



# Mitigating Flood Hazards with the International Codes

West Virginia Floodplain Management  
Association

June 11, 2025

# International Code Council - Who We Are



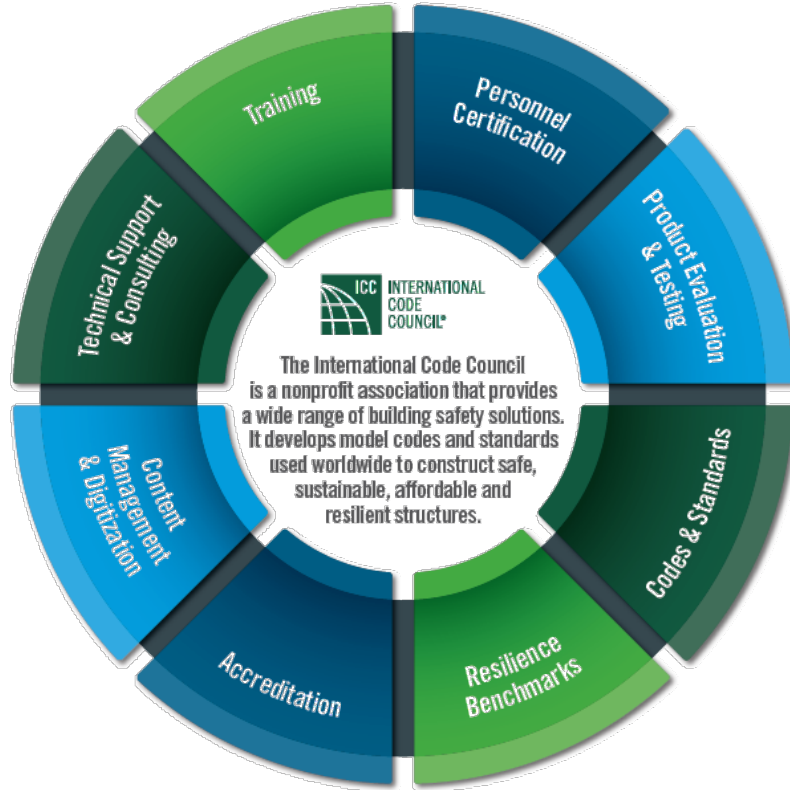
- **Nonprofit Corporation** - Dedicated to building safety and public protection
- **Mission-Driven** - Committed to making buildings safer to protect lives and preserve property
- **Code Development Leader** - Develops and maintains widely adopted safety codes and standards for residential and commercial buildings
- **National Presence, Global Impact** - Headquartered in Washington, D.C., with influence across the U.S. and beyond
- **Extensive Network** - 61,000+ members and 412 active chapters
- **Expert Team** - Staffed by over 700 engineers, architects, and administrative professionals

# The International Codes (I-Codes)

- 50 States + District of Columbia
  - U.S. Territories
  - Federal Agencies
- Mexico
- Caribbean Region
- Central America
- Eastern Europe
- Middle East



# Code Council Family of Solutions



- Codes and Standards
- Personnel Training and Certification
- Product Evaluation
- Accreditation Services
- Codification & Administration Services
- Engineering Support
- Community Resilience Benchmarks™
- Third-Party Evaluation Services

# Global Use of Code Council Family of Solutions

The use of the ICC Family of Solutions has wide relevance on a global scale.

