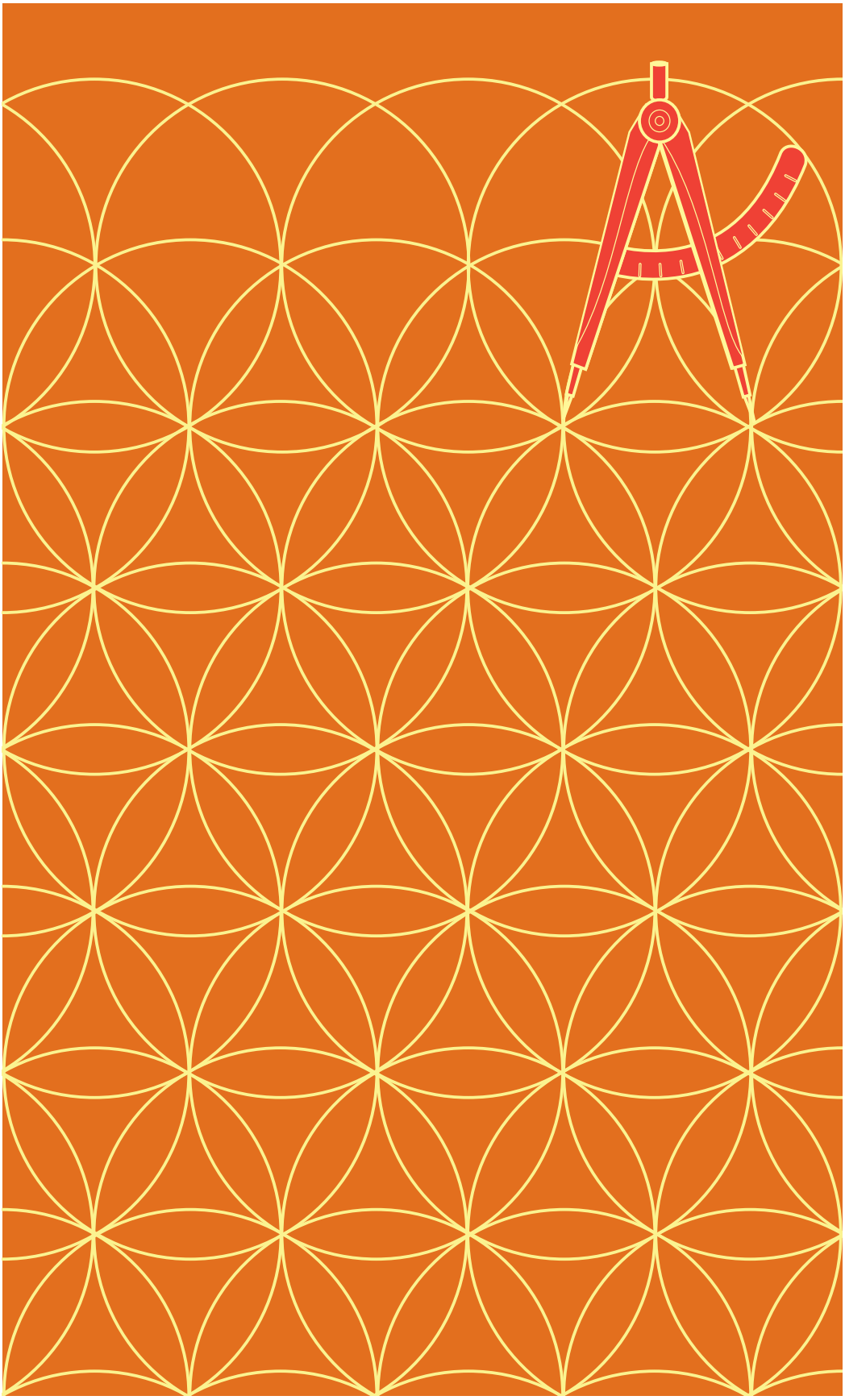
AIA Introduction to Codes and Standards



AIA

Preface

Just as construction practices have evolved over time, so have the regulations that govern the design, construction, and occupation of the built environment. With few exceptions, these regulations—our building codes—do not become less stringent over time, and many elements that used to be considered as best practices are now codified as minimally acceptable construction practices. Under new, higher performance codes, design professionals responsible for incorporating code requirements into the design process are subject to new expectations and legal requirements.

