



Submit your own items or suggestions for future topics to column editor Rebecca Quinn, CFM, at [rcquinn@earthlink.net](mailto:rcquinn@earthlink.net). Comments welcomed!

### Here's Something You Might Find Interesting . . .

Most states and communities that adopt building codes base their codes on the International Code Series® that is developed and maintained by the International Code Council, Inc. The I-Codes have provisions that apply to buildings and structures in flood hazard areas and FEMA has determined that the provisions of the 2006, 2009 and upcoming 2012 editions are consistent with the NFIP regulations.

Communities that enforce a state-adopted building code (and communities that elect to adopt a code) may administer both the codes and a separate set of floodplain management regulations. In recent years, some states and communities are coordinating the codes and regulations to resolve differences, avoid overlap, and to ensure complete enforcement.

Many local code officials are also designated as their community's floodplain administrator. But many of us don't regularly deal with both codes and floodplain management regulations. As the two disciplines are brought together, I've become aware that some terms used in the building codes and by building officials are similar to terms that floodplain managers have used for years. But there are some important differences and nuances to keep in mind. Let's take a look at some of the more significant ones.

**Special Flood Hazard Area and Flood Hazard Area.** The NFIP regulations actually define "area of special flood hazard," but we all call it the SFHA. It's the area shown on Flood Insurance Rate Maps as subject to a one-percent or greater chance of flooding. The I-Codes use the term "flood hazard area" (FHA) which allows communities to adopt a map (or designate an area) other than the FIRM. Enforcement of the flood provisions of the I-Codes is required within flood hazard areas – and at a minimum, FHAs are SFHAs. Why might a community adopt another map? Well, a growing number of communities are developing "future condition" maps that take into consideration anticipated upland development. And sometimes, when significant events exceed the boundaries shown on FIRMs, some communities decide to regulate based on the flood of record. However, for most communities, the FIRM is the adopted map, which means the FHA is the same as the SFHA.

**Base Flood Elevation and Design Flood Elevation.** The Base Flood Elevation is the elevation of the base flood, which is the 1%-annual-chance (100-year) flood. The I-Codes use the term Design Flood Elevation (DFE). The term DFE traces back many years, originating in two standards that are referenced by the codes: ASCE 7 and the first edition of ASCE 24, *Flood Resistant Design and Construction*. Similar to the BFE, the DFE is the elevation of the design flood, and just as the SFHA is related to the FHA, the BFE is related to the DFE. The DFE is always at least the BFE – indeed, the two are exactly the same in the vast majority of communities because they adopt FIRMs. The DFE is higher than the BFE only in communities that adopt a map that shows flood hazard areas that are greater than the SFHAs shown on their FIRMs. Another twist has started to appear, and that is related to freeboard. Some jurisdictions have modified the I-Codes by putting freeboard into the definition of DFE, for example defining the DFE as BFE+1' or 2'. You can download highlights of ASCE 24 from the web at: <http://www.fema.gov/library/viewRecord.do?id=3515>. (In the near future, this and other building code resources will be available on the FEMA Building Sciences webpage: <http://www.fema.gov/rebuild/buildingscience>.)

**Residential and Nonresidential.** The NFIP regulations have one significant provision that applies depending on whether a building is residential or nonresidential: nonresidential buildings in A zones must either be elevated or floodproofed (not applicable in V zones). But the terms "residential" and "nonresidential" are not defined in the NFIP regulations – and while the distinction seems clear at first, there are plenty of examples of buildings that

aren't easy to classify. The building codes use a different way to distinguish which code applies to which buildings. The International Residential Code is used to regulate one- and two-family dwellings and townhomes, all limited to three stories high. The International Building Code (sometimes called the "commercial" code) applies to all other buildings, called occupancies.

On the surface, it looks like the two codes line up with the NFIP's distinction between residential and nonresidential. Ah, but it's not so simple. The IBC's Use and Occupancy Classifications include Assembly, Business, Educational, Factory, High-hazard, Institutional Mercantile, Storage, Utility and Miscellaneous, and Residential. That last classification, Residential, includes all residential occupancies other than the dwellings that are within the scope of the IRC. What might those be? Well, residential occupancies include boarding houses, hotels, motels, apartment buildings, convents, monasteries, dormitories, vacation timeshares, and certain residential care/assisted living facilities. So the question then, when applying the IBC, is whether those residential occupancies can be dry floodproofed? Since we know the I-Codes are consistent with the NFIP, we can be assured the answer is no. But where do we find that limitation? IBC Sec. 1612.4 refers to ASCE 24, which includes all the familiar design requirements (and more), including dry floodproofing. It's important to note that ASCE 24 does define the terms "residential" and "nonresidential," so that it is clear which buildings or portions of buildings can be dry floodproofed.

The lesson here is that those of us who deal primarily with NFIP-based regulations should be aware that when we say "residential," our building code colleagues might think of the IRC, and not realize that floodproofing cannot be used for all buildings that are within the scope of the IBC.

