

# 1

General



# 1.1 Introduction

*Appendix material, which appears in shaded boxes at the bottom of the page, is advisory only.*

## 1 General Considerations

### 1.1 Applicability

**1.1.1** The provisions of this chapter shall apply to all health care facility projects.

**1.1.2** This document covers health care facilities common to communities in the United States.

**1.1.3** Facilities with unique services will require special consideration. However, sections herein may be applicable for parts of any facility and may be used where appropriate.

### 1.2 About This Document

These *Guidelines for Design and Construction of Health Care Facilities* (Guidelines) are developed through a consensus process similar to one approved by the American National Standards Institute. This process brings together the members of the Health Guidelines Revision Committee (HGRC) of the Facility Guidelines Institute Inc. (FGI). The HGRC is a balanced group of volunteers representing varied viewpoints and interests in health care facility planning, design, and construction. It considers proposals for change received from the public; achieves consensus on health care facility planning, design, and construction issues; and develops proposed revisions to the previous edition of these Guidelines. The proposed revisions are then published for public comment and revised by the HGRC, as needed, in response to those comments. The product of this revision process is then compiled and published as a new edition of the Guidelines by the American Institute of Architects (AIA).

#### 1.2.1 Uses of This Document

These Guidelines are made available for a wide variety of public and private uses. These include reference in laws, codes, rules, and regulations, as well as use in private self-regulation and standardization of space and equipment requirements and the promotion of safe practices and methods in planning, design, and construction for various types of health care facilities.

**1.2.1.1** Regulatory use. Use of these Guidelines or any portion thereof 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.

- (1) Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument.
- (2) In order to assist FGI in following the uses made of this document, adopting authorities are requested to notify FGI when they adopt these Guidelines or use them in any other regulatory fashion.

#### 1.2.2 Disclaimers

**1.2.2.1** While FGI 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 or advice contained in these Guidelines.

**1.2.2.2** FGI endeavors to develop performance-oriented minimum requirements as suggested standards for American health care facility design, without prescribing design solutions. FGI disclaims liability for any personal injury or property or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document. FGI also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

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**1.2.2.4** Anyone using this document should rely on his or her own independent judgment or, as appropriate,

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seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstance.

**1.2.2.5** Neither FGI nor the AIA has any power, nor do they undertake, to police or enforce compliance with the contents of this document. Nor do FGI or the AIA list, certify, test, or inspect designs or construction for compliance with this document.

**1.2.2.6** Any certification or other statement of compliance with the requirements of this document shall not be attributable to FGI or the AIA and is solely the responsibility of the certifier or maker of the statement.

### 1.2.3 Copyright

The content of this document, in both book and CD form, is copyrighted by the Facility Guidelines Institute, Inc. (FGI), and its compilation is copyrighted by the American Institute of Architects (AIA). By making this document available for use and adoption by public authorities and private users, FGI and the AIA do not waive any rights in copyright to this document.

## 1.3 How to Use These Guidelines

### 1.3.1 Basic Organization

**1.3.1.1** Main body. The main body of this document comprises four parts:

- (1) Part 1 contains chapters that address considerations applicable to all health care facilities, except as noted or modified in specific facility-type chapters in the remaining parts.
- (2) Part 2 addresses inpatient care, with chapters devoted to general hospitals, small primary care hospitals, rehabilitation facilities, and psychiatric hospitals.
- (3) Part 3 addresses ambulatory care, including chapters devoted to same day outpatient facilities and adult day care facilities.
- (4) Part 4 addresses other health care venues, including long-term, residential, and other care settings. Chapters are devoted to nursing facilities; hospice care; assisted living; and mobile, transportable, and relocatable units.

**1.3.1.2** Appendix. An appendix is associated with each chapter in the main body of the text.

- (1) An asterisk (\*) preceding a paragraph number indicates that explanatory or educational material can be found in an appendix item located at the bottom of the page.
- (2) Appendix items are identified by the letter “A” preceding the paragraph number in the main text to which they relate.

### 1.3.1.3 Front and back matter

- (1) Informative introductory sections, including a preface, a summary of major additions and revisions to the previous edition, acknowledgments, and the table of contents precede the main body of the document.
- (2) A glossary of terms and a detailed index follow the main body of the text, together with forms for use in submitting requests for formal interpretations and proposals to change these Guidelines. For Guidelines 2006, a “where to find it” matrix of relocated information has been added to help readers familiar with previous editions of these Guidelines find information that has been moved to a different location in the reorganized document.