Architects are typically the responsible design professionals, with a corresponding duty to protect the health, safety, and welfare of both building occupants and the public at

large. As a group, architects may be the most significantly affected by, and the most significant users of, the codes. The American Institute of Architects (AIA) represents the profession on these important issues by supporting member architects' participation in code development and adoption processes.

The AIA Codes and Standards Committee, building upon the work of its predecessor, the Building Performance and Regulation Committee, has produced this document as an introduction to the world of codes and standards, to help architects better understand current development processes for the national model codes. It provides information on the historical and current development processes used by model codes and standards organizations. This information will increase architects' understanding of the subject and encourage their participation in the development of future codes and standards.

There has been tremendous growth in the number of building design and construction regulations over the last ninety years. There have also been remarkable changes in the number and identity of organizations that develop the model codes and standards. To many architects, the various acronyms, procedures, and requirements for membership associated with these organizations are confusing and complex. It is nonetheless vital that architects understand the work of these organizations,

because these groups shape the codes with which building projects must legally comply.

The AIA is in the fortunate position of being able to draw upon the expertise of every type of practitioner in the profession. It is composed of a diverse population covering large and small firms, emerging and seasoned professionals, and both urban and rural practices. It represents architects specializing in all project types, from single-room additions to stadiums, retail shops to airports. Many members have expertise in multiple disciplines, including structures, interiors, retail, and landscape design, to name just a few. This diversity of practice translates into many different but complementary viewpoints, which the AIA brings to model code development. Regardless of practice area, it is important that the model codes reflect the best interest of the general public, as well as careful consideration of the role of the design professional. To that end, the AIA has established public policies on codes and standards, to assure the design and construction of safe, sustainable buildings and communities, while also promoting the professional practice of architecture.

AIA Position Statements

Position Statement 22—Building Codes and Standards

Position Statement 23—Building Permits

Position Statement 44—Sustainable Building Codes, Standards and Rating Systems

One Code

Among the AIA's public policies on codes and standards is the "one code" policy, which states:

The AIA supports regulation by a single set of comprehensive, coordinated, and contemporary codes and standards, which establish sound threshold values of health, safety, and the protection of the public welfare throughout the United States. To that end, the AIA espouses the development and adoption of model building codes that:

- Include participation by architects and the public in a consensus process;
- Are the product of informed education and research;

- Are without favoritism or bias to any special interest;
- Include provisions for a prompt appeals procedure for all that might be aggrieved;
- Are cost-effective in relation to public benefit; and
- Promote building code provisions that set performance rather than prescriptive criteria.

The AIA plays a critical role in the development of the International Code Council's (ICC) family of codes, the most widely adopted set of model codes in the nation. As the professionals with the most synthetic view of the wide range of factors that go into a building project, architects are uniquely capable of identifying and helping to resolve internal conflicts and overlaps that remain among the several individual codes that are adopted by jurisdictions. As the ICC moves toward a staggered code development cycle for various codes, such redundancies and conflicts can multiply. The AIA will continue to support the simplification and coordination of model codes and standards, even as technological advancement and heightened aspirations tend toward greater complexity.

Most jurisdictions base their building codes on model codes, developed by an organization such as the International Code Council, through a formal, consensus-based process incorporating the expertise of numerous stakeholder groups; and revised on a regular, three-year cycle. Typically, the jurisdiction will amend the model code to take into account local climate and resource conservation, regional construction practices, and the like. As the professionals who apply the codes in design, architects can and should be trusted resources to their community leaders to advise them during the code adoption process.

