industrial occupancies, travel distance shall not exceed 300 ft (91 m), or if the building is protected throughout by a supervised, automatic sprinkler system installed in accordance with Section 7-7, travel distance shall not exceed 400 ft (122 m).

28-2.7 Discharge from Exits. Discharge from exits shall be in accordance with Section 5-7.

28-2.8 Illumination of Means of Egress. Illumination of means of egress shall be provided in accordance with Section 5-8.

Exception: Structures occupied only during daylight hours, with skylights or windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.

28-2.9* Emergency Lighting. All industrial occupancies shall have emergency lighting in accordance with Section 5-9.

Exception No. 1: Special purpose industrial occupancies without routine human habitation.

Exception No. 2: Structures occupied only during daylight hours, with skylights or windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.

28-2.10 Marking of Means of Egress. Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

28-2.11 Special Means of Egress Features. (Reserved.)

SECTION 28-3 PROTECTION

28-3.1 Protection of Vertical Openings. Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with Chapter 5 and 6-2.4.

Exception No. 1: Unprotected vertical openings connecting not more than three floors shall be permitted in accordance with 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: In special purpose and high hazard occupancies where unprotected vertical openings are in new or existing buildings and are necessary to manufacturing operations, they shall be permitted beyond the specified limits, provided every floor level has direct access to one or more enclosed stairs or other exits protected against obstruction by any fire or smoke in the open areas connected by the unprotected vertical openings.

Exception No. 4: Existing open stairs, existing open ramps, and existing escalators shall be permitted where connecting only two floor levels.

Exception No. 5: In existing buildings with low or ordinary hazard contents and protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings shall be permitted, provided the vertical opening does not serve as a required exit. All required exits under such conditions shall consist of outside stairs in accordance with 5-2.2, smokeproof enclosures in accordance with 5-2.3, or horizontal exits in accordance with 5-2.4.

Exception No. 6: Two-story convenience openings in accordance with 6-2.4.8 shall be permitted.

28-3.2* Protection from Hazards. Every high hazard industrial occupancy, operation, or process shall have automatic extinguishing systems or such other protection appropriate to the particular hazard, such as explosion venting or suppression, protecting any area subject to an explosion hazard for the purpose of minimizing danger to occupants in case of fire or other emergency before they have time to utilize exits to escape. Activation of the fire extinguishing or suppression system shall initiate the required building fire alarm system in accordance with 28-3.4.3.4. Hazardous areas in industrial occupancies protected by automatic extinguishing systems shall be exempt from the smoke-resisting enclosure requirement of 6-4.1.2.

28-3.3 Interior Finish.

28-3.3.1 Interior finish shall be in accordance with Section 6-5.

28-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A, Class B, or Class C in operating areas; and interior wall and ceiling finish shall be as required by 5-1.4 in exit enclosures.

28-3.3.3 Interior Floor Finish. (No requirements.)

28-3.4 Detection, Alarm, and Communication Systems.

28-3.4.1 General. Industrial occupancies shall be provided with a fire alarm system installed in accordance with Section 7-6.

Exception: If the total capacity of the building is under 100 persons and fewer than 25 persons are above or below the level of exit discharge.

28-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

28-3.4.3 Notification.

28-3.4.3.1 The required fire alarm system shall either

(a) Provide occupant notification in accordance with 7-6.3, or

(b) Sound an audible and visible signal in a constantly attended location for the purposes of initiating emergency action.

28-3.4.3.2 A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

28-3.4.3.3 A positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

28-3.4.3.4 In high hazard industrial occupancies as defined in 28-1.4, the required fire alarm system shall automatically initiate an occupant evacuation alarm signal in accordance with 7-6.3.

28-3.5 Extinguishing Requirements. (None.)

28-3.6 Corridors. The provisions of 5-1.3.1 shall not apply.

SECTION 28-4 SPECIAL PROVISIONS

28-4.1 High-Rise Buildings. High-rise industrial occupancies shall comply with the automatic sprinkler requirements of 32-8.2.1.

Exception No. 1: Low hazard industrial occupancies.

Exception No. 2: Special purpose industrial occupancies.

Exception No. 3: Existing industrial occupancies.

SECTION 28-5 BUILDING SERVICES

28-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

28-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

28-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

28-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 28-6* SPECIAL PROVISIONS FOR AIRCRAFT SERVICING HANGARS

28-6.1 The requirements of Sections 28-1 through 28-5 shall be met, except as modified by 28-6.2 through 28-6.4.

28-6.2 Exits from aircraft servicing areas shall be provided at intervals of not more than 150 ft (45 m) on all exterior walls. There shall be a minimum of two means of egress from each aircraft servicing area. Horizontal exits through interior fire walls shall be provided at intervals of not more than 100 ft (30 m) along the wall.

Exception: Dwarf or "smash" doors in doors used for accommodating aircraft shall be permitted to be used for compliance with these requirements.

28-6.3 Means of egress from mezzanine floors in aircraft servicing areas shall be arranged so that the maximum travel distance to reach the nearest exit from any point on the mezzanine shall not exceed 75 ft (23 m). Such means of egress shall lead directly to a properly enclosed stair discharging directly to the exterior, to a suitable cutoff area, or to outside stairs.

28-6.4 No dead end shall be permitted to be more than 50 ft (15 m) deep.

Exception: No dead end shall be allowed for high hazard contents areas.

CHAPTER 29 STORAGE OCCUPANCIES

SECTION 29-1 GENERAL REQUIREMENTS

29-1.1 Application. The requirements of this chapter shall apply to both new and existing storage occupancies. Storage occupancies shall include all buildings or structures used primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals.

29-1.2 Mixed Occupancies. (See 4-1.12 and 29-1.4.)

29-1.3 Special Definitions. (None.)

29-1.4 Classification of Occupancy. Storage occupancies shall include all occupancies defined in 4-1.10. Incidental storage in another occupancy shall not be the basis for overall occupancy classification.

Exception: Storage occupancies or areas of storage occupancies that are used for the purpose of packaging, labeling, sorting, special handling, or other operations requiring an occupant load greater than that normally contemplated for storage shall be classified as industrial occupancies. (See Chapter 28.)

29-1.5 Classification of Hazard of Contents. Contents of storage occupancies shall be classified as low hazard, ordinary hazard, or high hazard, in accordance with Section 4-2, depending upon the character of the materials stored, their packaging, and other factors.

29-1.6 Minimum Construction Requirements. (No requirements.)

29-1.7* Occupant Load. For purposes of determining required egress capacity, the occupant load of storage occupancies shall not be less than the maximum probable number of occupants present at any time.

SECTION 29-2 MEANS OF EGRESS REQUIREMENTS

29-2.1 General. Every required means of egress shall be in accordance with the applicable portions of Chapter 5.

29-2.2 Means of Egress Components.

29-2.2.1 Components of means of egress shall be limited to the types described in 29-2.2.2 through 29-2.2.12.

29-2.2.2 Doors.

29-2.2.2.1 Doors complying with 5-2.1 shall be permitted.

29-2.2.2.2 Delayed egress locks complying with 5-2.1.6.1 shall be permitted.

29-2.2.2.3 Access-controlled egress doors complying with 5-2.1.6.2 shall be permitted.

29-2.2.2.4 Existing horizontal sliding fire doors shall be permitted in the means of egress under the following conditions:

- (a) They are held open by fusible links,
- (b) The links are rated at not less than 165°F (74°C),
- (c) The fusible links are located not more than 10 ft (3 m) above the floor,
- (d) The fusible link is in immediate proximity to the door opening,
- (e) The fusible link is not located above a ceiling, and
- (f) The door is not credited with providing any protection under this Code.

29-2.2.3 Stairs.

29-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

29-2.2.3.2 Spiral stairs complying with 5-2.2.2.4 shall be permitted.

29-2.2.3.3 In existing buildings, winders complying with 5-2.2.2.5 shall be permitted.

29-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

29-2.2.5 Horizontal Exits.

29-2.2.5.1 Horizontal exits complying with 5-2.4 shall be permitted.

29-2.2.5.2* In horizontal exits where the doorway is protected by a fire door on each side of the wall in which it is located, one fire door shall be of the swinging type as provided in 5-2.4.3.6 and the other shall be permitted to be an automatic sliding fire door that shall be kept open whenever the building is occupied.

29-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

29-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

29-2.2.8 Fire Escape Stairs. Existing fire escape stairs complying with 5-2.8 shall be permitted.

29-2.2.9 Fire Escape Ladders. Fire escape ladders complying with 5-2.9 shall be permitted.

29-2.2.10 Slide Escapes. Existing slide escapes complying with 5-2.10 shall be permitted.

29-2.2.11 Alternating Tread Devices. Alternating tread devices complying with 5-2.11 shall be permitted.

29-2.2.12 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

29-2.3 Capacity of Means of Egress. The capacity of means of egress shall be in accordance with Section 5-3.

29-2.4 Number of Means of Egress. (See also Section 5-4.)

29-2.4.1 Every building or structure used for storage and every section thereof considered separately shall have at least two separate means of egress as remotely located from each other as practicable.

Exception No. 1: In low hazard storage occupancies, a single means of egress shall be permitted from any story or section.

Exception No. 2: In ordinary hazard storage occupancies, a single means of egress shall be permitted from any story or section, provided that the exit can be reached within the distance allowed as common path of travel. (See 29-2.5.4.)

29-2.4.2 Floors or portions thereof with an occupant load of more than 500 persons shall have the minimum number of separate and remote means of egress specified by 5-4.1.2.

Exception: Existing buildings.

29-2.5 Arrangement of Means of Egress.

29-2.5.1 Means of egress shall be arranged in accordance with Section 5-5.

29-2.5.2 In storage occupancies with low hazard contents, dead-end corridors and common paths of travel shall be permitted without limitation.

29-2.5.3 In storage occupancies with ordinary hazard contents, dead-end corridors shall not exceed 50 ft (15 m).

Exception: Dead-end corridors shall not exceed 100 ft (30 m) in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

29-2.5.4 In storage occupancies with ordinary hazard contents, common paths of travel shall not exceed 50 ft (15 m).

Exception: Common paths of travel shall not exceed 100 ft (30 m) in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

29-2.5.5 Dead-end corridors and common paths of travel shall be prohibited in high hazard storage occupancies.

Exception: As permitted by the Exception to 5-11.3.

29-2.6* Travel Distance to Exits. (See also Section 5-6.) Travel to exits shall not exceed 200 ft (60 m) from any point to reach the nearest exit.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, travel distance shall not exceed 400 ft (122 m).

Exception No. 2: There shall be no limitations on travel distance to exits for low hazard storage occupancies.

Exception No. 3: Every area used for the storage of high hazard commodities shall have an exit within 75 ft (23 m) of any point in the area where persons might be present. Travel distance shall be measured in accordance with Section 5-6.

Exception No. 4: In areas used for the storage of high hazard commodities and protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7, travel distance to an exit shall be within 100 ft (30 m) of any point in the area where persons might be present.

29-2.7 Discharge from Exits. Discharge from exits shall be in accordance with Section 5-7.

29-2.8 Illumination of Means of Egress. Illumination of means of egress shall be provided in accordance with Section 5-8.

Exception: In structures occupied only during daylight hours, with windows arranged to provide the required level of illumination on all portions of the means of egress during these hours, illumination requirements shall be permitted to be waived by special permission of the authority having jurisdiction.

29-2.9 Emergency Lighting. Storage occupancies shall be provided with emergency lighting in accordance with Section 5-9.

Exception No. 1: Storage occupancies shall not require emergency lighting when not normally occupied.

Exception No. 2: In structures occupied only during daylight hours, with skylights or windows arranged to provide the required level of illumination on all portions of the means of egress during these hours, emergency lighting shall not be required.

29-2.10 Marking of Means of Egress. Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

29-2.11 Special Means of Egress Features. (Reserved.)

SECTION 29-3 PROTECTION

29-3.1 Protection of Vertical Openings. Every stairway, elevator shaft, escalator opening, manlift opening, and other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: Unprotected vertical openings connecting not more than three floors shall be permitted in accordance with the conditions of 6-2.4.5.

Exception No. 2: Atriums in accordance with 6-2.4.6 shall be permitted.

Exception No. 3: In existing buildings with low or ordinary hazard contents and protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, unprotected vertical openings shall be permitted where they do not serve as required exits. All required exits under such conditions shall consist of outside stairs in accordance with 5-2.2, smokeproof enclosures in accordance with 5-2.3, or horizontal exits in accordance with 5-2.4.

Exception No. 4: Two-story convenience openings in accordance with 6-2.4.8 shall be permitted.

29-3.2 Protection from Hazards. (No requirements.) (See also Section 6-4.)

29-3.3 Interior Finish.

29-3.3.1 Interior finish shall be in accordance with Section 6-5.

29-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A, Class B, or Class C in storage areas; and interior wall and ceiling finish shall be as required by 5-1.4 in exit enclosures.

29-3.3.3 Interior Floor Finish. (No requirements.)

29-3.4 Detection, Alarm, and Communication Systems.

29-3.4.1 General. Storage occupancies shall be provided with a fire alarm system installed in accordance with Section 7-6.

Exception No. 1: Storage occupancies limited to low hazard contents.

Exception No. 2: Storage occupancies with ordinary or high hazard contents not exceeding an aggregate floor area of 100,000 sq ft (9300 sq m).

Exception No. 3: Storage occupancies with complete automatic extinguishment protection.

29-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

29-3.4.3 Notification.

29-3.4.3.1 The required fire alarm system shall either

(a) Provide occupant notification in accordance with 7-6.3, or

(b) Sound an audible and visible signal in a constantly attended location for the purposes of initiating emergency action.

29-3.4.3.2 A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

29-3.4.3.3 A positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

29-3.4.3.4 In high hazard storage occupancies, the required fire alarm system shall automatically initiate an occupant evacuation alarm signal in accordance with 7-6.3.

29-3.5 Extinguishing Requirements. (None.)

29-3.6 Corridors. The provisions of 5-1.3.1 shall not apply.

SECTION 29-4 SPECIAL PROVISIONS

29-4.1 High-Rise Buildings. High-rise storage occupancies shall comply with the automatic sprinkler requirements of 32-8.2.1.

Exception No. 1: Low hazard storage occupancies.

Exception No. 2: Existing storage occupancies.

SECTION 29-5 BUILDING SERVICES

29-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

29-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

29-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

29-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 29-6* SPECIAL PROVISIONS FOR AIRCRAFT STORAGE HANGARS

29-6.1 The requirements of Sections 29-1 through 29-5 shall be met, except as modified by 29-6.2 through 29-6.4.

29-6.2 Exits from aircraft storage areas shall be provided at intervals of not more than 150 ft (45 m) on all exterior walls. There shall be a minimum of two means of egress serving each aircraft storage area. Horizontal exits through interior fire walls shall be provided at intervals of not more than 100 ft (30 m) along the wall.

Exception: Dwarf or "smash" doors in doors used for accommodating aircraft shall be permitted to be used for compliance with these requirements.

29-6.3 Means of egress from mezzanine floors in aircraft storage areas shall be arranged so that the maximum travel distance to reach the nearest exit from any point on the mezzanine shall not exceed 75 ft (23 m). Such means of egress

shall lead directly to a properly enclosed stair discharging directly to the exterior, to a suitable cutoff area, or to outside stairs.

29-6.4 No dead end shall be permitted to be more than 50 ft (15 m) deep.

Exception: No dead end shall be allowed for high hazard contents areas.

SECTION 29-7* SPECIAL PROVISIONS FOR GRAIN OR OTHER BULK STORAGE ELEVATORS

29-7.1 The requirements of Sections 29-1 through 29-5 shall be met, except as modified by 29-7.2 through 29-7.4.

29-7.2 There shall be at least two means of egress from all working levels of the head house. One of these means of egress shall be a stair to the level of exit discharge that is enclosed by a dust-resistant 1-hr fire resistance-rated enclosure in accordance with 5-1.3. The second means of egress shall be either

(a) An exterior stair or basket ladder-type fire escape accessible from all working levels of the head house that provides a passage to ground level; or

(b) An exterior stair or basket ladder-type fire escape accessible from all working levels of the head house that provides access to the top of adjoining structures and that provides a continuous path to the means of egress described in 29-7.3.

Exception: Stair enclosures in existing structures shall be permitted to have non-fire-rated dust-resistant enclosures.

29-7.3 There shall be an exterior stair or basket ladder-type fire escape that provides passage to ground level from the top of the end of an adjoining structure, such as a silo, conveyor, gallery, or gantry.

29-7.4 Underground Spaces.

29-7.4.1 Underground spaces shall have at least two means of egress, one of which shall be permitted to be a means of escape. The means of escape shall be arranged to eliminate dead ends.

29-7.4.2 Travel distance to means of escape or exit shall not exceed 200 ft (60 m).

Exception No. 1: Existing facilities.

Exception No. 2: In a building protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7, travel distance shall not exceed 400 ft (122 m).

SECTION 29-8 SPECIAL PROVISIONS FOR PARKING STRUCTURES**29-8.1 General Requirements.**

29-8.1.1* Application. The following provisions shall apply to parking structures of closed or open type, above or below ground, but not to mechanical or exclusively attendant-type parking facilities, which are not occupied by customers. The requirements of Sections 29-1 through 29-7 shall not apply.

29-8.1.2 Mixed Occupancies.

29-8.1.2.1 Where both parking and repair operations are conducted in the same building, the entire building shall comply with Chapter 28.

Exception: If the parking and repair sections are separated by a minimum of 1-hr fire-rated construction, the parking and repair sections shall be permitted to be treated separately.

29-8.1.2.2 In areas where repair operations are conducted, the means of egress shall comply with Chapter 28.

29-8.1.3 Special Definitions.

Open-Air Parking Structure. Structures used for the parking or storage of motor vehicles and having the following:

(a) Uniformly distributed openings in exterior walls on not less than two sides totaling not less than 40 percent of the building perimeter, and

(b) Aggregate areas of such openings in exterior walls in each level not less than 20 percent of the total perimeter wall area of each level, and

(c) Interior wall lines and columns at least 20 percent open with openings distributed to permit ventilation.

29-8.1.4 Classification of Occupancy. Incidental vehicle parking in another occupancy shall not be the basis for overall occupancy classification.

29-8.1.5 Classification of Hazard of Contents. Parking structures used only for the storage of vehicles shall be classified as ordinary hazard in accordance with Section 4-2.

29-8.1.6 Minimum Construction Requirements. (No requirements.)

29-8.1.7 Occupant Load. (No requirements.)

29-8.2 Means of Egress Requirements.

29-8.2.1 General. Means of egress shall be in accordance with Chapter 5 and this section.

29-8.2.2 Means of Egress Components.

29-8.2.2.1 Components of means of egress shall be limited to the types described in 29-8.2.2.2 through 29-8.2.2.9.

29-8.2.2.2 Doors.

29-8.2.2.2.1 Doors complying with 5-2.1 shall be permitted.

29-8.2.2.2.2 Special locking arrangements complying with 5-2.1.6 shall be permitted.

29-8.2.2.2.3 An opening for the passage of automobiles shall be permitted to serve as an exit from a street floor, provided no door or shutter is installed therein.

29-8.2.2.3 Stairs.

29-8.2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

29-8.2.2.3.2 In existing buildings, winders complying with 5-2.2.5 shall be permitted.

29-8.2.2.3.3 Guard details for parking garages accessible to the general public shall meet the requirements of 5-2.4.6(c).

29-8.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

29-8.2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

29-8.2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted and shall not be subject to normal vehicular traffic where used as an exit.

Exception No. 1: In a ramp-type open-air parking structure with open vehicle ramps not subject to closure, the ramp shall be permitted to serve in lieu of the second means of egress from floors above the level of exit discharge, provided the ramp discharges directly outside at the street level.

Exception No. 2: For parking structures extending only one floor level below the level of exit discharge, a vehicle ramp leading directly to the outside shall be permitted to serve in lieu of the second means of egress, provided no door or shutter is installed therein.

29-8.2.2.6.1 Guard details for parking garages accessible to the general public shall meet the requirements of 5-2.4.6(c).

29-8.2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

29-8.2.2.8 Fire Escape Stairs. Fire escape stairs complying with 5-2.8 shall be permitted for existing parking structures only.

29-8.2.2.9 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

29-8.2.3 Capacity of Means of Egress. (See also 29-8.2.4 and 29-8.2.5.)

29-8.2.4 Number of Means of Egress. (See also Section 5-4.)

29-8.2.4.1 There shall not be less than two means of egress from every floor or section of every parking structure.

29-8.2.4.2 Floors or portions thereof with an occupant load of more than 500 persons shall have the minimum number of separate and remote means of egress specified by 5-4.1.2.

Exception: Existing buildings.

29-8.2.5 Arrangement of Means of Egress. (See also Section 5-5.)

29-8.2.5.1 Means of egress shall be arranged so that from any point in the parking structure the paths of travel to the two exits will be in different directions.

Exception: A common path of travel shall be permitted for the first 50 ft (15 m) from any point.

29-8.2.5.2 Dead ends shall not exceed 50 ft (15 m).