### 1.3.2 Minimum Standards for New Facilities

Each chapter in this document contains information intended as minimum standards for designing and constructing new health care facility projects.

**1.3.2.1** Standards set forth in these Guidelines shall be considered as minimum.

**1.3.2.2** Insofar as practical, these standards relate to desired performance or results or both.

### 1.3.3 Code Language

For brevity and convenience, these standards are presented in “code language.” Use of words such as shall indicates mandatory language only where the text is applied by an adopting authority having jurisdiction (AHJ). However, when adopted by an AHJ, design and construction shall conform to the requirements of these Guidelines.

#### 1.3.4 Other Codes

These Guidelines address certain details of construction and engineering that are important for health care facility design and construction, but they are not intended to be all-inclusive, nor shall they be used to the exclusion of other guidance. When applicable, other details of construction and engineering that are part of good design practice and building regulation shall be consulted in addition to these Guidelines.

**1.3.4.1** Local codes. For aspects of design and construction not included in these Guidelines, local governing building codes shall apply.

**1.3.4.2** Model codes. Where there is no local governing building code, the prevailing model code used within the relevant geographic area is hereby specified for all requirements not otherwise specified in these Guidelines.

**1.3.4.3** Life Safety Code. The Centers for Medicare and Medicaid Services, which is responsible for Medicare and Medicaid reimbursement, has adopted the National Fire Protection Association Life Safety Code, NFPA 101. Facilities participating in Medicare and Medicaid programs shall comply with that code.

**1.3.4.4** AHJ verification. Some projects may be subject to the regulations of several different jurisdictions, including local, state, and federal authorities. While coordination efforts have been made, these Guidelines may not always be consistent with all applicable codes, rules, and regulations. Therefore, it is essential that individual project requirements be verified as appropriate with all authorities having jurisdiction. Should requirements be conflicting or contradictory, the authority having primary responsibility for resolution should be consulted.

#### 1.3.5 Deviations

These Guidelines are not intended to restrict innovations and improvements in design or construction techniques. Accordingly, authorities adopting these standards as codes may approve plans and specifications that contain deviations if it is determined the applicable intent or objective has been met. Final implementation of these Guidelines may be subject to requirements of the authority having jurisdiction.

## 2 Interpretations of Requirements

Although the ultimate interpretation of information contained in this document is the responsibility of the adopting authority having jurisdiction, where applicable, the value of advisory commentary has been recognized.

### 2.1 Purpose of Interpretation

**2.1.1.** Interpretations of the language in the document are intended to provide clarification; a summary of any background and previous discussion, if appropriate; and a rationale for the interpretation rendered.

**2.1.2.** It is understood that any such interpretation is advisory in nature, intended to assist the user and adopting authority having jurisdiction to maximize the value of these Guidelines.

### 2.2 Requesting an Interpretation

**2.2.1.** The interpretation of a specific standard contained in these Guidelines may be requested from the Facility Guidelines Institute (FGI) with a detailed request.

**2.2.2.** Requests for interpretation should be submitted to FGI following the directions at the back of the book or by including the information requested in the directions in an e-mail message to [interpretations@fgi-guidelines.org](mailto:interpretations@fgi-guidelines.org).

## 3 Renovation

### 3.1 Compliance Requirements

Where renovation or replacement work is done within an existing facility, all new work or additions or both shall comply, insofar as practical, both with applicable sections of these Guidelines and with appropriate parts of NFPA 101, covering New Health Care Occupancies.

#### 3.1.1 Exceptions

Where major structural elements make total compliance impractical or impossible, exceptions should be considered.

**3.1.1.1** This recommendation does not guarantee that an exception will be granted, but does attempt to minimize restrictions on those improvements where total

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compliance would not substantially improve safety but would create an unreasonable hardship.

**3.1.1.2** These standards should not be construed as prohibiting a single phase of improvement. (For example, a facility may plan to replace a flammable ceiling with noncombustible material but lack funds to do other corrective work.) However, they are not intended as encouragement to ignore deficiencies when resources are available to correct life-threatening problems. (See Section 1.1-7.3.)

