

Taking a Look at Floodproofing for Machinery and Equipment

By Rebecca Quinn, CFM

Over the past several months there's been a lot of talk, and considerable consternation, about "machinery and equipment" and utility meters. The discussion was prompted by the prerequisites established by FEMA for the NFIP Community Rating System that, starting with CRS communities that have their cycle visits in 2021, requires communities to adopt at least one foot of freeboard above the base flood elevation to obtain or retain a Class 8 rating or better. Check out the [Class 8 Freeboard FAQs](#). Applying freeboard to the lowest floor is easy; it's even in the 2015 and later editions of the International Residential Code (although a few states remove the freeboard). But what about machinery and equipment?

Among other minimum requirements, NFIP communities must require new construction and substantial improvements to "be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are *designed and/or located* so as to prevent water from entering or accumulating within the components during conditions of flooding" [44 CFR § 60.3(a)(3)(iv)]. I added the italics to emphasize the rule doesn't explicitly say "elevated to or above the BFE." This rule was adopted in August 1986.

In the very early days, when the NFIP was administered by the U.S. Department of Housing and Urban Development, the requirements were even squishier, with the expectation that applicable state and local building codes and health regulations would "provide for the protection of the heating system and other critical mechanical or electrical installation from damage by flooding" [24 CFR § 1910.58(c)]. That changed in September 1971 to require use of "construction materials and utility equipment that are resistant to flood damage" and language similar to the current requirement appeared in the section for subdivisions, requiring a list of public facilities and utilities to be "located, elevated, and constructed to minimize or eliminate flood damage."

Let's take a look at what "designed" and "located" mean. "Located" is readily interpreted to mean elevated. But the design part? That's what we call a "performance statement" or expectation – it describes the expected performance without saying explicitly how to achieve it. "Designed ... so as to prevent water from entering or accumulating within the components" is fairly well understood to mean the equipment, by its very nature, can be submerged and subsequently restored to function with "minimal" cleaning and repair (similar to what is expected of flood damage-resistant materials). That means typical, off-the-shelf equipment does not meet that expectation. Here's where common lingo can get in the way – equipment that meets that expectation is not "floodproofed" in the same sense that buildings are designed to be dry floodproofed.

When you take a look at the CRS Class 8 FAQs, look for Question 16, The answer explicitly says the freeboard requirement "includes machinery and equipment placed within attached garages and/or within enclosures below elevated buildings, with the exception of utility meters and equipment specifically designed to withstand inundation." The answer goes on to say a community that "allows floodproofing around machinery and equipment in lieu of elevation to the freeboard level does not meet the prerequisite." Remove the word freeboard, and that's a good answer for minimum NFIP requirements and reinforces that the equipment itself must meet the performance expectation.

Now, what about utility meters? This has been a question for a long time. I wrote about electric meters in the [November 2009 Insider](#). Most electric, gas, and water meters are owned by the utility companies, and most utilities are regulated by a public service commission or similar state agency. For the most part, this means regulating installation of meters is not within the jurisdiction of communities. I think there's been a vague expectation that state floodplain folks would somehow be able to get public service commissions to impose

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requirements to minimize flood damage. When I was Maryland's NFIP State Coordinator many years ago I was not so gently "waved away" from starting that conversation with the public service commission. I am aware, however, that some electric companies have guidelines for meters in SFHAs. My guess is they elevate meters because it speeds up their own recovery and service to customers, not because a state entity imposes rules.

Let me tie together two things by telling you about an email exchange I had recently with someone who reads my Notebook columns. He explained he'd been "gigged" by the ISO CRS specialist because an Elevation Certificate showed the gas meter for a building below the BFE. The Elevation Certificate originated as a data collection tool to help the NFIP properly rate flood insurance policies. Over the past decade or more, the EC has changed to be more useful as a compliance tool because information about buildings is collected along with surveyed elevations. But keep in mind, surveyors only survey what they see. They cannot determine compliance, and they certainly cannot tell if equipment is specially designed to meet the performance expectation to be below the BFE.