## Americas:

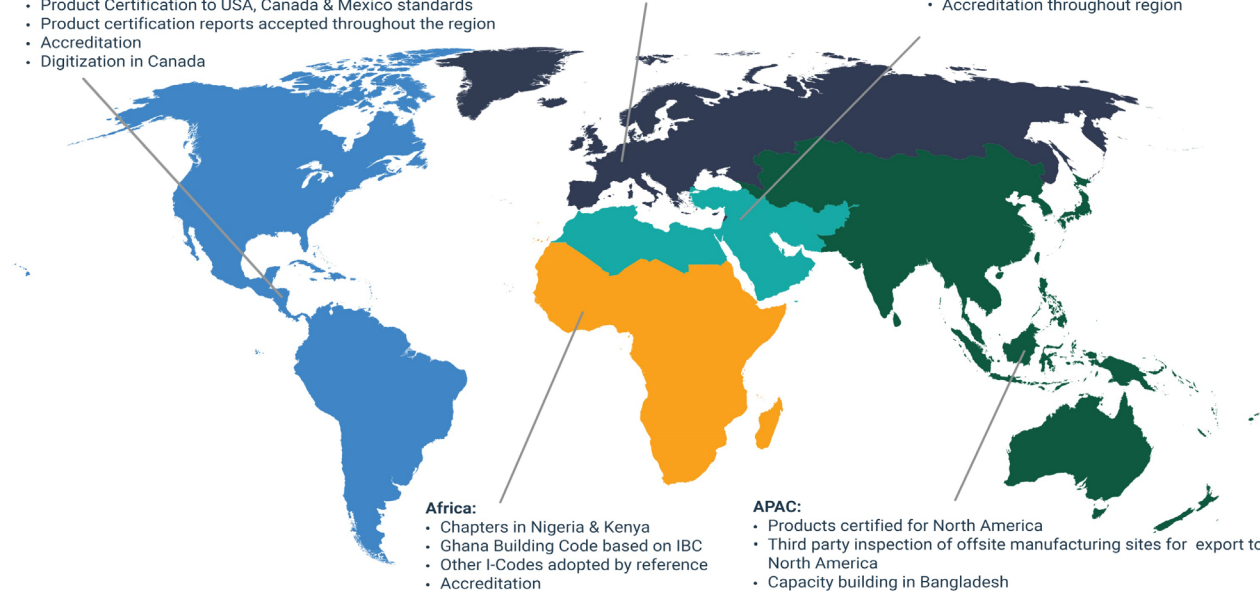
- I-Codes dominate in USA – full suite of solutions
- I-Code use in Mexico, Colombia and Caribbean, and referenced throughout the region
- CARICOM custom codes
- Chapters in Canada, Mexico & Cayman Islands
- Product Certification to USA, Canada & Mexico standards
- Product certification reports accepted throughout the region
- Accreditation
- Digitization in Canada

## Europe:

- Products certified for North America
- Third party inspection of offsite manufacturing sites for export to North America
- Collaboration with certification & standards bodies
- Accreditation

## MENA:

- Regional office in Dubai
- Custom codes in Saudi Arabia & Abu Dhabi, base codes accepted throughout region
- Training, certification on I-Codes & SBC
- Product certification reports accepted in UAE
- Accreditation throughout region



## Africa:

- Chapters in Nigeria & Kenya
- Ghana Building Code based on IBC
- Other I-Codes adopted by reference
- Accreditation

## APAC:

- Products certified for North America
- Third party inspection of offsite manufacturing sites for export to North America
- Capacity building in Bangladesh
- Marshall Islands custom code
- Base codes referenced throughout region
- Product certification reports accepted in Australia & NZ
- Chapters in Australia & NZ
- Accreditation

Learn more: [www.iccsafe.org/global-services/](http://www.iccsafe.org/global-services/)