### 3.1.2 Temporary Waivers

When parts of an existing facility essential to continued overall facility operation cannot comply with particular standards, those standards may be temporarily waived if patient care and safety are not jeopardized.

### 3.2 Affected Areas

In renovation projects and additions to existing facilities, only that portion of the total facility affected by the project shall comply with applicable sections of these Guidelines and with appropriate parts of NFPA 101 covering New Health Care Occupancies.

### 3.3 Unaffected Areas

Those existing portions of the facility that are not included in the renovation but that are essential to the functioning of the complete facility, as well as existing building areas that receive less than substantial amounts of new work, shall, at a minimum, comply with the relevant section of NFPA 101 for Existing Health Care Occupancies

### 3.4 Functional Requirements and Safety

When construction is complete, the facility shall satisfy functional requirements for the appropriate classification (general hospital, skilled nursing facility, etc.), in an environment that will provide acceptable care and safety to all occupants.

### 3.5 Conversion

When a building is converted from one occupancy to another, it shall comply with the new occupancy requirements.

**3.5.1** For purposes of life safety, conversion from a hospital to a nursing facility or vice versa is not considered a change in occupancy.

**3.5.2** Conversion to other appropriate use or replacement should be considered when cost prohibits compliance with acceptable standards.

### 3.6 Undiminished Safety

Renovations, including new additions, shall not diminish the safety level that existed prior to the start of the work; however, safety in excess of that required for new facilities is not required.

### 3.7 Long-Range Improvement

**3.7.1** Nothing in these Guidelines shall be construed as restrictive to a facility that chooses to do work or alterations as part of a phased long-range safety improvement plan.

**3.7.2** All hazards to life and safety and all areas of non-compliance with applicable codes and regulations shall be corrected as soon as possible in accordance with a plan of correction.

## 4 Design Standards for the Disabled

### 4.1 Federal Standards

#### 4.1.1 Regulations

**4.1.1.1** The Americans with Disabilities Act (ADA), which became law in 1990, extends comprehensive civil rights protection to individuals with disabilities. Under Titles II and III of the ADA, public, private, and public service hospitals and other health care facilities are required to comply with the Accessibility Guidelines for Buildings and Facilities (ADAAG) for alterations and new construction.

**4.1.1.2** The Uniform Federal Accessibility Standards (UFAS) also provides criteria for the disabled.

#### 4.1.2 Implementation

Implementation of UFAS and ADAAG for federal facilities is handled in the following ways:

**4.1.2.1** Compliance with UFAS

**4.1.2.2** Compliance with ADAAG

**4.1.2.3** Compliance with a combination of UFAS and ADAAG using the most stringent criteria

#### 4.1.3 Applicability

Individual federal agencies will provide direction on applicable criteria to be used for the design of federal facilities.

### 4.2 State and Local Standards

**4.2.1** Many state and local jurisdictions have adopted American National Standards Institute (ANSI) A117.1, “American National Standard for Accessible and Usable Buildings and Facilities,” which is also available for use in providing quality design for the disabled.

**4.2.2** State and local standards for accessibility and usability may be more stringent than ADA, UFAS, or ANSI A117.1. Designers and owners, therefore, must assume responsibility for verification of all applicable requirements.

### 4.3 Special Needs in Health Care Facilities

The users health care facilities often have very different accessibility needs than the typical adult individual with disabilities addressed by the model standards and guidelines mentioned above. Hospital patients, and especially nursing facility residents, due to their stature, reach, and strength characteristics, typically require the assistance of caregivers during transfer maneuvers. Many prescriptive requirements of model accessibility standards place both older persons and caregivers at greater risk of injury than do facilities that would be considered noncompliant. Thus, flexibility may be permitted for the use of assistive configurations that provide considerations for transfer assistance.

## 5 Provisions for Disasters

### 5.1 Needs Assessment

In locations where there is recognized potential for hurricanes, tornadoes, flooding, earthquake, or other regional disasters, planning and design shall consider the need to protect the life safety of all health care facility occupants and the potential need for continuing services following such a disaster.

#### 5.1.1 Facility Assessment

Owners of existing facilities should undertake an assessment of their facility with respect to its ability to withstand the effects of regional natural disasters. The assessment should consider performance of structural

and critical nonstructural building systems and the likelihood of loss of externally supplied power, gas, water, and communications under such conditions.

