NFPA® 101A

Guide on Alternative Approaches to Life Safety

2025 Edition

NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

AVA Documents
Document Sharing Hub
Full document details: NFPA 101A 2025

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

NFPA® codes, standards, recommended practices, and guides ("NFPA 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 NFPA 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 NFPA Standards. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making NFPA Standards 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 NFPA Standards. 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.

REVISION SYMBOLS IDENTIFYING CHANGES FROM THE PREVIOUS EDITION

Text revisions are shaded. A Δ before a section number indicates that words within that section were deleted and a Δ to the left of a table or figure number indicates a revision to an existing table or figure. When a chapter was heavily revised, the entire chapter is marked throughout with the Δ symbol. Where one or more sections were deleted, a • is placed between the remaining sections. Chapters, annexes, sections, figures, and tables that are new are indicated with an *N*.

Note that these indicators are a guide. Rearrangement of sections may not be captured in the markup, but users can view complete revision details in the First and Second Draft Reports located in the archived revision information section of each code at www.nfpa.org/docinfo. Any subsequent changes from the NFPA Technical Meeting, Tentative Interim Amendments, and Errata are also located there.

REMINDER: UPDATING OF NFPA STANDARDS

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

AVA Documents
Document Sharing Hub

Full document details: NFPA 101A 2025

ADDITIONAL IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

Updating of NFPA Standards

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

Interpretations of NFPA Standards

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing the Development of NFPA Standards 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.

Patents

The NFPA does not take any position with respect to the validity of any patent rights referenced in, related to, or asserted in connection with an NFPA Standard. The users of NFPA Standards bear the sole responsibility for determining the validity of any such patent rights, as well as the risk of infringement of such rights, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on NFPA Standards.

NFPA adheres to the policy of the American National Standards Institute (ANSI) regarding the inclusion of patents in American National Standards ("the ANSI Patent Policy"), and hereby gives the following notice pursuant to that policy:

NOTICE: The user's attention is called to the possibility that compliance with an NFPA Standard may require use of an invention covered by patent rights. NFPA takes no position as to the validity of any such patent rights or as to whether such patent rights constitute or include essential patent claims under the ANSI Patent Policy. If, in connection with the ANSI Patent Policy, a patent holder has filed a statement of willingness to grant licenses under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, copies of such filed statements can be obtained, on request, from NFPA. For further information, contact the NFPA at the address listed below.

Law and Regulations

Users of NFPA Standards should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

NFPA Standards are copyrighted. They are made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making these documents available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to these documents.

Use of NFPA Standards for regulatory purposes should be accomplished through adoption by reference. The term "adoption by reference" means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA Standards, contact NFPA at the address below.

For Further Information

All questions or other communications relating to NFPA Standards 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 standards during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; email: stds_admin@nfpa.org.

For more information about NFPA, visit the NFPA website at www.nfpa.org. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/docinfo.

AVA Documents
Document Sharing Hub

Full document details: NFPA 101A 2025

Copyright © 2024 National Fire Protection Association®. All Rights Reserved.

NFPA® 101A

Guide on

Alternative Approaches to Life Safety

2025 Edition

This edition of NFPA 101A, *Guide on Alternative Approaches to Life Safety*, was prepared by the Technical Committee on Alternative Approaches to Life Safety and released by the Correlating Committee on Safety to Life. It was issued by the Standards Council on April 22, 2024, with an effective date of May 12, 2024, and supersedes all previous editions.

This edition of NFPA 101A was approved as an American National Standard on May 12, 2024.

Origin and Development of NFPA 101A

Before the development of the 1988 edition of this document, it was published as several appendixes to NFPA 101®, *Life Safety Code*®. Today, NFPA 101A is revised every 3 years on a schedule behind that of NFPA 101 by one year to accurately reflect the requirements of NFPA 101, against which the NFPA 101A Fire Safety Evaluation Systems (FSESs) measure equivalency.

Chapter 4 first appeared as Appendix C in the 1981 edition of the *Life Safety Code* and Chapters 5, 6, and 7 first appeared in the 1985 edition of the *Life Safety Code* as Appendixes E, F, and G. Chapter 8 was proposed as Appendix H for the 1988 edition of the *Life Safety Code* but instead was published as a chapter in the 1998 edition of NFPA 101A. These chapters were originally prepared by the Center for Fire Research of the National Institute of Standards and Technology (then the National Bureau of Standards). The Committees on Safety to Life reviewed and modified the systems as appropriate for inclusion. Chapter 9 first appeared in the 2004 edition and provides an FSES for educational occupancies.

This document provides alternative approaches to life safety based on the 2024 edition of the *Life Safety Code*. It is intended to be used with NFPA 101 and not as a substitute. Section 1.4 of the *Life Safety Code* permits alternative compliance with the Code under equivalency concepts where such equivalency is approved by the authority having jurisdiction. The methods contained in this guide can be used to help determine equivalency where used as part of the technical documentation submitted to the authority having jurisdiction.

The figures contained in this guide are copyrighted by NFPA, but users are hereby given permission to copy the worksheets for private use only.

The 2025 edition includes changes to several worksheets for the various fire safety evaluation systems to ensure equivalency is measured accurately against the requirements of the 2024 edition of NFPA 101.

NFPA and National Fire Protection Association are registered trademarks of the National Fire Protection Association, Quincy, Massachusetts 02169.

AVA Documents Document Sharing Hub

Full document details: NFPA 101A 2025

Correlating Committee on Safety to Life

Jeffrey S. Tubbs, *Chair*
Arup, MA [SE]

Gregory E. Harrington, *Administrative Secretary*
National Fire Protection Association, MA []

Kenneth E. Bush, Maryland State Fire Marshals Office, MD [E]

Wayne G. Chip Carson, Carson Associates, Inc., VA [SE]

Stanley C. Harbuck, School of Building Inspection, MA [C]
Rep. American Public Health Association

Howard Hopper, UL LLC, CA [RT]

Jeffrey M. Hugo, National Fire Sprinkler Association, Inc., MI [M]

Jeffrey A. Lucas, Fort Lauderdale Fire Rescue, FL [E]
Rep. International Fire Marshals Association

Rodger Reiswig, Johnson Controls, VA [M]
Rep. National Electrical Manufacturers Association

Eric R. Rosenbaum, JENSEN HUGHES, MD [U]
Rep. American Health Care Association

Michael L. Savage, Sr., Marion County Building Safety, FL [E]

Alternates

Roland A. Asp, National Fire Sprinkler Association, Inc., MD [M]
(Alt. to Jeffrey M. Hugo)

Maria B. Marks, Siemens Industry, Inc., MD [M]
(Alt. to Rodger Reiswig)

Jake Pauls, Jake Pauls Consulting Services, Canada [C]
(Alt. to Stanley C. Harbuck)

James R. Quiter, Retired-Arup, CA [SE]
(Alt. to Jeffrey S. Tubbs)

Nonvoting

Michael A. Crowley, Coffman Engineers, Inc., TX [SE]
Rep. TC on Means of Egress

Nicholas A. Dawe, Cobb County Fire Marshal's Office, GA [E]
Rep. TC on Mercantile & Business Occupancies

Raymond A. Grill, Ray Grill Consulting PLLC, VA [SE]
Rep. TC on Building Service & Fire Protection Equipment

Chris Jelenewicz, Society of Fire Protection Engineers, MD [SE]
Rep. TC on Fundamentals

William E. Koffel, Koffel Associates, Inc., MD [SE]
Rep. TC on Health Care Occupancies

Josh Lambert, University of Texas at Austin, TX [U]
Rep. TC on Assembly Occupancies

Peter A. Larrimer, US Department of Veterans Affairs, PA [U]
Rep. TC on Alternative Approaches to Life Safety

Matthew J. Mertens, North Shore Fire Department, WI [E]
Rep. TC on Educational & Day-Care Occupancies

John A. Rickard, P3 Consulting, TX [SE]
Rep. TC on Board & Care Facilities

Janna E. Serafim, Code Red Consultants, LLC, MA [SE]
Rep. TC on Detention & Correctional Occupancies

Steven A. Sheldon, Fisher Engineering, Inc., AZ [SE]
Rep. TC on Industrial, Storage, & Miscellaneous Occupancies

Nathan B. Wittasek, Simpson Gumpertz & Heger (SGH), CA [SE]
Rep. TC on Fire Protection Features

Shane M. Clary, Bay Alarm Company, CA [IM]
Rep. Signaling Systems Correlating Committee

Gregory E. Harrington, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

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.

Documents
Document Sharing Hub
Full document details: NFPA 101A 2025

Technical Committee on Alternative Approaches to Life Safety

Peter A. Larrimer, *Chair*
US Department of Veterans Affairs, PA [U]

Gregory E. Harrington, *Administrative Secretary*
National Fire Protection Association, MA []

Kenton Jay Aikens, Interface Engineering, Inc., OR [M]
Rep. Automatic Fire Alarm Association, Inc.

Abdulrahman Sultan Alghanem, Qatar Civil Defence, Qatar [E]

Justin B. Biller, Emerson Graham + Associates, VA [SE]

Clinton Butts, DNV Healthcare USA Inc., VA [E]

Wayne G. Chip Carson, Carson Associates, Inc., VA [SE]

Brett Dunckel, Broward Sheriffs Office, FL [E]

Michael L. Edwards, US Architect of the Capitol, DC [U]

Joshua W. Elvove, Self, CO [SE]

Mark E. Fessenden, Johnson Controls, WI [M]
Rep. National Fire Sprinkler Association

Leah Hummel, American Society for Healthcare Engineering (ASHE), ND [U]

Hisham Saeed Ismaiel, Khatib & Alami, United Arab Emirates [SE]

William E. Koffel, Koffel Associates, Inc., MD [SE]

Scott P. Morris, Charlotte County Fire/EMS, FL [E]

Robert Pelley, Cincinnati Insurance, MO [I]

Eric R. Rosenbaum, JENSEN HUGHES, MD [SE]

Dennis L. Schmitt, Illinois Department of Public Health (IDPH), IL [E]

J. Francois Simard, Cirque Du Soleil, Canada [IM]

Aleksy L. Szachnowicz, Anne Arundel County Public Schools, MD [U]

Jon Taluba, Chichester Fire, NH [E]

Robert Upson, Amentum/AECOM, SC [SE]

Alternates

Cecil Bilbo, Jr., Academy of Fire Sprinkler Technology, Inc., IL [M]
(Alt. to Mark E. Fessenden)

Brandon Finzel, JENSEN HUGHES, NY [SE]
(Alt. to Eric R. Rosenbaum)

Lennon A. Peake, Koffel Associates, Inc., MD [SE]
(Alt. to William E. Koffel)

Gregory E. Harrington, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

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

AVA Documents 2025 Edition Document Sharing Hub

Full document details: NFPA 101A 2025

Contents

Chapter 1 Administration **101A–** 5
1.1 Scope. (Reserved) **101A–** 5
1.2 Purpose. (Reserved) **101A–** 5
1.3 Application. **101A–** 5

Chapter 2 Referenced Publications **101A–** 5
2.1 General. **101A–** 5
2.2 NFPA Publications. **101A–** 5
2.3 Other Publications. **101A–** 5
2.4 References for Extracts in Advisory Sections. **101A–** 6

Chapter 3 Definitions **101A–** 6
3.1 General. **101A–** 6
3.2 NFPA Official Definitions. **101A–** 6
3.3 General Definitions. **101A–** 6

Chapter 4 Fire Safety Evaluation System for Health Care Occupancies **101A–** 6
4.1 General. **101A–** 6
4.2 Procedure for Determining Equivalency. **101A–** 6
4.3 Fire/Smoke Zone. **101A–** 6
4.4 Maintenance. **101A–** 7
4.5 Occupancy Risk (Worksheet 4.7.2). **101A–** 7
4.6 Safety Parameters (Worksheet 4.7.6). **101A–** 9
4.7 Worksheets for Evaluating Fire/Smoke Zones. **101A–** 13

Chapter 5 Fire Safety Evaluation System for Detention and Correctional Occupancies **101A–** 18
5.1 General. **101A–** 18
5.2 Procedure for Determining Equivalency. **101A–** 18
5.3 Maintenance. **101A–** 18
5.4 Safety Parameters (Worksheet 5.5.3). **101A–** 18
5.5 Worksheets for Evaluating Fire Safety. **101A–** 22

Chapter 6 Evacuation Capability Determination for Board and Care Occupancies **101A–** 27
6.1 General. **101A–** 27
6.2 Procedure for Determining Evacuation Capability. **101A–** 27
6.3 Rating Residents. **101A–** 27
6.4 Rating Residents Using Worksheets 6.8.1 through 6.8.4. ..... **101A–** 27
6.5 Rating the Staff Shift (Worksheets 6.8.5 through 6.8.11). **101A–** 31
6.6 Rating the Facility (Worksheet 6.8.9). **101A–** 32
6.7 Determining Evacuation Capability (Worksheet 6.8.10). **101A–** 33
6.8 Worksheets for Rating Residents. **101A–** 33

Chapter 7 Fire Safety Evaluation System for Board and Care Occupancies **101A–** 38
7.1 General. **101A–** 38
7.2 Glossary for Fire Safety Evaluation Worksheet for a Small Facility. **101A–** 38
7.3 Worksheets for Evaluating Fire Safety for a Small Facility. **101A–** 41
7.4 Glossary for Fire Safety Evaluation Worksheet for a Large Facility. **101A–** 41
7.5 Worksheets for Evaluating Fire Safety in a Large Facility. **101A–** 49
7.6 Glossary for Fire Safety Evaluation Worksheet for an Apartment Building with Board and Care Occupancies. **101A–** 49
7.7 Worksheets for Evaluating Fire Safety in an Apartment Building with Board and Care Occupancies. **101A–** 58

Chapter 8 Fire Safety Evaluation System for Business Occupancies **101A–** 63
8.1 General. **101A–** 63
8.2 Procedure for Determining Equivalency. **101A–** 63
8.3 Glossary for Fire Safety Evaluation Worksheet for Business Occupancies. **101A–** 63
8.4 Maintenance. **101A–** 63
8.5 Safety Parameters (Worksheet 8.6.2). **101A–** 63
8.6 Worksheets for Evaluating Fire Safety in Business Occupancies. **101A–** 69

Chapter 9 Fire Safety Evaluation System for Educational Occupancies **101A–** 74
9.1 General. **101A–** 74
9.2 Procedure for Determining Equivalency. **101A–** 74
9.3 Glossary for Fire Safety Evaluation Worksheet for Educational Occupancies. **101A–** 74
9.4 Maintenance. **101A–** 74
9.5 Safety Parameters (Worksheet 9.6.2). **101A–** 75
9.6 Worksheets for Evaluating Fire Safety in Educational Occupancies. **101A–** 78

Annex A Explanatory Material **101A–** 83

Annex B Informational References **101A–** 83

Index **101A–** 84

Documents
Document Sharing Hub
Full document details: NFPA 101A 2025

NFPA 101A

Guide on

Alternative Approaches to Life Safety

2025 Edition

IMPORTANT NOTE: This NFPA document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading "Important Notices and Disclaimers Concerning NFPA Standards." They can also be viewed at www.nfpa.org/disclaimers or obtained on request from NFPA.