29-8.2.5.3 If fuel dispensing devices are located within a parking structure, travel away from the fuel dispensing device in any direction shall lead to an exit with no dead end in which occupants might be trapped by fire. Within closed parking structures, exits shall be arranged and located to meet the following additional requirements:

(a) Exits shall lead to the outside of the building on the same level or to stairs; no upward travel shall be permitted unless direct outside exits are available from that floor, and

(b) Any story below that story at which fuel is being dispensed shall have exits leading directly to the outside via outside stairs or doors at ground level.

29-8.2.6 Travel Distance to Exits. Means of egress in parking structures shall be arranged so that no point will be more than 150 ft (45 m), measured in accordance with Section 5-6, from the nearest exit.

Exception No. 1: Travel distance shall not exceed 300 ft (91 m) for open floors of nonsprinklered, open-air parking structures and 400 ft (120 m) in open-air parking structures protected throughout by an approved, automatic sprinkler system.

Exception No. 2: Travel distance shall not exceed 200 ft (60 m) for enclosed parking structures protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 3: Travel distance in parking structures open a minimum of 50 percent on all sides shall not exceed 400 ft (120 m).

29-8.2.7 Discharge from Exits. Exit discharge shall comply with Section 5-7.

29-8.2.8 Illumination of Means of Egress. Parking structures shall be provided with illumination of means of egress in accordance with Section 5-8.

Exception: Structures occupied only during daylight hours, arranged to provide the required level of illumination of all portions of the means of egress by natural means, shall be permitted to have the requirement for artificial illumination waived by the authority having jurisdiction.

29-8.2.9 Emergency Lighting. Parking structures shall be provided with emergency lighting in accordance with Section 5-9.

Exception: In structures occupied only during daylight hours, arranged to provide the required level of illumination of all portions of the means of egress by natural means, emergency lighting shall not be required.

29-8.2.10 Marking of Means of Egress. Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

29-8.2.11 Special Means of Egress Features. (Reserved.)

29-8.3 Protection.

29-8.3.1 Protection of Vertical Openings. (No requirements.)

29-8.3.2 Protection from Hazards. (No requirements.)

29-8.3.3 Interior Finish.

29-8.3.3.1 Interior finish shall be in accordance with Section 6-5.

29-8.3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish complying with 6-5.5 shall be Class A, Class B, or Class C in parking structures; and interior wall and ceiling finish shall be as required by 5-1.4 in exit enclosures.

29-8.3.3.3 Interior Floor Finish. (No requirements.)

29-8.3.4 Detection, Alarm, and Communication Systems.

29-8.3.4.1 General. Parking structures exceeding an aggregate floor area of 100,000 sq ft (9300 sq m) shall be provided with a fire alarm system installed in accordance with Section 7-6.

Exception No. 1: Open-air parking structures.

Exception No. 2: Parking structures protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

29-8.3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means in accordance with 7-6.2.1(a).

Exception No. 1: Initiation shall be permitted by means of an approved, automatic fire detection system installed in accordance with 7-6.2.1(b) that provides protection throughout the building.

Exception No. 2: Initiation shall be permitted by means of an approved, automatic sprinkler system installed in accordance with 7-6.2.1(c) that provides protection throughout the building.

29-8.3.4.3 Notification.

29-8.3.4.3.1 The required fire alarm system shall sound an audible alarm in a continuously attended location for purposes of initiating emergency action.

29-8.3.4.3.2 A presignal system in accordance with Exception No. 1 to 7-6.3.2 shall be permitted.

29-8.3.4.3.3 A positive alarm sequence in accordance with Exception No. 2 to 7-6.3.2 shall be permitted.

29-8.3.5 Extinguishing Requirements. (None.)

29-8.3.6 Corridors. The provisions of 5-1.3.1 shall not apply.

29-8.4 Special Provisions.

29-8.4.1 High-Rise Buildings. (No requirements.)

29-8.5 Building Services.

29-8.5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

29-8.5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2 except as otherwise required in Section 29-8.

29-8.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

29-8.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 30 NEW DAY-CARE OCCUPANCIES

SECTION 30-1 GENERAL REQUIREMENTS

30-1.1* Application.

30-1.1.1 The requirements of this chapter apply to the following:

- (a) New buildings or portions thereof used as day-care occupancies (*see Section 1-3*); and
- (b) Additions made to, or used as, a day-care occupancy (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing day-care occupancies (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a day-care occupancy (*see 1-3.12*).

30-1.1.2 Sections 30-1 through 30-5 and 30-7 establish life safety requirements for day-care occupancies in which more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day.

30-1.1.3 Sections 30-1 (other than 30-1.6), 30-6, and 30-7 establish life safety requirements for day-care homes as defined in 30-1.3.

30-1.1.4 Where a facility houses more than one age group of self-preservation capability, the strictest requirements applicable to any group present shall apply throughout the day-care occupancy or building, as applicable, unless the area housing that group is maintained as a separate fire area.

30-1.1.5 Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

30-1.2 Mixed Occupancies.

(a) *General.* Where day-care occupancies are located in a building containing mixed occupancies, the occupancies shall be separated by minimum 1-hr rated fire barriers constructed in accordance with 6-2.3.

Exception to (a): Day-care occupancies in assembly occupancies used primarily for worship.

(b) *Day-Care Occupancies in Apartment Buildings.* If the two exit accesses from the day-care occupancy enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire resistance rating constructed in accordance with Section 6-3. The smoke barrier shall be located so that it has an exit on each side.

30-1.3 Special Definitions.

Day-Care Home. A building or part of a building in which more than three but not more than 12 clients receive care, maintenance, and supervision, by other than their relative(s) or legal guardians(s), for less than 24 hr per day (generally within a dwelling unit).

Flexible Plan and Open Plan Day-Care Buildings. These include a building or portion of a building designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by tables, chairs, desks, bookcases, counters, low-height [maximum 5-ft (1.5-m)] partitions, or similar furnishings.

Self-Preservation.* A client that is capable of self-preservation is one that can evacuate the building without direct intervention by a staff member.

Separate Atmosphere. The atmosphere that exists between rooms, spaces, or areas that are separated by an approved smoke barrier.

30-1.4 Classification of Occupancy. (*See 4-1.11.*)

30-1.4.1 Occupancies that include part-day preschools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age shall comply with the provisions of Chapter 10.

30-1.4.2 Adult day-care shall include any building or portion thereof used for less than 24 hr per day to house more than three adults requiring care, maintenance, and supervision by other than their relative(s). Clients shall be ambulatory or semi-ambulatory and shall not be bedridden. They shall not exhibit behavior that is harmful to themselves or others.

30-1.5 Classification of Hazard of Contents. The contents shall be classified as ordinary hazard in accordance with Section 4-2.

30-1.6 Location and Construction.

30-1.6.1 Day-care occupancies shall be limited to the locations/construction types specified in Table 30-1.6.1.

Table 30-1.6.1 Location/Construction Type Limitations

Location of Day Care	Sprinklered Building	Construction Type Permitted
1 story below LED	Yes	Any type other than III(200) & V(000)
Story of exit discharge	No	Any type
1 story above LED	Yes	Any type
	No	I(443), I(332), II(222)
2 or 3 stories above LED	Yes	Any type other than III(200), IV(2HH), & V(000)
>3 stories above LED, but not high rise	Yes	I(443), I(332), II(222) or II(111)
High rise	Yes	I(443), I(332), or II(222)

30-1.6.2 Where day-care occupancies with clients 24 months or less in age or incapable of self-preservation are located one or more stories above the level of exit discharge or where day-care occupancies are located two or more stories above the level of exit discharge, smoke barriers shall be provided to divide such stories into a minimum of two smoke compartments. The smoke barriers shall be constructed in accordance with Section 6-3 but shall not be required to have a fire resistance rating.

30-1.7 Occupant Load.

30-1.7.1 The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor but not less than the number calculated on the basis of one person for each 35 sq ft (3.3 sq m) of net floor area used by the clients.

30-1.7.2 The occupant load of a day-care occupancy or a portion thereof shall be permitted to be modified from that specified above if the necessary aisles and exits are provided. An approved aisle, seating, and exiting diagram shall be required by the authority having jurisdiction to substantiate such a modification.

SECTION 30-2 MEANS OF EGRESS REQUIREMENTS**30-2.1 General.**

30-2.1.1 Means of egress shall be in accordance with Chapter 5 and this section.

30-2.2 Means of Egress Components.

30-2.2.1 Components of means of egress shall be limited to the types described in 30-2.2.2 through 30-2.2.8.

30-2.2.2 Doors.

30-2.2.2.1 General. Doors complying with 5-2.1 shall be permitted.

30-2.2.2.2 Panic Hardware or Fire Exit Hardware. Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware.

30-2.2.2.3 Door Closure. Any exit door designed to normally be kept closed shall comply with 5-2.1.8.

30-2.2.2.4 Locks and Latches. Only one locking or latching device shall be permitted on a door or on one leaf of a pair of doors.

30-2.2.2.5 Special Locking Arrangements. Special locking arrangements complying with 5-2.1.6 shall be permitted.

30-2.2.2.6* Closet Doors. Every closet door latch shall be such that clients can open the door from inside the closet.

30-2.2.2.7 Bathroom Doors. Every bathroom door lock shall be designed to permit opening of the locked door from the outside in an emergency. The opening device shall be readily accessible to the staff.

30-2.2.3* Stairs. Stairs complying with 5-2.2 shall be permitted.

30-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

30-2.2.5 Horizontal Exits. Horizontal exits complying with 5-2.4 shall be permitted.

30-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

30-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

30-2.2.8 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

30-2.3 Capacity of Means of Egress. Capacity of means of egress shall be in accordance with Section 5-3.

30-2.4 Number of Exits. Each floor occupied by clients shall have not less than two remotely located exits in accordance with Chapter 5.

30-2.5 Arrangement of Means of Egress. (See also 30-1.6.2.)

30-2.5.1 Means of egress shall be arranged in accordance with Section 5-5. No dead-end corridor shall exceed 20 ft (6.1 m).

30-2.5.2 Every room or space with an occupant load of more than 50 persons or an area of more than 1000 sq ft (93 sq m) shall have at least two exit access doorways as remotely located from each other as practicable. Such doorways shall provide access to separate exits, but where egress is through corridors, they shall be permitted to open onto a common corridor leading to separate exits located in opposite directions.

30-2.6 Travel Distance to Exits.

30-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

30-2.6.2 Travel Distance.

(a) The travel distance between any room door intended as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m); and

(c) The travel distance between any point in a sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

Exception: The travel distance in (a) and (b) above shall be permitted to be increased by 50 ft (15 m) in buildings protected throughout by an approved supervised automatic sprinkler system installed in accordance with Section 7-7.

30-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

30-2.8 Illumination of Means of Egress. Means of egress shall be illuminated in accordance with Section 5-8.

30-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9 in the following areas:

- (a) Interior stairs and corridors.
- (b) Normally occupied spaces.

Exception to (b): Administrative areas, general classrooms, and mechanical rooms and storage areas.

- (c) Flexible and open plan buildings.
- (d) Interior or windowless portions of buildings.
- (e) Shops and laboratories.

30-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

30-2.11 Special Means of Egress Features.

30-2.11.1 Windows for Rescue and Ventilation. Every room or space normally subject to client occupancy, other than bathrooms, shall have at least one outside window for emergency rescue and ventilation. Such window shall be openable from the inside without the use of tools and shall provide a

clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area. The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. The clear opening shall permit a rectangular solid, with a minimum width and height that provides the required 5.7 sq ft (0.53 sq m) opening and a minimum depth of 20 in. (51 cm), to pass fully through the opening.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

SECTION 30-3 PROTECTION

30-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

30-3.2 Protection from Hazards.

30-3.2.1 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following:

(a) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Boiler and furnace rooms.

Exception to (a)(1): Rooms enclosing only air-handling equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction.

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

- (4) Janitor closets.

Exception to (a)(4): Doors to janitor closets shall be permitted to have ventilating louvers where the space is protected by automatic sprinklers.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Laundries.

(2) Maintenance shops, including woodworking and painting areas.

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction.

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted in accordance with 7-7.1.2.

Exception: Food preparation facilities protected in accordance with 7-2.3 shall not be required to have openings protected between food preparation areas and dining areas. Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities shall not be required if approved by the authority having jurisdiction.

gation of food preparation facilities shall not be required if approved by the authority having jurisdiction.

30-3.3 Interior Finish.

30-3.3.1 Interior finish shall be in accordance with Section 6-5.

30-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A in stairways, corridors, and lobbies; in all other occupied areas, interior wall and ceiling finish shall be Class A or Class B.

30-3.3.3 Interior Floor Finish. Interior floor finish materials in accordance with 6-5.5 shall be Class I or Class II within corridors and exits.

30-3.4 Detection, Alarm, and Communication Systems.

30-3.4.1 General. Day-care occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

Exception: Day-care occupancies housed in one room.

30-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means and by operation of any required smoke detectors and required sprinkler systems. (See 30-3.4.5.)

Exception: Single-station smoke detectors.

30-3.4.3 Occupant Notification. Occupant notification shall be in accordance with 7-6.3.

30-3.4.4 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

30-3.4.5 Detection. A smoke detection system shall be installed in accordance with Section 7-6, with placement of detectors in each story in front of doors to the stairways and in the corridors of all floors occupied by the day-care occupancy. Detectors also shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy.

Exception: Day-care occupancies housed in one room.

30-3.5 Extinguishment Requirements. Any required sprinkler systems shall be installed in accordance with Section 7-7.

30-3.6 Corridors. Every interior corridor shall be constructed of walls having not less than a 1-hr fire resistance rating in accordance with 6-2.3.

SECTION 30-4 SPECIAL PROVISIONS

30-4.1 Windowless or Underground Buildings. Windowless or underground buildings shall comply with Section 32-7.

30-4.2 High-Rise Buildings. High-rise buildings that house day-care occupancies on floors more than 75 ft (23 m) above the lowest level of fire department vehicle access shall comply with Section 32-8.

30-4.3 Flexible Plan and Open Plan Buildings.

30-4.3.1 Flexible plan and open plan buildings shall comply with the requirements of this chapter as modified by 30-4.3.2 through 30-4.3.4.

30-4.3.2 Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are

required, not more than two of them shall enter into a common atmosphere.

30-4.3.3 Flexible plan buildings shall be permitted to have walls and partitions rearranged periodically only if revised plans or diagrams have been approved by the authority having jurisdiction.

30-4.3.4 Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position.

SECTION 30-5 BUILDING SERVICES

30-5.1 Utilities.

30-5.1.1 Utilities shall comply with the provisions of Section 7-1.

30-5.1.2 Special protective covers for all electrical receptacles shall be installed in all areas occupied by clients.

30-5.2 Heating, Ventilating, and Air Conditioning.

30-5.2.1 Heating, ventilating, and air conditioning equipment shall be installed in accordance with Section 7-2.

30-5.2.2 Unvented fuel-fired room heaters shall not be permitted.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

30-5.2.3 Any heating equipment in spaces occupied by clients shall be provided with partitions, screens, or other means to protect clients from hot surfaces and open flames. If solid partitions are used to provide such protection, provisions shall be made to ensure adequate air for combustion and ventilation for the heating equipment.

30-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

30-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 30-6 DAY-CARE HOMES

30-6.1 General Requirements.

30-6.1.1 Application.

30-6.1.1.1 The requirements of this section apply to the following:

- (a) New buildings or portions thereof used as day-care homes (*see Section 1-3*); and
- (b) Additions made to, or used as, a day-care home (*see 1-3.6*); and
- (c) Alterations, modernizations, or renovations of existing day-care homes (*see 1-3.7*); and
- (d) Existing buildings or portions thereof upon change of occupancy to a day-care home (*see 1-3.12*).

30-6.1.1.2 (*See also 30-6.1.4.*) This section establishes life safety requirements for day-care homes in which more than three but not more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit).

Exception: Facilities that supervise clients on a temporary basis with a parent or guardian in close proximity.

30-6.1.1.3 Where a facility houses more than one age group of self-preservation capability, the strictest requirements applicable to any group present shall apply throughout the day-care home or building, as applicable, unless the area housing that group is maintained as a separate area.

30-6.1.1.4 Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

30-6.1.2 Mixed Occupancies.

(a) *General.* Where day-care occupancies are located in a building containing mixed occupancies, the occupancies shall be separated by minimum 1-hr rated fire barriers constructed in accordance with 6-2.3.

Exception to (a): Day-care homes in assembly occupancies used primarily for worship.

(b) *Group Day-Care Homes in Apartment Buildings.* If the two exit accesses from the group day-care home enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire resistance rating constructed in accordance with Section 6-3. The smoke barrier shall be located so that it has an exit on each side.

30-6.1.3 Special Definitions.

Self-Preservation.* A client that is capable of self-preservation is one that can evacuate the building without direct intervention by a staff member.

30-6.1.4 Classification of Occupancy.

30-6.1.4.1 Occupancies that include part-day preschools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age shall comply with the provisions of Chapter 10.

30-6.1.4.2 Subclassification of Day-Care Homes.

(a) *Family Day-Care Homes.* A family day-care home is a day-care home in which more than three but fewer than seven clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit). Requirements for family day-care homes are based on a minimum staff-to-client ratio of one staff for up to six clients, including the caretaker's own children under age six, with no more than two clients incapable of self-preservation.

(b) *Group Day-Care Homes.* A group day-care home is a day-care home in which at least seven but not more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit). Requirements for group day-care homes are based on a minimum staff-to-client ratio of two staff for up to 12 clients, with no more than three clients incapable of self-preservation. This staff-to-client ratio shall be permitted to be modified by the authority having jurisdiction where safeguards in addition to those specified by this section are provided.

30-6.1.5 Classification of Hazard of Contents. The contents shall be limited to those classified as ordinary hazard in accordance with Section 4-2.

30-6.1.6 Minimum Construction Requirements. (None.)**30-6.1.7 Occupant Load.** (No special requirements.)**30-6.2 Means of Escape Requirements.****30-6.2.1 General.** Means of escape shall comply with Section 21-2.**30-6.2.2** (Reserved.)**30-6.2.3** (Reserved.)**30-6.2.4 Number of Means of Escape.****30-6.2.4.1** Number of means of escape shall comply with Section 21-2 and 30-6.2.4.1.1 through 30-6.2.4.1.4.**30-6.2.4.1.1** In group day-care homes, every story occupied by clients shall have not less than two remotely located means of escape.

30-6.2.4.1.2 Every room used for sleeping, living, or dining purposes shall have at least two means of escape, at least one of which shall be a door or stairway providing a means of unobstructed travel to the outside of the building at street or ground level. The second means of escape shall be permitted to be a window in accordance with 30-2.11.1. No room or space that is accessible only by a ladder or folding stairs or through a trap door shall be occupied for living or sleeping purposes.

30-6.2.4.1.3 In group day-care homes where spaces on the story above the story of exit discharge are used by clients, at least one means of escape shall be an exit discharging directly to the outside. The second means of escape shall be permitted to be a window in accordance with 30-2.11.1.

30-6.2.4.1.4 Where clients are occupying a story (basement) below the level of exit discharge, at least one means of escape shall be an exit discharging directly to the outside, and the vertical travel to ground level shall not exceed 8 ft (244 cm). The second means of escape shall be permitted to be a window in accordance with 30-2.11.1. No facility shall be located more than one story below the ground. In group day-care homes, any stairway to the story above shall be cut off by a fire barrier containing a door having at least a 20-min fire protection rating and equipped with a self-closing device.

30-6.2.5 Arrangement of Means of Egress.

30-6.2.5.1 Where a story above or below the level of exit discharge is used, see 30-6.2.4.

30-6.2.5.2 For group day-care homes, means of egress shall be arranged in accordance with Section 5-5. Dead-end corridors shall not exceed 20 ft (6.1 m).

30-6.2.6 Travel Distance.

(a) The travel distance between any room door intended as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m); and

(c) The travel distance between any point in a sleeping room and an exit access to that room shall not exceed 50 ft (15 m).

Exception: The travel distance in (a) and (b) above shall be permitted to be increased by 50 ft (15 m) in buildings protected throughout

by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

30-6.2.7 Discharge from Exits. (See 30-6.2.4.)

30-6.2.8 Illumination of Means of Egress. Illumination of the means of egress shall be provided in accordance with Section 5-8.

30-6.2.9 Emergency Lighting. (No requirements.)**30-6.2.10 Marking of Means of Egress.** (No requirements.)**30-6.3 Protection.**

30-6.3.1 Protection of Vertical Openings. For group day-care homes, the doorway between the level of exit discharge and any story below shall be equipped with a door assembly having a 20-min fire protection rating. Where the story above the story of exit discharge is used for sleeping purposes, there shall be a door assembly having a 20-min fire protection rating at the top or bottom of each stairway.

30-6.3.2 Protection from Hazards. (No requirements.)**30-6.3.3 Interior Finish.**

30-6.3.3.1 Interior finish shall be in accordance with Section 6-5.

30-6.3.3.2 In group day-care homes, interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A or Class B in corridors, stairways, lobbies, and exits. In family day-care homes, interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A or Class B in exits.

30-6.3.3.3 Interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A, Class B, or Class C in occupied spaces.

30-6.3.3.4 Interior Floor Finish. (No requirements.)**30-6.3.4 Detection, Alarm, and Communication Systems.**

30-6.3.4.1 Smoke detectors shall be installed within day-care homes in accordance with 7-6.2.10.