#### 5.1.2 Facility Planning

Facility master planning should consider mitigation measures required to address conditions that may be hazardous to patients and conditions that may compromise the ability of the facility to fulfill its planned post-emergency medical response.

#### 5.1.3 Seismic Considerations

Particular attention should be paid to seismic considerations in areas where the seismic design classification of a building would fall into Seismic Design Categories C, D, E, or F as described in American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 7-05, “Minimum Design Loads for Buildings and Other Structures.” (See Section 1.1-7.5.1.)

### 5.2 NBC Hazards Control

When consistent with their functional program and disaster planning, acute care facilities with emergency services can serve as receiving, triage, and initial treatment centers in the event of nuclear, biological, or chemical (NBC) exposure. These facilities shall designate specific area(s) for these functions.

**5.2.1** Facilities may designate an outdoor parking lot adjacent to the emergency department to serve as a primary decontamination area, which should include appropriate plumbing fixtures (e.g., hot and cold water) and drainage.

**5.2.2** Utilization of screens and tents may be needed.

**5.2.3** Other contingencies may require airborne infection isolation, application and removal of therapeutic chemical substances, and temporary container storage of contaminated materials.

**5.2.4** Hand-washing and shower capabilities will usually be of paramount importance in biohazard control efforts.

### 5.3 Wind- and Earthquake-Resistant Design for New Buildings

#### 5.3.1 Regulations

**5.3.1.1.** ASCE/SEI 7. The seismic provisions in ASCE/SEI 7 are based on the National Earthquake Hazards

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Reduction Program (NEHRP) provisions developed by the Building Seismic Safety Council (BSSC) for the Federal Emergency Management Agency (FEMA). Facilities shall be designed to meet the requirements of ASCE/SEI 7-05 or the building codes specified in Section 1.1-7.5.1, provided their requirements are substantially equivalent to ASCE/SEI 7.

**5.3.1.2.** Other seismic standards. The following seismic standards are essentially equivalent to the ASCE/SEI 7 provisions:

- (1) NEHRP Recommended Provisions for Seismic Regulations for New Buildings
- (2) International Building Code

**5.3.1.3.** Executive Order 12699, dated January 5, 1990, specified the use of the maps in the most recent edition of ANSI A58 for seismic safety of federal and federally assisted or regulated new building construction.

### 5.3.2 Design for Continued Operation

For those facilities that must remain operational in the aftermath of a disaster, special design is required to protect systems and essential building services such as power, water, medical gas systems, and, in certain areas, air conditioning. In addition, special consideration must be given to the likelihood of temporary loss of externally supplied power, gas, water, and communications

### 5.3.3 Seismic Construction Inspection

The owner shall provide special inspection during construction of seismic systems described in Section 11A.1.3 and testing described in Section 11A.2 of ASCE/SEI 7-05.

### 5.3.4 Roof Considerations

**5.3.4.1** Roof coverings and mechanical equipment shall be securely fastened or ballasted to the supporting roof construction and shall provide weather protection for the building at the roof.

**5.3.4.2** Roof covering shall be applied on clean and dry decks in accordance with the manufacturer's instructions, these Guidelines, and related references.

**5.3.4.3** In addition to the wind force design and construction requirements specified, particular attention

shall be given to roofing, entryways, glazing, and flashing design to minimize uplift, impact damage, and other damage that could seriously impair functioning of the building.

**5.3.4.4** If ballast is used it shall be designed so as not to become a projectile.

## 5.4 Flood Protection

Flood Protection, Executive Order No. 11988, was issued to minimize financial loss from flood damage to facilities constructed with federal assistance. In accordance with that order:

**5.4.1** Possible flood effects shall be considered when selecting and developing the site.

**5.4.2** Insofar as possible, new facilities shall not be located on designated floodplains.

**5.4.3** Where locating a facility on a floodplain is unavoidable, consult the Corps of Engineers regional office for the latest applicable regulations pertaining to flood insurance and protection measures that may be required.

## 5.5 Emergency Supply Storage

### 5.5.1 Required Supplies

Should normal operations be disrupted, the facility shall provide adequate storage capacity for, or a functional program contingency plan to obtain, the following supplies:

**5.5.1.1** Food

**5.5.1.2** Sterile supplies

**5.5.1.3** Pharmacy supplies

**5.5.1.4** Linen

**5.5.1.5** Water for sanitation

### 5.5.2 Storage Capacity

Such storage capacity or plans shall be sufficient for at least four continuous days of operation.