History

Building codes in the United States developed over many years in response to the desire to protect life and property from fire, wind, earthquake, and other forces. In the 19th and 20th centuries, the insurance industry played a large role in pressuring governments to regulate the occupancy and use of buildings in order to protect against loss. Several key events marked major changes to the codes, notably the 1903 Iroquois Theater fire in Chicago, which claimed 602 lives, and the 1942 fire at Cocoanut Grove Nightclub in Boston, which claimed 492 lives. Both tragedies brought about new code requirements across the country, such as use of panic hardware and outward-opening doors, along with increased attention to code enforcement in existing buildings.

While individual cities and states developed their own building codes, over time these have been largely superseded by national model codes, adopted with regional or local modifications by individual jurisdictions. In the 1970s, the AIA

began advocating for a single code based on combining the three existing regional code writing groups: the Building Officials and Code Administrators (BOCA); the International Conference of Building Officials (ICBO); and the Southern Building Code Congress International (SBCCI). These three groups eventually dissolved and formed the International Code Council (ICC) in the late 1990s. The ICC "family" of codes is now the prevailing model for jurisdictions throughout the United States.

The ICC, like most publishers of codes and standards, develops model codes through a "consensus process." The ICC's governmental consensus process aligns with federal guidelines for voluntary consensus standards (Office of Management and Budget Circular A-119) as well as AIA's Codes Policy, and includes the following concepts:

Open Public Forums

- All forums are open to the public at no cost
- Anyone can submit a code change proposal and testify at the hearings
- All views are considered by the code committees prior to a vote

Decision Transparency

- All testimony and committee recommendations are made in open public hearings
- All final code change proposal decisions are made by public safety officials in a public hearing

Representation of Interests

- Wide-ranging representation
- Full disclosure of conflicts of interest
- One-third of the committee's members must be governmental members with no financial vested interests
- Membership on a committee is not conditional on membership in ICC

Due Process

- Equal opportunities for rebuttal
- Committees consider all views, objections, and the cost impact of all code change proposals
- All who attend can testify

Appeals Process

- Open appeal process
- Appeals considered per due process

Majority Consensus

- A simple majority from the committee decides the action of the proposed code change
- ICC assembly action allows members to challenge the action of the committee

The ICC publishes their process for modifying and adopting changes to their published codes. It outlines the rules for timely evaluation and recognition of technological developments pertaining to construction regulations.

Influencers

Many people and organizations with diverse perspectives influence the formation of building codes. They include building and fire officials, engineers, architects, building owners, product manufacturers, federal government agencies, regulators, contractors, labor organizations, facility managers, specifiers, commissioning agents, city managers, planners, other public officials, and funding agencies.

Codes, Standards, and Rating Systems

To effectively navigate the landscape of building regulation, it is necessary to understand the differences among the three most commonly encountered types of documents: ***codes, standards,*** and ***rating systems.***

A building ***code*** is an enforceable body of rules that governs the design, construction, alteration, and repair of buildings. It establishes minimum requirements that a building must meet, with the intention of protecting the health, safety, and welfare of occupants and neighbors. The enforcement of the building codes varies from jurisdiction to jurisdiction. In some states, a state building code establishes minimum requirements that the state enforces; others allow enforcement by local jurisdictions, which can't opt out of the requirements. In yet others, the local jurisdiction can make those requirements more stringent, but not less; and finally, in others, local jurisdictions are solely responsible for enacting and enforcing building codes.

A building ***standard*** defines a specific way—or a variety of alternative ways—to achieve a desired outcome. Standards are typically developed by independent organizations through a consensus-based process. These organizations fall into two categories: independent testing agencies, such as Underwriters Laboratory (UL); or member groups setting a standard of care for their members and giving guidance to those outside their membership, such as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and ASTM

International (formerly known as American Society of Testing and Materials). Each has its own schedule and process for modifying its standards, typically based on the ANSI (American National Standards Institute) criteria. Such groups may or may not be certified by ANSI. A standard may serve simply as a yardstick of commonly accepted practice, or, if it provides the necessary level of specificity, it may be incorporated by reference into a code and becomes enforceable.