UPDATES, ALERTS, AND FUTURE EDITIONS: New editions of NFPA codes, standards, recommended practices, and guides (i.e., NFPA Standards) are released on scheduled revision cycles. This edition may be superseded by a later one, or it may be amended outside of its scheduled revision cycle through the issuance of Tentative Interim Amendments (TIAs). An official NFPA Standard at any point in time consists of the current edition of the document, together with all TIAs and Errata in effect. To verify that this document is the current edition or to determine if it has been amended by TIAs or Errata, please consult the National Fire Codes® Subscription Service or the "List of NFPA Codes & Standards" at www.nfpa.org/docinfo. In addition to TIAs and Errata, the document information pages also include the option to sign up for alerts for individual documents and to be involved in the development of the next edition.

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

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced and extracted publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration

1.1 Scope. (Reserved)

1.2 Purpose. (Reserved)

1.3 Application.

1.3.1* This guide consists of a number of alternative approaches to life safety. Each chapter is a different system independent of the others and is to be used in conjunction with the 2024 edition of NFPA *101*.

1.3.2 This edition of NFPA 101A contains alternative approaches that are tied to NFPA *101*. Each of these approaches, where approved by the AHJ, is recognized in Annex A of the *Life Safety Code,* as a method that can be used in determining equivalent compliance with various chapters of the *Code*.

Δ **1.3.3** The method described in this guide is an index method. Index methods are a type of qualitative risk assessment. Quantitative risk assessments can also be used to evaluate designs that are proposed as alternative approaches to life safety. For information on developing fire risk assessments, see the *SFPE Guide to Fire Risk Assessment*. Guidance on reviewing fire risk assessments can be found in NFPA 551.

1.3.4 For further information on alternative approaches to fire safety, see "Systems Approach to Fire-Safe Building Design," Section 1, Chapter 6, of the 21st edition of the NFPA *Fire Protection Handbook* and the *SFPE Handbook of Fire Protection Engineering*, 5th edition, Chapter 82, "Fire Risk Indexing."

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this guide and should be considered part of the recommendations of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 13, *Standard for the Installation of Sprinkler Systems,* 2022 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,* 2022 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies,* 2022 edition.

NFPA 72®, National Fire Alarm and Signaling Code®, 2022 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems,* 2024 edition.

NFPA 92, *Standard for Smoke Control Systems,* 2021 edition.

NFPA *101®, Life Safety Code®,* 2024 edition.

NFPA 204, *Standard for Smoke and Heat Venting,* 2021 edition.

NFPA 220, *Standard on Types of Building Construction,* 2024 edition.

NFPA 252, *Standard Methods of Fire Tests of Door Assemblies,* 2022 edition.

NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies,* 2022 edition.

NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile or Expanded Vinyl Wall Coverings on Full Height Panels and Walls,* 2023 edition.

NFPA 286, *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth,* 2024 edition.

NFPA 551, *Guide for the Evaluation of Fire Risk Assessments,* 2022 edition.

NFPA 5000®, Building Construction and Safety Code®, 2024 edition.

NFPA *Fire Protection Handbook*, 21st edition, 2023.

2.3 Other Publications.

Δ **2.3.1 ASTM Publications.** ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. www.astm.org

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2022.

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2020.

Documents 2025 Edition Document Sharing Hub

Full document details: NFPA 101A 2025

Δ **2.3.2 SFPE Publications.** Society of Fire Protection Engineers, 9711 Washingtonian Blvd., Suite 380, Gaithersburg, MD 20878. www.sfpe.org

SFPE Guide to Fire Risk Assessment, 2023.

SFPE Handbook of Fire Protection Engineering, 5th edition, 2016.

Δ **2.3.3 UL Publications.** Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096. www.ul.com

UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018.

2.3.4 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2020.

2.4 References for Extracts in Advisory Sections.

NFPA 5000®, Building Construction and Safety Code®, 2024 edition.

Chapter 3 Definitions

Δ **3.1 General.**

N **3.1.1** The definitions contained in this chapter apply to the terms used in this guide.

N **3.1.2** Where terms are not defined in this chapter or within another chapter, they should be defined using their ordinarily accepted meanings within the context in which they are used.

N **3.1.3** *Merriam-Webster's Collegiate Dictionary*, 11th edition, is the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Guide. An NFPA standard that is advisory or informative in nature and that contains only nonmandatory provisions. A guide may contain mandatory statements such as when a guide can be used, but the NFPA standard as a whole is not suitable for adoption into law.

3.2.4 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.

3.2.5* 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 appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.6 Shall. Indicates a mandatory requirement.

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

3.3 General Definitions. See Section 3.3 of NFPA *101*.

Chapter 4 Fire Safety Evaluation System for Health Care Occupancies

4.1 General.

4.1.1 This chapter is part of an NFPA guide and, therefore, is not mandatory. The term *shall* in this chapter is used to indicate that if the provisions of the chapter are applied, the procedures mandated are to be followed to ensure the effectiveness of the evaluation system.

4.1.2 The fire safety evaluation system (FSES) is a measuring system. It compares the level of safety provided by an arrangement of safeguards that differ from those specified in NFPA *101* to the level of safety provided in a building that conforms exactly with the details of the *Code*.

4.1.3 This chapter is provided to assist in completion of Figure 4.7, Worksheets for Evaluating Fire/Smoke Zones. The step-by-step instructions for completion appear on the worksheets. They are not repeated within the chapter. This chapter provides expanded discussion and definition of the various items in the worksheet to assist the user when questions of definition or interpretation arise. The chapter is organized to follow the format of the worksheet progressively.

4.2 Procedure for Determining Equivalency.

4.2.1 Evaluate fire/smoke zones using Figure 4.7 (Worksheets 4.7.1 through 4.7.11). Use the text portion (Section 4.3 through 4.6.13.4.3) of this chapter as a guide.

4.2.2 The Facility Fire Safety Requirements Worksheet (Worksheet 4.7.10) is used to determine any nonconformance with the requirements on the worksheet.

4.2.3 Equivalency is achieved if the fire/smoke zone evaluations show equivalency or better in each and every fire/smoke zone and the requirements of the Facility Fire Safety Requirements Worksheet (Worksheet 4.7.10) are met.

4.3 Fire/Smoke Zone.

Δ **4.3.1 Fire/Smoke Zone Arrangement.**

N **4.3.1.1** A fire/smoke zone is a space that is separated from all other spaces by floor assemblies, 2-hour fire barriers, or smoke barriers.

N **4.3.1.2** Every zone on a story that is subdivided into two or more zones shall have exit routes in accordance with 18.2.4 or 19.2.4 of NFPA *101*.

N **4.3.1.3** Compartments not meeting these requirements shall be evaluated as part of an adjacent zone.

N **4.3.1.4** Where a story is not subdivided by 2-hour fire barriers or smoke barriers, the entire story is considered to be the zone.

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

4.3.2 Selection of Zones to Be Evaluated.

4.3.2.1 The entire facility shall be divided into zones. There shall be no areas that are not in a zone.

4.3.2.2 For a complete evaluation, evaluate every zone in the health care facility individually.

4.3.2.3 Where the system is used to evaluate conditions unique to a selected number of zones, the entire building should be evaluated for compliance with the *Life Safety Code* and the FSES evaluation shall be completed on the specific zones where the condition occurs.

4.3.2.4 Most health care facilities have repetitive arrangements so that a complete picture can be developed by evaluating typical zones until all combinations are evaluated. The zones selected should include the following:

(1) Each type of patient zone having a different type of mobility, density, or attendant ratio, as specified in Worksheet 4.7.2
(2) Each zone that represents a significantly different type of construction, finish, or protection system
(3) Zones containing special medical treatment or support activities (e.g., operating suites, intensive care units, laboratories)
(4) Zones not involving housing, treatment, or customary access for four or more inpatients simultaneously who are incapable of self-preservation; such zones should be evaluated as follows:
    (a) Any zone, whether or not used for patient egress, shall be permitted to be evaluated on the same basis as a patient use zone. In such cases, the value of factor *F* in Worksheet 4.7.3 shall be assigned the value of factor *L* ("Zone Location") from Worksheet 4.7.2. In such cases, Safety Parameter 10, "Emergency Movement Routes," from Worksheet 4.7.6 shall be graded "deficient" if the exit capacity is less than that prescribed for the actual occupancy of the space and "<2 routes" if less than 75 percent of the prescribed exit capacity is present.
    (b) If the zone is separated by 2-hour fire-rated construction from all patient use zones, including any members that bear the load of a patient use zone, and if any communicating openings through the 2-hour fire-rated construction are protected by 1½-hour fire-protection-rated fire doors, the zone shall be permitted to be excluded from evaluation. In such cases, that space shall conform with the portion of NFPA *101* appropriate to its use. In addition, appropriate charges under Safety Parameter 8, "Hazardous Areas," in Worksheet 4.7.6 shall be charged against other zones in the facility.
    (c) Evaluation of any unoccupied story or stories located above the highest floor used for health care occupancy is not required, provided each such unoccupied story meets the construction requirements of 18.1.6 of NFPA *101* for new buildings or 19.1.6 of NFPA *101* for existing buildings, or if each unoccupied story is protected by automatic sprinklers.
(5) Patient sleeping rooms or suites exceeding 1000 ft^2 (92.9 m^2) of gross floor area should be evaluated as follows:
    (a) If the room or suite has a single exit access door, it should be evaluated as a single dead-end zone.
    (b) A patient sleeping room or suite of sleeping rooms exceeding the 5000 ft^2 (460 m^2) gross floor area limitation of 19.2.5.7.2.3(A) of NFPA *101* should be evaluated as a separate zone that is not a suite.
    (c) A patient sleeping room or suite of sleeping rooms exceeding the 7500 ft^2 (700 m^2) gross floor area limitation of 18.2.5.7.2.3(B) or 19.2.5.7.2.3(B) of NFPA *101* should be evaluated as a separate zone that is not a suite.
    (d) A patient sleeping room or suite of sleeping rooms exceeding the 10,000 ft^2 (930 m^2) gross floor area limitation of 18.2.5.7.2.3(C) or 19.2.5.7.2.3(C) of NFPA *101* should be evaluated as a separate zone that is not a suite.
(6) Patient care nonsleeping rooms or suites exceeding 2500 ft^2 (230 m^2) of gross floor area should be evaluated as follows:
    (a) If the room or suite has a single exit access door, it should be evaluated as a single dead-end zone.
    (b) A patient care nonsleeping room or suite of nonsleeping rooms exceeding the 10,000 ft^2 (930 m^2) gross floor area limitation of 19.2.5.7.3.2 of NFPA *101* should be evaluated as a separate zone that is not a suite.
    (c) A patient care nonsleeping room or suite of nonsleeping rooms exceeding the 12,500 ft^2 (1160 m^2) gross floor area limitation of 18.2.5.7.3.2(A) or 19.2.5.7.3.2(A) of NFPA *101* should be evaluated as a separate zone that is not a suite.
    (d) A patient care nonsleeping room or suite of nonsleeping rooms exceeding the 15,000 ft^2 (1390 m^2) gross floor area limitation of 18.2.5.7.3.2(B) or 19.2.5.7.3.2(B) of NFPA *101* should be evaluated as a separate zone that is not a suite.