# 2024 International Code Council Family of Codes

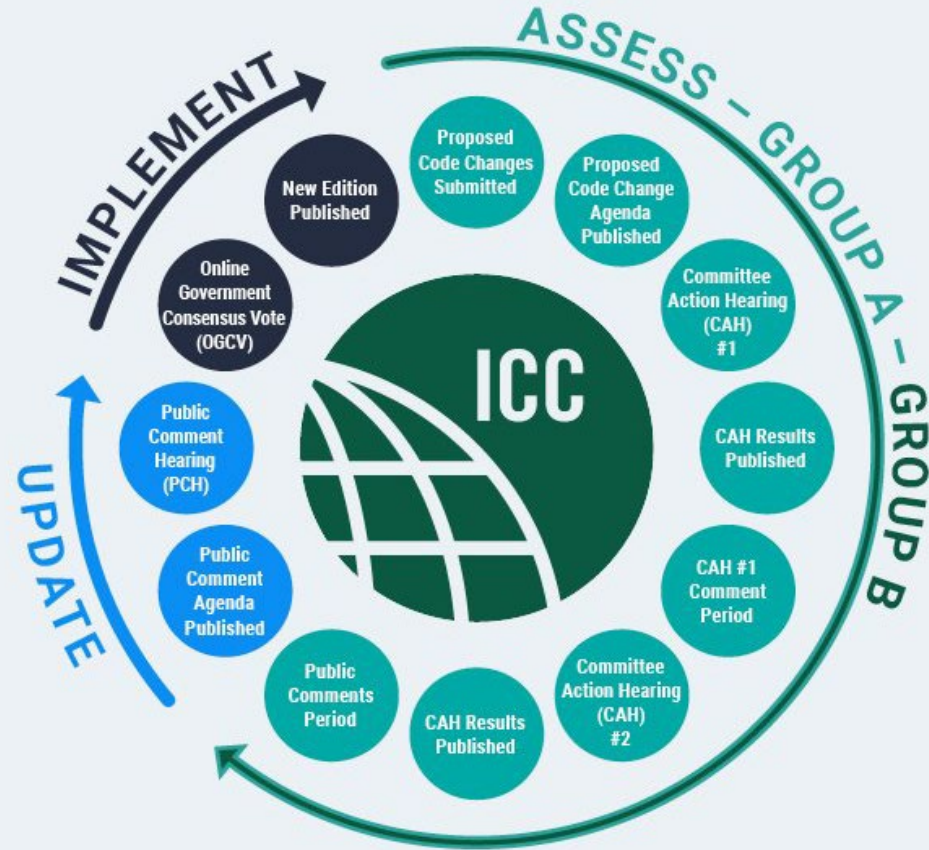




## ICC's Code Development Process (CDP)

Governmental consensus process.

Democratic approach to developing and publishing codes, enables the people closest to codes to shape the regulations and participate in ensuring public health, safety and welfare of the people who live in, work in and visit the community you serve.