30-6.3.4.2 Where the day-care home is located within a building of another occupancy, such as in an apartment building or office building, any corridors serving the day-care home shall be provided with a smoke detection system in accordance with Section 7-6.

30-6.3.4.3 Single-station smoke detectors in accordance with 7-6.2.10 powered by the building electrical system or system detectors with integral sounding devices in accordance with 7-6.1.4 shall be provided in all rooms used for sleeping.

30-6.4 Special Provisions.

30-6.4.1 Windowless or Underground Buildings. Windowless or underground buildings shall comply with Section 32-7.

30-6.4.2 High-Rise Buildings. High-rise buildings that house day-care occupancies on floors more than 75 ft (23 m) above the lowest level of fire department vehicle access shall comply with Section 32-8.

30-6.5 Building Services.**30-6.5.1 Utilities.**

30-6.5.1.1 Utilities shall comply with the provisions of Section 7-1.

30-6.5.1.2 Special protective covers for all electrical receptacles shall be installed in all areas occupied by clients.

30-6.5.2 Heating, Ventilating, and Air Conditioning.

30-6.5.2.1 Heating, ventilating, and air conditioning equipment shall be installed in accordance with Section 7-2.

30-6.5.2.2 Unvented fuel-fired room heaters shall not be permitted.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

30-6.5.2.3 Any heating equipment in spaces occupied by clients shall be provided with partitions, screens, or other means to protect clients from hot surfaces and open flames. If partitions are used to provide such protection, provisions shall be made to ensure adequate air for combustion and ventilation for the heating equipment.

SECTION 30-7 OPERATING FEATURES

30-7.1 Drills.

30-7.1.1* Fire exit drills shall be conducted not less than once per month. Drills shall be designed in cooperation with local authorities. Responsibility for the planning and conduct of drills shall be assigned only to competent site administrators or staff members qualified to exercise leadership.

30-7.1.2* In climates where the weather is severe during the winter months, drills shall be held with sufficient frequency during warmer months to familiarize all occupants with the drill procedure, as well as completing the required 12 drills.

30-7.1.3* Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in the case of fire.

30-7.1.4* Drills shall include suitable procedures to ensure that all persons subject to the drill actually participate.

30-7.1.5* Every fire exit drill shall be an exercise for site administrators and staff members with emphasis on an orderly evacuation under proper discipline rather than on speed. Running shall be prohibited. If there are clients incapable of holding their places in a line moving at a reasonable speed, provisions shall be made to have them taken care of by staff members or more capable clients, who will keep them from moving independently of the regular line of march.

30-7.1.6 As all drills simulate an actual fire condition, clients shall not be allowed to obtain clothing after the alarm is sounded, due to the confusion that would result in forming lines and the danger of tripping over dragging apparel.

30-7.1.7 Each group shall proceed to a predetermined point outside the building and remain there while a check is made to see that all are accounted for, leaving only when a recall signal is given to return to the building or when dismissed. Such points shall be sufficiently far away from the building and from each other as to avoid danger from any fire in the building, interference with fire department operations, or confusion among different groups.

30-7.1.8* Where necessary for drill lines to cross roadways, signs reading "STOP! FIRE DRILL," or the equivalent, shall be carried by staff members or more capable clients to the traffic intersecting points in order to stop traffic during the period of the drill.

30-7.1.9* Fire exit drills in day-care occupancies shall not include any fire extinguishing operations.

30-7.2 Inspections.

30-7.2.1 Fire prevention inspections shall be conducted monthly by a trained senior member of the staff. A copy of the latest inspection form shall be posted in a conspicuous place in the day-care facility.

30-7.2.2* It shall be the duty of site administrators and staff members to inspect all exit facilities daily in order to make sure that all stairways, doors, and other exits are in proper condition.

30-7.2.3 Open-plan buildings shall require extra surveillance to ensure that exit paths are maintained clear of obstruction and are obvious.

30-7.3 Furnishings and Decoration.

30-7.3.1 Draperies, curtains, and other similar furnishings and decorations in day-care occupancies shall be in accordance with 6-6.1.

30-7.3.2 Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system installed in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

30-7.3.3 Artwork and teaching materials shall be permitted to be attached directly to the walls and shall not exceed 20 percent of the wall area.

30-7.3.4 Wastebaskets and other waste containers shall be made of noncombustible or other approved materials.

30-7.4* Day-Care Staff. Adequate adult staff shall be on duty, alert, awake, and in the facility at all times where clients are present.

30-7.5 Flammable Liquids and Gases. Flammable and combustible liquids shall be stored in areas accessible only to designated individuals, and as required in NFPA 30, *Flammable and Combustible Liquids Code*.

30-7.6 Unvented Fuel-Fired Heating Equipment. Unvented fuel-fired heating equipment shall be prohibited in all categories of day-care facilities.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

CHAPTER 31 EXISTING DAY-CARE OCCUPANCIES

SECTION 31-1 GENERAL REQUIREMENTS

31-1.1* Application.

31-1.1.1 The requirements of this chapter apply to existing buildings or portions thereof currently occupied as day-care occupancies. (See also 30-1.1.1.)

31-1.1.2 The requirements detailed in this chapter are based on the following minimum staff-to-client ratios:

Staff-to-Client Ratio	Age (Months)
1:3	0-24
1:4	25-36
1:7	37-60
1:10	61-96
1:12	≥ 97
1:3	Clients incapable of self-preservation

Exception: (See 31-6-1.4.2.)

The staff-to-client ratios shall be permitted to be modified by the authority having jurisdiction where safeguards in addition to those specified by this section are provided.

31-1.1.3 Sections 31-1 through 31-5 and 31-7 establish life safety requirements for day-care occupancies in which more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day. An existing day-care occupancy shall be allowed the option of meeting the requirements of Chapter 30 in lieu of Chapter 31. An existing day-care occupancy that meets the requirements of Chapter 30 shall be judged as meeting the requirements of Chapter 31.

31-1.1.4 Centers housing children six years of age and older shall conform to the requirements of educational occupancies, except as noted herein. (See Chapter 11.)

31-1.1.5 Sections 31-1 (other than 31-1.6), 31-6, and 31-7 establish life safety requirements for day-care homes as defined in 31-1.3.

31-1.1.6 Where a facility houses more than one age group of self-preservation capability, the strictest requirements applicable to any group present shall apply throughout the day-care occupancy or building, as applicable, unless the area housing that group is maintained as a separate fire area.

Exception: Staff-to-client ratios listed in 31-1.1.2 shall be based on the number of clients in each age category.

31-1.1.7 Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

31-1.2 Mixed Occupancies.

(a) *General.* Where day-care occupancies are located in a building containing mixed occupancies, the occupancies shall be separated by minimum 1-hr rated fire barriers constructed in accordance with 6-2.3.

Exception to (a): Day-care centers in assembly occupancies used primarily for worship.

(b) *Day-Care Centers in Apartment Buildings.* If the two exit accesses from the day-care occupancy enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire resistance rating constructed in accordance with Section 6-3. The smoke barrier shall be located so that it has an exit on each side.

31-1.3 Special Definitions.

Day-Care Home. A building or part of a building in which more than three but not more than 12 clients receive care, maintenance, and supervision, by other than their relative(s) or legal guardians(s), for less than 24 hr per day (generally within a dwelling unit).

Flexible Plan and Open Plan Day-Care Buildings. These include a building or portion of a building designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by tables, chairs, desks, bookcases, counters, low-height [maximum 5-ft (1.5-m)] partitions, or similar furnishings.

Self-Preservation.* A client that is capable of self-preservation is one that can evacuate the building without direct intervention by a staff member.

Separate Atmosphere. The atmosphere that exists between rooms, spaces, or areas that are separated by an approved smoke barrier.

31-1.4 Classification of Occupancy. (See 4-1.11.)

31-1.4.1 For the purposes of this section, clients are classified in age groups as follows: clients under six years of age, clients six years and older, and clients incapable of self-preservation.

31-1.4.2 Occupancies that include part-day preschools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age shall comply with the provisions of Chapter 11.

31-1.4.3 Adult day-care shall include any building or portion thereof used for less than 24 hr per day to house more than three adults requiring care, maintenance, and supervision by other than their relative(s). Clients shall be ambulatory or semi-ambulatory and shall not be bedridden. They shall not exhibit behavior that is harmful to themselves or others.

31-1.5 Classification of Hazard of Contents. The contents shall be classified as ordinary hazard in accordance with Section 4-2.

31-1.6 Location and Construction.

31-1.6.1 The location of a day-care occupancy within a building shall be based on construction type and automatic sprinkler protection in accordance with Table 31-1.6.1. (See 6-2.1.)

31-1.6.2 The story below the level of exit discharge shall be permitted to be used in buildings of any construction type other than Type II(000), Type III(200), and Type V(000). (See 31-2.4.2.)

Table 31-1.6.1 Location/Construction Type Limitations

Type of Construction	Age Group	Number of Stories (Stories are counted starting at floor of exit discharge)			
		1	2	3	4 and Over
I(443) I(332) II(222)	0 through 5 6 and older††	X X	X X	X X	X X
II(111) III(211) V(III)	0 through 5 6 and older††	X X	X† X	N.P. X†	N.P. N.P.
IV(2HH)	0 through 5 6 and older††	X X	X† X†	N.P. N.P.	N.P. N.P.
II(000)	0 through 5 6 and older††	X X	X† X†	N.P. N.P.	N.P. N.P.
III(200) V(000)	0 through 5 6 and older††	X† X	X† X†	N.P. N.P.	N.P. N.P.

X: Permitted

N.P.: Not Permitted

X†: Permitted if entire building is protected throughout by an approved automatic sprinkler system.

††: Client capable of self-preservation. If client not capable of self-preservation, use portions of table applicable to 0 through 5 age group.

31-1.7 Occupant Load.

31-1.7.1 The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor but not less than the number calculated on the basis of one person for each 35 sq ft (3.3 sq m) of net floor area used by the clients.

31-1.7.2 The occupant load of a day-care occupancy or a portion thereof shall be permitted to be modified from that specified above if the necessary aisles and exits are provided. An approved aisle, seating, and exiting diagram shall be required by the authority having jurisdiction to substantiate such a modification.

SECTION 31-2 MEANS OF EGRESS REQUIREMENTS**31-2.1 General.**

31-2.1.1 Means of egress shall be in accordance with Chapter 5 and this section.

31-2.2 Means of Egress Components.

31-2.2.1 Components of means of egress shall be limited to the types described in 31-2.2.2 through 31-2.2.8.

31-2.2.2 Doors.

31-2.2.2.1 General. Doors complying with 5-2.1 shall be permitted.

31-2.2.2.2 Panic Hardware or Fire Exit Hardware. Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if it is panic hardware or fire exit hardware.

31-2.2.2.3 Door Closure. Any exit door designed to normally be kept closed shall comply with 5-2.1.8.

31-2.2.2.4 Locks and Latches. Only one locking or latching device shall be permitted on a door or on one leaf of a pair of doors.

31-2.2.2.5 Special Locking Arrangements. Special locking arrangements complying with 5-2.1.6 shall be permitted.

31-2.2.2.6* Closet Doors. Every closet door latch shall be such that clients can open the door from inside the closet.

31-2.2.2.7 Bathroom Doors. Every bathroom door lock shall be designed to permit opening of the locked door from the outside in an emergency. The opening device shall be readily accessible to the staff.

31-2.2.3* Stairs.

31-2.2.3.1 Stairs complying with 5-2.2 shall be permitted.

31-2.2.3.2 Stairs shall be Class A.

Exception: Class B stairs shall be permitted where not used by clients.

31-2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 5-2.3 shall be permitted.

31-2.2.5 Horizontal Exits.

31-2.2.5.1 Horizontal exits complying with 5-2.4 shall be permitted.

31-2.2.5.2 Areas of refuge shall be provided by horizontal exits for occupants of day-care occupancies located above the fifth story.

Exception: Buildings provided with smokeproof enclosures.

31-2.2.6 Ramps. Ramps complying with 5-2.5 shall be permitted.

31-2.2.7 Exit Passageways. Exit passageways complying with 5-2.6 shall be permitted.

31-2.2.8 Areas of Refuge. Areas of refuge complying with 5-2.12 shall be permitted.

31-2.3 Capacity of Means of Egress. Capacity of means of egress shall be in accordance with Section 5-3.

31-2.4 Number of Exits.

31-2.4.1 Each floor occupied by clients shall have not less than two remotely located exits in accordance with Chapter 5.

31-2.4.2 Where the story below the level of exit discharge is occupied as a day-care occupancy, 31-2.4.2.1 and 31-2.4.2.2 shall apply.

31-2.4.2.1 One means of egress shall be an outside or interior stair in accordance with 5-2.2. An interior stair, if used, shall serve only the story below the level of exit discharge. The interior stair shall be permitted to communicate with the level of exit discharge; however, the exit route from the level of exit discharge shall not pass through the stair enclosure.

31-2.4.2.2 The second means of egress shall be permitted to be via an unenclosed stairway separated from the level of exit discharge in accordance with 6-2.4.4. The path of egress travel on the level of exit discharge shall be protected in accordance with 5-1.3.1.

Exception: The path of travel on the level of exit discharge shall be permitted to be unprotected if the level of exit discharge and the level

below the level of exit discharge are protected throughout by a smoke detection system or an approved automatic sprinkler system.

31-2.5 Arrangement of Means of Egress.

31-2.5.1 Where the story below the level of exit discharge is used, see 31-2.4.2.

31-2.5.2 Means of egress shall be arranged in accordance with Section 5-5. Dead-end corridors shall not exceed 20 ft (6.1 m).

31-2.5.3 Every room or space with an occupant load of more than 50 persons or an area of more than 1000 sq ft (93 sq m) shall have at least two exit access doorways as remotely located from each other as practicable. Such doorways shall provide access to separate exits, but where egress is through corridors, they shall be permitted to open onto a common corridor leading to separate exits located in opposite directions.

31-2.6 Travel Distance to Exits.

31-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

31-2.6.2 Travel Distance.

(a) The travel distance between any room door intended as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m); and

(c) The travel distance between any point in a sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

Exception: The travel distance in (a) and (b) above shall be permitted to be increased by 50 ft (15 m) in buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

31-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with Section 5-7.

Exception: As provided in 31-2.4.2.

31-2.8 Illumination of Means of Egress. Illumination of the means of egress shall be in accordance with Section 5-8.

31-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9 in the following areas:

- (a) Interior stairs and corridors.
- (b) Normally occupied spaces.

Exception to (b): Administrative areas, general classrooms, and mechanical rooms and storage areas.

- (c) Flexible and open plan buildings.
- (d) Interior or windowless portions of buildings.
- (e) Shops and laboratories.

31-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

31-2.11 Special Means of Egress Features.

31-2.11.1 Windows for Rescue and Ventilation. Every room or space greater than 250 sq ft (23.2 sq m) used for classroom or other educational purposes or normally subject to student occupancy shall have at least one outside window for emer-

gency rescue and ventilation. Such window shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area. The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. The clear opening shall permit a rectangular solid, with a minimum width and height that provides the required 5.7 sq ft (0.53 sq m) opening and a minimum depth of 20 in. (51 cm), to pass fully through the opening.

Exception No. 1: In buildings protected throughout by an approved, automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

Exception No. 3: In rooms located higher than three stories above grade, the openable clear height, width, and area of the window shall be permitted to be modified to the dimensions necessary for ventilation.

Exception No. 4: Awning or hopper-type windows that are hinged or subdivided to provide a clear opening not less than 600 sq in. (3900 sq cm) in area nor any dimension less than 22 in. (55.9 cm) shall be permitted to continue to be used. Screen walls or devices in front of required windows shall not interfere with normal rescue requirements.

Exception No. 5: Where the room or space complies with the following:

(a) Doors exist that allow travel between adjacent classrooms and, where used to travel from classroom to classroom, provide direct access to exits in both directions or direct access to an exit in one direction and to a separate smoke compartment that provides access to another exit in the other direction; and

(b) The corridor is separated from the classrooms by a wall that resists the passage of smoke, and all doors between the classrooms and the corridor are self-closing in accordance with 5-2.1.8; and

(c) The length of travel to exits along such paths shall not exceed 150 ft (45 m); and

(d) Each communicating door shall be marked in accordance with Section 5-10; and

(e) No locking device shall be allowed on the communicating doors.

SECTION 31-3 PROTECTION

31-3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with 6-2.4.

31-3.2 Protection from Hazards.

31-3.2.1 Rooms or spaces for the storage, processing, or use of materials specified below shall be protected in accordance with the following:

(a) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr or protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

- (1) Boiler and furnace rooms.

Exception to (a)(1): Rooms enclosing only air-handling equipment.

(2) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction.

(3) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(b) Separation from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hr and protection of such rooms by automatic extinguishing systems as specified in Section 6-4 in the following areas:

(1) Laundries.

(2) Maintenance shops, including woodworking and painting areas.

(3) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction.

(4) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

(c) Where automatic extinguishing is used to meet the requirements of this section, the protection shall be permitted in accordance with 7-7.1.2.

Exception: Food preparation facilities protected in accordance with 7-2.3 shall not be required to have openings protected between food preparation areas and dining areas. Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities shall not be required if approved by the authority having jurisdiction.

31-3.2.2 Janitor closets shall be protected by an automatic sprinkler system installed in accordance with 7-7.1.2. Doors to janitor closets shall be permitted to have ventilating louvers.

31-3.3 Interior Finish.

31-3.3.1 Interior finish shall be in accordance with Section 6-5.

31-3.3.2 Interior Wall and Ceiling Finish. Interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A or Class B throughout.

31-3.3.3 Interior Floor Finish. (No requirements.)

31-3.4 Detection, Alarm, and Communication Systems.

31-3.4.1 General. Day-care occupancies shall be provided with a fire alarm system in accordance with Section 7-6.

Exception No. 1: Day-care occupancies housed in one room.

Exception No. 2: Day-care occupancies with a required staff of fewer than four persons based on 31-1.1.2.

31-3.4.2 Initiation. Initiation of the required fire alarm system shall be by manual means and by operation of any required smoke detectors and required sprinkler systems. (See 31-3.4.5.)

Exception: Single-station smoke detectors.

31-3.4.3 Occupant Notification. Occupant notification shall be in accordance with 7-6.3.

31-3.4.4 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 7-6.4.

Exception: Day-care occupancies with not more than 100 clients.

31-3.4.5 Detection. A smoke detection system shall be installed in accordance with Section 7-6, with placement of detectors in each story in front of doors to the stairways and in the corridors of all floors occupied by the day-care occupancy. Detectors also shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy.

Exception No. 1: Day-care occupancies housed in one room.

Exception No. 2: Day-care occupancies housing clients six years of age or older and capable of self-preservation if no sleeping facilities are provided.

31-3.5 Extinguishment Requirements. (None.)

31-3.6 Corridors. Every interior corridor shall be constructed of walls having not less than a 1/2-hr fire resistance rating in accordance with 6-2.3.

Exception No. 1: Corridor protection shall not be required where all spaces normally subject to student occupancy have at least one door opening directly to the outside or to an exterior exit access balcony or corridor in accordance with 11-2.5.6.

Exception No. 2: In buildings protected throughout by an approved, automatic sprinkler system with valve supervision installed in accordance with Section 7-7, corridor walls shall not be required to be rated, provided such walls, in conjunction with openings therein and ceilings at which they terminate, resist the passage of smoke.

Exception No. 3: Existing doors shall be permitted to be 1-3/4 in. (4.4 cm) thick, solid bonded wood core doors or the equivalent.

Exception No. 4: Lavatories shall not be required to be separated from corridors, provided they are separated from all other spaces by walls having not less than a 1/2-hr fire resistance rating in accordance with 6-2.3.

SECTION 31-4 SPECIAL PROVISIONS

31-4.1 Windowless or Underground Buildings. Windowless or underground buildings shall comply with Section 32-7.

31-4.2 High-Rise Buildings. High-rise buildings that house day-care occupancies on floors more than 75 ft (23 m) above the lowest level of fire department vehicle access shall comply with Section 32-8.

31-4.3 Flexible Plan and Open Plan Buildings. (Reserved.)

SECTION 31-5 BUILDING SERVICES

31-5.1 Utilities.

31-5.1.1 Utilities shall comply with the provisions of Section 7-1.

31-5.1.2 Special protective covers for all electrical receptacles shall be installed in all areas occupied by clients.

31-5.2 Heating, Ventilating, and Air Conditioning.

31-5.2.1 Heating, ventilating, and air conditioning equipment shall be installed in accordance with Section 7-2.

31-5.2.2 Unvented fuel-fired room heaters shall not be permitted.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

31-5.2.3 Any heating equipment in spaces occupied by clients shall be provided with partitions, screens, or other means to protect clients from hot surfaces and open flames. If solid partitions are used to provide such protection, provisions shall be made to ensure adequate air for combustion and ventilation for the heating equipment.

31-5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 7-4.

31-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 31-6 DAY-CARE HOMES

31-6.1 General Requirements.

31-6.1.1 Application.