**Critical Facilities and Essential Facilities.** FEMA has done a lot of post-disaster examination of critical facilities – a term that is not defined in NFIP or disaster regulations, but is generally considered to include facilities that house important services that should remain functional even after significant disasters. The NFIP doesn't have specific requirements for buildings and facilities that serve such vital functions. The IBC defines "essential facilities" as "buildings and other structures that are intended to remain operational in the event of an extreme environmental loading from flood, wind, snow or earthquakes." In addition, the IBC requires that each building be assigned an occupancy category according to a table that describes four occupancy categories (starting with the 2010 IBC, risk categories will be used). Occupancy Category IV includes buildings and structures that the emergency management community considers to be critical and essential facilities. The IBC, by reference to ASCE 24, *Flood Resistant Design and Construction*, requires freeboard for Occupancy Category IV structures. The code-required freeboard may or may not result in protection to the 500-year flood elevation. Of course, the floodplain managers among us would prefer to see critical and essential facilities located on higher ground outside of flood hazard areas, whenever possible. The summary of ASCE 24 referenced above includes the table that describes the four occupancy categories and another table that summarizes all of the elevation requirements.

**Livable and Habitable.** Many people use the term "liveable," but it's not defined in the code. The term "habitable" is defined in the code. The reason I draw your attention to this is because every now and then someone will say "in a floodplain all habitable (or liveable) spaces have to be elevated." So, take a close look at the code definition of habitable space: "A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces." We're all familiar with the NFIP limitation on enclosures below the BFE – they may be used only for parking of vehicles, building access and storage. It's easy to see the disconnect – there are certain uses that aren't habitable spaces, but also aren't allowed below the BFE. Thus, it is an incomplete statement to say habitable (or liveable) spaces have to be elevated. As repetitive as it may seem at times, when talking about enclosures it's always best to repeat the allowed uses: parking of vehicles, building access, and storage.

**Crawlspace and Under-floor Space.** Both terms are used but not defined by the building codes. NFIP guidance materials use the term "crawl space," but it is not used or defined in the regulations. Both terms refer to a type of foundation that is surrounded by solid perimeter, load-bearing walls. We all know a crawlspace when we see it – it's the space between the ground (whether earth or concrete/sealed) and the floor system above. But when that space gets taller than three feet or so, what do we call it? It's rather awkward to refer to a 7 ft high space as a crawlspace. This is where the term "under-floor space" is helpful. FEMA's revised TB-1 uses the term "full-

height under-floor space” to describe solid perimeter walls that have enough headroom that the enclosed area can be used for parking of vehicles, building access, and storage.

**Registered Design Professional.** The NFIP regulations require that certain things be done by a “registered professional engineer or architect,” but do not specifically reference licensed surveyors. Individual states regulate the professions of engineering, architecture, and land surveying. Some states call them licensed professionals, while others call them registered professionals. Each state also specifies what constitutes “practicing” each profession. For example, in some states, engineers can’t do land surveys and architects can’t do structural engineering. To make it easier all around, the building codes use the collective noun “registered design professional” which is defined as “an individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.” So, when you read in the codes that documentation prepared by a registered design professional must be submitted, it doesn’t automatically mean that architects and engineers can do the surveys, or that architects and surveyors can do floodway encroachment analyses – whether they can depends on the applicable laws.

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## CFM<sup>®</sup> Corner

*This section will appear in each issue of the Insider. Email for certification questions is [cfm@floods.org](mailto:cfm@floods.org). For suggestions on specific topics or questions to be covered, please send an email to Anita at this address in the ASFPM Office.*



Recently some members of the Certification Board of Regents (CBOR) rotated off CBOR and new individuals were appointed to these CBOR positions.

Effective January 1, 2011, the following changes took place:

- Mike DePue, CFM, replaces Cleighton Smith, CFM as the CBOR Private Sector representative. Mr. DePue also sits on the ASFPM Foundation Board of Trustees and is employed by PBS&J.
- Gene Henry, CFM replaces Diane Calhoun, CFM as the CBOR At-Large representative. Mr. Henry is a founding Board Member of the Florida Floodplain Managers Association and has served on the ASFPM Board of Directors. He is employed by Hillsborough County, FL.

CBOR welcomes Gene and Mike and says farewell to Diane and Cleighton. ASFPM thanks Cleighton and Diane for their hard work on CBOR during their appointment.

ASFPM would like to thank Diane for serving as President of CBOR for eight years. Under Diane’s guidance, CBOR initiated a joint venture with Ohio State University to conduct a detailed assessment for Reliability and Validity (R&V) of ASFPM’s Certification Program. The recommendations from this project are being incorporated into the Certification Program and CBOR’s five-year Strategic Plan.

Diane is considered to be one of the ASFPM treasures, where her contributions to State Chapters, ASFPM Board and Committees, ASFPM’s membership, and NFIP communities have been beyond measure. Many do not know that Diane served on the original ASFPM CFM Task Force and has been a member of the Professional Development Committee (PDC) Exam Review Committee since the pilot CFM exam in 1998.

Thank you Diane for your 30+ years of service to the floodplain management community.

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