## 6 National Standards for the Protection of Certain Health Information

### 6.1 HIPAA

The Health Insurance Portability and Accountability Act (HIPAA) became law in 1996. HIPAA consists of three major parts: the Privacy Rule, Transaction and Code Sets, and the Security Rule.

**6.1.1** The U.S. Department of Health and Human Services (HHS) issued the Privacy Rule to implement the requirement of HIPAA. Within HHS, the Office of Civil Rights (OCR) has responsibility for enforcement of the HIPAA regulations. HHS may provide direction and clarification on the Privacy Rule and Security Rule.

**6.1.2** HIPAA does not preempt or override laws that grant individuals even greater privacy protection. Additionally, covered entities are free to retain or adopt more protective policies or practices.

**6.1.3** HIPAA provides for civil and even criminal penalties for violations.

**6.1.4** Ultimately, designers and owners must assume responsibility in developing policies and procedures for verification of all applicable requirements that appropriately limit access to personal health information without sacrificing the quality of health care.

## 7 Codes and Standards

### 7.1 Safe Environment

Every health care facility shall provide and maintain a safe environment for patients, personnel, and the public.

### 7.2 Code Compliance

In the absence of state or local requirements, the project shall comply with approved nationally recognized building codes except as modified in the latest edition of NFPA 101 and/or herein.

**7.2.1** References made in these Guidelines to appropriate model codes and standards do not, generally, duplicate wording of the referenced codes.

**7.2.2** National Fire Protection Association (NFPA) standards, especially NFPA 101, are the basic codes of

reference; but other codes and/or standards may be included as part of these Guidelines (see Section 1.1-7.5.1).

**7.2.3** Referenced code material is contained in the issue current at the time of this publication.

**7.2.4** The latest revision of code material is usually a clarification of intent and/or general improvement in safety concepts and may be used as an explanatory document for earlier code editions.

**7.2.5** Questions of applicability should be addressed as the need occurs. The actual version of a code adopted by a jurisdiction may be different. Confirm the version adopted in a specific location with the authority having jurisdiction.

### 7.3 Equivalency

#### 7.3.1 Performance Standards

Insofar as practical, the minimum standards in these Guidelines have been established to obtain a desired performance result.

#### 7.3.2 Prescriptive Standards

Prescriptive limitations (such as exact minimum dimensions or quantities), when given, describe a condition that is commonly recognized as a practical standard for normal operation. For example, reference to a room or area by the patient, equipment, or staff activity that identifies its use avoids the need for complex descriptions of procedures for appropriate functional planning.

#### 7.3.3 Technical Standards

**7.3.3.1** NFPA document 101A is a technical standard for evaluating equivalency to certain requirements of NFPA 101, the Life Safety Code.

**7.3.3.2** The Fire Safety Evaluation System (FSES) has become widely recognized as a method for establishing a safety level equivalent to that of the Life Safety Code. It may be useful for evaluating existing facilities that will be affected by renovation. For purposes of these Guidelines, the FSES is not intended to be used for new construction.

#### 7.3.4 Equivalency

While these Guidelines are adopted as a regulatory standard by many jurisdictions, it is the intent of the document to permit and promote equivalency concepts.

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**7.3.4.1** When contemplating equivalency allowances, the authority having jurisdiction may use a variety of expert sources to make equivalency findings and may document the reasons for approval or denial of equivalency to the requester.

**7.3.4.2** Alternate methods, procedures, design criteria, and functional variations from these Guidelines, because of extraordinary circumstances, new programs, or unusual conditions, may be approved by the authority having jurisdiction when the facility can effectively demonstrate that the intent of the Guidelines is met and that the variation does not reduce the safety or operational effectiveness of the facility below that required by the exact language of the Guidelines.

**7.3.4.3** In all cases where specific limits are described, equivalent solutions will be acceptable if the authority having jurisdiction approves them as meeting the intent of these standards.

**7.3.4.4** Nothing in this document shall be construed as restricting innovations that provide an equivalent level of performance with these standards in a manner other than that which is prescribed by this document, provided that no other safety element or system is compromised in order to establish equivalency.

### 7.4 English/Metric Measurements

**7.4.1** Where measurements are a part of this document, English units are given as the basic standards, with equivalent metric units in parentheses.