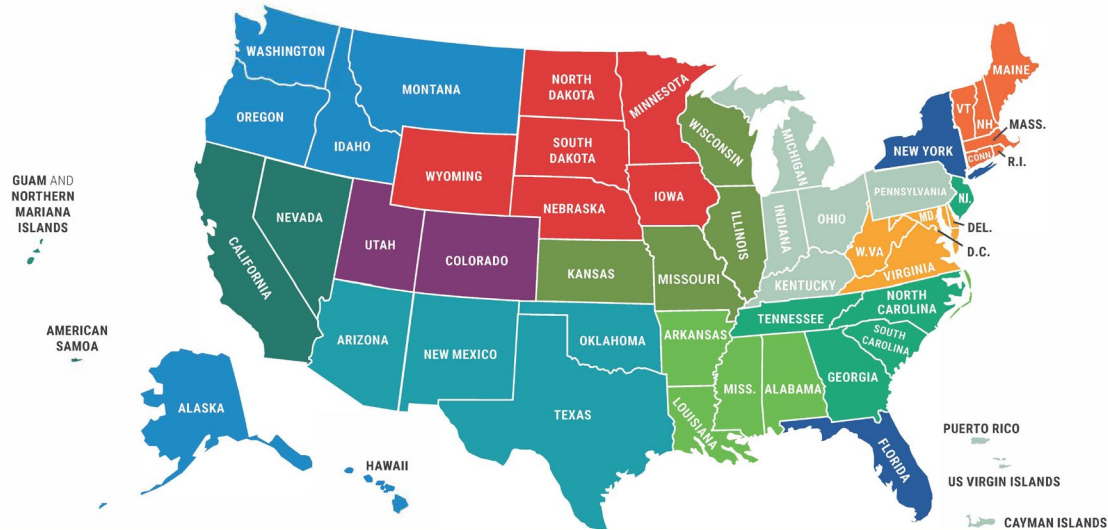


# Government Relations Team



INTERNATIONAL  
CODE  
COUNCIL®

## INTERNATIONAL CODE COUNCIL State & Local Areas of Responsibility



- Corey Roblee, OH Office
- Dorothy Mazzarella, FL Office
- Bryan Imai, WA Office
- Karyn Beebe, S. CA Office
- Bill Nash, RI Office

- Tim Schmitz, IL Office
- Rick Hauffe, SD Office
- Avi Smith-Rose, DC Office
- Alexis Kyman, LA Office
- Rick Bluntzer, TX Office

- Stephen Jones, SC Office
- Lesley Garland, N. CA Office



# ICC Resources For Floodplain Managers

- ICC Government Relations Department
- ICC Fire and Disaster Mitigation Team
- ICC Technical Services

# The I-Codes are Key to Disaster Mitigation

## I-Code Hazard-Related Provisions

- Flood
- Wind
- Rain
- Snow
- Ice
- Earthquakes (Seismic)
- Tsunami
- Structural Fire
- Wildfire

# ICC Fire & Disaster Mitigation Team



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## Fire and Disaster Mitigation - Vision

- Deepen ICC engagement with the fire service, emergency managers, design professionals, and the engineering community
- Protect the built environment, occupants, and responders from fire losses
- Mitigate natural hazards in the built environment to reduce property damage and loss of life



## Fire and Disaster Mitigation - Scope

- National, state and local fire service and emergency management activities
- Fire service and emergency management training and certification
- Member and stakeholder relations and activities
- Legislative support activities
- After action reviews and assessments of disaster incidents

# Fire and Disaster Mitigation - Lines of Effort

- **Disaster Response, Recovery, and Mitigation** – Strengthening readiness and resilience in the face of emergencies
- **Professional Development** – Empowering the workforce through training, education, and certification
- **Member and Stakeholder Engagement** – Building strong, collaborative relationships across the fire and safety community
- **Strategic Engagement and Technical Resources** – Leveraging partnerships and expertise to drive innovation and impact
- **Wildfire Strategy** – Advancing proactive approaches to wildfire prevention and response



# ICC MOU with Association of State Floodplain Managers (ASFPM)

- Recognizes ICC/ASFPM shared commitment to participate at the federal, state and local levels through outreach, knowledge transfer and collaboration on flood-damage resistant codes, standards, floodplain management policy and practice as well as a shared commitment to professional training.
- Highlight: Support post-disaster utilization of floodplain managers and building department personnel through mutual aid agreements, interlocal agreements, EMAC (Emergency Management Assistance Compact) and other disaster aid networks to assist impacted jurisdictions and communities in need.

# FEMA Post-Disaster Code Administration & Enforcement Assistance

- Disaster Recovery and Reform Act (DRRA) - Section 1206.
  - <https://www.fema.gov/assistance/public/policy-guidance-fact-sheets/section-1206-building-code-and-floodplain-management-administration-and>
- DRRA 1206 authorizes FEMA to provide resources needed to effectively administer and enforce adopted building codes and floodplain ordinances.
  - Building Code Administration (review and process building applications; collect fees; hire, train, supervise staff; etc.)
  - Code Enforcement (inspect structures; review elevation certificates; conduct and process condemnation determinations; etc.)
  - Floodplain Management Regulation, Administration, and Enforcement (hire, train, supervise staff; provide training; process permits; etc.)
  - Substantial Damage Operations (conduct field surveys; prepare cost information; perform inspections; etc.)
- FEMA Public Assistance program for major disaster declarations
  - Administer and enforce adopted building codes and floodplain ordinances in disaster-damaged areas for the 180 days directly following the declaration.