31-6.1.1.1* (See also 31-6.1.4.) This section establishes life safety requirements for day-care homes in which more than three but not more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit). An existing day-care home shall be allowed the option of meeting the requirements of Section 30-6 in lieu of this section. Any existing day-care home that meets the requirements of Chapter 30 shall be judged as meeting the requirements of this chapter.

Exception: Facilities that supervise clients on a temporary basis with a parent or guardian in close proximity.

31-6.1.1.2 Where a facility houses more than one age group of self-preservation capability, the strictest requirements applicable to any group present shall apply throughout the day-care home or building, as applicable, unless the area housing that group is maintained as a separate area.

31-6.1.1.3 Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

31-6.1.2 Mixed Occupancies.

(a) *General.* Where day-care occupancies are located in a building containing mixed occupancies, the occupancies shall be separated by minimum 1-hr rated fire barriers constructed in accordance with 6-2.3.

Exception to (a): Day-care homes in assembly occupancies used primarily for worship.

(b) *Group Day-Care Homes in Apartment Buildings.* If the two exit accesses from the group day-care home enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire resistance rating constructed in accordance with Section 6-3. The smoke barrier shall be located so that it has an exit on each side.

31-6.1.3 Special Definitions.

Self-Preservation.* A client that is capable of self-preservation is one that can evacuate the building without direct intervention by a staff member.

31-6.1.4 Classification of Occupancy.

31-6.1.4.1 Occupancies that include part-day preschools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age shall comply with the provisions of Chapter 11.

31-6.1.4.2 Subclassification of Day-Care Homes.

(a) *Family Day-Care Homes.* A family day-care home is a day-care home in which more than three but fewer than seven clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit). Requirements for family day-care homes are based on a minimum staff-to-client ratio of one staff for up to six clients, including the caretaker's own children under age six, with no more than two clients incapable of self-preservation.

(b) *Group Day-Care Homes.* A group day-care home is a day-care home in which at least seven but not more than 12 clients receive care, maintenance, and supervision by other than their relative(s) or legal guardian(s) for less than 24 hr per day (generally within a dwelling unit). Requirements for group day-care homes are based on a minimum staff-to-client ratio of two staff for up to 12 clients, with no more than three clients incapable of self-preservation. This staff-to-client ratio shall be permitted to be modified by the authority having jurisdiction where safeguards in addition to those specified by this section are provided.

31-6.1.5 Classification of Hazard of Contents. The contents shall be limited to those classified as ordinary hazard in accordance with Section 4-2.

31-6.1.6 Minimum Construction Requirements. (None.)

31-6.1.7 Occupant Load. (No special requirements.)

31-6.2 Means of Escape Requirements.

31-6.2.1 General. Means of escape shall comply with Section 21-2.

31-6.2.2 (Reserved.)

31-6.2.3 (Reserved.)

31-6.2.4 Number of Means of Escape.

31-6.2.4.1 Number of means of escape shall comply with Section 21-2 and 31-6.2.4.1.2 through 31-6.2.4.1.4.

31-6.2.4.1.1 In group day-care homes, every story occupied by clients shall have not less than two remotely located means of escape.

31-6.2.4.1.2 Every room used for sleeping, living, or dining purposes shall have at least two means of escape, at least one of which shall be a door or stairway providing a means of unobstructed travel to the outside of the building at street or ground level. The second means of escape shall be permitted to be a window in accordance with 31-2.11.1. No room or space that is accessible only by a ladder or folding stairs or through a trap door shall be occupied for living or sleeping purposes.

31-6.2.4.1.3 In group day-care homes where spaces on the story above the story of exit discharge are used by clients, at least one means of escape shall be an exit discharging directly to the outside. The second means of escape shall be permitted to be a window in accordance with 31-2.11.1.

31-6.2.4.1.4 Where clients are occupying a story (basement) below the level of exit discharge, at least one means of escape shall be an exit discharging directly to the outside, and the vertical travel to ground level shall not exceed 8 ft (244 cm). The second means of escape shall be permitted to be a window in accordance with 31-2.11.1. No facility shall be located more than one story below the ground. In group day-care homes, any stairway to the story above shall be cut off by a fire barrier containing a door having at least a 20-min fire protection rating and equipped with a self-closing device.

31-6.2.5 Arrangement of Means of Egress.

31-6.2.5.1 Where a story above or below the level of exit discharge is used, see 31-6.2.4.

31-6.2.5.2 For group day-care homes, means of egress shall be arranged in accordance with Section 5-5. Dead-end corridors shall not exceed 20 ft (6.1 m).

31-6.2.6 Travel Distance.

(a) The travel distance between any room door intended as an exit access and an exit shall not exceed 100 ft (30 m); and

(b) The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m); and

(c) The travel distance between any point in a sleeping room and an exit access to that room shall not exceed 50 ft (15 m).

Exception: The travel distance in (a) and (b) above shall be permitted to be increased by 50 ft (15 m) in buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7.

31-6.2.7 Discharge from Exits. (See 31-6.2.4.)

31-6.2.8 Illumination of Means of Egress. Illumination of the means of egress shall be provided in accordance with Section 5-8.

31-6.2.9 Emergency Lighting. (No requirements.)

31-6.2.10 Marking of Means of Egress. (No requirements.)

31-6.3 Protection.

31-6.3.1 Protection of Vertical Openings. For group day-care homes, the doorway between the level of exit discharge and any story below shall be equipped with a door assembly having a 20-min fire protection rating. Where the story above the story of exit discharge is used for sleeping purposes, there shall be a door assembly having a 20-min fire protection rating at the top or bottom of each stairway.

Exception: Existing self-closing $1\frac{3}{4}$ -in. (4.4-cm) thick, solid bonded wood doors without rated frames shall be permitted to be accepted by the authority having jurisdiction.

31-6.3.2 Protection from Hazards. (No requirements.)

31-6.3.3 Interior Finish.

31-6.3.3.1 Interior finish shall be in accordance with Section 6-5.

31-6.3.3.2 Interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A or Class B in exits.

31-6.3.3.3 Interior wall and ceiling finish materials in accordance with 6-5.5 shall be Class A, Class B, or Class C in occupied spaces in the home.

31-6.3.3.4 Interior Floor Finish. (No requirements.)

31-6.3.4 Detection, Alarm, and Communication Systems.

31-6.3.4.1 Smoke detectors shall be installed within day-care homes in accordance with 7-6.2.10.

31-6.3.4.2 Where the day-care home is located within a building of another occupancy, such as in an apartment building or office building, any corridors serving the day-care home shall be provided with a smoke detection system in accordance with Section 7-6.

31-6.3.4.3 Single-station smoke detectors in accordance with 7-6.2.10 powered by the building electrical system or system detectors with integral sounding devices in accordance with 7-6.1.4 shall be provided in all rooms used for sleeping.

Exception: Existing battery-powered detectors rather than house electrical service-powered detectors shall be accepted where, in the opinion of the authority having jurisdiction, the facility has demonstrated testing, maintenance, and battery replacement programs that ensure reliability of power to the detectors.

31-6.4 Special Provisions.

31-6.4.1 Windowless or Underground Buildings. Windowless or underground buildings shall comply with Section 32-7.

31-6.4.2 High-Rise Buildings. High-rise buildings that house day-care occupancies on floors more than 75 ft (23 m) above the lowest level of fire department vehicle access shall comply with Section 32-8.

31-6.5 Building Services.

31-6.5.1 Utilities.

31-6.5.1.1 Utilities shall comply with the provisions of Section 7-1.

31-6.5.1.2 Special protective covers for all electrical receptacles shall be installed in all areas occupied by clients.

31-6.5.2 Heating, Ventilating, and Air Conditioning.

31-6.5.2.1 Heating, ventilating, and air conditioning equipment shall be installed in accordance with Section 7-2.

31-6.5.2.2 Unvented fuel-fired room heaters shall not be permitted.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

31-6.5.2.3 Any heating equipment in spaces occupied by clients shall be provided with partitions, screens, or other means to protect clients from hot surfaces and open flames. If partitions are used to provide such protection, provisions shall be

made to ensure adequate air for combustion and ventilation for the heating equipment.

SECTION 31-7 OPERATING FEATURES

31-7.1 Drills.

31-7.1.1* Fire exit drills shall be conducted not less than once per month. Drills shall be designed in cooperation with local authorities. Responsibility for the planning and conduct of drills shall be assigned only to competent site administrators or staff members qualified to exercise leadership.

31-7.1.2* In climates where the weather is severe during the winter months, drills shall be held with sufficient frequency during warmer months to familiarize all occupants with the drill procedure, as well as completing the required 12 drills.

31-7.1.3* Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in the case of fire.

31-7.1.4* Drills shall include suitable procedures to ensure that all persons subject to the drill actually participate.

31-7.1.5* Every fire exit drill shall be an exercise for site administrators and staff members with emphasis on an orderly evacuation under proper discipline rather than on speed. Running shall be prohibited. If there are clients incapable of holding their places in a line moving at a reasonable speed, provisions shall be made to have them taken care of by staff members or more capable clients, who will keep them from moving independently of the regular line of march.

31-7.1.6 As all drills simulate an actual fire condition, clients shall not be allowed to obtain clothing after the alarm is sounded, due to the confusion that would result in forming lines and the danger of tripping over dragging apparel.

31-7.1.7 Each group shall proceed to a predetermined point outside the building and remain there while a check is made to see that all are accounted for, leaving only when a recall signal is given to return to the building or when dismissed. Such points shall be sufficiently far away from the building and from each other as to avoid danger from any fire in the building, interference with fire department operations, or confusion among different groups.

31-7.1.8* Where necessary for drill lines to cross roadways, signs reading "STOP! FIRE DRILL" or the equivalent shall be carried by staff members or more capable clients to the traffic intersecting points in order to stop traffic during the period of the drill.

31-7.1.9* Fire exit drills in day-care occupancies shall not include any fire extinguishing operations.

31-7.2 Inspections.

31-7.2.1 Fire prevention inspections shall be conducted monthly by a trained senior member of the staff. A copy of the latest inspection form shall be posted in a conspicuous place in the day-care facility.

31-7.2.2* It shall be the duty of site administrators and staff members to inspect all exit facilities daily in order to make sure that all stairways, doors, and other exits are in proper condition.

31-7.2.3 Open-plan buildings shall require extra surveillance to ensure that exit paths are maintained clear of obstruction and are obvious.

31-7.3 Furnishings and Decoration.

31-7.3.1 Draperies, curtains, and other similar furnishings and decorations in day-care occupancies shall be in accordance with 6-6.1.

31-7.3.2 Clothing and personal effects shall not be stored in corridors.

Exception No. 1: Corridors protected by an automatic sprinkler system installed in accordance with Section 7-7.

Exception No. 2: Corridor areas protected by a smoke detection system installed in accordance with Section 7-6.

Exception No. 3: Storage in metal lockers, provided the required egress width is maintained.

31-7.3.3 Artwork and teaching materials shall be permitted to be attached directly to the walls and shall not exceed 20 percent of the wall area.

31-7.3.4 Wastebaskets and other waste containers shall be made of noncombustible or other approved materials.

31-7.4* Day-Care Staff. Adequate adult staff shall be on duty, alert, awake, and in the facility at all times where clients are present.

31-7.5 Flammable Liquids and Gases. Flammable and combustible liquids shall be stored in areas accessible only to designated individuals, and as required in NFPA 30, *Flammable and Combustible Liquids Code*.

31-7.6 Unvented Fuel-Fired Heating Equipment. Unvented fuel-fired heating equipment shall be prohibited in all categories of day-care facilities.

Exception: Gas space heaters installed in compliance with NFPA 54, National Fuel Gas Code.

CHAPTER 32 SPECIAL STRUCTURES AND HIGH-RISE BUILDINGS

SECTION 32-1 GENERAL REQUIREMENTS

32-1.1 Application. The requirements of Sections 32-1 through 32-7 apply to occupancies regulated by Chapters 8 through 31 that are in a special structure. The provisions of the applicable chapter (i.e., 8 through 31) shall apply except as modified by this chapter. Section 32-8 applies to high-rise buildings only where specifically required by Chapters 8 through 32.

32-1.2 Mixed Occupancies. (See 4-1.12.)

32-1.3 Special Definitions. (See the definitions within each special structure section.)

32-1.4 Classification of Occupancy. Occupancies regulated by Chapters 8 through 31 that are in special structures shall meet the requirements of those chapters, except as modified by this chapter.

32-1.5 Classification of Hazard of Contents. Classification of hazard of contents shall be as defined in Section 4-2.

32-1.6 Minimum Construction Requirements. (See applicable occupancy chapter.)

32-1.7 Occupant Load. The occupant load of special structures shall be based on the use of the structure as regulated by Chapters 8 through 32.

SECTION 32-2 OPEN STRUCTURES

32-2.1 Application.

32-2.1.1 The provisions of Section 32-1 shall apply.

32-2.1.2 Definition — Open Structure. Structures supporting equipment and operations not enclosed within building walls, such as those found in oil refining, chemical processing, or power plants. Roofs or canopies without enclosing walls shall not be considered an enclosure.

32-2.2* Means of Egress.

32-2.2.1 General. The means of egress provisions of the applicable occupancy chapter (Chapters 8 through 31) shall apply except as modified by 32-2.2.2 through 32-2.2.10.

32-2.2.2 Means of Egress Components.

32-2.2.2.1 Fire Escape Ladders. Open structures that are designed for occupancy by not more than three persons shall be permitted to be served by fire escape ladders complying with 5-2.9.

32-2.2.3 Capacity of Means of Egress. Open structures are exempt from the requirements for capacity of means of egress.

32-2.2.4 Number of Means of Egress.

32-2.2.4.1 The grade level of open structures, which by their very nature contain an infinite number of means of egress, are exempt from the requirements for number of means of egress.

32-2.2.4.2 Open structures occupied by not more than three persons, with travel distance of not more than 200 ft (60 m), shall be permitted to have a single exit.

32-2.2.5 Arrangement of Means of Egress. (No modifications.)

32-2.2.6 Travel Distance to Exits. Open structures shall be exempt from travel distance limitations.

32-2.2.7 Discharge from Exits. Open structures permitted to have a single exit per 32-2.2.4 shall be permitted to have 100 percent of the exit discharge through areas on the level of exit discharge.

32-2.2.8 Illumination of Means of Egress. Open structures shall be exempt from illumination of means of egress requirements.

32-2.2.9 Emergency Lighting. Open structures shall be exempt from emergency lighting requirements.

32-2.2.10 Marking of Means of Egress. Open structures shall be exempt from marking of means of egress requirements.

32-2.3 Protection.

32-2.3.1 Protection of Vertical Openings. Open structures shall be exempt from protection of vertical opening requirements.

32-2.3.2 Protection from Hazards. Every open structure shall have automatic, manual, or other protection as might be appropriate to the particular hazard that is designed to minimize danger to occupants in case of fire or other emergency before they have time to utilize the means of egress.

Exception: Structures with only occasional occupancy.

32-2.3.3 Interior Finish. (No modifications.)

32-2.3.4 Detection, Alarm, and Communication Systems. Open structures shall be exempt from requirements for detection, alarm, and communication systems.

32-2.3.5 Extinguishing Requirements. (No modifications.)

SECTION 32-3 TOWERS

32-3.1 Application.

32-3.1.1 The provisions of Section 32-1 shall apply.

32-3.1.2 Definition — Tower. An enclosed independent structure or portion of a building with elevated levels for support of equipment or occupied for observation, control, operation, signaling, or similar limited use where:

(a) The elevated levels are provided to allow adequate observation or line-of-sight for personnel or equipment, and

(b) Levels within the tower below the observation level and equipment room for that level are not occupied.

32-3.2 Means of Egress.

32-3.2.1 General. The means of egress provisions of the applicable occupancy chapter (Chapters 8 through 31) shall apply except as modified by 32-3.2.2 through 32-3.2.10.

32-3.2.2 Means of Egress Components.

32-3.2.2.1 Fire Escape Ladders. Towers, such as forest fire observation or railroad signal towers, that are designed for occupancy by not more than three persons, shall be permitted to be served by fire escape ladders complying with 5-2.9.

32-3.2.2.2 Elevators. Towers subject to occupancy by not more than 90 persons shall be permitted to use elevators in the means of egress in accordance with 5-2.13.

32-3.2.3 Capacity of Means of Egress.

32-3.2.3.1 Means of egress for towers shall be provided for the number of persons expected to occupy the space.

32-3.2.3.2 Spaces not subject to human occupancy because of machinery or equipment shall be excluded from consideration.

32-3.2.4* Number of Means of Egress.

32-3.2.4.1 Towers shall be permitted to have a single exit if the following conditions are met:

(a) The tower is subject to occupancy by fewer than 25 persons.

(b) The tower is not used for living or sleeping purposes.

(c) The tower is of Type I, Type II, or Type IV construction. (See 6-2.1.)

(d) The tower interior wall and ceiling finish is Class A or Class B.

(e) The tower has no combustible materials in, under, or in the immediate vicinity, except necessary furniture.

(f) There are no high hazard occupancies in the tower or in the immediate vicinity.

(g) Where the tower is located above a building, the single exit from the tower shall be provided by

1. An exit enclosure separated from the building with no door openings to or from the building, or

2. An exit enclosure leading directly to an exit enclosure serving the building with walls and door separating these exit enclosures from each other, and another door allowing access to the top floor of the building, which provides access to a second exit serving that floor.

32-3.2.4.2 Towers with 360 degree line-of-sight requirements shall be permitted to have a single means of egress for a distance of travel not exceeding 75 ft (23 m), or 100 ft (30 m) if the tower is sprinklered throughout in accordance with Section 7-7.

32-3.2.5 Arrangement of Means of Egress. (No modifications.)

32-3.2.6 Travel Distance to Exits. Towers where ladders are permitted by 32-3.2.2.1 shall be exempt from travel distance limitations.

32-3.2.7 Discharge from Exits. Towers permitted to have a single exit per 32-3.2.4 shall be permitted to have 100 percent of the exit discharge through areas on the level of exit discharge.

32-3.2.8 Illumination of Means of Egress. Towers where ladders are permitted by 32-3.2.2.1 shall be exempt from illumination of means of egress requirements.

32-3.2.9 Emergency Lighting.

32-3.2.9.1 Towers where ladders are permitted by 32-3.2.2.1 shall be exempt from emergency lighting requirements.

32-3.2.9.2 Locations not routinely inhabited by humans shall be exempt from emergency lighting requirements.

32-3.2.9.3 Structures occupied only during daylight hours, with windows arranged to provide the required level of illumination of all portions of the means of egress during these hours shall be exempt from emergency lighting requirements, upon approval of the authority having jurisdiction.

32-3.2.10 Marking of Means of Egress.

32-3.2.10.1 Towers where ladders are permitted by 32-3.2.2.1 shall be exempt from marking of means of egress requirements.

32-3.2.10.2 Locations not routinely inhabited by humans shall be exempt from marking of means of egress requirements.

32-3.3 Protection.**32-3.3.1 Protection of Vertical Openings.**

32-3.3.1.1 Towers where ladders are permitted by 32-3.2.2.1 shall be exempt from protection of vertical opening requirements.

32-3.3.1.2 Towers where the support structure is open and there is no occupancy below the top floor level, stairs shall be permitted to be open with no enclosure required or fire escape stairs shall be permitted.

32-3.3.2 Protection from Hazards. Every tower shall have automatic, manual, or other protection, as might be appropriate to the particular hazard, that is designed to minimize danger to occupants in case of fire or other emergency before they have time to utilize the means of egress.

Exception: Structures with only occasional occupancy.

32-3.3.3 Interior Finish. (No modifications.)

32-3.3.4 Detection, Alarm, and Communication Systems. Towers designed for occupancy by not more than three persons shall be exempt from requirements for detection, alarm, and communication systems.

32-3.3.5 Extinguishing Requirements. (No modifications.)

32-3.3.6 Corridors. (No modifications.)

SECTION 32-4 WATER SURROUNDED STRUCTURES**32-4.1 Application.**

32-4.1.1 The provisions of Section 32-1 shall apply.

Exception: Any structure surrounded by water and under the jurisdiction of the U.S. Coast Guard and designed and arranged in accordance with Coast Guard regulations shall be exempt from the requirements of this Code.

32-4.1.2 Definition — Water Surrounded Structure. A structure fully surrounded by water.

32-4.2 Means of Egress.

32-4.2.1 General. The means of egress provisions of the applicable occupancy chapter (Chapters 8 through 31) shall apply except as modified by 32-4.2.2 through 32-4.2.10.

32-4.2.2 Means of Egress Components. (No modifications.)

32-4.2.3 Capacity of Means of Egress. Spaces not subject to human occupancy because of machinery or equipment shall be excluded from consideration.

32-4.2.4 Number of Means of Egress. (No modifications.)

32-4.2.5 Arrangement of Means of Egress. (No modifications.)

32-4.2.6 Travel Distance to Exits. (No modifications.)

32-4.2.7 Discharge from Exits. Structures permitted to have a single exit per 32-4.2.4 shall be permitted to have

100 percent of the exit discharge through areas on the level of exit discharge.

32-4.2.8 Illumination of Means of Egress. (No modifications.)

32-4.2.9 Emergency Lighting.

32-4.2.9.1 Locations not routinely inhabited by humans are exempt from emergency lighting requirements.