The floodplain administrator who got in touch said he checked [FEMA P-348 Protecting Utility Systems from Flood Damage](#) (2017), and found little about utility meters. I mentioned this while chatting with a colleague about the dual uses for Elevation Certificates. She pointed out the EC instructions for Item C2.e tell the surveyor to enter the elevation of specific "machinery and equipment items: elevators and their associated equipment, furnaces, hot water heaters, heat pumps, and air conditioners." The instructions go on to say local officials may require elevation for other equipment, given the requirement to ensure "all machinery and equipment servicing the building are protected from flooding." But notice what's missing from the list to determine which equipment is the lowest for the purposes of completing Item C2.e? Utility meters.

So, perhaps the answer in terms of the "gigged" EC is to remove the surveyed elevation of the gas meter and re-shoot the lowest of the specifically listed machinery and equipment. I certainly don't mean to downplay the value of protecting utility meters from flood damage. But communities should not be penalized for something that is beyond their regulatory scope.

Submit your own items or suggestions for future topics to column editor Rebecca Quinn, CFM, at rqquinn@earthlink.net. Comments welcomed! Explore back issues of the [Floodplain Manager's Notebook](#).



Condos, Cooperatives, and Coach Houses

By Ray Carroll, MAI, SRA, CFM

This month I'll talk about condominiums, cooperatives, and strange things called "coach houses." As before, I'll use either *structure value* or *building value* to mean the market value that should be used in SI/SD determinations. I'll use *whole-property value* when I mean the market value of a parcel of land including improvements.

Condominiums

Sometimes floodplain administrators receive appraisal reports in connection with permits for work on buildings "owned in condominium." Condominium is a type of real property ownership in which each owner holds title to his or her individual unit (usually a portion of the interior of a building), and shares ownership jointly of common property such as the land, the common-use portions of the building, recreation facilities,

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and other site improvements. Even if the condominium unit is legally defined as an entire building, as it sometimes is, there will be joint ownership of land and other improvements. It is incorrect to talk about a condominium in terms of being a building.

Appraisal reports identified as Fannie Mae form 1073 or Freddie Mac form 465 are commonly used for underwriting mortgage loans on individual condominium units. Alternatively, the report could be any of a variety of general-purpose condominium unit reports used to support tax code basis-value determinations, buy/sell decisions, or other related uses. None of these reports should be used to support SI/SD determinations because they are all designed and intended to report the *whole-property value* of an individual condominium unit.

Individual condominium unit appraisal reports rely almost exclusively on the sales comparison approach. There's no cost-depreciation approach. Occasionally, a community will receive a condominium unit report supplemented by a land sales analysis, maybe with some discussion of the contribution of joint-owned improvements. Usually, this is the work of a well-meaning appraiser who doesn't understand that for an SI/SD determination, it's the market value of the entire physical building that must be appraised, not the individual unit.

Appraisals to support SI/SD determinations must always be appraisals of the building. An appraisal of an individual condominium unit is never appropriate, even when a permit application is submitted for work on just one unit. The only appropriate valuation method for buildings owned in condominium is Actual Cash Value (ACV).

Cooperatives

A cooperative unit is fractional ownership (evidenced by corporate shares) in a company that owns the real property. The unit of corporate ownership entitles a shareholder to exclusively occupy a defined space in the building, and to jointly use common areas including land, the common-use portions of the building, recreation facilities, and other site improvements. The rights to occupy and use are evidenced by a lease, or an assignment of lease. Just like condominiums, when a cooperative unit occupant proposes improvements, it's the market value of entire building that must be appraised and used in the SI/SD determination, not an individual co-op unit. And again, ACV is the only appropriate method.

Coach house conundrum

This is a real-world example of how regulations don't anticipate every scenario, and how the results of a properly-developed ACV appraisal might seem ridiculous.