# Flood Provisions of the 2024 International Codes

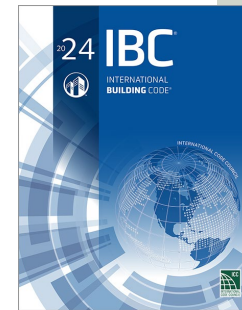
- International Building Code (IBC)
- International Residential Code (IRC)
- International Existing Building Code (IEBC)
- International Fire Code (IFC)
- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Fuel Gas Code (IFGC)





# Flood Provisions of the 2024 International Building Code (IBC)

- Chapter 1 Scope and Administration
- Chapter 2 Definitions
- Chapter 12 Interior Environment
- Chapter 14 Exterior Walls
- **Chapter 16 Structural Design**
- Chapter 18 Soils and Foundations
- Chapter 30 Elevators and Conveying Systems
- Chapter 31 Special Construction
- **Appendix G Flood-Resistant Construction**
- **Appendix M Tsunami-Generated Flood Hazards**

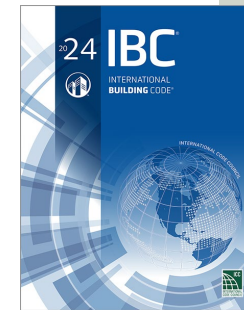




# Flood Provisions of the 2024 International Building Code (IBC)

## Chapter 1 Scope and Administration

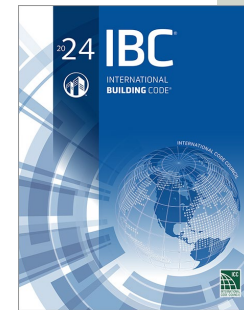
- 104.2.4.1 Flood hazard areas. Limits the BO ability to grant modifications in flood hazard areas.
- 107.2.6 Site plan. Site plans are required in the construction documents for permitting. Flood hazard areas, floodways, and design flood elevations shall be indicated on site plans as applicable.
- 110.3.3 Lowest floor elevation. Requires elevation certification in flood hazard areas.
- 110.3.12.1 Flood hazard documentation. Requires documentation of the elevation of the lowest floor or the elevation of dry floodproofing, if applicable.



# Flood Provisions of the 2024 International Building Code (IBC)

## Chapter 16 Structural Design Section 1612: Flood Loads

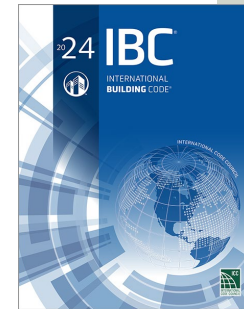
- Requires all new construction buildings/structures (includes substantial improvement/damage) , located in flood hazard zones, to be designed and constructed to resist the effects of flood hazards and flood loads.
- Requires compliance with ASCE 7 Chapter 5 and ASCE 24 (2014).
- Requires flood hazard documentation for construction in all flood hazard areas be prepared and sealed by a registered design professional and submitted to the building official.





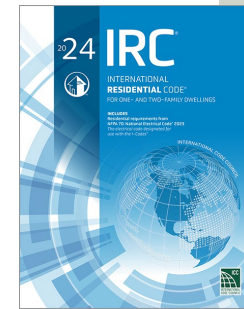
# Flood Provisions of the 2024 International Building Code (IBC)

- Appendix G Flood-Resistant Construction
- Intended to provide the additional flood-plain management and administrative requirements of the National Flood Insurance Program.
- Adoption of the International Building Code and Appendix G will meet the minimum requirements of NFIP as set forth in Title 44 of the Code of Federal Regulations.