32-4.2.9.2 Structures occupied only during daylight hours, with windows arranged to provide the required level of illumination of all portions of the means of egress during these hours, shall be exempt from emergency lighting requirements, upon approval of the authority having jurisdiction.

32-4.2.10 Marking of Means of Egress. Locations not routinely inhabited by humans shall be exempt from emergency lighting requirements.

32-4.3 Protection.

32-4.3.1 Protection of Vertical Openings. (No modifications.)

32-4.3.2 Protection from Hazards. Every water surrounded structure shall have automatic, manual, or other protection, as might be appropriate to the particular hazard, that is designed to minimize danger to occupants in case of fire or other emergency before they have time to utilize the means of egress.

Exception: Structures with only occasional occupancy.

32-4.3.3 Interior Finish. (No modifications.)

32-4.3.4 Detection, Alarm, and Communication Systems. (No modifications.)

32-4.3.5 Extinguishing Requirements. (No modifications.)

32-4.3.6 Corridors. (No modifications.)

SECTION 32-5* PIERS

32-5.1 The provisions of Section 32-1 shall apply.

32-5.2 Piers used exclusively to moor cargo vessels and to store material shall be exempt from number of means of egress requirements where provided with proper means of egress from structures thereon to the pier and a single means of access to the mainland as appropriate with the pier's arrangement.

32-5.3 Piers not meeting the requirements of 32-5.2 and occupied for other than cargo handling and storage shall have means of egress arranged in accordance with Chapters 8 through 31. In addition, one of the following measures shall be provided on piers extending over 150 ft (45 m) from shore to minimize the possibility that fire under or on the pier might block escape of occupants to shore.

(a) The pier shall be arranged to provide two separate ways to travel to shore, such as by two well-separated walkways or independent structures; or

(b) The pier deck shall be open and fire resistive, set on noncombustible supports; or

(c) The pier shall be open and unobstructed and shall be 50 ft (15 m) or more in width if less than 500 ft (150 m) long, or its width shall be not less than 10 percent of its length if over 500 ft (150 m) long; or

(d) The pier deck shall be provided with automatic sprinkler protection for combustible substructure and all superstructures.

SECTION 32-6* VEHICLES AND VESSELS

32-6.1 Vehicles. Any trailer, railroad car, street car, bus, or similar conveyance that is not mobile, or is attached to a building, or is permanently fixed to a foundation, that is subject to human occupancy shall comply with the requirements of this *Code* that are appropriate to buildings of similar occupancy.

32-6.2 Vessels. Any ship, barge, or other vessel permanently fixed to a foundation or mooring, or unable to get underway by means of its own power, and occupied for purposes other than navigation shall be subject to the requirements of this *Code* applicable to buildings of similar occupancy.

SECTION 32-7 UNDERGROUND AND WINDOWLESS STRUCTURES

32-7.1 The provisions of Section 32-1 shall apply.

32-7.2 Special Definitions.

Access Openings. A window, panel, or similar opening meeting the following criteria:

(a) The opening has minimum dimensions of not less than 22 in. (55.9 cm) in width and 24 in. (61 cm) in height and is unobstructed to allow for ventilation and rescue operations from the exterior; and

(b) The bottom of the opening is not more than 44 in. (112 cm) above the floor; and

(c) The opening is readily identifiable from both the exterior and interior; and

(d)* The opening is readily openable from both the exterior and interior.

Underground Structure.* A structure or portions of a structure in which the floor level is below the level of exit discharge.

Exception: A structure or portions of a structure shall not be considered an underground structure if the story is provided on at least two sides with at least 20 sq ft (1.9 sq m) of access opening entirely above the adjoining grade level in each 50 lineal ft (15 lineal m) of exterior enclosing wall area.

Windowless Structure. A structure or portions of a structure lacking access openings detailed as follows:

(a) A one-story structure or portion thereof shall not be considered a windowless structure if the story is provided with grade level doors or access openings on two sides of the building spaced not more than 125 ft (38 m) apart in the exterior walls.

(b) A structure or portion thereof more than one story in height shall not be considered a windowless structure if

1. Access openings are provided on the first story as required by (a), and

2. Every story above the first floor is provided with access openings on two sides of the building, spaced not more than 30 ft (9.1 m) apart.

32-7.3 Special Provisions for Structures That Are Windowless or Underground.

32-7.3.1 Where windowless or underground structures have an occupant load of more than 50 persons in the windowless or underground portions of the structure, the windowless or underground portions and all areas and floor levels traversed in

traveling to the exit discharge shall be protected by an automatic sprinkler system installed in accordance with Section 7-7.

Exception: Existing windowless or underground structures with an occupant load of 100 or fewer persons in the windowless or underground portions of the structure.

32-7.3.2 Windowless or underground portions of structures and all areas traversed in traveling to the exit discharge shall be provided with emergency lighting in accordance with Section 5-9.

Exception: One- and two-family dwellings.

32-7.4 Special Provisions for Structures That Are Underground.

32-7.4.1 The requirements of 32-7.3 shall apply.

32-7.4.2 Exits from underground structures having an occupant load of more than 100 persons in the underground portions of the structure and having a floor used for human occupancy more than 30 ft (9.1 m) or more than one level below the lowest level of exit discharge shall be as follows:

(a) Cut off from the level of exit discharge per Section 5-1, and

(b) Provided with outside smoke venting facilities or other means to prevent the exits from becoming charged with smoke from any fire in the areas served by the exits.

32-7.4.3 The underground portions of an underground structure shall be provided with approved, automatic smoke venting in accordance with Section 7-3, where the underground structure has the following:

(a) An occupant load of more than 100 persons in the underground portions of the structure; and

(b) A floor level used for human occupancy more than 30 ft (9.1 m) or more than one level below the lowest level of exit discharge; and

(c) Combustible contents, combustible interior finish, or combustible construction.

Exception: Existing underground structures.

32-7.4.4 Exit stair enclosures in underground structures having a floor level used for human occupancy more than 30 ft (9.1 m) or more than one level below the lowest level of exit discharge shall be provided with signage in accordance with 5-2.2.5.4 at each floor level landing traversed in traveling to the exit discharge. The signs shall include a chevron-shaped indicator to show direction to the exit discharge.

SECTION 32-8 HIGH-RISE BUILDINGS

32-8.1 General.

32-8.1.1 Where required by Chapters 8 through 31, the provisions of this section shall apply to high-rise buildings as defined in Chapter 3.

Exception: As modified by Chapters 8 through 31.

32-8.1.2 In addition to the requirements of this section, compliance with all other applicable provisions of this Code shall be required.

32-8.2 Extinguishment Requirements.

32-8.2.1* High-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 7-7. A sprinkler control valve and a water flow device shall be provided for each floor.

32-8.2.2 High-rise buildings shall be protected throughout by a Class I standpipe system installed in accordance with Section 7-7.

32-8.3 Detection, Alarm, and Communication Systems.

32-8.3.1* A fire alarm system utilizing an approved, emergency voice/alarm communication system shall be installed in accordance with Section 7-6.

32-8.3.2 Two-way telephone communication service shall be provided for fire department use. This system shall be in accordance with NFPA 72, *National Fire Alarm Code*. The communication system shall operate between the central control station and every elevator car, every elevator lobby, and each floor level of exit stairs.

Exception: Where the fire department radio system is approved as an equivalent system.

32-8.4 Emergency Lighting and Standby Power.

32-8.4.1 Emergency lighting in accordance with Section 5-9 shall be provided.

32-8.4.2 Standby power in accordance with NFPA 70, *National Electrical Code*, and NFPA 110, *Standard for Emergency and Standby Power Systems*, Class 1, Type 60 shall be provided. The standby power system shall have a capacity and rating sufficient to supply all required equipment. Selective load pickup and load shedding shall be permitted in accordance with NFPA 70, *National Electrical Code*. The standby power system shall be connected to the following:

- (a) Emergency lighting system.
- (b) Fire alarm system.
- (c) Electric fire pump.
- (d) Central control station equipment and lighting.
- (e) At least one elevator serving all floors and shall be transferable to any elevator.
- (f) Mechanical equipment for smokeproof enclosures.
- (g) Mechanical equipment required to conform with the requirements of Section 7-3.

32-8.5* Central Control Station. A central control station shall be provided in a location approved by the fire department. The control station shall contain the following:

- (a) Voice fire alarm system panels and controls.
- (b) Fire department two-way telephone communication service panels and controls where required by another section of this Code.
- (c) Fire detection and fire alarm system annunciation panels.
- (d) Elevator floor location and operation annunciators.
- (e) Sprinkler valve and water flow annunciators.
- (f) Emergency generator status indicators.
- (g) Controls for any automatic stairway door unlocking system.
- (h) Fire pump status indicators.
- (i) A telephone for fire department use with controlled access to the public telephone system.

CHAPTER 33 REFERENCED PUBLICATIONS

(See Appendix B for other referenced publications that are advisory and thus do not constitute part of the requirements of this Code.)

33-1 The following documents or portions thereof are referenced within this Code as mandatory requirements and shall be considered part of the requirements of this Code. The edition indicated for each referenced mandatory document is the current edition as of the date of the NFPA issuance of this Code. Some of these mandatory documents might also be referenced in this Code for specific informational purposes and, therefore, are also listed in Appendix B.

The numbers in parentheses represent the paragraph numbers from chapters of this Code that reference the given publication in a mandatory way.

The Committee on Safety to Life recognizes that it is sometimes impractical to continually upgrade existing buildings or installations to comply with all the requirements of the following referenced publications. Existing buildings or installations that do not comply with the provisions of the following referenced publications shall be permitted to be continued in service, provided the lack of conformity with these standards does not present a serious hazard to the occupants as determined by the authority having jurisdiction.

33-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 10, *Standard for Portable Fire Extinguishers*, 1994 edition. (7-7.4.1)

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 1996 edition. [6-2.4.12 Exception No. 1, 7-7.1.1, 7-7.4.2, 8-4.5.7, 8-7.5.3.7 Exception No. 1, 9-7.5.3.7 Exception No. 1, 12-3.5.3, 13-3.5.5, 16-1.5, 16-3.5.1 Exception, 17-1.5, 18-3.5.1 Exception No. 2, 19-2.2.1.2, 19-3.5.1 Exception No. 2, 21-2.2.1 Exception (b), 21-3.3.1 Exception No. 2 to (a), 22-2.3.5.2 Exception No. 3, 24-4.4.2.5(b), 25-4.4.2.5(b), 26-1.5.2, 27-1.5.2]

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 1996 edition. [7-7.1.1 Exception No. 2, 21-2.2.1 Exception (b), 21-3.3.1 Exception No. 2 to (a), 22-2.3.5.2 Exception No. 1, 22-2.3.5.2 Exception No. 2, 23-2.3.5.1 Exception No. 1, 23-2.3.5.1 Exception No. 2]

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*, 1996 edition. [7-7.1.1 Exception No. 1, 16-3.5.1, 17-3.5.1, 18-3.5.1, 19-3.5.1, 20-3.5.1, 21-2.2.1 Exception (b), 21-3.3.1 Exception No. 2 to (a), 22-2.3.5.2 Exception No. 4, 22-2.3.5.2 Exception No. 5, 22-3.3.5.1 Exception No. 1, 23-2.3.5.1 Exception No. 3, 23-2.3.5.1 Exception No. 4, 23-3.3.5.1 Exception No. 1]

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 1996 edition. (7-7.4.2)

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 1995 edition. (7-7.5, 7-7.6)

NFPA 30, *Flammable and Combustible Liquids Code*, 1996 edition. [6-4.3.1(a), 24-4.5.3.1(a), 24-4.5.5, 25-4.5.3.1(a), 25-4.5.5, 30-7.5, 31-7.5]

NFPA 30B, *Code for the Manufacture and Storage of Aerosol Products*, 1994 edition. [24-4.5.3.1(b), 24-4.5.5, 25-4.5.3.1(b), 25-4.5.5]

NFPA 31, *Standard for the Installation of Oil-Burning Equipment*, 1997 edition. (7-2.2)

NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*, 1994 edition. (8-4.6.1, 8-4.6.3 Exception, 9-4.6.1, 9-4.6.3 Exception)

NFPA 43B, *Code for the Storage of Organic Peroxide Formulations*, 1993 edition. [24-4.5.3.1(c), 25-4.5.3.1(c)]

NFPA 43D, *Code for the Storage of Pesticides*, 1994 edition. [24-4.5.3.1(d), 25-4.5.3.1(d)]

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*, 1996 edition. (6-4.4, 7-2.4, 10-3.2.3, 11-3.2.3, 26-3.2.3)

NFPA 54, *National Fuel Gas Code*, 1996 edition. [6-4.3.1(b), 7-1.1, 7-2.2, 10-5.2.2 Exception, 10-7.5 Exception, 11-7.5, 16-5.2.2 Exception, 17-5.2.2 Exception, 18-5.2.2 Exception, 20-5.2.2 Exception, 30-5.2.2 Exception, 30-6.5.2.2 Exception, 30-7.6 Exception, 31-5.2.2 Exception, 31-6.5.2.2 Exception, 31-7.6 Exception]

NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*, 1995 edition. [6-4.3.1(c), 7-1.1, 8-7.1.4(d), 9-7.1.4(d)]

NFPA 70, *National Electrical Code*, 1996 edition. (5-9.2.4, 6-2.4.12 Exception No. 3, 6-5.3.4, 7-1.2, 7-2.2, 7-6.1.4, 8-4.3.4, 10-4.1.5, 14-5.1.2, 15-5.1.2, 15-5.1.2 Exception, 32-8.4.2)

NFPA 72, *National Fire Alarm Code*, 1996 edition. [5-2.1.8 Exception (c), 6-3.5.2, 6-3.5.3, 7-6.1.4, 7-6.2.8, 7-6.2.9, 7-6.2.10 Exception, 7-6.2.10 Exception No. 2, 7-6.3.2 Exception No. 2, 7-6.3.4, 7-6.3.5 Exception No. 2, 7-6.3.8, 7-6.4, 7-6.5.4, 7-7.2.1, 10-3.4.2.3(a), 11-3.4.2.3(a), 14-3.4.1.3, 15-3.4.1.3, 22-3.3.4.8, 23-3.3.4.6, 32-8.3.2]

NFPA 80, *Standard for Fire Doors and Fire Windows*, 1995 edition. [5-2.1.14(e), 6-2.3.2.1(a), 6-2.3.2.2, 12-3.6.3.5, 13-3.6.3.7]

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment*, 1994 edition. (7-5.2)

NFPA 88A, *Standard for Parking Structures*, 1995 edition. (16-3.5.4, 18-3.5.5)

NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*, 1996 edition. (6-2.6.1 Exception No. 2, 7-2.1)

NFPA 90B, *Standard for the Installation of Warm Air Heating and Air Conditioning Systems*, 1996 edition. (7-2.1)

NFPA 91, *Standard for Exhaust Systems for Air Conveying of Materials*, 1995 edition. (7-2.2)

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, 1997 edition. (7-2.3)

NFPA 99, *Standard for Health Care Facilities*, 1996 edition. [6-4.4 Exception, 7-2.4, 12-2.9.2, 12-2.10.2, 12-3.2.1, 12-3.2.2, 12-3.2.3, 12-3.2.4, 12-5.1.2, 12-5.1.3, 12-6.2.9.2, 12-6.3.2.1, 12-6.3.2.2, 13-3.2.2, 13-3.2.3, 13-3.2.4, 13-6.2.9.2, 13-6.3.2.1, 13-6.3.2.2]

NFPA 102, *Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures*, 1995 edition. (9-4.8.1)

NFPA 110, *Standard for Emergency and Standby Power Systems*, 1996 edition. (5-9.2.3, 7-1.3, 32-8.4.2)

NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, 1996 edition. (5-9.2.3, 7-1.4)

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*, 1996 edition. (7-2.2)

NFPA 220, *Standard on Types of Building Construction*, 1995 edition. (6-2.1.1, 6-5.5.3 Exception, 12-6.1.6.2, 13-6.1.6.2)

NFPA 221, *Standard for Fire Walls and Fire Barrier Walls*, 1994 edition. (6-2.2.2)

NFPA 231, *Standard for General Storage*, 1995 edition. [24-4.5.3.1(e), 24-4.5.5, 25-4.5.3.1(e), 25-4.5.5]

NFPA 231C, *Standard for Rack Storage of Materials*, 1995 edition. [24-4.5.3.1(f), 24-4.5.5, 25-4.5.3.1(f), 25-4.5.5]

NFPA 231D, *Standard for Storage of Rubber Tires*, 1994 edition. [24-4.5.3.1(g), 24-4.5.5, 25-4.5.3.1(g), 25-4.5.5]

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 1996 edition. (12-7.8.2, 13-7.8.2)

NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*, 1995 edition. [Section 3-2, 6-2.3.1.1, 6-2.3.1.1 Exception No. 2, 8-4.5.7(e), 22-1.3, 23-1.3]

NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, 1995 edition. [Section 3-2, 6-2.3.2.1(a), 6-2.3.2.3.1(c), 6-3.4.2(a)]

NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, 1995 edition. (Section 3-2, 6-5.6.1)

NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*, 1996 edition. [6-5.4.1, 6-5.5.1, 8-4.5.7(f)]

NFPA 256, *Standard Methods of Fire Tests of Roof Coverings*, 1993 edition. [12-1.6.2 Exception, 13-1.6.2 Exception, 15-1.6.3 Exception No. 1(a), 22-3.1.3.3 Exception to (a), (b), and (c), 23-3.1.3.3 Exception to (a), (b), and (c)]

NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*, 1996 edition. [Section 3-2, 6-2.3.2.2(a)]

NFPA 260, *Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture*, 1994 edition. [6-6.2(a)]

NFPA 261, *Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes*, 1994 edition. [6-6.2(b)]

NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*, 1994 edition. [6-5.3.1.5, 6-5.3.1.5.1, 6-5.3.1.5.2, 6-5.3.5.1(e)]

NFPA 266, *Standard Method of Test for Fire Characteristics of Upholstered Furniture Exposed to Flaming Ignition Source*, 1994 edition. (6-6.3)

NFPA 418, *Standard for Heliports*, 1995 edition. (12-3.2.7)

NFPA 701, *Standard Methods of Fire Tests for Flame-Resistant Textiles and Films*, 1996 edition. [6-6.1, 8-4.5.11, 8-7.5.3.4(c), 9-4.5.11, 9-7.5.3.4(c)]

NFPA 703, *Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*, 1995 edition. [6-5.8.1, 8-7.5.3.4(b), 9-7.5.3.4(b)]

NFPA 1126, *Standard for the Use of Pyrotechnics before a Proximate Audience*, 1996 edition. (8-7.3, 9-7.3)

33-1.2 Other Publications.

ANSI A14.3-1984, *Safety Code for Fixed Ladders*, American National Standards Institute, 11 West 42nd Street, New York, NY 10036 (5-2.9.2.1)

CABO/ANSI A117.1-1992, *American National Standard for Accessible and Usable Buildings and Facilities*, American National Standards Institute, 11 West 42nd Street, New York, NY 10036 (Section 3-2, 5-1.2, 5-2.12.3.5, 5-2.12.3.6, 5-10.1.3, 7-6.3.4)

ANSI A1264.1-1989, *Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems*, American National Standards Institute, 11 West 42nd Street, New York, NY 10036 (5-2.9.2.1 Exception No. 2, 28-2.2.10 Exception)

ASME/ANSI A17.1-1993, *Safety Code for Elevators and Escalators*, including Addenda A17.1a-1994 and A17.1b-1995, American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017 (5-2.12.2.4, 5-2.13.9, 5-2.13.11, 7-4.2, 7-4.4, 7-4.8)

ASME/ANSI A17.3-1993, *Safety Code for Existing Elevators and Escalators*, including Addenda A17.3a-1994 and A17.3b-1995, American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017 (7-4.3, 7-4.5)

ASTM E136-1982, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (Section 3-2)

ASTM E1537, *Standard Method for Fire Testing of Real Scale Upholstered Furniture Items*, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (6-6.3)

ASTM E1590-1994, *Standard Method for Fire Testing of Real Scale Mattresses*, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (6-6.4)

ASTM F851-1983, *Standard Test Method for Self-Rising Seat Mechanisms*, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (8-2.5.5.1, 9-2.5.5.1)

Code of Federal Regulations 16, Part 1632 [6-6.2(c)]

UL 924, *Standard for Safety Emergency Lighting and Power Equipment*, Underwriters Laboratories Inc., 333 Pfingsten Rd., Northbrook, IL 60062 (5-10.2.2)

UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*, Underwriters Laboratories Inc., 333 Pfingsten Rd., Northbrook, IL 60062 [6-6.7, 8-4.5.11, 8-7.4.3, 8-7.5.3.4(f), 8-7.5.3.4(g), 8-7.5.3.6, 9-7.4.3, 9-7.5.3.4(f), 9-7.5.3.4(g), 9-7.5.3.6]

APPENDIX A EXPLANATORY MATERIAL

This appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

The following notes, bearing the same number as the text of the *Life Safety Code* to which they apply, contain useful explanatory material and references to standards.

CHAPTER 1

A-1 The following is a suggested procedure for determining the *Code* requirements for a building or structure.