4.4 Maintenance. Any device, equipment, system, condition, arrangement, level of protection, procedure, or any other feature that is not maintained in a dependable operating condition or that is used in such a manner that the intended fire safety function or hazard constraint is impaired should be considered defective and receive no credit in the evaluation.

4.5 Occupancy Risk (Worksheet 4.7.2). In establishing a system for evaluating occupancy risk, the following facts are recognized:

(1) There is a basic level of risk inherent in every health care facility.
(2) The fuel characteristics of furniture, equipment, and supplies vary with time.
(3) The arrangement of these items within the space available can vary with time.

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

(4) Consequently, these three factors are not included as parameters in a safety equivalency measurement; to account for these factors, the occupancy risk baseline is set at the inherent risk level, with the presumption that the furniture, equipment, and supplies are the most combustible and adversely located (from a fire safety standpoint) of those items normally found in health care facilities.

4.5.1 Patient Mobility.

4.5.1.1 The single most important factor controlling risk in a health care facility is the degree to which patients need assistance in taking the actions necessary for their safety. The level of capability in health care facilities varies from patients who, if informed or directed, are able to take positive, self-protecting actions to those patients who have no ability to move or even to take the simplest actions to safeguard themselves. In some cases, patients are directly connected to a fixed life-support system and are so dependent on it that, regardless of their physical condition or the availability of assistance, they cannot be moved without jeopardy of death or serious harm. In the measurement of occupancy risk factors, the least mobile category of patient expected in the zone determines the risk factor for that zone. The rationale for this approach is that, if a zone accepts any patient with a reduced mobility status, it might accept other such patients at any time. The impact of this approach is that most health care facilities should be rated in the "not mobile" risk category. Mobility status should be based on the minimum level of mobility in an average 24-hour period.

4.5.1.2 Mobility Status Factor. Patient mobility status is based on the capability of each patient to take actions necessary for self-protection. The four classes are defined as follows:

(1) *Mobile.* Capable of readily rising from bed and taking self-protecting actions at approximately the same rate as a healthy adult. To be classified as mobile, the patient must not need assistance in getting out of bed and must be able to open a closed or locked door. Persons shall be considered to be mobile if they are not restrained or in any other way limited in response capabilities so that the type of arousal mechanism that normally would awaken an adult is not effective.
(2) *Limited Mobility.* Those patients who have all of the capabilities of a mobile person except that their rate of travel is significantly slower.
(3) *Not Mobile.* Patients incapable of removing themselves from danger exclusively by their own efforts. Examples include persons who are totally bedridden; who need assistance getting out of bed or moving; and who are restrained, locked in their rooms, or otherwise prevented from taking complete emergency self-protection evacuation actions without assistance.
(4) *Not Movable.* Patients not capable of being moved from the room in which they are housed during the course of a fire. Examples include patients attached to life-support systems or involved in medical or surgical procedures that prohibit their immediate relocation without extreme danger of death or serious harm.

4.5.2 Patient Density.

4.5.2.1 The occupancy risk evaluation for occupancy density (number of patients within the zone) measures both the inherent increase in the maximum fire death potential that occurs as the number of patients in a zone increases and the problems involved for a limited staff in handling larger numbers of patients during an emergency.

4.5.2.2 Patient Factor. The density of patients is the number of patients who could potentially be housed in the zone. The patient count should be based on the number of assignable beds in the zone, assuming that they might all be occupied at the time of the fire emergency.

4.5.3 Zone Location.

4.5.3.1 This risk factor relates to fire department accessibility to a fire. The rating system recognizes the inherent advantages for the first story zone. It also recognizes the problems of evacuation from higher stories and the virtual impossibility of using external fire-fighting efforts above the sixth story in any building.

4.5.3.2 Story Factor. The measured zone's location shall be considered to be on the first story if the story has direct access to the exterior at or within less than one-half story height above or below grade. If a building is on a sloping grade, each story that has such exterior access shall be considered as a first story for the purpose of measuring zones on those stories. The measured zone shall be considered to be on the second to third story range and the fourth to sixth story range, based on the height of the zone above the nearest at-grade story. The zone shall be considered to be above the sixth story if it is more than six stories above the nearest at-grade story. The risk factor value for zones in basements is the same as for zones at or above the seventh story. The problems involved in emergency internal access, in fire fighting and rescue, and in the inability to make external attack in basements are approximately equivalent to those in the upper stories of buildings.

4.5.4 Ratio of Patients to Attendants.

4.5.4.1 This risk factor recognizes the importance to patient safety of a staff that is immediately available to respond in an emergency. The emergency actions that might be undertaken by the staff include detection, alarm, fire extinguishment, confinement of the fire, establishment of barriers between the patients and the fire (closing patient room doors), rescue, emergency medical aid, and other related functions. A few of these functions, such as detection and alarming, might not be critically related to the ratio of nursing staff to patients, while those related to rescue and the closing of patient room doors have a strong relationship to the staffing ratio. The staff ratio considered is based on the minimum staffing level immediately available (normally the night shift).

4.5.4.2 Patient–Attendant Factor. The ratio of patients to attendants is based on those patients in the fire/smoke zone and the immediately available attendant staff.

4.5.4.2.1 The ratio calculation shall be based on the minimum staffing level (usually occurring during the night shift). Where nursing stations or other positions of attendants are located at the junction of two or more zones and the location of the station is such that each of the zones has immediate access and is in view of the nursing station, the total staffing assigned to the nursing station can be credited to each of the zones. An exception occurs when staff members are bound by duty assignments (cardiac care units, infant nurseries, operating suites, etc.) that prevent them from responding to other than their assigned zone.

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

4.5.4.2.2 The evaluation system assesses this risk factor at 4.0 in any case involving periods where no attendants are immediately available to a zone that houses patients but where attendants are available within one story of all stories housing patients. This evaluation system is not intended to be used in cases where no staff are present in the building housing patients.

4.5.5 Patient Average Age.

4.5.5.1 This risk factor recognizes the increased susceptibility of the elderly and of infants up to one year old to physical harm by smoke particles, gaseous combustion products, and heated air. A larger risk factor is assigned to zones occupied by a population whose average age is above 65 years or below one year. Basically, imposition of this rating demands additional safety protection in nursing homes for the aged and in nurseries.

4.5.5.2 The mode value is used to arrive at the age factor for the patients in the zone. The calculation should be based on the past record of occupants assigned to the zone. Patients under one year old are classified at the same risk level as those over 65. This factor recognizes the susceptibility of infants to fire.

4.6 Safety Parameters (Worksheet 4.7.6). Safety parameters are a measure of those building factors that bear on or contribute to the safety of those persons (patients, staff, visitors, others) who might be in the particular zone at the time of a fire. Each of the safety parameters was analyzed. Where the current *Life Safety Code* requirements recognize several different approaches to the parameter, the most important alternatives were specified. Also specified were conditions likely to be encountered in situations failing to meet the explicit *Code* requirements and conditions exceeding those required by the *Code*, but available for increased protection.

4.6.1 Construction. Construction types are defined by the fire resistance and combustibility of load-bearing framing members, floor/ceiling assemblies, and roof/ceiling assemblies in accordance with NFPA 220.

4.6.1.1 Where the facility includes additions or connected structures of different construction, the rating and classification of the structure shall be based on one of the following:

(1) Separate buildings, if in accordance with 8.2.1.3 (NFPA *101*)
(2) Separate buildings, if the additions and connected structure conform to the provisions of applicable sections of Chapter 18 or 19 (NFPA *101*), whether or not separation is provided
(3) The lower safety parameter point score involved, if neither 4.6.1.1(1) nor 4.6.1.1(2) applies

4.6.1.2 The story used to determine the parameter value is the story of the fire/smoke zone being evaluated. The construction type of the building for all stories is based on the lowest construction type anywhere in the building. The story or zone is specified relative to, and beginning with, the level of exit discharge as defined in Section 3.3 (NFPA *101*).

4.6.1.3 Where the zone is on a story below the level of exit discharge, the construction value shall be based on the distance of that story from the level of exit discharge (i.e., one story below the level of exit discharge equals "second"; two stories below the level of exit discharge equals "third"; three or more stories below the level of exit discharge equals "fourth and above").

4.6.2 Interior Finish (Corridor and Exits). The classification of wall and ceiling interior finish materials shall be in accordance with Section 10.2 (NFPA *101*). The flame-spread classification shall be based on the most combustible surface after deleting trim. Interior wall and ceiling finish materials tested in accordance with NFPA 265 or NFPA 286, as permitted by Section 10.2 (NFPA *101*), and meeting the criteria established in Section 10.2 (NFPA *101*) for those test standards, shall be scored as Class A interior finish materials (flame spread ≤25). Textile wall and ceiling coverings and expanded vinyl wall and ceiling covering materials shall comply with 10.2.4 (NFPA *101*). No allowance is made in the safety parameter values for interior finish materials that fail to be classified as a minimum of Class C or textile wall materials not compliant with 10.2.4 (NFPA *101*). It is not anticipated that such materials will be used in health care facilities. In the rare case that such high flame-spread interior finish materials are involved, an individual fire hazard assessment outside the capability of this evaluation system will be required.

4.6.3 Interior Finish (Rooms). See 4.6.2.

4.6.4 Corridor Partitions/Walls. For the purpose of this evaluation, the fire-rated partitions considered are as defined in 18.3.6 (NFPA *101*) for new buildings and 19.3.6 (NFPA *101*) for existing buildings. All elements of the partition, except the door (considered as a separate element in this evaluation), must be included in the determination of its time-rated fire resistance classification according to ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*. An exception to the general rule of evaluating doors separately from walls occurs where one or more rooms have no doors *(see 4.6.5)*. In this instance, it is considered that the worth of the fire resistance capabilities of the corridor partition wall is so reduced that the wall should be graded as having no fire resistance. *(See Worksheet 4.7.6.)*

4.6.4.1 Corridor partitions shall be graded as "none or incomplete" if they do not meet the requirements of 18.3.6 or 19.3.6 (NFPA *101*), as appropriate, including applicable exceptions. In existing buildings, partitions shall be permitted to be graded as "<½ hour," provided the ceiling within the fire/smoke zone is of a design and construction sufficient to resist the passage of smoke and the partition either extends through or terminates at the underside of the ceiling with a smoketight joint.

4.6.4.2 Corridor partitions shall be graded as "≥½ hour but <1 hour" or "≥1 hour" only where the partitions extend to the underside of the floor or roof construction above in accordance with 18.3.6 or 19.3.6 (NFPA *101*), as appropriate.

4.6.5 Doors to Corridor. The classification of doors and opening protectives to the corridor shall be based on the minimum quality of any door in the zone, and the classification shall be determined in accordance with NFPA 252 or NFPA 257. Doors for protection of vertical openings and hazardous areas that are covered separately in 4.6.7 and 4.6.8 are not included in this evaluation. Doors that do not latch and doors that have louvers shall not be considered in classifying doors to corridors if those doors open to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces that do not contain flammable or combustible materials.

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

Δ **4.6.5.1 No Door.** A room shall be considered as not having a door if there is no door or window in the opening or if there is some other mechanism that prevents closing of the door or otherwise leaves a significant opening between the patient room and the corridor. Doors with louvers or ordinary glass lights shall be classified as "no door." Ordinary glass lights shall not be considered as making a partition incomplete in locations where both sides of the glass light are fully protected by automatic sprinkler systems. Doors that have been blocked open by door stops, chocks, tiebacks, or other devices that necessitate manual unlatching or releasing action to close the door shall be classified as "no door." Hold-open devices that release when the door is pushed or pulled, such as friction catches or magnetic catches, shall be permitted, and the door shall be classified under 4.6.5.2, 4.6.5.3, and 4.6.5.4. Also, doors that are not provided with a latch in accordance with 18.3.6.3.5 through 18.3.6.3.9 or 19.3.6.3.5 through 19.3.6.3.7 (NFPA *101*) shall be classified as "no door."

4.6.5.2 Doors of Less Than 20-Minute Fire Protection Rating (<20 min FPR). Doors and windows that are not deficient as described in 4.6.5.1 but that do not meet the requirements of 4.6.5.3 shall be classified as less than 20-minute fire protection rating.

4.6.5.3 Doors of 20-Minute or More Fire Protection Rating (≥20 min FPR). Doors and windows shall be considered as having a 20-minute or greater fire protection rating when tested in accordance with 4.6.5, are of 1¾ in. (44 mm) thick, solid, bonded wood core construction, or any other arrangement of equal or greater stability and fire integrity. The thermal insulation capability of the door or window need not be considered. Hollow or sheet steel doors, therefore, meet the 20-minute requirement.

4.6.5.4 Twenty-Minute or More Fire Protection Rating and Automatic Closing (≥20 min FPR and Auto Close). Automatic-closing devices shall be considered to be present if the door has an arrangement that holds it open in a manner such that it is released by a smoke detector–operated device (e.g., a magnetic or pneumatic hold-open device) prior to the passage of significant smoke from a room of fire origin into the corridor or from the corridor into a room not involved in the fire. Smoke detectors for operation of such doors shall be permitted to be integral with the door closers, mounted at each opening, or operated from systems meeting the requirements for two or more points of credit under 4.6.12. The requirement for 20-minute fire protection rating is the same as in 4.6.5.3.