**7.4.2** Either method shall be consistently used throughout a given design.

### 7.5 Referenced Codes and Standards

Codes and standards that have been referenced in whole or in part in the various sections of this document are listed in Section 1.1-7.5.1. Names and addresses of the originators are included in Section 1.1-7.5.2 for information.

#### 7.5.1 Publication References

Users of these Guidelines are encouraged to use these publications for further information as may be necessary to achieve the final product. The issues available at the time of publication are cited. Later issues will

normally be acceptable where requirements for function and safety are not reduced; however, editions of different dates may have portions renumbered or retitled. Care must be taken to ensure that appropriate sections are used.

Access Board (an independent federal agency)  
(<http://www.access-board.gov/ufas/ufas-html/ufas.htm>).  
*Uniform Federal Accessibility Standard (UFAS).*

American Conference of Governmental Industrial Hygienists ([www.acgih.org](http://www.acgih.org)).  
*Industrial Ventilation: A Manual of Recommended Practice*, 25th ed.

American Society of Civil Engineers  
(<http://www.pubs.asce.org>).  
*ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures.*

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)  
(<http://www.ashrae.org>).  
*ASHRAE Handbook of Fundamentals.*  
*2003 ASHRAE Handbook—HVAC Applications.*  
*Humidity Control Design Guide for Commercial and Institutional Buildings.*  
Standard 52.1-1992, *Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter.*  
Standard 52.2, *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.*  
Standard 55-2004, *Thermal Environmental Conditions for Human Occupancy.*  
Standard 62-1999, *Ventilation for Acceptable Indoor Air Quality.*  
Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings.*  
Standard 154-2003, *Ventilation for Commercial Cooking Operations.*

American Society of Mechanical Engineers (ASME)  
(<http://www.asme.org/cns/departments/Safety/Public/A17/> or [www.ansi.org](http://www.ansi.org)).  
*ANSI/ASME A17.1, Safety Code for Elevators and Escalators*, 2000.

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C1071-05, *Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material)*, 2005
- American Water Works Association (AWWA) ([www.awwa.org](http://www.awwa.org)).  
*Recommended Practice for Backflow Prevention and Cross-connection Control*, 2004.
- Americans with Disabilities Act. U.S. Department of Justice ADA Information Line, 1-800-514-0301 or 1-800-514-0383 (TDD). (<http://www.usdoj.gov/disabilities.htm>).
- Association for the Advancement of Medical Instrumentation ([www.aami.org](http://www.aami.org)).  
ANSI/CDV-1 RD62, 2001, *Water Treatment Equipment for Hemodialysis Applications*.
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*NEHRP (National Earthquake Hazards Reduction Program) Recommended Provisions for Seismic Regulations for New Buildings*, 2000 ed.
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“Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005.” *Morbidity and Mortality Weekly Report (MMWR)* 2005:54 (No. RR-17). (<http://www.cdc.gov/mmwr/PDF/rr/rr5417.pdf>)  
“Guidelines for Preventing Health Care-Associated Pneumonia, 2003.” *Morbidity and Mortality Weekly Report (MMWR)* 53 (RR03); 1-36. ([http://www.cdc.gov/ncidod/dhqp/gl\\_hcpneumonia.html](http://www.cdc.gov/ncidod/dhqp/gl_hcpneumonia.html))
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- Publication #E-10, *Maintenance of Medical Gas and Vacuum Systems in Health-Care Facilities*, 2001.
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MIL STD 282, *Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance-Test Methods*. (<http://assist.daps.dla.mil> —Click “Quick Search” and enter “MIL-STD-282” as the document ID.)
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*FDA Food Code*, 2001. (<http://www.cfsan.fda.gov/~dms/fc05-toc.html>).
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*I-B-R Boiler Ratings Procedural Guide*, 2002.  
*I-B-R Testing and Rating Standards for Baseboard Radiation*, 1990.  
*I-B-R and Rating Standards for Finned Tube (Commercial) Radiation*, 1990.
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ANSI/IESNA RP-28-01, *Lighting and the Visual Environment for Senior Living*.  
ANSI/IESNA Publication RP-29-06, *Lighting for Hospitals and Health Care Facilities*.
- Industrial Safety Equipment Association (ISEA) ([www.ansi.org](http://www.ansi.org)).  
ANSI-Z-358.1-2004, *American National Standard for Emergency Eyewash and Shower Equipment*.
- National Association of Psychiatric Health Systems ([www.NAPHS.org](http://www.NAPHS.org)).  
“Guidelines for the Built Environment of Behavioral Health Facilities” (<http://www.naphs.org/Teleconference/safetystandards.html>)
- National Council on Radiation Protection and Measurements (NCRP). (<http://www.ncrp.com/ncrprpts.html>)  
Report #102, *Medical X-Ray, Electron Beam and Gamma-Ray Protection for Energies Up to 50 MeV (Equipment Design, Performance and Use)*, 1989.