1. Determine the occupancy classification. Refer to the occupancy definitions in Chapter 4 and the occupancy Chapters 8 through 31. Also see 4-1.12 for buildings with more than one use.
2. Determine if the building or structure is new or existing. Refer to the definitions in Chapter 3.
3. Determine the occupant load. Refer to 5-3.1 and the -1.7 section of occupancy Chapters 8 through 31.
4. Determine the hazard of contents. Refer to Section 4-2.
5. Refer to the applicable occupancy chapter of the *Code* (Chapters 8 through 31). Refer as necessary to Chapters 1 through 7 for general information (e.g., definitions) or as directed by the occupancy chapter.
6. Determine the occupancy subclassification or special use condition, if any. Chapters 12 and 13, health care occupancies; Chapters 14 and 15, detention and correctional occupancies; Chapters 16 and 17, hotels and dormitories; Chapters 22 and 23, residential board and care occupancies; and Chapters 24 and 25, mercantile occupancies, contain subclassifications or special use definitions.
7. Proceed through the applicable occupancy chapter verifying compliance with each referenced section, subsection, paragraph, subparagraph, and referenced codes, standards, and other documents.
8. Where two or more requirements apply, the occupancy chapter generally takes precedence over the base Chapters 1 through 7.
9. Where two or more occupancy chapters apply, such as in a mixed occupancy (*see 4-1.12*), the most restrictive requirements apply.

A-1-2.2 The *Code* recognizes that panic in a burning building may be uncontrollable, but deals with the potential panic hazard through measures designed to prevent the development of panic. Experience indicates that panic seldom develops, even in the presence of potential danger, so long as occupants of buildings are moving toward exits that they can see within a reasonable distance with no obstructions or undue congestion in the path of travel. However, any uncertainty as to the location or adequacy of means of egress, the presence of smoke, or the stoppage of egress travel, such as may occur when one person stumbles and falls on the stairs, may be conducive to panic. Panic danger is greatest when there are large numbers of people in a confined area.

A-1-3 It is the intent of this section that a building addition, or alteration designed to meet the requirements of a prior edition of the *Code* be required to meet those requirements for the life of the building. Requirements for existing build-

ings in this edition of the *Code* would apply if those requirements are more restrictive.

There are some cases where the requirements for new construction are less restrictive, and it might be justified to allow an existing building to use the less restrictive requirements. However, extreme care needs to be exercised when making this allowance, because the less restrictive provision might be the result of a new requirements elsewhere in the *Code*. For example, in editions of the *Code* prior to 1991, corridors in new health care occupancies were required to have a 1-hr fire resistance rating. Since 1991 these corridors have been required only to resist the passage of smoke. However, this is based on the new requirement that all new health care facilities must be protected throughout by automatic sprinklers.

A-1-3.4 In existing buildings, it is not always practical to strictly apply the provisions of this *Code*. Physical limitations may require disproportionate effort or expense with little increase in life safety. In such cases, the authority having jurisdiction should be satisfied that reasonable life safety is ensured.

In existing buildings it is intended that any condition that represents a serious threat to life be mitigated by application of appropriate safeguards. It is not intended to require modifications for conditions that do not represent a significant threat to life, even though such conditions are not literally in compliance with the *Code*.

A-1-3.7 The following is an example of what is intended by 1-3.7. In a hospital that has 6-ft (1.8-m) wide corridors, these corridors cannot be reduced in width even though the requirements for existing hospitals do not require 6-ft (1.8-m) wide corridors. However, if a hospital has 10-ft (3-m) wide corridors, they may be reduced to 8 ft (2.4 m) in width, which is the requirement for new construction. If the hospital corridor is 3 ft (0.9 m) wide, it would have to be increased to 4 ft (1.2 m). If alterations require replacement of a portion of a hospital corridor wall, this portion of the corridor would not be required to be increased to 8 ft (2.4 m) in width unless it was practical to do so.

A-1-3.11.1 Fatal fires have occurred when a required stair has been closed for repairs or removed for rebuilding, when a required automatic sprinkler system has been shut off to change piping, etc.

A-1-3.11.2 See also NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

A-1-3.12 Examples of changes from one occupancy subclassification to another subclassification of the same occupancy could include a change from a Class B to a Class A mercantile occupancy. Hospitals and nursing homes are both health care occupancies and are defined separately, but they are not established as separate suboccupancies; thus, a change from one to the other does not constitute a change of occupancy subclassification.

For example, a building was used as a hospital but has been closed for four years. It is again to be used as a hospital. As long as the building was not used as another occupancy during the time it was closed, it would be considered existing.

Hotels and apartments, although both residential occupancies, are treated separately, and a change from one to the other constitutes a change of occupancy.

A-1-3.13.2 The presence of a life safety feature, such as sprinklers or fire alarm devices, creates a reasonable expectation by

the public that these safety features are functional. When systems are inoperable or taken out of service, but the devices remain present, they present a false sense of safety. Also, before taking any life safety features out of service, extreme care needs to be exercised to ensure that the feature is not required, was not originally provided as an alternative or equivalency, or is no longer required due to other new requirements in the current *Code*. It is not intended that the entire system or protection feature be removed. Instead components such as sprinklers, initiating devices, notification appliances, standpipe hose, and exit systems should be removed to reduce the likelihood of relying on inoperable systems or features. Alternatively, signage could be provided to indicate that a system is no longer operable.

A-1-4.2 The phrase “intimate with the initial fire development” refers to the person(s) at the ignition source and not to all persons within the same room or area. *Code* provisions aimed at protecting occupants not intimate with the initial fire development may also protect those who are intimate with the initial fire development.

A-1-4.3 The level of life safety from fire is defined through requirements directed at the

- (a) Prevention of ignition,
- (b) Detection of fire,
- (c) Control of fire development,
- (d) Confinement of the effects of fire,
- (e) Extinguishment of fire,
- (f) Provision of refuge and/or evacuation facilities,
- (g) Staff reaction, and
- (h) Provision of fire safety information to occupants.

A-1-6.1 Before a particular mathematical fire model or evaluation system is used, its purpose and limitations need to be known. The technical documentation should clearly identify any assumptions included in the evaluation. Also, it is the intent of the Committee on Safety to Life to recognize that future editions of this *Code* are a further refinement of this edition and earlier editions. The changes in future editions will reflect the continuing input of the fire protection/life safety community in its attempt to meet the purpose stated in this *Code*.

A-1-6.2 An equivalent method of protection is one providing an equal or greater level of safety. It is not a waiver or deletion of a *Code* requirement.

A-1-7 The term “fire exit drill” is used to avoid confusion between drills held for the purpose of rapid evacuation of buildings and drills of fire-fighting practice that from a technical viewpoint are correctly designated as “fire drills,” although this term is by common usage applied to egress drills in schools, etc.

The purpose of fire exit drills is to educate the building occupants in the fire safety features and the egress facilities available. Speed in emptying buildings, while desirable, is not the only objective.

The usefulness of a fire exit drill and the extent to which it can be carried off depends on the character of the occupancy; fire exit drills being most effective in occupancies where the occupant load of the building is subject to discipline and habitual control. For example, schools offer possibilities of more

highly developed and valuable fire exit drills than other types of occupancy.

In buildings where the occupant load is of a changing character and not subject to discipline, such as hotels or department stores, no regularly organized fire exit drill, such as that which may be conducted in schools, is possible. In such cases, the fire exit drills must be limited to the regular employees, who can, however, be thoroughly schooled in the proper procedure and can be trained to properly direct other occupants of the building in case of fire. In occupancies such as hospitals, regular employees can be rehearsed in the proper procedure in case of fire; such training always is advisable in all occupancies whether or not regular fire exit drills can be held.

A-1-7.2 If a fire exit drill is considered merely as a routine exercise from which some persons may be excused, there is a grave danger that in an actual fire the drill will fail in its intended purpose. However, there might be some circumstances under which all occupants might not participate in a fire exit drill, for example, infirm or bedridden patients in a health care occupancy.

A-1-7.5 Fire is always unexpected. If the drill is always held in the same way at the same time it loses much of its value, and when for some reason during an actual fire it is not possible to follow the usual routine of the fire exit drill to which occupants have become accustomed, confusion and panic may ensue. Drills should be carefully planned to simulate actual fire conditions. Not only should they be held at varying times, but different means of exit should be used based on an assumption that, for example, some given stairway is unavailable by reason of fire or smoke, and all the occupants must be led out by some other route. Fire exit drills should be designed to familiarize the occupants with all available means of exit, particularly emergency exits that are not habitually used during the normal occupancy of the building.

CHAPTER 2

A-2-1 It is not always necessary to completely evacuate the building or structure to escape from a fire or other emergency. An area of refuge formed by horizontal exits, smoke barriers, other floors, or similar compartmentation often can serve as a place for the occupants to remain in relative safety until the emergency is over. In those occupancies where access to the exits is by way of enclosed corridors, particularly those occupancies with sleeping occupants, a single fire might block access to all exits, including horizontal exits and smoke barriers. In such cases, the occupants may achieve a greater degree of safety by remaining in their rooms.

A-2-10 The provisions of this *Code* will not necessarily provide a building suitable for use by physically handicapped people. Reference is made to CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

CHAPTER 3

A-3-2 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compli-

ance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A-3-2 Authority Having Jurisdiction. The phrase “authority having jurisdiction” is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A-3-2 Birth Center. The birth center is a low volume service for healthy, childbearing women, and their families, who are capable of ambulation in the event of fire or fire-threatening events. Birth center mothers and babies have minimal analgesia, no general or regional anesthesia, and are capable of ambulation, even in second stage labor.

A-3-2 Building, Existing. With respect to judging whether a building should be considered existing, the deciding factor is not when the building was designed or when construction started but rather the date plans were approved for construction by the appropriate authority having jurisdiction. It is intended that the initial assessment of the building, when new, should be based on new occupancy requirements for the edition of the *Code* in effect on the date of plan approval. Subsequent assessments of the building made while that edition of the *Code* is still in effect should also be based on new occupancy requirements. (See A-1-3.)

A-3-2 Existing. See Building, Existing.

A-3-2 Fire Compartment. In the provisions of fire compartments utilizing the outside walls of a building, it is not intended that the outside wall be specifically fire resistance-rated unless required by other standards. Likewise it is not intended for outside windows or doors to be protected unless specifically required for exposure protection by another section of this *Code* or by other standards.

A-3-2 High-Rise Building. It is the intent of this definition that in determining the level from which the highest occupiable floor is to be measured, the enforcing agency should exercise reasonable judgment, including consideration of overall accessibility to the building by fire department personnel and vehicular equipment. Where a building is situated on a sloping terrain and there is building access on more than one level, the enforcing agency may select the level that provides the most logical and adequate fire department access.

A-3-2 Limited-Combustible. See NFPA 259, *Standard Test Method for Potential Heat of Building Materials* and NFPA 220, *Standard on Types of Building Construction*.

A-3-2 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A-3-2 Smoke Compartment. In the provision of smoke compartments utilizing the outside walls or the roof of a building, it is not intended that outside walls or roofs or any openings therein be capable of resisting the passage of smoke.

CHAPTER 4

A-4-1.2 Assembly occupancies are characterized by the presence or potential presence of crowds with attendant panic hazard in case of fire or other emergency. They are generally open to the public, or occasionally open to the public, and the occupants, present voluntarily, are not ordinarily subject to discipline or control. Such buildings are ordinarily occupied by able-bodied persons and are not used for sleeping purposes. The need for alternate egress routes for small commercial assembly occupancies, such as restaurants, lounges, theaters, etc., with capacities of as few as 50 persons, is specially treated in this method of classification. Special conference rooms, snack areas, etc., incidental to and under the control of the management of other occupancies, such as offices, fall under the 50-person limitation.

Restaurants and drinking establishments with an occupant load of fewer than 50 persons should be classified as mercantile occupancies.

A-4-1.3 An educational occupancy is distinguished from an assembly occupancy in that the same occupants are regularly present and they are subject to discipline and control.

A-4-1.7 Office, storage, and service facilities incidental to the sale of merchandise and located in the same building are included with mercantile occupancy.

A-4-1.8 Doctors' and dentists' offices are included unless of such character as to be classified as ambulatory health care occupancies. Birth centers occupied by fewer than four patients, not including infants, at any one time; not providing sleeping facilities for four or more occupants; and not providing treatment procedures that render four or more patients, not including infants, incapable of self-preservation at any one time should be classified as business occupancies. For birth centers occupied by patients not meeting these parameters, see Chapter 12 or 13, as appropriate.

Service facilities common to city office buildings such as newsstands, lunch counters serving fewer than 50 persons, barber shops, and beauty parlors are included in the business occupancy group.

City halls, town halls, and court houses are included in this occupancy group insofar as their principal function is the transaction of public business and the keeping of books and records. Insofar as they are used for assembly purposes, they are classified as assembly occupancies.

A-4-1.9 In evaluating the appropriate classification of laboratories, the authority having jurisdiction should determine

each case individually based on the extent and nature of the associated hazards. Some laboratories may be classified as occupancies other than industrial, for example a physical therapy laboratory or a computer laboratory.

A-4-1.10 Storage occupancies are characterized by the presence of relatively small numbers of persons in proportion to the area. Any new use that increases the number of occupants to a figure comparable with other classes of occupancy changes the classification of the building to that of the new use.

A-4-1.11 In areas where public schools offer only half-day kindergarten programs, many child day-care occupancies offer state approved kindergarten classes for children who require full-day care. As these classes are normally incidental to the day-care occupancy, the requirements of the day-care occupancy should be followed. (*See also 6-6.1.*)

A-4-1.12 With only a few exceptions, the *Code* sets no specific occupancy separation requirements. The authority having jurisdiction determines what separation is needed, if any, based on 4-1.12 and the -1.2 section of each occupancy chapter. The local building code or the model building codes may be consulted by the authority having jurisdiction in making this determination, keeping life safety rather than property protection in mind.

A-4-1.12 Exception Examples of uses that might be incidental to another occupancy include

- (a) A newsstand (mercantile) in an office building,
- (b) A giftshop (mercantile) in a hotel,
- (c) A small storage area (storage) in any occupancy,
- (d) Minor office space (business) in any occupancy, and
- (e) A maintenance area (industrial) in any occupancy.

A-4-2.1.3 Under this provision, any violation of the requirements of Chapters 8 through 32 for separation or protection of hazardous operation or storage would inherently involve violation of the other sections of the *Code*, unless additional egress facilities appropriate to high hazard contents were provided.

A-4-2.2.1 These classifications do not apply to the application of sprinkler protection classifications. See NFPA 13, *Standard for the Installation of Sprinkler Systems*.

A-4-2.2.2 Chapter 29 recognizes storage of noncombustible materials as low hazard. In other occupancies it is assumed that even where the actual contents hazard may normally be low, there is sufficient likelihood that some combustible materials or hazardous operations will be introduced in connection with building repair or maintenance, or that some psychological factor might create conditions conducive to panic, so that the egress facilities cannot safely be reduced below those specified for ordinary hazard contents.

A-4-2.2.3 Ordinary hazard classification represents the conditions found in most buildings and is the basis for the general requirements of this *Code*.

The fear of poisonous fumes or explosions is necessarily a relative matter to be determined on a judgment basis. All smoke contains some toxic fire gases, but under conditions of ordinary hazard there should be no unduly dangerous exposure during the period necessary to escape from the fire area, assuming there are proper exits.

A-4-2.2.4 High hazard contents may include occupancies where gasoline and other flammable liquids are handled or used or are stored under conditions involving possible release of flammable vapors; where grain dust, wood flour or plastic dust, aluminum or magnesium dust, or other explosive dusts may be produced; where hazardous chemicals or explosives are manufactured, stored, or handled; where cotton or other combustible fibers are processed or handled under conditions producing flammable flyings; and other situations of similar hazard.

Chapters 28 and 29 include detailed provisions on high hazard contents.

CHAPTER 5

A-5-1.1 Portable ladders, rope fire escapes, and similar emergency escape devices may have a useful function in facilitating escape from burning buildings lacking adequate exits of the stair or other standard type, but they are not the equivalent of standard exits, and their use is not in any way recognized by this *Code* as satisfying the requirements for means of egress. Furthermore, many such devices are of types quite unsuited to use by aged or infirm persons or by small children. Therefore, such devices may give a false sense of security and should not be used as an excuse for not providing standard exit facilities.

A-5-1.2 Accessible Means of Egress. An accessible means of egress should comply with the accessible route requirements of CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

A-5-1.2 Area of Refuge. An area of refuge has a temporary use during egress. It generally serves as a staging area that provides relative safety to its occupants while potential emergencies are assessed, decisions are made, and mitigating activities are begun. Taking refuge within such an area is thus a stage of the total egress process; a stage between egress from the immediately threatened area and egress to a public way. An area of refuge might be another building connected by a bridge or balcony, a compartment of a subdivided story, an elevator lobby, or an enlarged story-level exit stair landing.

An area of refuge is accessible by means of horizontal travel or, as a minimum, via an accessible route meeting the requirements of CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*.

This *Code* recognizes any floor in a building protected throughout by an approved, supervised automatic sprinkler system as an area of refuge. This is in recognition of the ability of a properly designed and functioning automatic sprinkler system to control a fire at its point of origin and to limit the production of toxic products to a level that is not life threatening.

The requirement for separated rooms or spaces may be met on an otherwise undivided floor by enclosing the elevator lobby with ordinary glass or other simple enclosing partitions that are smoke resisting.

A-5-1.2 Common Path of Travel. Common path of travel is measured in the same manner as travel distance but terminates at that point where two separate and distinct routes become available.

A-5-1.2 Exit. Exits include exterior exit doors, exit passageways, horizontal exits, separated exit stairs, and separated exit ramps. In the case of a stairway, the exit includes the stair

enclosure, the door to the stair enclosure, stairs and landings inside the enclosure, the door from the stair enclosure to the outside or to the level of exit discharge, and any exit passageway and its associated doors if such are provided so as to discharge the stair directly to the outside. In the case of a door leading directly from the street floor to the street or open air, the exit comprises only the door.

Doors of small individual rooms, as in hotels, while constituting exit access from the room, are not referred to as exits except where they lead directly to the outside of the building.

A-5-1.2 Horizontal Exit. Horizontal exits should not be confused with egress through doors in smoke barriers. Doors in smoke barriers are designed only for temporary protection against smoke, whereas horizontal exits provide protection against serious fire for a relatively long period of time in addition to providing immediate protection from smoke.

A-5-1.2 Means of Egress. A means of egress comprises the vertical and horizontal travel and includes intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, elevators, enclosures, lobbies, escalators, horizontal exits, courts, and yards.

A-5-1.2 Smokeproof Enclosure. For further guidance, see the following publications:

ASHRAE *Handbook and Product Directory—Fundamentals*.

Design of Smoke Management Systems, by Klote and Milke.

NFPA 105, *Recommended Practice for the Installation of Smoke-Control Door Assemblies*.

A-5-1.3.1 The purpose of a tight-fitting door is to control the flow of smoke. The tight fit can be achieved by close attention to tolerances or by supplemental means. In no case should the “crack dimensions” exceed the maximum tolerances allowed in NFPA 80, *Standard for Fire Doors and Fire Windows*. See also NFPA 105, *Recommended Practice for the Installation of Smoke-Control Door Assemblies*.

A-5-1.3.2.1(a) and (b) In existing buildings, existing walls in good repair consisting of lath and plaster, gypsum wallboard, or masonry units can usually provide satisfactory protection for the purposes of this requirement where 1-hr fire resistance rating is required. Further evaluation might be needed where 2-hr fire resistance rating is required. Additional guidelines can be found in Appendix D of NFPA 914, *Recommended Practice for Fire Protection in Historic Structures*, and in the SFPE *Handbook of Fire Protection Engineering*.

A-5-1.3.2.3 This provision prohibits the use of exit enclosures for storage or for installation of equipment not necessary for safety. Occupancy is prohibited other than for egress, refuge, and access. The intent is that the exit enclosure essentially be “sterile” with respect to fire safety hazards.

A-5-1.6.2 Aside from the problems created for persons who are mobility impaired, small changes of elevations in floors are best avoided because of the increased occurrence of missteps where the presence of single steps, a series of steps, or a ramp is not readily apparent. While small changes of elevation pose significant fall risks in the case of individual movement, they are even more undesirable where crowds traverse the area.

A contrasting marking stripe on each stepping surface may be helpful at the nosing or leading edge such that the location of each step is readily apparent, especially when viewed in

descent. Such stripes should be at least 1 in. (2.5 cm) but not more than 2 in. (5.0 cm) in width. Other methods could include a relatively higher level of lighting, contrasting colors, contrasting textures, especially prominent handrails, warning signs, a combination thereof, or other similar means. The construction or application of marking stripes should be such that slip resistance is consistent over the walking surface and no tripping hazard is created (*see also A-5-2.2.3.3*). Depending on the distractions of the surroundings, the familiarity of users with a particular small change of level, and especially the number of people that might be in a group traversing the change of level (thereby reducing visibility of the level changes), a strong argument can be made for the elimination of steps and ramps that might pose a risk of missteps.

A-5-1.9.1 A proper means of egress permits unobstructed travel at all times. Any type of barrier including, but not limited to, the accumulations of snow and ice in those climates subject to such accumulations is an impediment to free movement in the means of egress.

