

International Building Code (IBC)

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CMGT 564 – Strategic Standardization

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Outline

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- ⇒ Why use the IBC
- ⇒ History
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What Is the IBC?

- ⇒ A model building code developed by the International Code Council.
- ⇒ A set of standards that specify the minimum acceptable level of safety for building construction.
- ⇒ A document containing standardized requirements for the design and construction of buildings.

Why use the IBC?

- ➔ To regulate building construction.
- ➔ To protect public health, safety, and general welfare as they relate to the construction of buildings.
- ➔ To provide architects and engineers a starting point.
- ➔ To consolidate existing building codes.

History (Building Codes)

- ⇒ 1800 B.C
 - Babylonian emperor enforces Code of Hammurabi.
- ⇒ 1700's
 - Washington & Jefferson encourage development of building regulations.
- ⇒ 1900's
 - Insurance companies encourage the development of building codes.
 - 1915: Building Officials and Code Administration International (BOCA)
 - Developed BOCA National Building Code: Used mainly in Northeast
 - 1927: International Conference of Building Officials (ICBO)
 - Developed Uniform Building Code: Used mainly in Midwest & West
 - 1940: Southern Building Code Congress International (SBCCI)
 - Developed Standard Building Code: Used mainly in South

History (IBC)

⇒ 1994

- BOCA, ICBO, & SBCCI form the International Code Council (ICC)
 - To develop codes with no regional limitations.

⇒ 1997

- First edition of International Building Code (IBC) published.

⇒ 2000

- First comprehensive and coordinated set of the IBC published.
- BOCA/NBC, UBC, & SBC are superseded by the IBC and no longer developed.

Structure of the IBC

- ⇒ Consists of 35 chapters and appendices.
- ⇒ Each chapter is broken down into sections.
- ⇒ Each section broken down into subsections.
- ⇒ Each section describes a performance criteria to be met or references other sections or standards such as ANSI, ASTM, etc.

Structure of the IBC (Chapters)

- ⇒ 1: Administration
- ⇒ 2: Definitions
- ⇒ 3: Use and Occupancy Classification
- ⇒ 4: Special Detailed Requirements Based on Use and Occupancy
- ⇒ 5: General Building Heights and Areas
- ⇒ 6: Types of Construction
- ⇒ 7: Fire-resistant-rated Construction
- ⇒ 8: Interior Finishes
- ⇒ 9: Fire Protection Systems
- ⇒ 10: Means of Egress
- ⇒ 11: Accessibility
- ⇒ 12: Interior Environment
- ⇒ 13: Energy Efficiency
- ⇒ 14: Exterior Walls
- ⇒ 15: Roof Assemblies and Rooftop Structures
- ⇒ 16: Structural Design
- ⇒ 17: Structural Tests and Special Inspections
- ⇒ 18: Soils and Foundations

Structure of the IBC (Chapters)

- ⇒ 19: Concrete
- ⇒ 20: Aluminum
- ⇒ 21: Masonry
- ⇒ 22: Steel
- ⇒ 23: Wood
- ⇒ 24: Glass and Glazing
- ⇒ 25: Gypsum Board and Plaster
- ⇒ 26: Plastic
- ⇒ 27: Electrical
- ⇒ 28: Mechanical Systems
- ⇒ 29: Plumbing Systems
- ⇒ 30: Elevators and Conveying Systems
- ⇒ 31: Special Construction
- ⇒ 32: Encroachments into the Public Right-of-Way
- ⇒ 33: Safeguards During Construction
- ⇒ 34: Existing Structures
- ⇒ 35: Referenced Standards

Structure of the IBC

- 5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood, for a distance of 4 feet (1220 mm); or
- 5.2. The roof is protected with 0.625-inch Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a minimum distance of 4 feet (1220 mm).
- 6. Where the wall is permitted to have at least 25 percent of the exterior wall areas containing unprotected openings based on the location from a lot line as determined in accordance with Section 704.8.

704.11.1 Parapet construction. Parapets shall have the same fire-resistance rating as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall not be less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall the height be less than 30 inches (762 mm).

704.12 Opening protection. Windows required to be protected in accordance with Section 704.8, 704.9, or 704.10 shall comply with Section 714.3.7. Other openings required to be protected with fire doors or shutters in accordance with Sections 704.8, 704.9 and 704.10 shall comply with Section 714.2.

Exception: Fire protective assemblies are not required where the building is protected throughout by an automatic sprinkler system and the exterior openings are protected by an approved water curtain using automatic sprinklers approved for that use. The sprinklers and the water curtain shall be installed in accordance with NFPA 13.