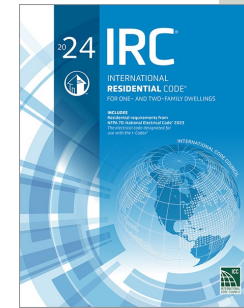
# Flood Provisions of the 2024 International Residential Code (IRC)

- Chapter 1 Scope and Administration
- Chapter 2 Definitions
- **Chapter 3 Building Planning**
- Chapter 4 Foundations
- Chapter 13 General Mechanical System Requirements
- Chapter 14 Heating and Cooling Equipment and Appliances
- Chapter 16 Duct Systems (Mechanical)
- Chapter 17 Combustion Air (Mechanical)
- Chapter 20 Boilers and Water Heaters (Mechanical)
- Chapter 21 Hydronic Piping (Mechanical)
- Chapter 22 Special Piping and Storage Systems (Mechanical)



# Flood Provisions of the 2024 International Residential Code (IRC)

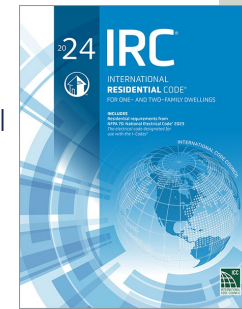
- Chapter 24 Fuel Gas
- Chapter 26 General Plumbing Requirements
- Chapter 27 Plumbing Fixtures
- Chapter 30 Sanitary Drainage (Plumbing)
- Chapter 31 Vents (Plumbing)
- Appendix BA Manufactured Housing Used as a Dwelling
- Appendix BI Light Straw-Clay Construction
- Appendix BJ Strawbale Construction
- Appendix BO Existing Buildings and Structures
- Appendix CC Recommended Procedure for Safety Inspection of an Existing Appliance Installation



# Flood Provisions of the 2024 International Residential Code (IRC)

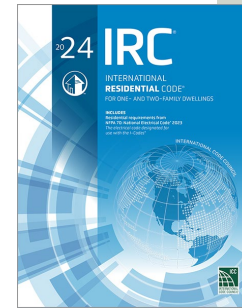
## Chapter 1 Scope and Administration

- R106.1.4 Information for construction in flood hazard areas.
  - Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation.
  - The elevation of the proposed lowest floor, including basement; in areas of shallow flooding (AO Zones), the height of the proposed lowest floor, including basement, above the highest adjacent grade.
  - The elevation of the bottom of the lowest horizontal structural member in coastal high-hazard areas (V Zone) and in Coastal A Zones where such zones are delineated on flood hazard maps identified in Table R301.2 or otherwise delineated by the jurisdiction.
- R109.1.3 Floodplain inspections
  - Elevation documentation to be prepared and sealed by a registered design professional shall be submitted upon placement of the lowest floor prior to vertical construction.



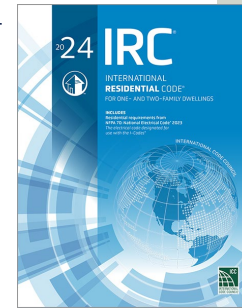
# Flood Provisions of the 2024 International Residential Code (IRC)

- Chapter 3 Building Planning
- R306 Flood-Resistant Construction
  - R306.1- Requires buildings located in flood hazard areas be designed and built in compliance with Section R306. Buildings located in floodways shall be designed and constructed with ASCE 24(2014).
  - R306.1.1- As an alternative to the requirements of Section R306, ASCE 24 is permitted.



# Flood Provisions of the 2024 International Residential Code (IRC)

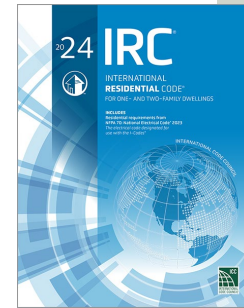
- Chapter 3 Building Planning
- R306 Flood-Resistant Construction
- R306.2.1 Elevation requirements
  - Flood hazard areas, not including Coastal A Zones, shall have the lowest floors (including basement floors) at or above the base flood elevation plus 1 foot, or the design flood elevation, whichever is higher.
  - Exception: For parking, building access or storage; attached garages and carports may be at or above grade on not less than one side. Associated walls shall have flood openings that comply with Section R306.2.2 Enclosed area below required elevation.