4.6.5.5 Self-Closing Patient Room Doors. Traditional self-closing doors on individual patient rooms shall be evaluated in the following manner:

(1) If it can be established that the doors are constantly kept in the normally closed position except when persons are actually passing through the openings, the self-closing device shall be considered as equivalent to an automatic-closing device and credited accordingly.
(2) If the self-closing doors are blocked open, they shall be classified as "no door" and a parameter value of –10 invoked.

4.6.6 Zone Dimensions. Zone dimension shall be as calculated per 18.3.7.1 or 19.3.7.1 (NFPA *101*).

4.6.6.1 The length of a corridor "dead end" shall be measured from the point at which a person egressing from the dead end would have an option of egressing in two separate directions.

4.6.6.2 In assessing the values for this parameter, a single value shall be chosen based on the worst safety level in the zone. For example, if one or more dead ends in excess of 50 ft (15 m) but not more than 100 ft (30 m) exist, the parameter value for dead ends (–4) shall be applied regardless of the actual corridor lengths.

4.6.6.3 Because dead-end corridors and single emergency movement routes *(see 4.6.10)* each confine the occupants of a zone to a single means of egress, the effect of these two factors on the parameter value is not cumulative. As indicated by Note b to Worksheet 4.7.6, the parameter value for dead-end corridors is to be 0 instead of –2, –4, or –6 in the special case where a value of –8 is assessed under 4.6.10 for single emergency movement routes.

4.6.6.4 Zone length applies to the greater dimension of length or width of the zone.

4.6.7 Vertical Openings. These values apply to vertical openings and penetrations, including exit stairways, ramps, and other vertical exits of the type recognized by NFPA *101*, plus pipe shafts, ventilation shafts, duct penetrations, and laundry and incinerator chutes. Enclosures shall be of construction having a fire resistance rating not less than that prescribed for vertical openings *(see Safety Parameter 7 of Worksheet 4.7.6)*. In addition, they shall be equipped with fire doors or acceptable protection of openings into the shafts, all designed and installed to provide a complete barrier to the vertical spread of fire or smoke.

4.6.7.1 A vertical opening or penetration shall be considered open if it has any of the following characteristics:

(1) It is unenclosed.
(2) It is enclosed but does not have doors or opening protectives.
(3) It is enclosed but has openings other than doorways.
(4) It is enclosed with cloth, paper, or similar materials without any sustained flame-stopping capabilities.

4.6.7.2 Where vertical openings are located outside the fire/smoke zone and the separation between the zone and the vertical opening is of 1-hour or greater fire resistance rating and is of higher fire resistance rating than the protection of the vertical opening itself (for example, an open shaft separated from the zone by a 2-hour fire-resistance-rated partition with 1½-hour fire-protection-rated self-closing fire doors), the rating of this factor for the zone being measured shall be based on the higher of the two fire resistance categories. In this example, a safety parameter value of 3 would be given for the 2-hour fire resistance rating. Where this occurs, however, the space with the vertical opening cannot be considered an exit route or refuge area for that zone when evaluating the emergency movement route parameter addressed in 4.6.10.

4.6.7.3 A vertical opening shall be considered open for more than three stories if there is unprotected penetration of four or more stories on the same shaft without an intervening slab or other cutoff *(also see same area as an unprotected penetration in 4.6.13)*. If a shaft is enclosed at all stories except one and this results in an unprotected opening between the shaft and one, and only one, fire/smoke zone, the parameter value assigned for that shaft opening in the fire/smoke zone where the unprotected opening occurs shall be 0.

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

4.6.7.4 Unenclosed vertical openings protected in accordance with 18.3.1 or 19.3.1 (NFPA *101*) shall not be considered when determining a safety parameter value.

4.6.8 Hazardous Areas. Hazardous area protection is determined in accordance with Section 8.7, 18.3.2, and 19.3.2 (NFPA *101*). The term *adjacent zone* as used in the evaluation form means any zone, either on the same story or on the story immediately below, that physically abuts the zone being evaluated and not separated by 2-hour fire-resistance-rated construction. The term *outside zone* as used in the evaluation form means any place within the building other than the fire/smoke zone being measured and not separated by 2-hour fire-resistance-rated construction.

4.6.8.1 In assessing the parameter value for hazardous areas, only one value shall be chosen. It shall be the most severe value corresponding to the deficiencies present. A double deficiency can exist only where the hazard is severe and the space is not sprinkler protected. Double protection consists of both a fire-rated enclosure and automatic sprinkler protection of the hazardous area. If both of these protections are lacking in a severe hazardous location, the double deficiency value shall be chosen. If double deficiencies exist both within the zone and outside the zone, the lesser value (i.e., −11) for the condition inside the zone shall be chosen. The values are not cumulative, regardless of how many hazardous areas are present. Table 4.6.8.1 provides a matrix to be used to determine degree of deficiency to be assessed.

4.6.8.2 Where the hazard is not severe, the maximum deficiency that can occur is a single deficiency, which shall be permitted to be countered by either of the following means:

(1) A fire-resistance-rated enclosure
(2) Automatic extinguishing equipment and enclosure by smoke partitions

4.6.8.3 A single deficiency situation also is considered to exist where a severe hazard is protected by either of the following means, but not by both:

(1) A fire-resistance-rated enclosure
(2) Automatic extinguishing equipment and enclosure by smoke partitions

4.6.9 Smoke Control. Smoke control definitions are provided in 4.6.9.1 through 4.6.9.3.

4.6.9.1 No Control. There are no smoke barriers (or horizontal exits) on the story, and there is no mechanical smoke control system.

4.6.9.2 Smoke Barrier Serves Zone. A smoke barrier consists of a partition extending across the entire width of the zone equipped with doors that either are self-closing or are closed upon detection by smoke detectors located at the door arches or other release mechanisms as described in 7.2.1.8 (NFPA *101*). To be credited as a smoke barrier, an existing partition also shall conform with the requirements of 19.3.7.3 through 19.3.7.10 (NFPA *101*). New smoke barriers in either new or existing buildings shall meet the more stringent requirements of 18.3.7.3 through 18.3.7.10 (NFPA *101*). A horizontal exit that also complies with Section 8.5 (NFPA *101*) will act as a smoke barrier and is credited as both a smoke barrier *(see 4.6.9)* and an emergency movement route *(see 4.6.10)*.

Δ Table 4.6.8.1 Hazardous Areas Deficiencies

Protection	Hazard	
	Severe	Not Severe
None	Double	Single
Fire-resistance-rated enclosures	Single	None
Automatic sprinklers and smoke partitions	Single	None
Automatic sprinklers and fire-resistance-rated enclosures	None	None

4.6.9.3 Mechanically Assisted Systems — by Zone. Mechanically assisted smoke control on a zone basis shall include a smoke barrier, as in 4.6.9.2, supported by a tested and accepted smoke control system that obstructs the leakage of smoke between zones. One method of judging the acceptability of smoke control systems is found in NFPA 92.

4.6.10 Emergency Movement Routes. A movement route is any means of egress meeting the requirements for such means specified in 7.2.2 through 7.2.6 (NFPA *101*). Horizontal exits also shall meet the requirements specified in 4.6.10.4. Doors exiting directly to the exterior also shall constitute a movement route from the room containing such a door.

4.6.10.1 Fewer Than Two Routes. The means of emergency movement from a zone is classified as fewer than two routes if there are not at least two remote movement routes serving the zone. Movement routes shall be permitted to be outside the physical limits of the zone.

4.6.10.2 Multiple Routes. The emergency movement route is multiple if the zone occupants have the choice of two or more distinctly separated movement routes from the zone.

4.6.10.3 Deficient. The choice of parameter value for deficient emergency movement routes is independent of any values determined in 4.6.7.

4.6.10.3.1 An emergency movement route of a type described by 18.2.2 or 19.2.2 (NFPA *101*) is deficient if the door widths or corridor widths do not conform to the requirements of 18.2.3 or 19.2.3 (NFPA *101*).

4.6.10.3.2 Emergency movement routes also shall be considered deficient if they fail to meet the requirements of 18.2.1 through 18.2.7 or 19.2.1 through 19.2.7 (NFPA *101*) for the egress route involved. However, any route where the doors from rooms or through partitions or walls are less than 32 in. (810 mm) in the clear, the corridor(s) involved is less than 34 in. (865 mm) wide, or stair access is less than 28 in. (710 mm) in the clear shall not be credited as an egress route.

4.6.10.3.3 Emergency movement routes shall be considered deficient if the route does not otherwise conform to the requirements of Section 7.1 through 7.2.6 (NFPA *101*), even if the routes have been or are acceptable to the authority having jurisdiction.

4.6.10.3.4 Emergency movement routes shall be considered deficient if the capacity of the exits serving the story containing the zone being evaluated is insufficient for the calculated occupant load of the story. For buildings not protected throughout by automatic sprinklers, use the capacity factor of 0.6 in. (15 mm) per person for stairs.

4.6.10.4 Horizontal Exits. The presence of a single horizontal exit from the zone being evaluated shall be assigned a parameter value of 1, provided the space on the opposite side of the

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

horizontal exit is capable of handling all of the patients from affected zones. Horizontal exits shall be credited where they comply with 4.6.10.4.1 through 4.6.10.4.3.

4.6.10.4.1 The existing arrangement shall conform with the requirements of 19.2.2.5 (NFPA *101*). New horizontal exits in new or existing buildings shall meet the more stringent requirements of 18.2.2.5 (NFPA *101*).

4.6.10.4.2 The zone credited shall conform to the requirements of 7.5.1.1 through 7.5.1.1.4 (NFPA *101*) with the zone served considered a separate portion of the building.

4.6.10.4.3 The travel distance from within each patient sleeping or treatment room in the zone to a horizontal exit door or exit to grade shall not exceed 150 ft (46 m) or where Parameter 13 is scored as 10 shall not exceed 200 ft (61 m).

4.6.10.5 Direct Exits. To be credited for direct exits, each patient-use space (except bathrooms, restrooms, and corridors) in the zone shall have a door that is operable by the room occupant(s) and opens directly to the exterior at grade or onto an exterior balcony with direct access to an exterior exit or a smokeproof enclosure. The direct exit shall be ramped or otherwise without steps or changes in elevation that could prevent or obstruct the movement of wheelchairs or wheel-littered patients through the direct exits to a place of safety and refuge.

4.6.11 Manual Fire Alarm. The manual alarm systems for new construction shall be in accordance with the requirements of 18.3.4 other than 18.3.4.3.2 (NFPA *101*). Existing construction shall be in accordance with 19.3.4 other than 19.3.4.3.2 (NFPA *101*). Connection to the fire department shall be considered as being met if the fire alarm system is connected directly to the fire department through an approved central station or through other means acceptable to the authority having jurisdiction.

4.6.12 Smoke Detection and Alarm. A detection system as used herein is one based on the use of automatic smoke detectors installed in accordance with Section 9.6 (NFPA *101*). Notification shall be in accordance with 18.3.4.3 other than 18.3.4.3.2 or 19.3.4.3 other than 19.3.4.3.2 (NFPA *101*). No recognition is given for thermal detectors; however, credit is given for the use of quick-response sprinklers per Note g of Worksheet 4.7.6. The detection system categories are described in 4.6.12.1 through 4.6.12.5.

4.6.12.1 None. There are no smoke detectors in the zone, or, if present, they are not included in any of the categories of 4.6.12.2 through 4.6.12.5.

4.6.12.2 Corridor Only. Smoke detectors are installed throughout the corridors of the zone involved.

4.6.12.3 Rooms Only. Smoke detectors are installed throughout the rooms of the zone involved. These smoke detectors shall be considered as meeting this requirement where there is at least one smoke detector in each room occupied or used by patients. Detectors are not required in restrooms or closets.

4.6.12.4 Corridor and Habitable Spaces. Detection systems installed throughout the corridors of the zone involved and in the habitable spaces (patient rooms, nurses stations, and other areas basically used for human occupancy) shall be considered as meeting the requirements for a corridor and habitable spaces detection system. Closets, toilet rooms, and other auxiliary spaces, as well as ceiling voids, interstitials, and other building spaces not used by humans as a normal part of their regular occupancy, are not required to have detectors.

4.6.12.5 Total Spaces in Zone. Total space provision of detectors includes detector coverage of all spaces, except noncombustible building voids that contain no combustible materials. The total space credit is to be given if the zone measured meets this criterion, regardless of the presence or lack of detectors in other portions of the building.

4.6.13 Automatic Sprinklers.

4.6.13.1 Wherever sprinkler protection is involved in an area having an unprotected vertical opening, the sprinkler protection around that vertical opening shall conform to Chapter 8 (NFPA *101*). This protection is required to allow the credit for sprinkler protection but shall in no way reduce any assessed value under Safety Parameter 7 in Worksheet 4.7.6 resulting from an unprotected vertical opening.

4.6.13.2 In Worksheet 4.7.7, the value for sprinkler protection credited to the people movement safety (S_3) category is divided by 2. This produces a safety parameter value of only one-half the value credited in other categories.

4.6.13.3 Each sprinkler system shall be provided with supervision. Each sprinkler system shall be interconnected electrically with the fire alarm system, and sprinkler control valves shall be supervised electrically so that at least a local alarm shall sound in a constantly attended location when a valve is not in the fully open position.