704.12.1 Unprotected openings. Where protected openings are not required by Section 704, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.

704.13 Joints. Joints made in or between exterior walls required by this section to have a fire-resistance rating shall comply with Section 712.

Exception: Joints in exterior walls that are permitted to have unprotected openings.

704.13.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 712.4.

704.14 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated exterior walls required to have protected openings shall comply with Section 715.

Exception: Foundation vents installed in accordance with this code are permitted.

SECTION 705 FIRE WALLS

705.1 General. Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building. The extent and location of such fire walls shall provide a complete separation. Where a fire wall also separates groups that are required to be separated by a fire barrier wall, the most restrictive requirements of such separation shall apply. Fire walls located on property lines shall also comply with Section 503.2. Such fire walls (party walls) shall be constructed without openings.

705.2 Structural stability. Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating.

705.3 Materials. Fire walls shall be of any approved noncombustible materials.

Exception: Buildings of Type V construction.

705.4 Fire-resistance rating. Fire walls shall have a fire-resistance rating of not less than that required by Table 705.4.

TABLE 705.4
FIRE WALL FIRE-RESISTANCE RATINGS

GROUP	FIRE-RESISTANCE RATING (hours)
A, B, E, H-4, I, R-1, R-2, U	3 ^a
F-1, H-3 ^b , H-5, M, S-1	3
H-1, H-2	4 ^b
F-2, S-2, R-3, R-4	2

a. Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction.

b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

705.5 Horizontal continuity. Fire walls shall be continuous from exterior wall to exterior wall and shall extend at least 18 inches (457 mm) beyond the exterior surface of exterior walls.

Exceptions:

1. Fire walls shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided the exterior wall has a fire-resistance rating of at least 1 hour for a horizontal distance of at least 4 feet (1220 mm) on both sides of the fire wall. Openings within such exterior walls shall be protected by fire assemblies having a fire-protection rating of not less than 1/2 hour.
2. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided the sheathing, siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet (1220 mm) on both sides of the fire wall.
3. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Development of the IBC

- ⇒ IBC developed by Technical Subcommittees
- ⇒ Subcommittees overseen by the Steering Committee and Performance Committee of ICC.
 - Who is part of the committees?
 - Code Officials (BOCA, ICBO, SBCCI)
 - Design Professionals
 - Trade Associations
 - Builders & Contractors
 - Manufacturers & Suppliers
 - Government Agencies

Development of the IBC

⇒ Technical Subcommittees

- General Subcommittee
 - Chapters 1-2, 5-6, 12-13, and 26-34
- Structural Subcommittee
 - Chapters 16-25
- Fire Safety Subcommittee
 - Chapters 7-9, 14-15
- Means of Egress Subcommittee
 - Chapters 10-11
- Occupancy Subcommittee
 - Chapters 3-4

Development of the IBC

- ⇒ The development of the IBC runs in 18 month cycles.
 - Applications and proposals due
 - Publish proposals
 - Public hearings
 - Publish hearing proceedings
 - Public comments due
 - Publish public comments
 - Final public hearing
 - Annual meeting
 - Publication of code

Development of the IBC

ICC CODE DEVELOPMENT SCHEDULE

CODE DEVELOPMENT CYCLE	2003-2004	2004-2005
	18 Month Cycle	Tentative Dates
		18 Month Cycle
DEADLINE FOR RECEIPT OF APPLICATIONS FOR CODE COMMITTEES (CC)	March 24, 2003	August 20, 2004
DEADLINE FOR RECEIPT OF NEW CODE CHANGE PROPOSALS	March 24, 2003	August 20, 2004
PUBLICATION DATE FOR MONOGRAPH OF "PROPOSED CHANGES TO THE I-CODES"	July 3, 2003	December 21, 2004
PUBLIC HEARINGS ON CODE CHANGE PROPOSALS	September 5-14, 2003 Opryland Hotel Nashville, TN	February 21 - March 2, 2005 Millennium Hotel Cincinnati Cincinnati, OH
PUBLICATION DATE FOR "REPORT OF THE PUBLIC HEARINGS"	November 14, 2003	May 2, 2005
DEADLINE FOR RECEIPT OF PUBLIC COMMENTS	January 14, 2004	June 17, 2005
PUBLICATION DATE OF PUBLIC COMMENTS "FINAL ACTION" AGENDA	April 1, 2004	August 24, 2005
PUBLIC HEARINGS FOR "FINAL ACTION CONSIDERATION"	May 17-20, 2004 Sheraton Hotel Overland Park, KS	September 25-29, 2005 COBO Center Detroit, MI
ANNUAL MEETING DATES	<u>September 5-14, 2003</u> ICC Meeting Nashville, TN Hearings: Opryland Hotel Hotels: Opryland Hotel	<u>September 26-29, 2004</u> ICC Meeting Salt Lake City, UT Salt Palace <u>September, 25-29, 2005</u> Hearings: ICC Meeting COBO Center Detroit, MI
RESULTING PUBLICATION	2004 SUPPLEMENT	2006 EDITIONS