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Report # 144, *Radiation Protection Design for Particle Accelerator Facilities*, 2003.

Report # 147, *Structural Shielding Design for Medical Use of X Ray Imaging Facilities*, 2004.

National Fire Protection Association  
(<http://www.nfpa.org/categoryList.asp>).

NFPA 13, *Installation of Sprinkler Systems*, 2002.

NFPA 20, *Standard for the Installation of Stationary Fire Pumps for Fire Protection*, 2003.

NFPA 70, *National Electrical Code*, 2005.

NFPA 72, *National Fire Alarm Code*, 2002

NFPA 80, *Standard for Fire Doors, Fire Windows*, 1999.

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment*, 2004.

NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*, 2002.

NFPA 90B, *Standard for the Installation of War Air Heating and Air-Conditioning Systems*, 20002.

NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, 2004.

NFPA 99, *Standard for Health Care Facilities*, 2005.

NFPA 101, *Life Safety Code*, 2003.

NFPA 110, *Standard for Emergency and Standby Power Systems*, 2005.

NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, 2000.

NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*, 2000.

NFPA 258, *Standard Research Test Method of Determining Smoke Generation of Solid Materials*, 2001.

NFPA 418, *Standard for Heliports*, 2001.

NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*, 2004.

NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*, 2003.

Nuclear Regulatory Commission (NRC)  
(<http://www.nrc.gov/reading-rm/doc-collections/cfr/>).

Code of Federal Regulations (CFR) Title 10—  
Energy, Chapter 1—Nuclear Regulatory  
Commission Part 20 (10 CFR 20), Standards  
for Protection Against Radiation.

Part 35 (10 CFR 35), Medical Use of Byproduct  
Material.

Occupational Safety and Health Administration, U.S.  
Department of Labor ([www.osha.org](http://www.osha.org)).

Code of Federal Regulations (CFR) Title 29—  
OSHA Regulations. Part 1910 (29 CFR  
1910), Occupational Safety and Health  
Standards.

([http://www.osha.gov/pls/oshaweb/owastand.display\\_standard\\_group?p\\_toc\\_level=1&p\\_part\\_number=1910](http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1910))

Plumbing-Heating-Cooling Contractors—National  
Association (PHCC—National Association)

(<http://www.phccweb.org/>).

*National Standard Plumbing Code*, 2000.

### 7.5.2 Resources for Codes and Standards

Providers of some of the codes and standards used in this publication are listed here. Unless otherwise noted in Section 1.1-7.5.1, federal publications may be obtained from the Government Printing Office in Washington, D.C.

Air Conditioning and Refrigeration Institute  
4100 North Fairfax Drive, Suite 200  
Arlington, VA 22203  
Tel. 703-524-8800  
Web: <http://www.ari.org>

Architectural and Transportation Barriers  
Compliance Board  
Office of Technical and Information Services  
1331 F St., N.W., Suite 1000  
Washington, DC 20004-1111  
Tel. 202-272-5434, 1-800-872-2253  
Web: <http://www.access-board.gov>

Americans with Disabilities Act  
U.S. Department of Justice  
950 Pennsylvania Ave., N.W.  
Washington, DC 20530-0001  
Tel. 202-514-2000  
Web: <http://www.usdoj.gov/crt/ada/adahom1.htm>

American National Standards Institute (ANSI)  
1819 L Street, N.W., Sixth floor  
Washington, DC 20036  
Tel. 202-293-8020  
Web: <http://www.ansi.org>

American Society of Civil Engineers  
1801 Alexander Bell Drive  
Reston, VA 20191-4400  
Tel. 1-800-548-2723, 703-295-6300  
Web: <http://www.asce.org>