A-5-2.1.1.3 Although 5-2.1.1.3 and 5-2.1.5.1 permit locking of means of egress doors where a building is not considered occupied, the *Code* does not intend to permit occupants to be locked in buildings or building spaces beyond their control except for detention and correctional occupancies and health care occupancies.

A-5-2.1.2.1 Figure A-5-2.1.2.1 illustrates the method of measuring the width of doorways.

In cases where a chapter requires a minimum door width, for example, 36 in. (91 cm), this requirement can be met by a door leaf of the minimum specified width if the term “clear width” does not appear as part of the minimum width requirement. A pair of cross-corridor doors subject to such a requirement would be judged under two sets of criteria:

1. Each door leaf must be a minimum of 36 in. (91 cm) in width, and
2. The pair of doors must provide sufficient, clear, unobstructed width (which will be less than the door leaf width measurement) to handle their assigned occupant load based on a calculation using the appropriate egress capacity factor (as found in 5-3.3.1).

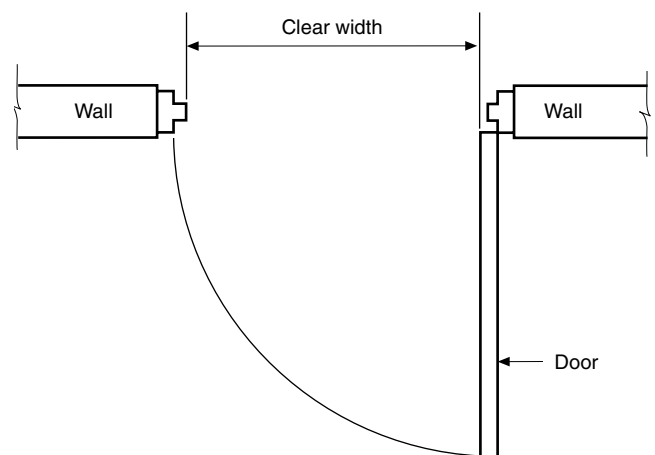


Figure A-5-2.1.2.1 Clear door width.

A-5-2.1.4.1 Where doors are subject to two-way traffic, or where their opening may interfere with pedestrian traffic, an appropriately located vision panel can reduce the chance of accidents.

Swinging doors in horizontal or vertical rolling partitions complying with the following should be permitted in a means of egress where:

- (a) The door or doors comply with 5-2.1.4,
- (b) The partition in which the doors are mounted complies with the applicable fire protection rating and closes upon smoke detection or power failure at a speed of not more than 9 in. (23 cm) per second and not less than 6 in. (15 cm) per second, and
- (c) The doors mounted in the partition are self- or automatic-closing in accordance with 5-2.1.8.

A-5-2.1.4.4 This paragraph is not intended to apply to the swing of cross-corridor doors such as smoke barrier doors and horizontal exits.

A-5-2.1.5.2 It is intended that the reentry provisions apply only to enclosed exit stairs, not to outside stairs. This arrangement makes it possible to leave the stairway at such floor should the fire render the lower part of the stair unusable during egress or should the occupants seek refuge on another floor.

A-5-2.1.5.3 Examples of devices that might be arranged to release latches include knobs, levers, and panic bars. This requirement may be satisfied by the use of conventional types of hardware, whereby the door is released by turning a lever, knob, or handle or pushing against a panic bar, but not by unfamiliar methods of operation such as a blow to break glass. The operating devices should be capable of being operated with one hand and should not require tight grasping, tight pinching, or twisting of the wrist to operate.

A-5-2.1.5.3 Exception Examples of devices that, when used with a latch, can be arranged to require not more than one additional releasing operation include night latches, dead bolts, and security chains.

A-5-2.1.5.5 Examples of devices prohibited by this requirement include locks, padlocks, hasps, bars, chains, or combinations thereof.

A-5-2.1.6.1(e) In the event that the authority having jurisdiction has allowed increased operation time, the sign should reflect the appropriate time.

A-5-2.1.8 Examples of doors designed to normally be kept closed include those to a stair enclosure or horizontal exit.

A-5-2.1.9 An example of the type of door addressed by 5-2.1.9 is one actuated by a motion sensing device upon the approach of a person.

A-5-2.1.9 Exception No. 2 Although a single power-operated door leaf located within a two-leaf opening may alone not provide more than 30 in. (76 cm) of clear width in the emergency break-out mode, where both leaves are broken out to become side-hinged, the required egress width can be provided by the width of the entire opening.

A-5-2.2.2.1 Exception No. 1 It is the intent of Exception No. 1 to 5-2.2.2 to permit use of the table for existing stairs in existing buildings even where there is a change in occupancy per 1-3.12. Safety improvements should be made that are rea-

sonable and feasible at minimal cost. Improvements include removal, repair, or replacement of step coverings [as described in A-5-2.2.3.5, especially Figure A-5-2.2.3.5(e)] and addition of functional handrails and guardrails in place of or in conjunction with other rails (as described by 5-2.2.4).

A-5-2.2.2.5 If properly designed and constructed, stairs with winders are not necessarily more dangerous than other stairs. Attention to the following factors will help to make winders generally more effective for egress and safety. Handrails should be continuous, without breaks at newel posts, from story to story. Indeed, handrails located a greater than normal distance from the inner turn of winders can improve safety by constraining stair users to walk on the portion of the treads providing deeper treads, with at least 11 in. (27.9 cm) of depth. Combinations of straight flights and winders are best arranged with winders occurring only below the straight flight. This is because the winders provide larger tread dimensions over much of their width than do typical treads on straight flights. A descending person will thus be unlikely to experience a reduction of tread depths during descent, a condition of nonuniformity that is best avoided.

A-5-2.2.3.3 The tripping hazard referred to in 5-2.2.3.3 occurs especially during descent, where the tread walking surface has projections such as strips of high friction materials or lips from metal pan stairs that are not completely filled with concrete or other material. Tread nosings that project over adjacent treads can also be a tripping hazard. CABO/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*, illustrates projecting nosing configurations that minimize the hazard.

Regarding the slip resistance of treads, it should be recognized that when walking up or down stairs a person's foot exerts a smaller horizontal force against treads than achieved when walking on level floors. Therefore, materials used for floors that are acceptable as slip resistant (as described by ASTM) provide adequate slip resistance where used for stair treads, including the important leading edges of treads, the part of the tread that the foot first contacts during descent, the most critical direction of travel. If stair treads are wet, there may be an increased danger of slipping, just as there may be an increased danger of slipping on wet floors of similar materials. A small wash or drainage slope on exterior stair treads is therefore recommended to shed water (*see Templer, J. A., The Staircase: Studies of Hazards, Falls, and Safer Design, Cambridge, MA: MIT Press, 1992*). Where environmental conditions (such as illumination levels and directionality or a complex visual field drawing a person's attention away from stair treads) lead to a hazardous reduction in one's ability to perceive stair treads, they should be made of a material that permits ready discrimination of the number and position of treads. In all cases, the leading edges of all treads should be readily visible during both ascent and descent. A major factor in injury-producing stair accidents and in the ability to use stairs efficiently in conditions such as egress is the clarity of the stair treads as separate stepping surfaces.

A-5-2.2.3.4 A small drainage slope for stair treads subject to wetting may improve tread slip resistance (*see also A-5-2.2.3.3*). A consistent slope to a side of the stair, where drainage is possible, may be preferable to a front-to-back slope of the treads. Providing a pitch of $\frac{1}{8}$ in. to $\frac{1}{4}$ in. per ft (1 cm to 2 cm per m) will aid the shedding of water from a nominally horizontal surface.

A-5-2.2.3.5 Figures A-5-2.2.3.5(a), (b), (c), and (d) illustrate the method for measuring riser height and tread depth. Stairs that will be covered with resilient floor coverings may need additional tread depth beyond the minimum specified in the *Code*. Any horizontal projection of resilient covering materials beyond the tread nosing and riser, such as carpet and underlayment, can interfere with users' feet and thereby reduce usable tread depth. At the tread nosing, such resilient covering materials may not be capable of providing stable support for users' feet. Generally, effective tread depth is reduced by the uncompressed thickness of such resilient coverings and might be further reduced over time if coverings are not well secured and consequently move forward at the nosings. [See Figure A-5-2.2.3.5(e).]

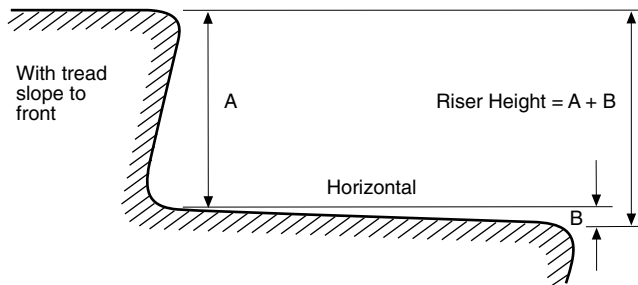


Figure A-5-2.2.3.5(a) Riser measurement with tread slope to front.

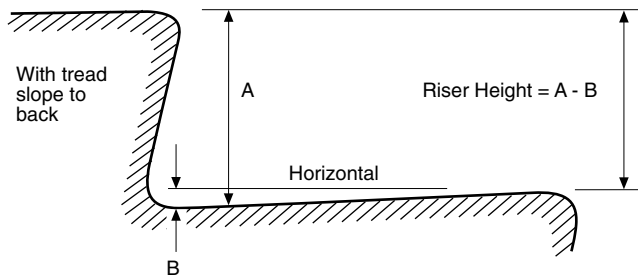


Figure A-5-2.2.3.5(b) Riser measurement with tread slope to back.

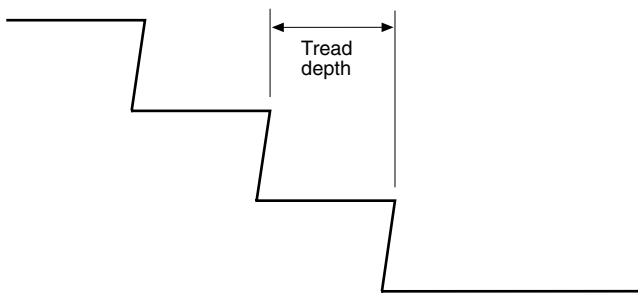


Figure A-5-2.2.3.5(c) Tread depth.

A-5-2.2.4.1 Means of egress components that might require protection with guards include stairs, landings, balconies, corridors, passageways, floor or roof openings, ramps, aisles, porches, and mezzanines.

A-5-2.2.4.2 The intent of this provision is to place handrails for the required egress width of stairs only, regardless of the actual width of the stairs. The required egress width is along

Tread measurements:

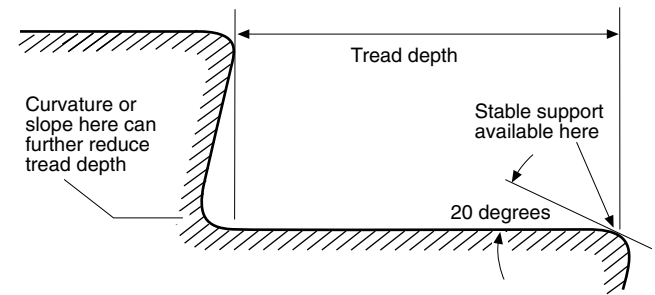


Figure A-5-2.2.3.5(d) Tread measurement with stable support at leading edge.

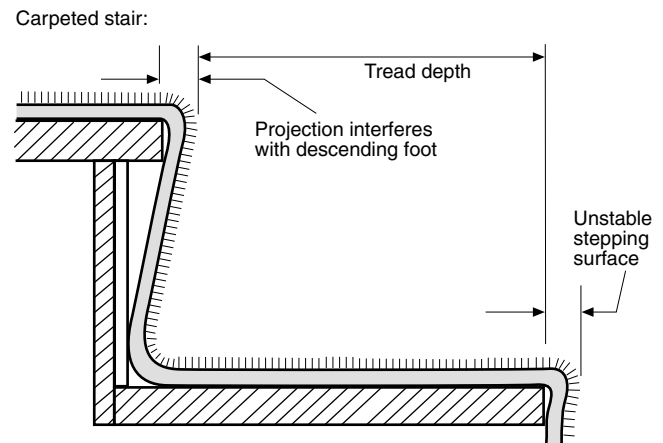


Figure A-5-2.2.3.5(e) Tread measurement with unstable stepping surface at leading edge.

the natural path of travel to and from the building. Examples of this requirement are shown in Figure A-5-2.2.4.2. The reduced intermediate handrail spacing of 60 in. (152 cm) along with a handrail height within the permissible height limits permits everyone to reach and grasp one handrail. Except as noted in 5-2.2.4.3 and 5-2.2.4.5, handrails are not required on stair landings.

A-5-2.2.4.5 Figure A-5-2.2.4.5 illustrates some of the requirements of 5-2.2.4.5.

A-5-2.2.4.5(a) Exception No. 3 Additional handrails, beyond those required by the *Code*, are permitted at heights other than those stipulated. For example, where children under the age of 5 are major users of a facility, an additional handrail at a height in the range of 28 in. to 32 in. (71 cm to 81 cm) might be useful. Generally, children apparently prefer to use, and can effectively use, handrails that are located at shoulder to head height due to their developmental characteristics and their less developed balance and walking abilities. At 36 months of age, head height ranges from 35 in. to 40 in. (89 cm to 102 cm); shoulder height averages 29 in. (74 cm). At 60 months of age, head height ranges from 39 in. to 46 in. (99 cm to 117 cm); shoulder height ranges from 31 in. to 37 in. (79 cm to 94 cm).

A-5-2.2.4.5(b) This 1½-in. (3.8-cm) clearance assumes that the wall and other surfaces adjacent to the handrail is a

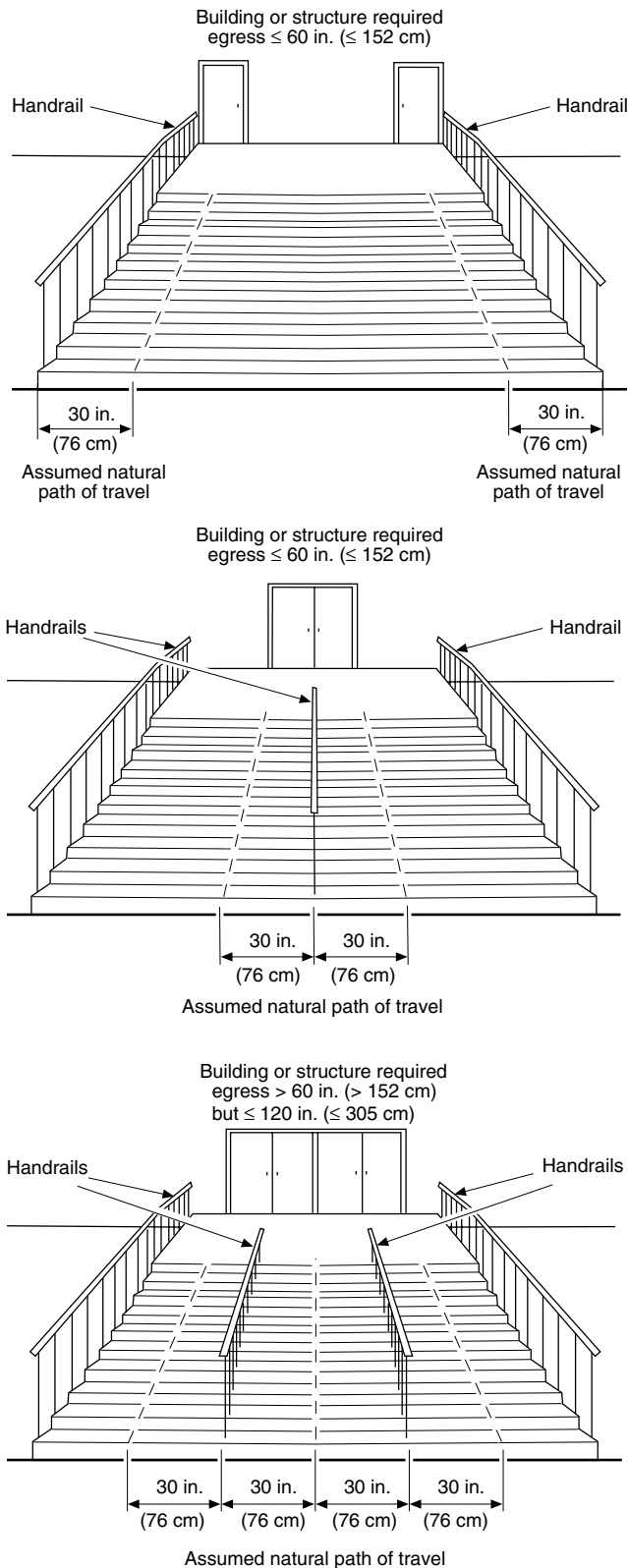


Figure A-5-2.2.4.2 Assumed natural paths of travel on monumental stairs with various handrail locations.

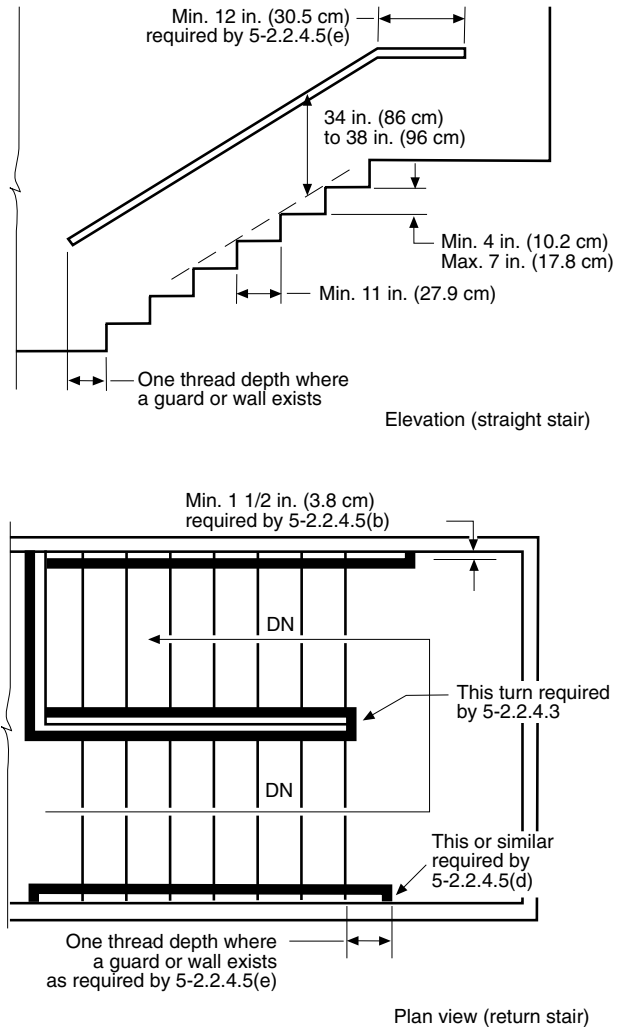


Figure A-5-2.2.4.5 Handrail details.

smooth surface. Where rough surfaces are used, greater clearances are recommended. In fact, ergonomic studies suggest that 2 1/4 in. (5.7 cm) is a more appropriate minimum clearance even to smooth surfaces. Note that the 3 1/2-in. (8.9-cm) projection requirement does not prohibit such larger clearances; the 3 1/2 in. (8.9 cm) refers to stair width required for egress capacity for example, not the actual width.

A-5-2.2.4.5(c) Handrails should be designed so they can be grasped firmly with a comfortable grip and so the hand can be slid along the rail without encountering obstructions. The profile of the rail should comfortably match the hand grips. For example, a round profile such as is provided by the simplest round tubing or pipe having an outside diameter of 1 1/2 in. to 2 in. (3.8 cm to 5 cm) provides good graspability for adults. Factors such as the use of a handrail by small children and the wall-fixing details should be taken into account in assessing handrail graspability. The most functional as well as the most preferred handrail shape and size is circular with a 1 1/2-in. (3.8-cm) outside diameter (according to research conducted using adults). Handrails used predominantly by children should be designed at the lower end of the permitted dimensional range.

Handrails are one of the most important components of a stair; therefore, design excesses such as oversized wood handrail sections should be avoided unless there is a readily perceived and easily grasped handhold provided. In handrail design, it is useful to remember at all times the effectiveness of a simple round profile that permits some locking action by fingers as they curl around the handrail.

A-5-2.2.4.6 Exception No. 3 to (b) This reduction in required height applies only to the stair, not to the landings.

A-5-2.2.4.6(c) Vertical intermediate rails are preferred to reduce climbability.

A-5-2.2.5.2 The purpose of this provision is to protect the exterior wall of a stairway from fires in other portions of the building. If the exterior wall of the stair is flush with the building exterior wall, the fire would need to travel around 180 degrees in order to impact the stair. This has not been a problem in existing buildings, so no protection is required. However, if the angle of exposure is less than 180 degrees, protection of either the stair wall or building wall is required.

Figures A-5-2.2.5.2 (a), (b), and (c) illustrate the requirement (assuming nonrated glass on exterior wall of stair is used).

