

Flood Resistant Provisions of Connecticut's New Building Code

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Overview

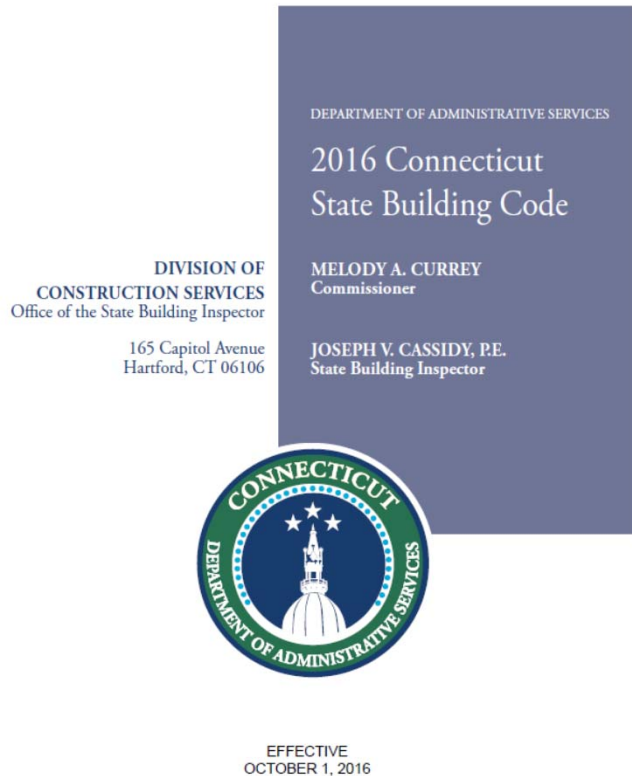
- 2016 Connecticut State Building Code Adoption
- National Flood Insurance Program (NFIP) and Building Codes
- Flood Provisions of the Building Code
- Challenges and Benefits

Connecticut State Building Code

“The 2016 Connecticut State Building Code has been approved and will be effective for all permit applications on or after October 1, 2016.”

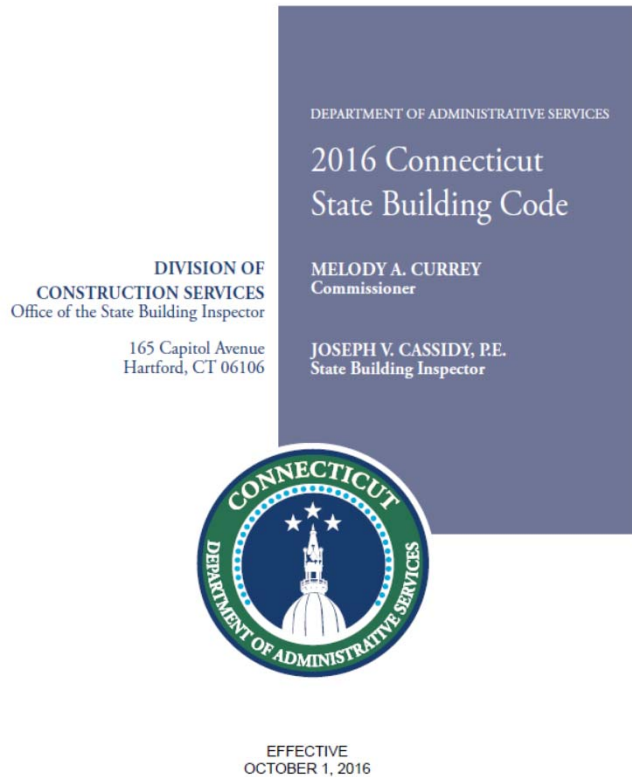
– CT Office of State Building Inspector

2016 Connecticut State Building Code



- **2012 International Building Code (IBC)**
- **2012 International Residential Code (IRC)**
- 2009 ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities
- 2012 International Existing Building Code
- 2012 International Plumbing Code
- 2012 International Mechanical Code
- 2012 International Energy Conservation Code
- 2014 NFPA 70, National Electrical Code, of the National Fire Protection Association Inc.