4.6.13.4 In evaluating sprinkler protection within the zone, the protection or lack of protection of hazardous areas is considered separately and covered under 4.6.8. For all other areas in the zone, sprinklers shall be graded based on the categories specified in 4.6.13.4.1 through 4.6.13.4.3.

4.6.13.4.1 None. No credit is applied if there are no sprinklers or if sprinklers, though present, are not sufficient to qualify for one of the other categories specified.

4.6.13.4.2 Corridor and Habitable Space. Habitable space includes patient rooms, nurses' stations, and other areas used basically for human occupancy. Habitable space does not include closets, bathrooms, toilets, elevators, and similar spaces. This safety parameter value is based on standard sprinkler spacings in the areas covered and is conditional, based on the classification of construction type as covered in 4.6.1.

4.6.13.4.2.1 Safety Parameter 1, "Construction" *(see 4.6.1)*, in Worksheet 4.7.6 is based on a "protected" or "fire-resistive" type of construction. Protected or fire-resistive types of construction include Types I, II (222), II (111), III (211), and V (111). This credit is based on a system that effectively provides coverage for all corridor and habitable space in the zone, plus the establishment of water distribution patterns or other protection in a manner to prevent the advance of fire from nonsprinklered spaces into the sprinklered spaces. In buildings of protected or fire-resistive construction, the credit is to be applied to any zone where these conditions are met, whether or not areas outside the zone are protected similarly.

4.6.13.4.2.2 Safety Parameter 1, "Construction" *(see 4.6.1)*, is based on an "unprotected" type of construction. Unprotected types of construction include Types II (000), III (200), and V (000). In any unprotected type of construction, the credit for corridor and habitable space protection is to be given only if, in addition to the conditions described in 4.6.13.4.2.1, sprin-

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

kler protection also is provided in all spaces in the building (including attic or loft spaces) with construction elements that are not sheathed, enclosed, or otherwise protected with fire-resistive materials such as gypsum board, plaster, or masonry block.

4.6.13.4.3 Entire Building. Total space automatic sprinkler protection is to be credited only if the entire structure is protected by automatic sprinklers in accordance with 18.3.5 or 19.3.5 (NFPA *101*). This credit also is given where a smoke zone in an existing hospital is renovated to install quick-response or residential sprinklers in accordance with 18.1.1.4.3 (NFPA *101*); however, the mandatory safety requirements values of Worksheet 4.7.8C for nonsprinklered existing hospitals must be used. Wherever quick-response automatic sprinklers are provided for zones as part of the entire building sprinkler system, additional credit shall be permitted to be taken under Safety Parameter 12, "Smoke Detection and Alarm." *(See 4.6.12 and Worksheet 4.7.6.)*

4.7 Worksheets for Evaluating Fire/Smoke Zones. The worksheets for evaluating fire/smoke zones use a 10-step process found in Figure 4.7.

4.7.1 Step 1 — Complete the Cover Sheet Using Worksheet 4.7.1. See Figure 4.7.

4.7.2 Step 2 — Determine Occupancy Risk Parameter Factors Using Worksheet 4.7.2. For each risk parameter in Worksheet 4.7.2, select and circle the appropriate risk factor value. Choose only one value for each of the five risk parameters.

4.7.3 Step 3 — Compute Occupancy Risk Factor *F* Using Worksheet 4.7.3. The following steps should be taken:

(1) Transfer the circled risk factor values from Worksheet 4.7.2 to the corresponding blocks in Worksheet 4.7.3.
(2) Compute occupancy risk factor *F* by multiplying the risk factor values as indicated in Worksheet 4.7.3.

4.7.4 Step 4 — Compute Adjusted Occupancy Risk Factor *R* Using Worksheet 4.7.4 or Worksheet 4.7.5. The following steps should be taken:

(1) If building is classified as "new," use Worksheet 4.7.4. If building is classified as "existing," use Worksheet 4.7.5.
(2) Transfer the value of *F* from Worksheet 4.7.3 to Worksheet 4.7.4 or Worksheet 4.7.5, as appropriate. Calculate *R*.
(3) Transfer *R* to the block labeled *R* in Worksheet 4.7.9.

4.7.5 Step 5 — Determine Safety Parameter Values Using Worksheet 4.7.6. Select and circle the safety value for each safety parameter in Worksheet 4.7.6 that best describes the conditions in the zone. Choose only one value for each of the 13 parameters. If two or more values appear to apply, choose the one with the lowest point value.

4.7.6 Step 6 — Compute Individual Safety Evaluations Using Worksheet 4.7.7. The following steps should be taken:

(1) Transfer each of the 13 circled safety parameter values from Worksheet 4.7.6 to every available block in the line with the corresponding safety parameter in Worksheet 4.7.7. For Safety Parameter 13, the value entered in the "People Movement Safety" column is recorded in Worksheet 4.7.7 as one-half the corresponding value circled in Worksheet 4.7.6.
(2) Add each of the four columns, keeping in mind that any negative numbers need to be deducted.
(3) Transfer the resulting total values for S_1, S_2, S_3, and S_4 to the corresponding blocks in Worksheet 4.7.9.

4.7.7 Step 7 — Determine Mandatory Safety Requirements Values Using Worksheet 4.7.8A, 4.7.8B, or 4.7.8C as Appropriate. The following steps should be taken:

(1) Using the classification of the building (i.e., new or existing) and the story where the zone is located, circle the appropriate value in each of the three columns in Worksheet 4.7.8A, 4.7.8B, or 4.7.8C.
(2) Transfer the three circled values from Worksheet 4.7.8A, 4.7.8B, or 4.7.8C to the blocks marked S_a, S_b, and S_c in Worksheet 4.7.9.
(3) The mandatory safety requirements values for basements are based on the distance of the basement level from the closest level of discharge. *(See also 4.6.1.2 and 4.6.1.3.)*

4.7.8 Step 8 — Determine Zone Fire Safety Equivalency Using Worksheet 4.7.9. The following steps should be taken:

(1) Perform the subtractions indicated in Worksheet 4.7.9. Enter the differences in the appropriate answer blocks.
(2) For each row, check "yes" if the value in the answer block is zero (0) or greater. Check "no" if the value in the answer block is a negative number.

4.7.9 Step 9 — Evaluate Other Considerations Not Previously Addressed Using Worksheet 4.7.10. The equivalency covered by Worksheets 4.7.2 through 4.7.9 includes the majority of the considerations covered by the *Life Safety Code*. Some considerations are not evaluated by this method and must be considered separately. These additional considerations are covered in Worksheet 4.7.10, Facility Fire Safety Requirements Worksheet. Complete one copy of this separate worksheet for each facility.

4.7.10 Step 10 — Determine Equivalency Conclusion. Conclude whether the level of life safety is at least equivalent to that prescribed by the *Life Safety Code* using Worksheet 4.7.11, Conclusions. Worksheet 4.7.11 combines the zone fire safety equivalency evaluation of Worksheet 4.7.9 and the additional considerations of Worksheet 4.7.10.

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 4.7.1 COVER SHEET

Zone Evaluation Worksheet for Health Care Facilities

Facility _____ Building _____

Zone(s) evaluated _____

Evaluator _____ Date _____

Complete this worksheet for each zone. Where conditions are the same in several zones, one worksheet can be used for those zones.

WORKSHEET 4.7.2 OCCUPANCY RISK PARAMETER FACTORS

Risk Parameters	Risk Factor Values					
1. Patient Mobility (*M*)	Mobility Status	Mobile	Limited Mobility	Not Mobile	Not Movable	
	Risk Factor	1.0	1.6	3.2	4.5	
2. Patient Density (*D*)	No. of Patients	1–5	6–10	11–30	>30	
	Risk Factor	1.0	1.2	1.5	2.0	
3. Zone Location (*L*)	Floor	1st	2nd or 3rd	4th to 6th	7th and Above	Basements
	Risk Factor	1.1	1.2	1.4	1.6	1.6
4. Ratio of Patients to Attendants (*T*)	Patients / Attendant	1–2 / 1	3–5 / 1	6–10 / 1	>10 / 1	One or More* / None
	Risk Factor	1.0	1.1	1.2	1.5	4.0
5. Patient Average Age (*A*)	Age	<65 Years and >1 Year		≥65 Years or ″1 Year		
	Risk Factor	1.0		1.2		

*A risk factor of 4.0 is charged to any zone that houses patients without any staff in immediate attendance.

WORKSHEET 4.7.3 OCCUPANCY RISK FACTOR CALCULATION

	M		*D*		*L*		*T*		*A*		*F*
Occupancy Risk	☐	×	☐	×	☐	×	☐	×	☐	=	☐

WORKSHEET 4.7.4 ADJUSTED OCCUPANCY RISK FACTOR — NEW BUILDINGS

	F		*R*
1.0 ×	☐	=	☐

WORKSHEET 4.7.5 ADJUSTED OCCUPANCY RISK FACTOR — EXISTING BUILDINGS

	F		*R*
0.6 ×	☐	=	☐

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 1 of 4)

Δ **FIGURE 4.7 Worksheets for Evaluating Fire/Smoke Zones.**

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 4.7.6 SAFETY PARAMETER VALUES

Safety Parameters	Parameter Values						
1. Construction	Building Construction Type						
Story or Zone	V(000)	V(111)	III(200)	III(211), IV(2HH)	II(000)	II(111)	II(222), I(332), I(442)
1st	−2	0	−2	0	0	2	2
2nd	−7	−2	−4	−2(2)[i]	−2	2	4
3rd	−9	−7	−9	−7(2)[j]	−7	2	4
4th and Above	−13	−7	−13	−7(4)[j]	−9	−7	4
2. Interior Finish (Corridors and Exits)	Class C	Class B	Class A				
	−5(0)[f]	0(3)[f]	3				
3. Interior Finish (Rooms)	Class C	Class B	Class A				
	−3(1)[f]	1(3)[f]	3				
4. Corridor Partitions/Walls	None or Incomplete	<½ hr	≥½ hr to <1 hr	≥1 hr			
	−10(0)[a]	0	1(0)[a]	2(0)[a]			
5. Doors to Corridor	No Door	<20 min FPR	≥20 min FPR	≥20 min FPR and Auto Clos.			
	−10	0	1(0)[d]	2(0)[d]			
6. Zone Dimensions	Dead End			No Dead Ends >30 ft and Zone Length Is:			
	>100 ft	>50 ft to 100 ft	>30 ft to 50 ft	>150 ft	100 ft to 150 ft	<100 ft	
	−6(0)[b]	−4(0)[b]	−2(0)[b]	−2(0)[c](0)[h]	0	1	
7. Vertical Openings	Open 4 or More Floors	Open 2 or 3 Floors	Enclosed with Indicated Fire Resist.				
			<1 hr	≥1 hr to <2 hr	≥2 hr		
	−14	−10	0	2(0)[e]	3(0)[e]		
8. Hazardous Areas	Double Deficiency		Single Deficiency		No Deficiencies		
	In Zone	Outside Zone	In Zone	In Adjacent Zone			
	−11	−5	−6	−2	0		
9. Smoke Control	No Control	Smoke Barrier Serves Zone	Mech. Assisted Systems by Zone				
	−5(0)[c]	0	3				
10. Emergency Movement Routes	<2 Routes	Multiple Routes			Direct Exit(s)		
		Deficient	W/O Horizontal Exit(s)	W/Horizontal Exit(s)			
	−8	−2	0	1	5		
11. Manual Fire Alarm	No Manual Fire Alarm		Manual Fire Alarm				
			W/O F.D. Notification	W/F.D. Notification			
	−4		1	2			
12. Smoke Detection and Alarm	None	Corridor Only	Rooms Only	Corridor and Habit. Spaces	Total Spaces in Zone		
	0(3)[g]	2(3)[g]	3(3)[g]	4	5		
13. Automatic Sprinklers	None	Corridor and Habit. Space	Entire Building				
	0	8	10				

[a] Use (0) where Parameter 5 is −10.
[b] Use (0) where Parameter 10 is −8.
[c] Use (0) on floor with fewer than 31 patients (existing buildings only).
[d] Use (0) where Parameter 4 is −10.
[e] Use (0) where Parameter 1 is based on first floor zone or an unprotected type of construction (columns marked "000" or "200").

For SI units, 1 ft = 0.3048 m; 1 ft² = 0.092 m².

[f] Use ( ) if the area of Class B or C interior finish in the corridor and exit or room is protected by automatic sprinklers and Parameter 13 is 0; use ( ) if the room with existing Class C interior finish is protected by automatic sprinklers, Parameter 4 is greater than or equal to 1, and Parameter 13 is 0.
[g] Use this value in addition to Parameter 13 if the entire zone is protected with quick-response automatic sprinklers.
[h] Use (0) where zone area does not exceed limitations of 18.3.7.1 or 19.3.7.1 (NFPA *101*) and travel distance from any point to reach a door in smoke barrier ≤200 ft.
[i] Use ( ) if Parameter 13 is 10 and Type IV(2HH) construction complies with 4.5.6.1.1 or 4.5.6.1.2 of NFPA 220.
[j] Use ( ) if Parameter 13 is 10, Type IV(2HH) construction complies with 4.5.6.1.1 of NFPA 220, and the zone or floor is located no higher than the 4th story.