American Society of Heating, Refrigerating and  
Air-Conditioning Engineers  
1791 Tullie Circle, N.E.  
Atlanta, GA 30329  
Tel. 1-800-527-4723, 404-636-8400  
Web: <http://www.ashrae.org>

American Society of Mechanical Engineers (ASME)  
Three Park Avenue  
New York, NY 10016-5990  
Tel. 1-800-843-2763  
Web: <http://www.asme.org>

American Society for Testing and Materials  
100 Barr Harbor Drive  
West Conshohocken, PA 19428-2959  
Tel. 610-832-9585  
Web: <http://www.astm.org>

Association for the Advancement of Medical  
Instrumentation  
1110 N. Glebe Road, Suite 220  
Arlington, VA 22201-5762  
Tel. 1-800-332-2264, 703-525-4890  
Web: <http://www.aami.org>

Building Seismic Safety Council  
National Institute of Building Sciences  
1090 Vermont Avenue, N.W., Suite 700  
Washington, DC 20005-4905  
Tel. 202-289-7800  
Web: <http://www.bssconline.org>

Centers for Disease Control and Prevention  
Hospital Infection Control Practices (HICPAC)  
Center for Infection Control  
1600 Clifton Road  
Atlanta, GA 30333  
Tel. 404-639-3311, 1-800-311-3435  
Web: <http://www.cdc.gov>

College of American Pathologists  
325 Waukegan Road  
Northfield, IL 60093-2750  
Tel. 1-800-323-4040  
Web: <http://www.cap.org>

Compressed Gas Association  
4221 Walney Road, Fifth floor  
Chantilly, VA 20151-2923  
Tel. 703-788-2700  
Web: <http://www.cganet.com>

Food and Drug Administration (FDA)  
Center for Food Safety and Applied Nutrition  
5100 Paint Branch Parkway  
College Park, MD 20740-3835  
Tel. 1-888-SAFEFOOD  
Web: <http://cfsan.fda.gov>

General Services Administration  
1800 F Street, N.W.  
Washington, DC 20405  
Web: <http://www.gsa.gov>

Hydronics Institute (Division of Gas Appliance  
Manufacturer Association (GAMA))  
35 Russo Place, P.O. Box 218  
Berkeley Heights, NJ 07922  
Tel. 908-464-8200  
Web: <http://www.gamanet.org>

Illuminating Engineering Society of North America  
(IESNA)  
120 Wall Street, Floor 17  
New York, NY 10005  
Tel. 212-248-5000  
Web: <http://www.iesna.org>

International Code Council  
5203 Leesburg Pike, Suite 600  
Falls Church, VA 22041-3401  
Tel. 703-379-1546  
Web: <http://www.iccsafe.org>

National Council on Radiation Protection and  
Measurement  
7910 Woodmont Avenue, Suite 400  
Bethesda, MD 20814-3095  
Tel. 301-657-2652  
Web: <http://www.ncrponline.com>

## 1.1 INTRODUCTION

National Fire Protection Association (NFPA)  
1 Batterymarch Park  
P.O. Box 9101  
Quincy, MA 02169-7471  
Tel. 617-770-3000  
Web: <http://www.nfpa.org>

National Institute of Standards and Technology  
(formerly National Bureau of Standards)  
100 Bureau Dr., Stop 3460  
Gaithersburg, MD 20899-3460  
Tel. 301-975-6478  
Web: <http://www.nist.gov>

National Technical Information Service (NTIS)  
U.S. Department of Commerce Technology  
Administration  
5285 Port Royal Road  
Springfield, VA 22161  
Tel. 703-605-6858  
Web: <http://www.ntis.gov>

Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738  
Tel. 301-415-7000  
Web: <http://www.nrc.gov>

Occupational Safety and Health Administration  
U.S. Department of Labor  
200 Constitution Avenue, N.W., Room N3647  
Washington, DC 20210  
Tel. 1-800-321-6742  
Web: <http://www.osha.gov>

Plumbing-Heating-Cooling Contractors—  
National Association  
180 South Washington Street, P.O. Box 6808  
Falls Church, VA 22040  
Tel. 1-800-533-7694  
Web: <http://www.phccweb.org>  
Underwriters Laboratories, Inc.  
333 Pfingsten Road  
Northbrook, IL 60062-2096  
Tel. 847-854-3577  
Web: <http://www.ul.com>