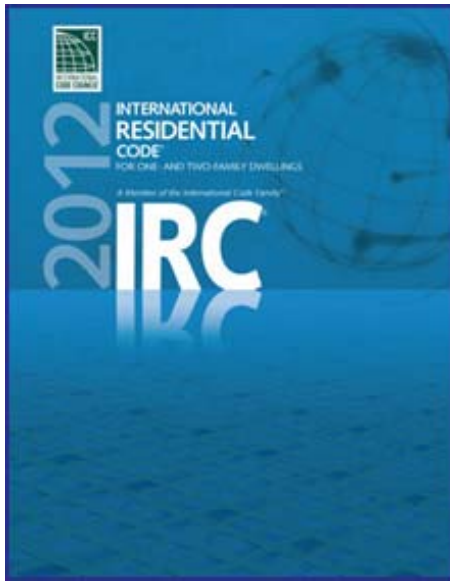
2016 Connecticut State Building Code



Flood amendments

- Mainly administrative
- Do not appear to weaken or add higher requirements than the I-Codes

2012 International Codes and Referenced Standards



One- and two-family dwellings

Chapter 1. Administration

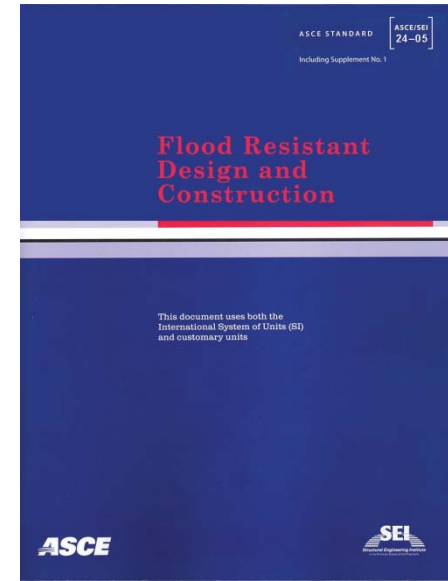
Section R322. Flood-Resistant Construction



All structures other than those covered by IRC

Chapter 1. Administration

Chapter 16. Structural Design Requirements



Required by IBC

Allowed by IRC in Zone V and Coastal A Zone, required in floodway

NFIP and Building Codes

“The 2015, 2012 and 2009 I-Code flood provisions meet or exceed the National Flood Insurance Program requirements for buildings and structures.”

– Federal Emergency Management Agency

NFIP and Building Codes

- Common intent and purpose to protect public safety and reduce property damage
- NFIP regulations govern development in the floodplain
- Codes govern buildings and structures
- NFIP regulations largely unchanged since 1980s
- Building codes and standards updated on regular schedule using consensus process, experts, past experience
- Building codes can be more specific and include some higher standards

NFIP and Building Code

“ASFPM strongly believes the minimum NFIP floodplain regulations do not provide adequate long-term flood risk reduction for communities and that the benefits of flood risk reduction achieved by higher regulatory standards far outweighs the burden of administering them.”

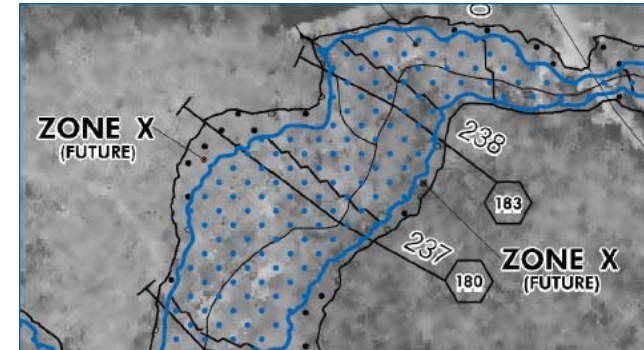
– *ASFPM Floodplain Regulations Committee*

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NFIP and Building Code

Building codes can be more specific and include some higher standards

- Provide specific requirements for determining flood loads
- Detailed specifications, such as for pile foundations
- Allow for design flood greater than the base flood
- More strict limitations on dry floodproofing
- Higher standards for critical facilities



Flood Provisions of the Building Code

States and localities should adopt and enforce the most current version of the IBC and IRC.