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 2 of 4)

Δ **FIGURE 4.7** ***Continued***

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 4.7.7 INDIVIDUAL SAFETY EVALUATIONS

Safety Parameters	Containment Safety (S_1)	Extinguishment Safety (S_2)	People Movement Safety (S_3)	General Safety (S_4)
1. Construction				
2. Interior Finish (Corr. and Exit)				
3. Interior Finish (Rooms)				
4. Corridor Partitions/Walls				
5. Doors to Corridor				
6. Zone Dimensions				
7. Vertical Openings				
8. Hazardous Areas				
9. Smoke Control				
10. Emergency Movement Routes				
11. Manual Fire Alarm				
12. Smoke Detection and Alarm				
13. Automatic Sprinklers			√ 2 =	
Total Value	S_1 =	S_2 =	S_3 =	S_4 =

WORKSHEET 4.7.8A MANDATORY SAFETY REQUIREMENTS — NEW HOSPITALS, EXISTING HOSPITALS, OR NEW NURSING HOMES

Zone Location	Containment (S_a)		Extinguishment (S_b)		People Movement (S_c)	
	New	Exist.	New	Exist.	New	Exist.
1st story	11	5	15(12)[a]	4	8(5)[a]	1
2nd or 3rd story[b]	15	9	17(14)[a]	6	10(7)[a]	3
4th story or higher but not high rise	18	9	19(16)[a]	6	11(8)[a]	3
High rise	18	17(9)[c]	19(16)[a]	16(6)[c]	11(8)[a]	7(3)[c]

[a] Use ( ) in zones that do not contain patient sleeping rooms.
[b] For a 2nd-story zone location in a *sprinklered* EXISTING hospital, as an alternative to the mandatory safety requirement values set specified in the table, the following mandatory values set shall be permitted to be used: S_a = 7, S_b = 10, and S_c = 7.
[c] Use ( ) where the phase-in period for the requirement for sprinklers in 19.4.3 of NFPA *101* has not yet elapsed.

WORKSHEET 4.7.8B MANDATORY SAFETY REQUIREMENTS — EXISTING NURSING HOMES

Zone Location	Containment (S_a)	Extinguishment (S_b)	People Movement (S_c)
1st story	0	10	0
2nd story	2(11)[a]	10(5)[a]	2(10)[a]
3rd story	6(11)[b]	14(3)[b]	2(11)[b]
4th–6th story	8(11)[c]	16(3)[c]	2(11)[c]
7th story or higher	6	16	2

[a] Use ( ) when parameter 1 (Worksheet 4.7.7) is <–2.
[b] Use ( ) when parameter 1 (Worksheet 4.7.7) is <2.
[c] Use ( ) when parameter 1 (Worksheet 4.7.7) is <4.

WORKSHEET 4.7.8C MANDATORY SAFETY REQUIREMENTS — MAJOR REHABILITATION IN NONSPRINKLERED EXISTING HOSPITALS

Zone Location	Containment (S_a)	Extinguishment (S_b)	People Movement (S_c)
1st story	13	17(14)*	8(5)*
2nd or 3rd story	17	19(16)*	10(7)*
4th story or higher	18	19(16)*	11(8)*

*Use ( ) in zones that do not contain patient sleeping rooms.

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 3 of 4)

Δ **FIGURE 4.7** ***Continued***

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 4.7.9 ZONE FIRE SAFETY EQUIVALENCY EVALUATION

							Yes	No
Containment Safety (S_1)	minus	Mandatory Containment (S_a)	≥	0	S_1 [ ] – S_a [ ] = C [ ]			
Extinguishment Safety (S_2)	minus	Mandatory Extinguishment (S_b)	≥	0	S_2 [ ] – S_b [ ] = E [ ]			
People Movement Safety (S_3)	minus	Mandatory People Movement (S_c)	≥	0	S_3 [ ] – S_c [ ] = P [ ]			
General Safety (S_4)	minus	Occupancy Risk (R)	≥	0	S_4 [ ] – R [ ] = G [ ]			

WORKSHEET 4.7.10 FACILITY FIRE SAFETY REQUIREMENTS WORKSHEET

Complete one copy of this worksheet for each facility.
For each consideration, select and mark the appropriate column.

		Met	Not Met	Not Applic.
A.	Building utilities conform to the requirements of 18.5.1 and 19.5.1.			X
B.	In new facilities only, life-support systems, alarms, emergency communication systems, and illumination of generator set locations are powered as prescribed by 18.5.1.2 and 18.5.1.3.			
C.	Heating and air conditioning systems conform with the air conditioning, heating, and ventilating systems fire safety requirements within Section 9.2, except for enclosure of vertical openings, which have been considered in Safety Parameter 7 of Worksheet 4.7.6 of NFPA 101A.			X
D.	Fuel-burning space heaters and portable electrical space heaters are not used.			X
E.	There are no flue-fed incinerators.			
F.	An evacuation plan is provided and fire drills conducted in accordance with 18.7.1/18.7.2 and 19.7.1/19.7.2.			X
G.	Smoking regulations have been adopted and implemented in accordance with 18.7.4 and 19.7.4.			X
H.	Combustibility of draperies, upholstered furniture, mattresses, furnishings, and decorations is limited in accordance with 18.7.5 and 19.7.5.			
I.	Fire extinguishers are provided in accordance with the requirements of 18.3.5.12 and 19.3.5.12.			X
J.	Exit signs are provided in accordance with the requirements of 18.2.10 and 19.2.10.			
K.	Emergency lighting is provided in accordance with 18.2.9.1 or 19.2.9.1.			
L.	Standpipes are provided in all new high-rise buildings as required by 18.4.3.			
M.	Automatic sprinklers are provided throughout existing nursing homes and existing high-rise buildings.			X

All references are to NFPA *101*, *Life Safety Code*.

WORKSHEET 4.7.11 CONCLUSIONS

1. ☐ All of the checks in Worksheet 4.7.9 are in the "Yes" column and all applicable considerations in Worksheet 4.7.10 are identified as "Met." The level of fire safety is at least equivalent to that prescribed by NFPA *101*, *Life Safety Code*, for health care occupancies.

2. ☐ All of the checks in Worksheet 4.7.9 are in the "Yes" column and all considerations identified in Worksheet 4.7.10 as "Not Met" have been evaluated and mitigated to the satisfaction of the AHJ. The level of fire safety is at least equivalent to that prescribed by NFPA *101*, *Life Safety Code*, for health care occupancies.

3. ☐ One or more of the checks in Worksheet 4.7.9 are in the "No" column or any consideration identified in Worksheet 4.7.10 as "Not Met" has NOT been evaluated and mitigated to the satisfaction of the AHJ. The level of fire safety is not shown by this system to be equivalent to that prescribed by NFPA *101*, *Life Safety Code*, for health care occupancies.

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 4 of 4)

Δ **FIGURE 4.7** ***Continued***

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

Chapter 5 Fire Safety Evaluation System for Detention and Correctional Occupancies

5.1 General.

5.1.1 This chapter is part of an NFPA guide and, therefore, is not mandatory. The term *shall* in this chapter is used to indicate that if the provisions of the chapter are applied, the procedures mandated are to be followed to ensure the effectiveness of the evaluation system.

5.1.2 The fire safety evaluation system is a measuring system. It compares the level of safety provided by an arrangement of safeguards that differ from those specified in NFPA *101* to the level of safety provided in a building that conforms exactly with the details of the *Code*.

5.2 Procedure for Determining Equivalency. Evaluate the entire facility using Figure 5.5, Worksheets for Evaluating Fire Safety in Detention and Correctional Occupancies (Worksheets 5.5.1 through 5.5.8), as defined in Sections 22.1 and 23.1 (NFPA *101*), on a single worksheet. Where different use conditions or fire protection features are involved, portions of the facility separated from each other by 2-hour or greater fire-resistance-rated construction (including any members that bear the load of detention use, egress, or refuge space and with 1½-hour fire-protection-rated doors in any communication opening) shall be permitted to be evaluated separately.

5.3 Maintenance. Any device, equipment, system, condition, arrangement, level of protection, procedure, or any other feature that is not maintained in a dependable operating condition or that is used in such a manner that the intended fire safety function or hazard constraint is impaired should be considered defective and receive no credit in the evaluation.

5.4 Safety Parameters (Worksheet 5.5.3). The safety parameters are a measure of those building factors that bear upon or contribute to the safety of those persons who might be in the building at the time of a fire. *(See Worksheet 5.5.3.)* Each of the safety parameters is to be analyzed, and the safety value for each parameter that best describes the condition in the building is to be identified. Only one value for each of the parameters is to be chosen. If two or more values appear to apply, the one with the lowest point value governs.

5.4.1 Construction. Construction types are defined by the fire resistance and combustibility of load-bearing framing members, floor/ceiling assemblies, and roof/ceiling assemblies in accordance with NFPA 220, which extracts material from *NFPA 5000. (See Table 5.4.1.)*

5.4.1.1 Where the facility includes additions or connected structures of different construction, the rating and classification of the structure shall be based on one of the following:

(1) Separate buildings where a 2-hour or greater fire-resistance-rated separation exists between the portions of the building
(2) The lower safety parameter point score involved, where such a separation does not exist

5.4.1.2 The story used to determine the parameter value is the highest story used for confinement purposes. The number of stories in height is determined in accordance with 4.6.3 (NFPA *101*). Where there are stories below the level of exit discharge, the maximum value assigned to the construction parameter shall be based on a two-story building or the actual story height, whichever is the lower value.

5.4.1.3 A multitiered open cell block in an existing building shall be permitted to be considered a single story, provided that one or more of the following conditions exist:

(1) A smoke control system is provided (*see recommended design criteria in A.23.3.1.3 ofNFPA 101*) to maintain the level of smoke filling from potential cell fires at least 5 ft (1525 mm) above the floor level of any occupied tier.
(2) A smoke control system as described in 5.4.1.3(1) is provided to maintain the level of smoke filling at least 5 ft (1525 mm) above the exit level where either of the following situations exist:
    (a) The cell block is Use Condition II.
    (b) The cell block is Use Condition III, and all persons housed in the cell block 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 cell.
(3) Complete automatic sprinkler protection is provided.

5.4.2 Hazardous Areas.

5.4.2.1 The assignment of charges for hazardous areas is a four-step process.

5.4.2.1.1 Step 1 — Identify Hazardous Areas. Hazardous areas are defined in 22.3.2 and 23.3.2 (NFPA *101*).

5.4.2.1.2 Step 2 — Determine the Level of Hazard. A hazardous area is classed as severe if it is an area requiring both automatic sprinkler protection and fire-rated enclosure per 22.3.2.1, 22.3.2.3, 22.3.5.2, 23.3.2.1, or 23.3.5.2 (NFPA *101*).

5.4.2.1.3 Step 3 — Determine the Fire Protection Provided. The parameter value for hazardous areas is based on the presence or absence of the fire protection necessary to control or confine the hazard. Two levels of fire protection are considered. The first consists of automatic sprinklers or other appropriate extinguishing system covering the entire hazard. The second is based on fire-resistance-rated enclosures, including any bearing members in the space, partitions separating the hazardous area from all other spaces, and doors to the space sufficient to exceed the potential of the fire load involved. Any hazardous space that has either protection system is classified as having single protection. Any hazardous space that is both fully enclosed in a capable fire-resistance-rated enclosure and sprinklered is classified as having double-level protection. On this basis, any fuel load that has the potential to overwhelm the available structural capability of both its own enclosure and the basic structure could, as a maximum, have single protection.

5.4.2.1.4 Step 4 — Determine the Degree of Deficiency and Assign Parameter Values. The parameter value ultimately is determined by the degree of the deficiencies of the hazardous area based on the level of protection needed.

5.4.2.2 Table 5.4.2.2 provides a matrix to be used to determine the degree of deficiency for this parameter. In some situations, more than one hazardous area with the same or differing levels of deficiency can exist. In this case, the choice is based on the single most serious deficiency for the hazardous area.

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

Table 5.4.1 Fire Resistance Ratings for Type I Through Type V Construction (hours)

	Type I		Type II			Type III		Type IV	Type V	
	442	**332**	**222**	**111**	**000**	**211**	**200**	**2HH**	**111**	**000**
Exterior Bearing Walls[a]										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0[b]	2	2	2	1	0[b]
Supporting one floor only	4	3	2	1	0[b]	2	2	2	1	0[b]
Supporting a roof only	4	3	1	1	0[b]	2	2	2	1	0[b]
Interior Bearing Walls										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	2	1	0
Supporting one floor only	3	2	2	1	0	1	0	1	1	0
Supporting roofs only	3	2	1	1	0	1	0	1	1	0
Columns										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H	1	0
Supporting one floor only	3	2	2	1	0	1	0	H	1	0
Supporting roofs only	3	2	1	1	0	1	0	H	1	0
Beams, Girders, Trusses, and Arches										
Supporting more than one floor, columns, or other bearing walls	4	3	2	1	0	1	0	H	1	0
Supporting one floor only	2	2	2	1	0	1	0	H	1	0
Supporting roofs only	2	2	1	1	0	1	0	H	1	0
Floor/Ceiling Assemblies	2	2	2	1	0	1	0	H	1	0
Roof/Ceiling Assemblies	2	1½	1	1	0	1	0	H	1	0
Interior Nonbearing Walls	0	0	0	0	0	0	0	0	0	0
Exterior Nonbearing Walls[c]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]

H: Heavy timber members *(see NFPA 5000 for requirements)*.
[a]See 7.3.2.1 of *NFPA 5000*.
[b]See Section 7.3 of *NFPA 5000*.
[c]See 7.2.3.2.12, 7.2.4.2.3, and 7.2.5.6.8 of *NFPA 5000*.
[**5000:**Table 7.2.1.1]

Δ **Table 5.4.2.2 Hazardous Areas — Degree of Deficiency**

	No protection	**Sprinkler protection**	**Fire-resistance -rated enclosure**	**Sprinklered and fire -resistance-rated enclosure**
Hazardous area	Single deficiency	No deficiency		
Severely hazardous area	Double deficiency	Single deficiency	Single deficiency* Double deficiency†	No deficiency* Single deficiency†

*If fire resistance and structural strength exceed maximum potential of hazard.
†If fire resistance and structural strength are not sufficient to withstand potential of hazard.