Historically, ***rating systems,*** such as those for the fire-resisting properties of materials, have established terms of measurement for the performance of building components. Such rating systems are often referenced in building codes to establish minimum requirements for a component's performance. Independent bodies test and rate materials, products, or assemblies and certify their level of performance per the referenced standard, to determine if they are acceptable in the marketplace.

More recently, green building rating systems, such as the USGBC's LEED, have emerged for the purpose of rating the overall performance of buildings with respect to energy consumption, resource conservation, indoor air quality, and other environmental considerations. Such rating systems are intended to encourage levels of performance above and beyond the minimum requirements set by codes; their language is not necessarily crafted with enforceability as a paramount concern. Consequently, when incorporated by reference into a building code, a rating system may present challenges in interpretation, documentation, and enforcement. In addition, the process of review and revision of the rating system itself may not follow a recognized consensus process nor a regular, three-year cycle of the model codes, thus complicating the process of keeping the building code up-to-date at the local level.

Prescriptive vs. Performance Language

Any provision of a code, standard, or rating system may be defined prescriptively or in terms of performance. A prescriptive provision states precisely what must be done, e.g., "must be attached with 10d nails at 6 inches on center." A performance provision sets a minimum requirement for how the component performs—e.g., "must be able to sustain a lateral point load of 200 lbs."—without prescribing how that minimum level of performance is to be accomplished. Most model codes offer both prescriptive and performance options.

Enforcement

In addition to the traditional building departments and other local or state authorities having jurisdiction, , some federal agencies, including the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency

(EPA), and the Departments of Energy (DOE), Housing and Urban Development (HUD), the Interior (DOI), and Justice (DOJ), exercise various forms of control over building construction. Local building officials do not enforce federal regulations. Compliance processes are independent of local authority and take various forms. Accessibility under the Americans with Disabilities Act is a civil right enforceable by the Department of Justice. Compliance, if challenged, is determined by the courts after the project is completed. In addition, recent federal programs, such as the Energy Information and Security Act and the American Recovery and Reinvestment Act's (ARRA) incentives to states, have had a direct effect on adoption of codes and standards.

A Special Case: the IgCC

For an in-depth discussion of the IgCC, see *The AIA Guide to the IgCC*. The Guide provides an overview of the 2012 IgCC with respect to potential impacts on design and the practice of architecture.

Development of the IgCC

Recently, the AIA has enjoyed an opportunity to participate in the development of the first national model green code. AIA recommended members to participate on both the drafting and the code development committees appointed by the International Code Council (ICC). Because architects have a unique and vital perspective in the development of the IgCC, it is a priority of the AIA Codes and Standards Committee and the AIA National Board of Directors that our perspective continue to shape the future of the new code. The development of green model codes brings changes to the practice of architecture, and the profession must understand those changes to act as industry leaders. The architect must be prepared to work with the new code in order to protect the health, safety, and welfare of the general public and bring added value to their clients.

Evolution of Green Codes

Architects have long been trained in sustainable design and construction. In 2005, the AIA adopted several position statements relating to the importance of sustainable design to the profession and society. For over ten years, green building rating systems such as LEED, BREEAM, and others achieved marketplace success by formulating a set of prescriptive approaches and conventions. Energy-oriented codes such as the ICC's International Energy Conservation Code (IECC), or standards such as ASHRAE's 90.1.2007 or 189.1, promote application of sustainable and energy efficient design practices.

The movement of rating systems from marketplace devices to policy instruments has impacted the work of architects over the past ten years, as the rating of green buildings has grown in popularity. The adoption of a "stretch" code in Massachusetts, a "reach" code in Oregon, and Title 24 and CALGreen in California have all moved the energy-use reduction and sustainable building factors into the regulatory arena of the building code. The launch of the IgCC in 2012 expands the applicability of a sustainable building code to a national level, as jurisdictions adopt this new code. The IgCC incorporates new requirements, which will engage more critically architects' skills and working methods.