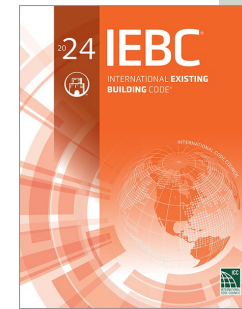
# Flood Provisions of the 2024 International Residential Code (IRC)

- Chapter 3 Building Planning
- R306 Flood-Resistant Construction
- R306.2.2 Enclosed area below required elevation.
- Enclosed areas, including crawl spaces, that are below the elevation required in Section R306.2.1 shall:
  - Be used for parking or storage
  - Be provided with flood openings
  - Exceptions include Elevator shafts and minimally sized utility chases that do not provide access for a person to enter the space.



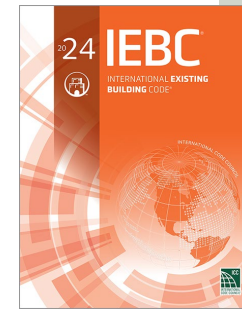
# Flood Provisions of the 2024 International Existing Building Code (IEBC)

- Chapter 1 Scope and Administration
- Chapter 2 Definitions
- Chapter 3 Provisions for all Compliance Methods
- Chapter 4 Repairs
- Chapter 5 Prescriptive Code Compliance
- Chapter 7 Alterations – Level 1
- Chapter 11 Additions
- Chapter 12 Historic Buildings
- Chapter 13 Performance Compliance Methods
- Chapter 14 Relocated or Moved Buildings



# Flood Provisions of the 2024 International Existing Building Code (IEBC)

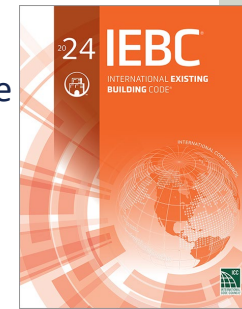
- Chapter 1 Scope and Administration
- 104.2.4 Modifications.
  - The code official may allow modifications to the code when practical difficulties are found.
  - Modification must comply with the intent of the code.
  - Modification does not lessen health, accessibility, life and fire safety, or structural requirements.





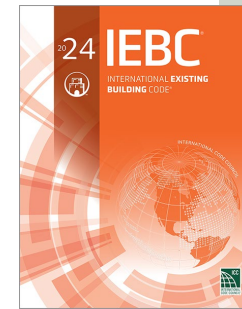
# Flood Provisions of the 2024 International Existing Building Code (IEBC)

- 104.2.4 Modifications.
- [A] 104.2.4.1 Flood hazard areas.
  - Where repairs, alterations and additions constitute substantial improvement, the code official shall not grant modifications to provisions related to flood resistance unless a determination is made that:
    - Sufficient cause that flood-resistant construction provisions are inappropriate.
    - Exceptional hardship
    - Not increase flood heights, threaten public safety or cause public expense; .....or conflict with existing laws or ordinances.....
    - Written notice to applicant citing the elevation differences, increased risk and stating that the increased risk will increase the cost of insurance.



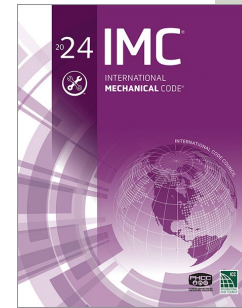
# Flood Provisions of the 2024 International Existing Building Code (IEBC)

- Repairs, Additions, Alterations, Relocated or moved buildings, require compliance with the IBC Section 1612 or the IRC Section R306.
- Chapter 12 Historic Buildings – when work is required because of a change of occupancy, and alterations, constitutes substantial improvement, then the existing building shall comply with the IBC Section 1612 or the IRC Section R306.