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

5.4.3 Fire Alarm. Fire alarms are defined in 5.4.3.1 through 5.4.3.3.

5.4.3.1 No Alarm. There is no fire alarm system, or the system is incomplete and does not meet the requirements for a higher-scored category.

5.4.3.2 Without Fire Department Notification (W/O F.D. Notification). There is a manual fire alarm system or smoke detection system conforming with the appropriate requirements of 22.3.4 or 23.3.4 (NFPA *101*), except that the requirements of 22.3.4.3.2 or 23.3.4.3.2 covering automatic transmission of the alarm to the fire department are not met.

5.4.3.3 With Fire Department Notification (W/ F.D. Notification). There is a manual fire alarm or smoke detection system conforming with the appropriate requirements of 22.3.4 or 23.3.4 (NFPA *101*).

5.4.3.3.1 Without Manual Alarm. There is no manual alarm system, but a smoke detection alarm system or sprinkler system recognized under Safety Parameter 4 or Safety Parameter 5 of this system is provided and is arranged to transmit an alarm automatically to the fire department under either of the following conditions:

(1) Fire resistance and structural strength exceed maximum potential of hazard.
(2) Fire resistance or structural strength is not sufficient to withstand potential of hazard.

5.4.3.3.2 With Manual Alarm. There is a manual alarm system, and it is arranged to transmit an alarm automatically to the fire department.

5.4.4 Smoke Detection.

5.4.4.1 General. A detection system as used herein is one based on the use of smoke detectors meeting the installation requirements of 22.3.4.4 and 23.3.4.4 (NFPA *101*) and *NFPA 72* with the extent of coverage as defined in 5.4.4.2. No credit is given for thermal detectors in habitable spaces.

5.4.4.2 The detection system categories are described in 5.4.4.2.1 through 5.4.4.2.5.

5.4.4.2.1 None. There are no smoke detectors, or, if present, they do not meet the requirements for a higher-scored category.

5.4.4.2.2 Corridors, Common Spaces, and Sleeping Rooms for More Than Four Persons. Smoke detection requirements of such spaces located within the residential housing area are covered by smoke detector installations in accordance with *NFPA 72*. In Use Condition II dormitory rooms in sprinklered buildings where staff is present whenever the dormitory room is occupied, detectors may be omitted from the dormitory room but not from the corridors and common spaces.

5.4.4.2.3 All Sleeping Rooms. Smoke detectors shall be considered as meeting the requirement when there is at least one smoke detector in each sleeping room occupied or used by prisoners. In rooms having a dimension in excess of 30 ft (9.1 m), additional detectors are provided so that detector spacing does not exceed approximately 30 ft (9.1 m). Detectors are not required in restrooms or closets.

5.4.4.2.4 Full Coverage. The requirements of 5.4.4.2.2 and 5.4.4.2.3 are met.

5.4.4.2.5 Total Building. Total building detector credit requires conformance with the requirements of *NFPA 72* for total coverage.

5.4.5 Automatic Sprinklers.

5.4.5.1 General. In evaluating sprinkler protection, the protection or lack of protection of hazardous areas is considered separately and covered under 5.4.2, except that total building protection shall include hazardous areas. In addition, the existence or lack of fire department notification is considered separately under 5.4.3. In all other situations, any sprinkler installations shall conform to 22.3.5 and 23.3.5 (NFPA *101*) and be graded based on the categories specified in 5.4.5.1.1 through 5.4.5.1.3.

5.4.5.1.1 None. No credit is given if there are no sprinklers or if sprinklers, though present, are not sufficient to qualify for one of the other categories specified.

5.4.5.1.2 Residential Housing Areas. The credit for sprinkler protection of residential housing areas is given for arrangements whereby sprinklers are located throughout the areas, such that all space within such areas (including cells or sleeping rooms) is covered by the protection spray pattern of sprinkler heads.

5.4.5.1.3 Entire Building. The building is totally sprinkler protected in accordance with NFPA 13 for light hazard occupancy (or higher hazard occupancy for any spaces classified as higher hazard by NFPA 13).

5.4.6 Interior Finish.

5.4.6.1 Classification of interior wall and ceiling finish materials is in accordance with Section 10.2 (NFPA *101*).

5.4.6.2 No consideration is included in the safety parameter value for any finish with a flame-spread index greater than 200 as tested by ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*. Some materials, including foamed plastics, high-density polyethylene, and polypropylene, are not permitted to be tested in accordance with ASTM E84 and must be tested in accordance with NFPA 286 and must meet the acceptance criteria shown in Section 10.2 (NFPA *101*). Some materials, including asphalt-impregnated paper, are capable of inducing extreme rates of fire growth and rapid flashover. In any case involving these materials, the resultant risk is considered to classify any such finish area as a hazardous area to be evaluated under 5.4.2. Note that plywood of ¼ in. (6 mm) or greater thickness should be considered as having a flame-spread index of 200 or less. Interior wall and ceiling finish materials tested in accordance with NFPA 265 or NFPA 286 as permitted by Section 10.2 (NFPA *101*), and meeting the criteria established in Section 10.2 (NFPA *101*) for those test standards, shall be scored as Class A interior finish materials (flame spread ≤25).

5.4.7 Reserved.

5.4.8 Cell/Sleeping Room Enclosure.

5.4.8.1 The parameter value categories for cell or sleeping room enclosures are divided between those for cells or sleeping rooms that face directly onto a corridor and those for which there is an intervening common space (i.e., day room, group activity space, or other space between the sleeping room and the corridor access).

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

5.4.8.2 Open. The cell or sleeping room enclosure includes an opening in excess of 0.85 ft^2 (0.08 m^2). In Use Condition V, the closure shall be considered "open" if there are any openings exceeding the minimum necessary for door swing and latch, unless either of the following conditions exists:

(1) The affected cells meet the requirements for mechanically assisted smoke control in 5.4.13.3.
(2) There is a closure for such openings operable from inside the cell.

5.4.8.3 Smoke Resistant <1 Hour. An enclosure qualifies in this category if the walls are complete from slab to slab or to a continuous smoke-resistant ceiling, and if doors are complete, but some wall aspect (wall, ceiling, etc.) is less than 1-hour fire-resistance-rated, or the door is not capable of resisting fire for at least 20 minutes.

5.4.8.4 One-Hour Fire-Resistance-Rated or Greater (≥1-Hour Fire Resistance). An enclosure qualifies in this category if it meets all of the requirements of 5.4.8.3, all wall aspects have at least a 1-hour fire resistance rating, and the door is capable of resisting fire for at least 20 minutes.

5.4.9 Separation of Residential Housing Areas from Other Areas. A residential housing area includes sleeping areas and any contiguous day room, group activity space, or other common space.

5.4.9.1 The parameter value categories for separation of residential housing areas are based on the quality of the common walls, separating partitions, and doors between residential housing areas and the rest of the building. The parameter value is based on the residential housing area that has the lowest quality separation. Where a building contains more than one residential housing area, the separation of residential housing areas from each other also is to be considered equivalent to the separation of a residential housing area from some other type of space. In buildings entirely composed of a single residential housing area, the separation is considered to be fire resistant if there is at least a 30 ft (9.1 m) separation from other structures and smoke resistant if there is a separation of less than 30 ft (9.1 m).

5.4.9.2 Classification of internal separations is based on the criteria in 5.4.9.2.1 through 5.4.9.2.3.

5.4.9.2.1 Incomplete. Any separation that does not meet the criteria for 5.4.9.2.2 or 5.4.9.2.3 is incomplete.

5.4.9.2.2 Smoke-Resistant Less Than 1 Hour. An enclosure qualifies in this category if the walls are complete from slab to slab or to a continuous smoke-resistant ceiling, and if doors are complete, but some wall aspect (wall, ceiling, etc.) is less than 1-hour fire-resistance-rated or the door is not capable of resisting fire for at least 20 minutes.

5.4.9.2.3 One-Hour Fire Resistance or Greater (≥1-Hour Fire Resistance). An enclosure qualifies in this category if it meets all of the requirements of 5.4.9.2.2, all wall aspects have at least a 1-hour fire resistance rating, and the door is capable of resisting fire for at least 20 minutes.

5.4.10 Exit System.

5.4.10.1 General. Exit routes are the paths of travel from the residential housing area to outside of any of the types and arrangements described in Chapter 7 (NFPA *101*). The exit route starts at the corridor interface with the cell or common space as indicated by 5.4.8.

5.4.10.2 Multiple Routes. Multiple routes exist where the occupants of any residential housing area have, either from the residential housing area or through access in a corridor adjacent to the residential housing area, a choice of two separate exit routes in accordance with 22.2.4 or 23.2.4 (NFPA *101*) to the outside of the types specified in 22.2.2 and 23.2.2 (NFPA *101*).

5.4.10.3 Deficient. An exit route is deficient if it is usable with reasonable safety but fails to meet any of the applicable criteria in Chapter 7 (NFPA *101*).

5.4.10.4 Direct Room Exits. To be credited with direct room exits, each cell or other sleeping room must have a door that opens to the exterior at grade or to an unenclosed exterior balcony with direct access to an exterior exit or smokeproof enclosure. The locking of such a door must be no more restrictive than that required for the least restrictive exit or smoke barrier door for the use condition involved. In large rooms, the maximum travel distance from any occupiable location to a direct room exit must not exceed 50 ft (15 m). Where the separation of the individual sleeping rooms from other spaces and from each other is smoke resistant, the credit for direct room exits is applicable even if there are no other exit routes from the involved sleeping rooms.

5.4.10.5 No exit shall be considered in this parameter unless the locking arrangement conforms with the criteria for the use condition being applied to the facility.

5.4.11 Exit Access.

5.4.11.1 Exit access is the travel distance from any point in a room to an exit (or to a smoke barrier in an existing building). In addition, any exit arrangement that does not conform with 22.2.6.2 (NFPA *101*) for new buildings or with 23.2.6.2 (NFPA *101*) for existing buildings shall receive a parameter value no higher than the score for egress travel [i.e., >150 ft (>45 m) and ≤200 ft (≤61 m)].

5.4.11.2 The penalty for dead-end access shall be assessed where any corridor affords access in only one direction to a required exit from that corridor. The calculation of the distance to determine the parameter value is the measurement from the centerline of the doorway exiting to the corridor to the doorway of the exit from the corridor or building, whichever is shorter. Exit travel is the distance from the door to the corridor to the point where the building is exited or a stairwell is entered, whichever is shorter. Where the distance to the stairwell is the shorter distance, that distance shall be based on the distance to the door enclosing the stairwell if the stairwell is enclosed, or to the top tread if the stairwell is open.

5.4.12 Vertical Openings.

5.4.12.1 General. These values apply to vertical openings and penetrations, including exit stairways, ramps, and any other vertical exits, pipe shafts, ventilation shafts, duct penetrations, and laundry and incinerator chutes. The charge for vertical openings shall be based on the presence or lack of enclosure and the fire resistance rating of the enclosure, if provided.

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025

5.4.12.2 Open or Incomplete. A vertical opening or penetration shall be classified as an open or incomplete enclosure if it has any of the following characteristics:

(1) It is unenclosed.
(2) It is enclosed but does not have doors.
(3) It is enclosed but has openings other than doorways.
(4) It is enclosed with cloth, paper, or similar materials without any sustained firestopping capabilities.

5.4.12.2.1 If a shaft other than a credited exit route (i.e., credited as one of the multiple routes required in 5.4.10 or in determining travel distance in 5.4.11) is enclosed on all stories but one, and this results in an unprotected opening between that shaft and one, and only one, story, the parameter value assigned to that shaft shall be 0. If a required egress route is contained in that shaft, the parameter value shall be –2.

5.4.12.2.2 If vertical firestopping is incomplete, the vertical opening shall be evaluated using the criteria of 5.4.12.2 and 5.4.12.2.1.

5.4.12.3 Communicating Stories. Communicating stories shall be permitted without enclosure protection between levels, provided they meet the requirements of 22.3.1 or 23.3.1 (NFPA *101*), as appropriate.

5.4.12.4 Open Tiered Cells. The *open or incomplete enclosures* category does not apply to open, multitiered cell blocks in existing buildings classified as single-story buildings in accordance with 5.4.1.

5.4.12.5 Smoke Resistant. A complete enclosure is provided and is capable of resisting the passage of smoke but does not meet the fire resistance requirements of 8.6.5 (NFPA *101*). Unprotected vertical openings in accordance with 22.3.1(2) and 23.3.1.1(2) (NFPA *101*) shall be considered to be smoke resistant.