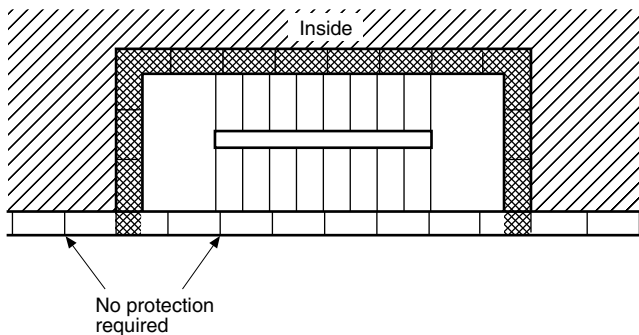


Figure A-5-2.2.5.2(a) Stairway with nonrated exterior wall in same plane as building exterior wall.

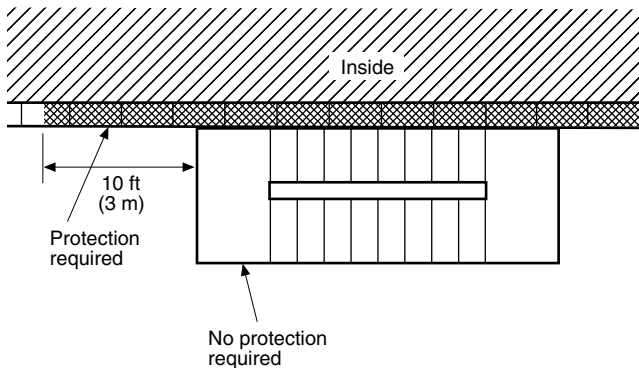


Figure A-5-2.2.5.2(b) Stairway with unprotected exterior perimeter protruding past building exterior wall.

A-5-2.2.5.3 An example of a use with the potential to interfere with egress is storage.

A-5-2.2.5.4 The intent of this provision is to provide vital egress information to the occupants of a building and to fire

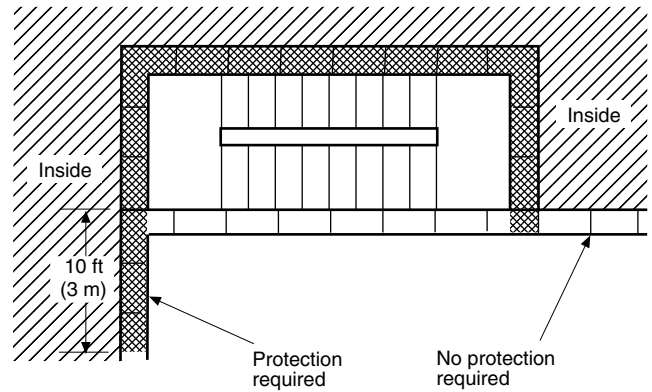


Figure A-5-2.2.5.2(c) Stairway with nonrated exterior wall exposed by adjacent exterior wall of building.

fighters. To reduce information overload to occupants during emergency egress, a sign indicating the floor level of and the direction to the exit discharge may be placed as a separate sign with another sign indicating the floor level, the terminus of the top and bottom of the stair enclosure, and the identification of the stair.

A-5-2.2.6.3 The guards that are required by 5-2.2.4 will usually meet this requirement where the stair is not more than three stories high. Special architectural treatment, including application of such devices as metal or masonry screens and grilles, will usually be necessary to comply with the intent of this requirement for stairs over three stories in height.

A-5-2.2.6.6 (See A-5-2.2.3.4.)

A-5-2.3.9.1 The design pressure differences required by 5-2.3.9.1 are based on specific gas temperatures and ceiling heights. The system is required to be approved because anticipated conditions may be different from those on which the design pressure differences were calculated and, thus, different design pressure differences may be needed. For additional information on necessary minimum design pressure differences, including calculational techniques, or maximum pressure differences across doors to ensure reasonable operating forces, see NFPA 92A, *Recommended Practice for Smoke-Control Systems*.

A-5-2.4.1 Example: One way to provide the required egress capacity from the upper floor of a department store building 350 ft × 200 ft (107 m × 60 m) (occupant load 1166 per floor) would be to furnish eight 44-in. (112-cm) stairs. [See Figure A-5-2.4.1(a).]

Assume that this building is divided into two sections by a fire barrier meeting the requirements for a horizontal exit, one 130 ft × 200 ft (40 m × 60 m) and the other 220 ft × 200 ft (67 m × 60 m), with two pairs of 46-in. (117-cm) double egress doors, with each door providing 44 in. (112 cm) of clear egress width. [See Figure A-5-2.4.1(b).] The smaller section, considered separately, will require the equivalent of three 44-in. (112-cm) exit stairs and the larger section will require five such exits. The horizontal exits will serve as one of the three exits required for the smaller section and two of the five exits required for the larger section. Therefore, only two 44-in. (112-cm) exit stairs from the smaller section and three 44-in. (112-cm) exit stairs from the larger section will be required, if the exits can be arranged to meet the requirements for the

150-ft (45-m) travel distance allowed from any point in a non-sprinklered building. Thus, the total number of exit stairs required for the building will be five, as compared with eight if no horizontal exit had been provided.

Another option would be the use of two 56-in. (142-cm) exit stairs from the larger section, which would reduce the total number of stairways required from the floor to four. [See Figure A-5-2.4.1(c).] However, if the building were further sub-

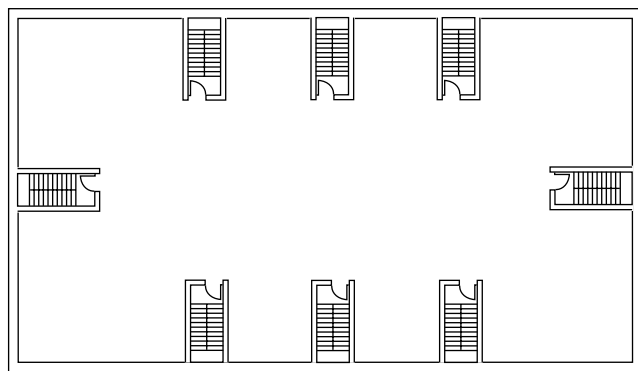


Figure A-5-2.4.1(a) Eight exits, none via horizontal exit, required to provide the necessary egress capacity.

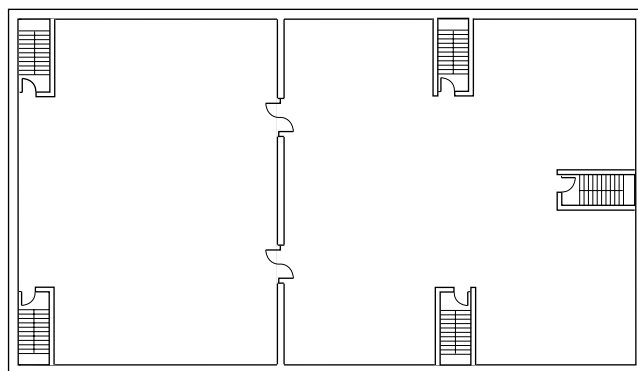


Figure A-5-2.4.1(b) Number of stairs reduced by three through use of two horizontal exits; egress capacity not reduced.

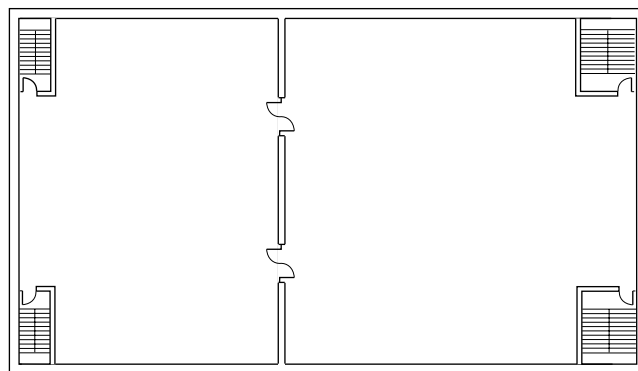


Figure A-5-2.4.1(c) Number of stairs further reduced by widening stairs in larger compartment, but not to less than one half the required number and capacity of exits from that compartment.

divided by a second fire wall meeting the requirements for a horizontal exit, no further reduction in stairways would be permitted in order to keep from exceeding the maximum one half of exiting via horizontal exits.

A-5-2.4.3.7 For further information, see NFPA 105, *Recommended Practice for the Installation of Smoke-Control Door Assemblies*.

A-5-2.4.3.8 Fusible link-actuated automatic-closing doors do not qualify for use in horizontal exits under these provisions, as smoke might pass through the opening before there is sufficient heat to release the hold open device.

Such doors are also objectionable because, once closed, they are difficult to open and would inhibit orderly egress.

A-5-2.5.6.2 The guards required by 5-2.2.4 for the unenclosed sides of ramps will usually meet this requirement where the ramp is not more than three stories high. Special architectural treatment, including application of such devices as metal or masonry screens and grilles, will usually be necessary to comply with the intent of the requirements for ramps over three stories in height.

A-5-2.5.6.3 Providing a pitch of $\frac{1}{8}$ in. to $\frac{1}{4}$ in. per ft (1 cm to 2 cm per m) will aid the shedding of water from a nominally horizontal surface.

A-5-2.6 An exit passageway serves as a horizontal means of exit travel that is protected from fire in a manner similar to an enclosed interior exit stair. Where it is desired to offset exit stairs in a multistory building, an exit passageway can be used to preserve the continuity of the protected exit by connecting the bottom of one stair to the top of the other stair that continues to the street floor. Probably the most important use of an exit passageway is to satisfy the requirement that at least 50 percent of the exit stairs discharge directly outside from multistory buildings. (See 5-7.2.) Thus, if it is impractical to locate the stair on an exterior wall, an exit passageway can be connected to the bottom of the stair to convey the occupants safely to an outside exit door. In buildings of extremely large area, such as shopping malls and some factories, the exit passageway can be used to advantage where the distance of travel to reach an exit would otherwise be excessive.

A-5-2.6.1 Examples of building elements that might be arranged as exit passageways include hallways, corridors, passages, tunnels, underfloor passageways, or overhead passageways.

A-5-2.6.2 Exception No. 1 Where an exit passageway serves occupants on the level of exit discharge as well as other floors, there should be no need to add the occupant loads and thus increase the width of the exit passageway. The situation is the same as having occupants from the level of exit discharge join occupants from upper floors for a few feet of horizontal travel through a stair enclosure.

A-5-2.8.7 Swinging stairs, although superior to fire escape ladders, are generally unsatisfactory, even for emergency use. Although they are permitted by this Code, they should not be used where it is reasonably possible to terminate the fire escape stair at the ground.

A-5-2.8.7.9 A latch is desirable to hold swinging stairs down after they have swung to the ground.

A-5-2.11 Special consideration should be given prior to the application of such devices where children, the elderly, or physically disabled persons may have to utilize such devices.

These devices present obstacles in ascent and descent that differ from stairs and ladders.

A-5-2.12.2.3 The minimum 48-in. (122-cm) clear width is needed for a three-person carry of an occupied wheelchair up or down a stair. This procedure, as well as the more difficult two-person wheelchair carry or roll, requires training and experience. Safer, alternative stair descent measures for transporting a person who normally requires a wheelchair include evacuation chairs and self-braking stair descent devices. In addition to having such devices available where needed, and persons trained and experienced in their use, it is important to have people trained and experienced in wheelchair transfer techniques.

In view of the logistical difficulties as well as the dangers inherent in carrying occupied wheelchairs or otherwise transporting their occupants on stairs, the preferred means of egress from an area of refuge consists of facilities normally employed for ingress and egress by people using wheelchairs. Foremost among these options are elevators meeting the firefighter service requirements of ASME/ANSI A17.1, *Safety Code for Elevators and Escalators*.

A-5-2.12.2.4 The use of elevators for egress, especially during an emergency such as a fire, is not an approach to be taken without considerable planning, ongoing effort, and a high degree of understanding by everyone involved with the evacuation of persons with mobility impairments. Due in part to the limited capacity of elevators, as well as the conflicting demands for elevator use for fire-fighting activities, even these special elevators cannot be considered as satisfying any of the Code's requirements for egress capacity, number of means of egress, or travel distance to an exit.

A-5-2.12.2.6 The instructions should include the following:

- (a) Directions to find other means of egress, and
- (b) Advice that persons able to use exit stairs do so as soon as possible unless they are assisting others, and
- (c) Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance, and
- (d) Directions for use of the emergency communication system.

To facilitate an adequate degree of understanding of the use of areas of refuge and of the associated assisted egress procedures, information should be provided to those using the facilities. The exact content of the information, its organization (e.g., as a set of instructions), and its format (e.g., either posted instructions in the area of refuge or information otherwise transmitted to facility users) should be determined on a case-by-case basis. The information should be tailored to the specific facility, its emergency plan, the intended audience, and the intended presentation format. The following provides suggested information content addressing two situations: (a) an area of refuge utilizing an elevator for assisted egress and (b) an area of refuge utilizing a stair for assisted egress.

(a) *Refuge with Elevator Use.* The area of refuge, provided in the elevator lobby, serves as a staging area for persons unable to use stairs and needing assistance for their evacuation during an emergency. The elevator(s) will be taken out of automatic service and operated by emergency service personnel. Persons unable to evacuate down the exit stairs without assis-

tance and needing transportation by elevator should make sure the elevator lobby doors are closed while they wait in the elevator lobby for assistance. The two-way communication system should be used if there is more than several minutes delay in arrival of an elevator that will provide transportation to the ground floor. Alternatively, another refuge area, and assistance with evacuation, is available in the designated exit stair.

(b) *Refuge with Stair Use.* The area of refuge within the designated exit stair serves as a staging area for persons needing assistance for their evacuation during an emergency. Persons unable to use the stair unassisted, or who wish to move down the stairs at a slower pace, should wait on the stair landing. The two-way communication system should be used if assistance is needed.

A-5-2.12.3.1 Figure A-5-2.12.3.1 illustrates the application of the minimum space requirement to an area of refuge located within an exit stair enclosure. Note that each of the two required spaces is sufficient to permit the parking of a standard wheelchair. Preferably, such spaces should be provided adjacent to each other in a location where the presence of people taking temporary shelter in an area of refuge will be immediately apparent to rescue personnel and other evacuees.

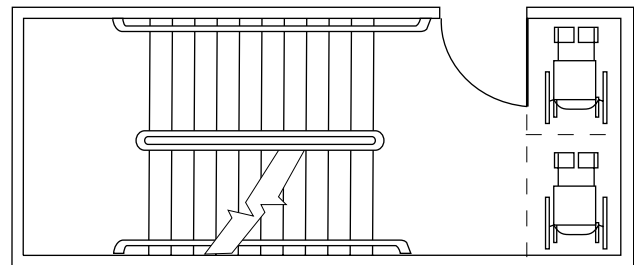


Figure A-5-2.12.3.1 Exit stair used as an area of refuge.

A-5-2.12.3.2 The method of meeting the tenability performance criteria required of an area of refuge less than 1000 sq ft (93 sq m) in area may involve controlling the exposing fire (e.g., via automatic sprinkler protection), installing smoke-resisting doors in the smoke-resisting barriers (see NFPA 105, *Recommended Practice for the Installation of Smoke-Control Door Assemblies*), providing smoke control to prevent or limit smoke migration through cracks or other leakage paths (see NFPA 92A, *Recommended Practice for Smoke-Control Systems*), or providing other means or a combination of these means.

Calculations, if used, need to be based on established engineering relationships and equations. Such calculational procedures are described in NFPA 92A, *Recommended Practice for Smoke-Control Systems*, ASHRAE/SFPE's *Design of Smoke Management Systems*, and the SFPE *Handbook of Fire Protection Engineering*. Tenable conditions are those that maintain the temperature of any smoke in the area of refuge at less than 200°F (93°C) if the smoke is more than 5 ft (1.5 m) above the floor, and 120°F (49°C) if the smoke descends below the 5-ft (1.5-m) level in the area of refuge. Also, if the smoke descends below the 5-ft (1.5-m) level, tenable conditions require at least 16 percent oxygen and no more than 30,000 ppm-min exposure to carbon monoxide. The exposing conditions used in the calculations should be in accordance with the following:

- (a) Exposing space is sprinkler protected. The temperature of the exposing smoke is 200°F (93°C), the smoke layer

extends to the floor, the oxygen content is 16 percent, and the carbon monoxide concentration is 2000 ppm (0.2 percent).

(b) Exposing space is a nonsprinklered corridor finished with Class A interior wall and ceiling finish. The temperature of the exposing smoke is 600°F (315°C), the smoke layer extends to a level 2 ft (0.6 m) above the floor, the oxygen content is 3 percent, and the carbon monoxide concentration is 50,000 ppm (5 percent).

(c) Exposing space is either not a corridor or, if a corridor, the corridor is not finished with a Class A interior wall and ceiling finish. The temperature of the exposing smoke is 1500°F (815°C), the smoke layer extends to a level 2 ft (0.6 m) above the floor, the oxygen content is 3 percent, and the carbon monoxide concentration is 50,000 ppm (5 percent).

A-5-2.12.3.4 Requirements for fire resistance ratings in excess of 1 hr and fire protection ratings in excess of 20 min and prohibitions on duct penetrations may appear in other *Code* sections. For example, if the barrier creating the area of refuge is also part of an exit stair enclosure that connects more than three stories or is a horizontal exit, a minimum 2-hr fire resistance rating of the barrier and a minimum 1½-hr fire protection rating for opening protectives such as doors would be required for most occupancies.

For further information on door openings in smoke-resisting barriers, see NFPA 105, *Recommended Practice for the Installation of Smoke-Control Door Assemblies*.

Generally, by providing one barrier that subdivides a floor area, two areas of refuge can be created. This geometric fact and the possibility of creating areas of refuge within compartmented elevator lobbies or on enlarged stair landings of exit stair enclosures make less onerous any requirement for a story to have more than one accessible means of egress.

A-5-2.13.1 It is the intent of this section that elevators serving as a means of egress serve only independent towers or the tower portion of any integral structure. For elevators that are used as a component in the means of egress, the elevator lobbies, elevator shaft, and machine room need to be protected from the effects of fire.

A-5-2.13.6 One or more of the following approaches can be used to restrict exposure of elevator equipment to water:

(a) A combination of sealed elevator lobby doors, sloped floors, floor drains, and sealing of elevator shaft walls.

(b) The elevator is mounted on the building exterior that normally operates in the elements, plus seals on the elevator lobby doors.

(c) The elevator shaft is separated from the building at each floor by an exterior elevator lobby designed to prevent water entry into the elevator shaft.

Information gained from ongoing research concerning water flow and elevators could lead to the development of water resistive or water protected elevator equipment specifically for fire applications. Such equipment should be used only with the building elements (sealed elevator lobby doors, sloped floors, floor drains, etc.) for which it is developed. Further information is available from the NIST publication, *Feasibility of Fire Evacuation by Elevators at FAA Control Towers*.

A-5-2.13.7 Cooling equipment dedicated to the elevator machine room can be used to minimize requirements for standby power.

A-5-2.13.8 Communication between elevator lobbies and a central control point can be by telephone or intercom. Auditory alarms should be designed so that they do not interfere with people talking on communication systems.

A-5-2.13.9 Smoke detection in the elevator lobby will result in a Phase I recall of the elevators. The elevators will then be automatically taken out of normal service and will be available to be operated by emergency service personnel.

A-5-3.1.2 The normal occupant load is not necessarily a suitable criterion, as the greatest hazard may occur when an unusually large crowd is present, a condition often difficult for authorities having jurisdiction to control by regulatory measures. The principle of this *Code* is to provide means of egress for the maximum probable number of occupants rather than to attempt to limit occupants to a number commensurate with available means of egress. There are, however, limits of occupancy specified in certain special cases for other reasons.

Table A-5-3.1.2 represents a compilation of the occupant load factors specified by the individual occupancies of Chapters 8 through 31.

Table A-5-3.1.2 Occupant Load Factors

Use	Sq Ft	Sq M
Assembly		
Less concentrated use		
without fixed seating	15 net	1.4
Concentrated use without		
fixed seating	7 net	0.65
Waiting space	3 net	0.28
Library — stack areas	100 gross	9.3
Library — reading areas	50 net	4.6
Mercantile		
Street floor and sales basement	30 gross	2.8
Multiple street floors — each	40 gross	3.7
Other floors	60 gross	5.6
Storage, shipping	300 gross	27.9
Malls	See 24-1.7/25-1.7	
Educational		
Classroom area	20 net	1.9
Shops and other vocational areas	50 net	4.6
Day-care centers	35 net	3.3
Business (offices), industrial	100 gross	9.3
Hotel and apartment	200 gross	18.6
Health care		
Sleeping departments	120 gross	11.1
Inpatient treatment departments	240 gross	22.3
Detention and correctional	120 gross	11.1

These figures, based on counts of typical buildings, represent the average maximum density of occupancy.

A-5-3.2 For further information on stair capacity, see Chapter 2 of NFPA 101A, *Guide on Alternative Approaches to Life Safety*.

A-5-3.4.1 Exception No. 1 This provision provides for minimum widths for small spaces such as individual offices. The intent is that this is for spaces formed by furniture and movable walls so that accommodations can easily be made for mobility impaired individuals. One side of a path could be a fixed wall, provided the other side was movable. This does not exempt the door widths or widths of fixed-wall corridors regardless of the number of people or length.