Amendments to the IBC

- ⇒ New editions of the IBC are published every 3 years.
 - Since first comprehensive edition in published in 2000, the ICC has published 2003 and 2006 versions.
 - Changes are indicated by markings in the margins.
 - Amended to incorporate lessons learned and new technology.
- ⇒ Intervening supplements are published between editions.
 - A supplement was published in 2004.

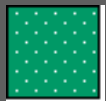
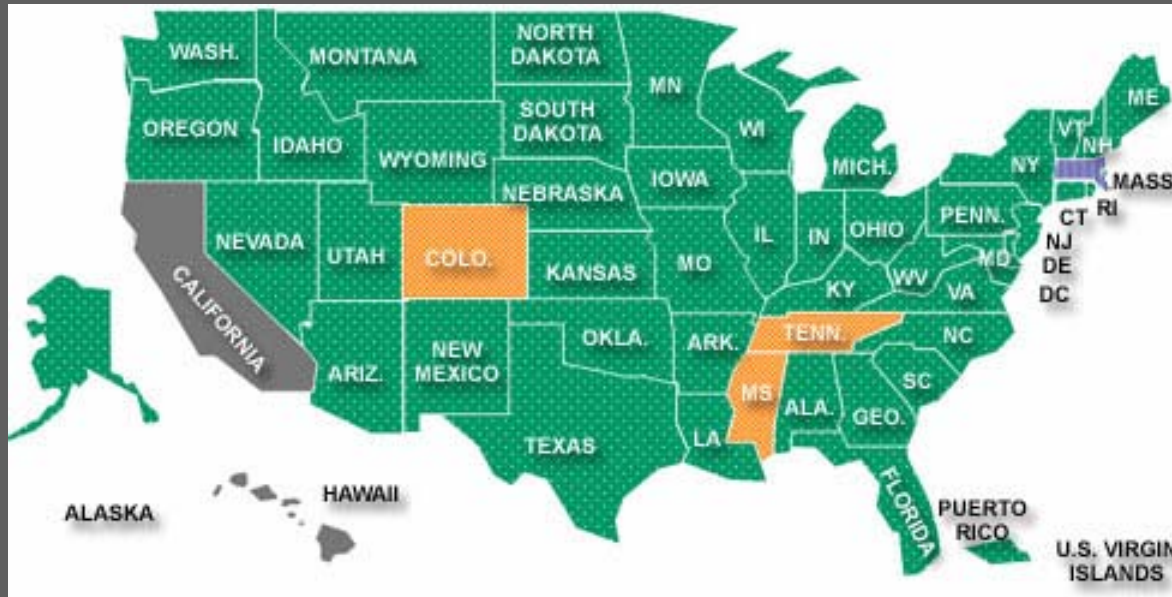
Amendments to the IBC

- ⇒ Various states/counties have amended versions of the IBC and incorporated it into their building codes.
 - Arkansas, California, Florida, Georgia, Los Angeles County, & Oregon

Government Regulation

- ⇒ Constitutionally states have jurisdiction over regulation of construction
- ⇒ The IBC has been adopted by 47 states, Washington, DC., U.S. Department of Defense, and the National Park Service.
 - Designed to be adopted by reference by ordinance.
- ⇒ Local code enforcement officials regulate adherence to the IBC.

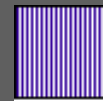
Government Regulation



One or more international codes currently enforced statewide.



One or more international codes enforced within state at local level.



One or more international codes adopted statewide with future enforcement date.

Government Regulation

- ⇒ Disputes between the ICC and NFPA
 - NFPA developed its own code (NFPA 5000) to compete with the IBC.
 - NFPA wants to offer an ANSI-accredited, consensus-based alternative.
 - California uses NFPA 5000.

Conclusion

- ⇒ The IBC is a good thing for the building industry.
 - Consolidates previous building codes
 - Adopted by majority of states
 - "One-stop-shop"
 - Continually changing

Questions?