5.4.12.6 Fire Resistant. A smoke-resistant enclosure is provided that also meets the fire resistance requirements of 8.6.5 (NFPA *101*). Atriums in accordance with 8.6.7 (NFPA *101*) shall be considered to be fire resistant.

5.4.13 Smoke Control. Smoke control definitions are provided in 5.4.13.1 through 5.4.13.4.

5.4.13.1 No Control. Smoke barriers (or horizontal exits) are nonexistent on the story or are not accessible to those confined.

5.4.13.2 Smoke Compartment — Passive. Credit for smoke barriers is given to any facility meeting the requirements of 22.3.7 or 23.3.7 (NFPA *101*), as appropriate.

5.4.13.3 Smoke Compartment — Mechanically Assisted. Mechanically assisted smoke control on a compartment basis must include a smoke barrier (or a horizontal exit) supported by a mechanism of automatic control fans, smoke vent shafts, or a combination thereof to provide a pressure differential that assists in confining smoke to the compartment of origin. Fans involved shall be permitted to be special smoke control fans or special adjustments of the normal building air movement fans.

5.4.13.4 Heat and Smoke Vent System. A heat and smoke vent system is a tested and accepted system that handles smoke in order to maintain the level of smoke above head height in the residential housing area. Methods of judging the acceptability of the system are contained in NFPA 92 and NFPA *101*, A.23.3.1.3. Additional credit for this system shall be given if the operation of the exhaust system is initiated automatically by smoke detection available in the zone.

5.5 Worksheets for Evaluating Fire Safety. The worksheets for evaluating fire safety zones use an eight-step process found in Figure 5.5.

5.5.1 Step 1 — Complete the Cover Sheet Using Worksheet 5.5.1. See Figure 5.5.

5.5.2 Step 2 — Determine the Most Restrictive Use Condition in the Facility Using Worksheet 5.5.2. See Figure 5.5.

5.5.3 Step 3 — Determine Safety Parameter Values Using Worksheet 5.5.3. Select and circle the safety value for each safety parameter that best describes the conditions in the zone. Choose only one value for each of the 13 safety parameters. If two or more values appear to apply, choose the one with the lowest point value.

5.5.4 Step 4 — Compute Individual Safety Evaluations Using Worksheet 5.5.4. The following steps should be taken:

(1) Transfer each of the 13 circled safety parameter values from Worksheet 5.5.3 to every available block in the line with the corresponding parameter title in Worksheet 5.5.4. Where the block is marked "÷ 2 =," enter one-half the value from Worksheet 5.5.3.
(2) Add each of the four columns, keeping in mind that any negative numbers need to be deducted.
(3) Transfer the resulting values for S_1, S_2, S_3, and S_4 to the corresponding blocks in Worksheet 5.5.6.

5.5.5 Step 5 — Determine Mandatory Safety Requirements Using Worksheet 5.5.5A, 5.5.5B, or 5.5.5C as Appropriate. The following steps should be taken:

(1) Select the proper row in Worksheet 5.5.5A, Worksheet 5.5.5B, or Worksheet 5.5.5C. For high-rise buildings, use Worksheet 5.5.5B. Circle the appropriate values.
(2) Transfer the circled values from Worksheet 5.5.5A, Worksheet 5.5.5B, or Worksheet 5.5.5C to the blocks marked S_a, S_b, S_c, and S_d in Worksheet 5.5.6.

5.5.6 Step 6 — Compute the Fire Safety Equivalency Evaluation Using Worksheet 5.5.6. The following steps should be taken:

(1) Perform the subtractions indicated in Worksheet 5.5.6. Enter the differences in the appropriate answer blocks.
(2) For each row, check "yes" if the value in the answer block is zero (0) or greater. Check "no" if the value in the answer block is a negative number.

5.5.7 Step 7 — Evaluate Other Considerations Not Previously Addressed Using Worksheet 5.5.7. The equivalency covered by Worksheets 5.5.3 through 5.5.6 includes the majority of the considerations covered by the *Life Safety Code*. Some considerations are not evaluated by this method and must be considered separately. These additional considerations are covered in Worksheet 5.5.7, the Facility Fire Safety Requirements Worksheet. Complete one copy of this separate worksheet for each facility.

5.5.8 Step 8 — Determine Equivalency Conclusion. Conclude whether the level of life safety is at least equivalent to that prescribed by the *Life Safety Code* using Worksheet 5.5.8, Conclusions. Worksheet 5.5.8 combines the zone fire safety equivalency evaluation of Worksheet 5.5.6 and the additional considerations of Worksheet 5.5.7.

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 5.5.1 COVER SHEET

Fire Safety Evaluation Worksheet for Detention and Correctional Occupancies

Building Identification _____

Evaluator _____ Date _____

Complete one worksheet for each building evaluated.

WORKSHEET 5.5.2 USE CONDITION

_____ Use Condition II — Zoned Egress

_____ Use Condition III — Zoned Impeded Egress

_____ Use Condition IV — Impeded Egress

_____ Use Condition V — Contained

NOTE: If Use Condition III or Use Condition IV is involved, staff location, remote release locks, or fire detection, or any combination of these, must be sufficient to ensure the prompt release required by the use condition checked.

WORKSHEET 5.5.3 SAFETY PARAMETER VALUES

Safety Parameters	Parameter Values							
1. Construction	V(000)	V(111)	IV(2HH)	III(200)	III(211)	II(000)	II(111)	II(222) or I (ANY)
1 story	−2	0	0	−2	0	0	2	2
2 story	−2	0	0	−2	0	−2	2	2
3 story	−8(−2)[a]	−2(0)[a]	−2(0)[a](2)[j]	−8(−2)[a]	0	−5(−2)[a]	2	2
≥4 stories	−10(−2)[a]	−4(0)[a]	−4(0)[a](2)[j]	−10(−2)[a]	−2(0)[a]	−8(−2)[a]	0	2

2. Hazardous Areas	Within Res. Housing Area		Outside Res. Housing Area		None or No Deficiencies
	Double Deficiency	Single Deficiency	Double Deficiency	Single Deficiency	
	−7	−4	−4(−7)[b]	0	0

3. Fire Alarm	No Alarm	W/O F.D. Notification	W/F.D. Notification	
			W/O Man. Alarm	W/Man. Alarm
	−1	0	1	2

4. Smoke Detection	None	Residential Housing Area			Total Bldg.
		Partial Coverage		Full Coverage	
		Corr. + Comm. Spa. + Lrg. Sleeping Rms.	All Sleeping Rms.		
	−4(−1)[a]	0	2	4	5

5. Automatic Sprinklers	None	Residential Housing Areas	Entire Building
	0	8	10

6. Interior Finish (Corrs. and Egress)	Class C	Class B	Class A
	−3	−1	0

7. Interior Finish (Other Areas)	Class C	Class B	Class A
	−2	−1	0

8. Cell/Sleeping Room Enclosure	Cells (Rooms) Face on Corridor (Each Cell is a Separate Residential Housing Area)	Intervening Common Space Within Resid. Housing Area		
		Open	Smoke Resistant <1 Hour	≥1-Hour Fire-Resistance-Rated
	0	−3(−5)[c] (0)[d]	0(−2)[c]	2(0)[c]

(Worksheet 5.5.3 continues.)

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 1 of 4)

Δ FIGURE 5.5 Worksheets for Evaluating Fire Safety in Detention and Correctional Occupancies.

Documents 2025 Edition Document Sharing Hub

Full document details: NFPA 101A 2025

Worksheet 5.5.3 *Continued*

9. Separation of Resid. Housing Areas from Other Areas	Incomplete		Smoke Resistant <1 Hour	≥1-Hour Fire-Resistance-Rated
	Parameter 5 Value <10	Parameter 5 Value = 10		
	−6	2	2(4)[h]	4(2)[b]

10. Exit System	<2 Routes	Multiple Routes		Direct Room Exits
		Deficient	No Deficiencies	
	−6	−2	0	3

11. Exit Access	Dead Ends		No Dead Ends >50 ft and Travel Is:[i]			
	>100 ft	>50 ft[i]	>200 ft	≤200 ft	>150 ft	≤150 ft
	−2(0)[g]	−1(0)[g]	−2(0)[g]	−1(0)[g]		0

12. Vertical Openings	Open or Incomplete Enclosures			Enclosed[e]	
	Thru ≥4 Floors	2–3 Floors	1 Floor	Smoke Resistant	Fire Resistant
	−10(0)[f]	−7(0)[f]	−2(0)[f]	0	2

13. Smoke Control	No Control	Smoke Compartments		Heat + Smoke Vent System
		Passive	Mechanically Assisted	
	−2	2	3	8

[a] Use ( ) if Parameter 5 is 10.
[b] Use ( ) if Parameter 1 is based on II(000), III(200), or V(000) construction and Parameter 5 is 0.
[c] Use ( ) for Use Condition V, new construction, where Parameter 5 is 0.
[d] Use ( ):
– For Use Condition II.
– For Use Condition III if intervening space is ≤50 ft.
– For Use Condition IV if Parameter 5 is ≥8 and intervening space is <50 ft.

For existing buildings if either:
– Parameter 13 = 8, or
– Parameter 5 is ≥8 and Parameter 4 is ≥0.

For SI units, 1 ft = 0.3048 m; 1 ft² = 0.092 m².

[e] Use 0 in 1-story buildings.
[f] Use ( ) if Parameter 13 is 8.
[g] Use ( ) if Parameter 10 is −6.
[h] Use ( ) for Use Conditions II, III, and IV, new construction, if cells are facing access corridor.
[i] Use 20 ft for Use Condition V.
[j] Use (2) if Parameter 5 is 10, Type IV(2HH) construction complies with 4.5.6.1.1 of NFPA 220, and the zone or floor is located no higher than the 4th story.

WORKSHEET 5.5.4 INDIVIDUAL SAFETY EVALUATIONS

Safety Parameters	Fire Control Provided (S_1)	Egress Provided (S_2)	Refuge Provided (S_3)	General Fire Safety Provided (S_4)
1. Construction				
2. Hazardous Areas		÷ 2 =		
3. Fire Alarm	÷ 2 =			
4. Smoke Detection	÷ 2 =			
5. Automatic Sprinklers		÷ 2 =	÷ 2 =	
6. Interior Finish (Corrs. and Egress)				
7. Interior Finish (Other Areas)	÷ 2 =			
8. Cell/Sleeping Room Enclosure				
9. Separation of Residential Housing Areas from Other Areas		÷ 2 =		
10. Exit System			÷ 2 =	
11. Exit Access				
12. Vertical Openings	÷ 2 =			
13. Smoke Control				
Total	S_1 =	S_2 =	S_3 =	S_4 =

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 2 of 4)

Δ FIGURE 5.5 ***Continued***

AVA Documents Document Sharing Hub
Full document details: NFPA 101A 2025

WORKSHEET 5.5.5A MANDATORY SAFETY REQUIREMENTS FOR PARTIALLY SPRINKLERED OR NONSPRINKLERED EXISTING BUILDINGS OTHER THAN HIGH RISE

Use Condition	Stories in Height	Fire Control (S_a)	Egress (S_b)	Refuge (S_c)	General (S_d)
II + III	1 Story	0	4	2	1
	2 Stories	3	6	6	5
	≥3 Stories	5	6	8	7
IV	1 Story	2	8	2	5
	2 Stories	5	10	6	9
	≥3 Stories	7	10	8	11
V	1 Story	6	9	6	9
	2 Stories	9	11	10	13
	≥3 Stories	9	11	10	13

WORKSHEET TABLE 5.5.5B MANDATORY SAFETY REQUIREMENTS FOR NEW BUILDINGS, TOTALLY SPRINKLERED BUILDINGS, AND HIGH-RISE BUILDINGS

Use Condition	Stories in Height	Fire Control (S_a)		Egress (S_b)		Refuge (S_c)		General (S_d)	
		New	Exist.	New	Exist.	New	Exist.	New	Exist.
II, III, IV	1 and 2 Stories	2	2	4	2	–1	–1	2	0
	≥3 Stories	7	2	6	2	5	–1	8	0
V	1 and 2 Stories	10	10	7	6	7	7	9	8
	≥3 Stories	15	10	9	6	13	7	15	8

WORKSHEET 5.5.5C MANDATORY SAFETY REQUIREMENTS — MODERNIZATIONS OR RENOVATIONS IN NONSPRINKLERED EXISTING BUILDINGS OTHER THAN HIGH RISE

Use Condition	Stories in Height	Fire Control (S_a)	Egress (S_b)	Refuge (S_c)	General (S_d)
II + III	1 Story	4	6	6	6
	2 Stories	5	8	8	8
	≥3 Stories	7	8	10	10
IV	1 Story	6	10	6	10
	2 Stories	7	12	8	12
	≥3 Stories	9	12	10	14
V	1 Story	8	10	8	12
	2 Stories	9	12	10	14
	≥3 Stories	9	12	10	14

(For use with NFPA 101A-2025/NFPA *101*-2024) (p. 3 of 4)

Δ **FIGURE 5.5** ***Continued***

Documents 2025 Edition Document Sharing Hub
Full document details: NFPA 101A 2025