One of the most significant characteristics of the IgCC is its emphasis on building performance as one of several paths to compliance. The IECC, ASHRAE 90.1 and now the IgCC require that buildings target performance based on a calculation of projected energy use, rather than prescriptively defining the design features of a building.

Advanced codes afford the practicing architect a number of potential methods for providing added value to their clients. Addressing code related issues, especially in light of high-performance codes, can be a part of a business strategy for firms and sole practitioners alike. Services such as energy modeling and commissioning are opportunities for an expanded practice under the IECC (International Energy Conservation Code) and the IgCC.

Outcome-Based Codes

Another idea growing in popularity among state and local level policymakers is the notion of outcome-based codes, which assess project compliance based on *actual* performance, measured after the completion of construction. While this is not yet a feature of typical code regimes, the groundwork has been laid in states with state-specific green codes: California (Title 24), Massachusetts, Oregon, and Washington. The City of Seattle is working with the National Trust for Historic Preservation Green Lab on outcome-based codes that work with existing and

historic structures. In Vancouver, British Columbia, the comprehensive BuildSmart program includes the use of green bonds and mandatory disclosure for years after issuance of a certificate of occupancy.

The increased interest in disclosure regulation, requiring building owners to provide performance data from the operation of their buildings, suggests that this will be an important trend for architects to consider as they design energy efficient buildings for clients. New York City has passed regulation mandating public disclosure of buildings' energy use.

Ultimately, the trend toward a regulatory environment in which building codes emphasize energy performance and sustainability presents an opportunity for architects to apply their professional expertise to decision making on community health, economic factors, and planning and development at a larger scale, and to provide greater professional influence over the impact of buildings on the individual and the community.

This evolution of model codes also applies in some part to the development of the ICC itself. That effort was due in no small part to Bob Fowler, FAIA, President of ICBO at the time. The criteria that were used to develop the IgCC applied equally to the creation of the ICC. That change is arguably more critical to the health of codes from the architects perspective than the IgCC.

Code Education

Building codes evolve constantly to ensure a community's health, safety, and welfare in the face of new technology and changing risk awareness. The expertise required to develop architectural designs that comply with rapidly changing codes and regulations is constantly increasing. The AIA is a natural focal point to provide access to the education required to ensure that architects remain current in their knowledge and application of building codes. Code education provided by the AIA includes an all-day design workshop and two 90-minute sessions that give an overview of the concepts presented.

Code Development: Getting Involved

Architects make a difference in shaping building codes by helping to simplify language and to craft that language to promote resource-efficient building performance. The architect's integrated understanding of all of the factors that shape a building is essential for the crafting of codes purged of redundancy, ambiguity, and contradictions.

Our collective experience at the code development table illustrates the importance of architects' involvement in the code development process. Architects involved in the development of the codes have kept the interest of all our members in the forefront of the discussions and the development of the codes and their concepts and language. Without the architect's presence, the codes would be much different.

There are several ways for individual architects to get involved:

- Contact the AIA Codes Advocacy Team and let us know you're interested.
- Join and post comments to AIA's KnowledgeNet site for Codes and Standards, the LinkedIN AIA Codes and Standards Group, and add to or start your own discussion threads on codes and standards issues.
- Volunteer at the local chapter level, join or start a Codes and Standards Committee, and keep AIA National involved in your efforts, so we can all benefit.
- Respond to opportunities for public comment to code changes directly to the code or standard developing agency (ICC, ASHRAE, etc.) or by contacting the AIA Codes and Standards Committee or the Codes Advocacy Team.

Architects must continue to maintain our stake in the development of model codes in order to ensure that our best interests, as well as those of the public, are protected and that reasonable standards of care are promoted. In other words: let's not leave to non-architects the writing of the rules under which architects practice. Get involved!

2012 AIA Codes and Standards Committee

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