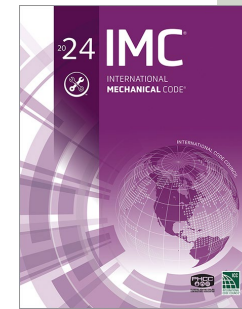
# Flood Provisions of the 2024 International Mechanical Code (IMC)

- Chapter 1 Scope and Administration
- Chapter 2 Definitions
- **Chapter 3 General Regulations**
- Chapter 4 Ventilation
- Chapter 5 Exhaust Systems
- Chapter 6 Duct Systems
- Chapter 9 Specific Appliances, Fireplaces and Solid Fuel-Burning Equipment
- Chapter 10 Boilers, Water Heaters and Pressure Vessels
- Chapter 13 Fuel Oil Piping and Storage



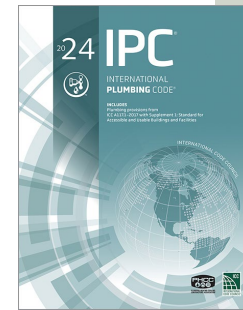
# Flood Provisions of the 2024 International Mechanical Code (IMC)

- Chapter 3 General Regulations
  - Requires mechanical systems, equipment and appliances to be located at or above the elevation required by the IBC Section 1612.
  - Break-away walls – no mechanical systems/equipment to be mounted on or penetrate break-away walls.



# Flood Provisions of the 2024 International Plumbing Code (IPC)

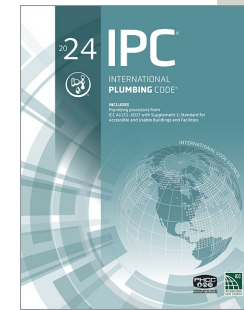
- Chapter 1 Scope and Administration
- Chapter 2 Definitions
- **Chapter 3 General Regulations**
- Chapter 8 Indirect/Special Waste





# Flood Provisions of the 2024 International Plumbing Code (IPC)

- Chapter 3 General Regulations
  - Plumbing systems and equipment shall be located and installed as required by the IBC Section 1612:
    - Water service pipes
    - Pump seals below DFE
    - Covers on water wells.
    - Sanitary drain piping.
    - Storm drain piping.
    - Manhole covers.
    - Plumbing fixtures.
    - Water heaters.
    - Vents and vent systems.
- Plumbing systems, pipes and fixtures shall not be mounted on or penetrate through walls intended to break away under flood loads.



# 2027 Code Development Process Highlights - Flood

- Code Change Proposal - Group B/CAH #1 - S97-25 - Parts I, II, III, IV, V, VI, and VII
  - Updates the I-Codes to ASCE 24-24: *Flood Resistant Design and Construction* for IBC, IEBC, IFC, IMC, IPC, IFGC; Adds ISPSC and IPSDC (IRC still under consideration for CAH #2).
  - Adds 500-year Floodplain definition to IBC and to the definition of Flood Hazard Area
  - Revises the definition of Base Flood Elevation (*for all I-Codes named above*) to be the *“elevation of the highest existing grade of the portion of the building’s perimeter that falls within Zone AO plus the depth number (in feet) specified on the flood hazard map”*.  
(Minimum BFE: Zone AO + 2’)
  - Revises definition of Design Flood to correspond with the elevations in Section 1.5.2 of ASCE 24 and acting over the flood hazard area as specified in Section 1.3 of ASCE 24 or otherwise legally designated.
  - Adds third area to the Flood Hazard Area (1%> per year; 500-yr floodplain; designated flood hazard area).

## 2027 Group B/CAH #1 Code Change Proposals and Results

- [S97-25 Part I](#) As Modified by Committee
- [S97-25 Part II](#) As Submitted
- [S97-25 Part III](#) As Submitted
- [S97-25 Part IV](#) As Submitted
- [S97-25 Part V](#) As Submitted
- [S97-25 Part VI](#) As Modified by Committee
- [S97-25 Part VII](#) Disapproved



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