– Hurricane Sandy Rebuilding Task Force

Flood Provisions of the Building Code

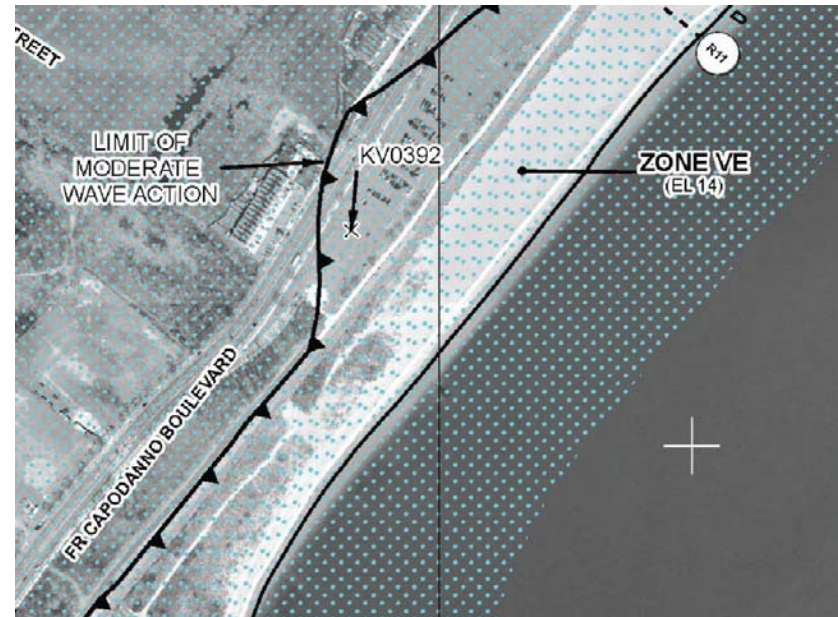
Key Changes from 2003 IBC to 2012 IBC

- Require floodway analysis if floodway not mapped
- Limitations on granting modifications equivalent to NFIP variance provisions
- Require documentation of lowest floor elevation prior to final inspection
- Through reference to updated ASCE 24
 - Separate chapters for requirements based on flood zone
 - Coastal A Zone requirements
 - Freeboard requirements based on occupancy category

Flood Provisions of the Building Code

Coastal A Zone

- Higher requirement than NFIP
- Coastal A Zone buildings must meet Zone V requirements
- Flood openings required in breakaway walls
- Delineated on newer FIRMs by Limit of Moderate Wave Action (LiMWA)



Legend

▲▲▲ Limit of Moderate Wave Action

Flood Provisions of the Building Code

Freeboard based on Occupancy Category

– Higher standard than the NFIP in most cases

See next page for description of Categories →

		Category I	Category II	Category III	Category IV
Elevation of Lowest Floor (A Zone: Table 2-1)	All A Zones not identified as Coastal A Zones: elevation of lowest floor	DFE	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
Elevation of Bottom of Lowest Horizontal Structural Member (V Zone: Table 4-1)	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	DFE	DFE	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	DFE	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
Elevation Below Which Flood-Damage-Resistant Materials Shall be Used (Table 5-1)	All A Zones not identified as Coastal A Zones	DFE	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	DFE	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	DFE	BFE +2 ft or DFE, whichever is higher	BFE +3 ft or DFE, whichever is higher	BFE +3 ft or DFE, whichever is higher

Source: Highlights of ASCE 24-05 (FEMA)

Flood Provisions of the Building Code

Freeboard based on Occupancy Category

– Higher standard than the NFIP in most cases

		Category I	Category II	Category III	Category IV
Minimum Elevation of Utilities and Equipment (Table 7-1)	All A Zones not identified as Coastal A Zones	DFE	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is parallel to direction of wave approach	DFE	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: where the lowest horizontal structural member is perpendicular to direction of wave approach	DFE	BFE +2 ft or DFE, whichever is higher	BFE +3 ft or DFE, whichever is higher	BFE +3 ft or DFE, whichever is higher
Dry Floodproofing of non-residential structures and non-residential portions of mixed-use buildings (Table 6-1)	All A Zones not identified as Coastal A Zones: elevation to which dry floodproofing extends	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher	BFE +1 ft or DFE, whichever is higher	BFE +2 ft or DFE, whichever is higher
	All V Zones and Coastal A Zones: dry floodproofing not allowed	Not permitted	Not permitted	Not permitted	Not permitted

Source: Highlights of ASCE 24-05 (FEMA)

Flood Provisions of the Building Code

Key Changes from 2009 IRC to 2012 IRC

- Require documentation of lowest floor elevation prior to final inspection
- Allow use of ASCE 24 within delineated Coastal A Zones (in addition to allowed use in Zone V)
- Specify limitations on spread footing, mat, raft foundations that support columns and require ASCE 24 compliance
- Require space below elevated homes in Zone V to be free of obstruction

Challenges

“It can be a challenge to administer two regulatory instruments that govern the same thing.”

- Anonymous

Challenges

- Communities in Connecticut have to enforce the building code and local floodplain management regulations
- Codes and floodplain regulations might be enforced by different departments
- Differences in requirements can be tedious to figure out
- Conflicting requirements can be confusing

Benefits

- Strengthened enforcement in flood hazard areas
- Improved construction quality
- Effective inspections
- Reduced damage



Resources

- CT Code Amendments:

http://www.ct.gov/dcs/lib/dcs/2016_ct_state_building_code.pdf

- ICC Free eCode Viewer:

<http://codes.iccsafe.org/I-Codes.html#2012>

- ICC Flood CodeMaster:

<http://shop.iccsafe.org/>

- ICC Government Relations:

<http://www.iccsafe.org/about-icc/government-relations/map/connecticut/>

- FEMA Resources:

<https://www.fema.gov/building-code-resources>

Thank You

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