About 20 years ago, an excellent quality RV park catering to the owners of Class A motorhomes was developed in a Florida floodplain. RV parks are considered reasonable floodplain development because motorhomes are not structures, and in Florida they tend to disappear from the parks in late Spring before the beginning of hurricane season, and reappear at the end of the season. The RV park in question is a planned community with an engineered drainage system, an elevated clubhouse/storm shelter, security gates,

Actual Cash Value (ACV)

FEMA P-758 [SI/SD Desk Reference](#), Section 4.5.3, describes actual cash value (ACV) as "the cost to replace a building on the same parcel with a new building of like-kind and quality, minus depreciation due to age, use, and neglect. ACV does not consider loss in value simply due to outmoded design or location."



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landscaping, and very nice site amenities including concrete aprons and pads, and public utility hookups for water, sewer, electricity, telephone, and TV cable. The park developer provided each site with a 10' x 10' kit-built frame storage shed (asphalt shingle roof, vinyl siding, no interior finish).

Motorhome people are generally very social folk. They like to entertain and most RV sites get furnished with lounge chairs, covered tables, and sometimes fire pits. In this Florida RV park, it wasn't long before someone decided that the regular card game would be better played out of the bugs and weather and remodeled a storage shed, which became the first "coach house." The idea caught on and soon there were upgraded coach houses with metal shingle roofs, stucco siding, ceramic tile floors, painted drywall interiors, lofts to accommodate water heaters, full bathrooms, efficiency kitchens, air conditioning, art glass windows, and ... well, you get the picture. Keeping up with the Jones' applies throughout society. The demand for embellishments was so strong that more than one local contractor specialized in coach house remodeling. Permits weren't pulled for the original developer-provided kit-built sheds, so they weren't shown in tax assessment records, and subsequent work was done without permits.

Ignorance was bliss until Hurricane Irma came along. Some of the coach houses sustained damage. Subsequently, community officials noticed the coach house owners and permits were required, making the repairs subject to the 50 Percent Rule. Since they weren't assessed, the adjusted tax assessment method wasn't available. Coach houses never sell separate from an RV pad site, so there's no way to make a *whole-property value* appraisal. ACV is the only appraisal method.

What do you suppose it costs, per square foot, to build a structure with all the amenities of a good quality single-family residence and yet the building is only 100 sq. ft. in area? The answer might make your head spin.

GivingTuesday is a Resounding Success: A Heartfelt 'Thank You' to our Donors!

ASFPM Foundation would like to take this opportunity to thank our donors, ASFPM Chapters, and GivingTuesday ambassadors for making this year's GivingTuesday a huge success! This year ASFPM Foundation set an ambitious goal of \$20,000 with all proceeds going to the [Future Leaders Scholarship Fund](#). To help us reach our goal, Dewberry graciously provided a matching gift for the first \$3,000 donated. This was followed by an anonymous donor, who selflessly provided a second matching gift for the next \$5,000 in donations. With everyone's help, hard work, and generosity, the Foundation exceeded its goal, raising over \$22,000 in donations and tripling the number of individual donors from last year.

ASFPM Foundation gives special thanks to ASFPM Chapter Directors and ASFPM Chapters for helping us spread the word and participating in a 'Chapter Challenge' for GivingTuesday. Chapters were awarded prizes for having the most participants, expressed as a percentage of their overall membership. The Chapter Challenge resulted in almost \$9,000 in donations and half of the individual donors!

- Twenty-one chapters participated, which is almost 60 percent of the total number of chapters.
- The top five chapters in the Challenge were FMA, Georgia, Michigan, Ohio, and Wisconsin.
- Other participating chapters included Arizona, Colorado, Florida, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maryland, Nebraska, New York, NORFMA, North Carolina, South Carolina, Tennessee, and Virginia.

The \$22,000 raised on GivingTuesday funds one Future Leaders Scholarship for an entire year. Because of your generosity, more students like Jesus Mulgado and Elizabeth Lacey will be able to pursue their dreams of become a flood risk management professional.

Thank you again and best wishes for a safe and restful holiday season!