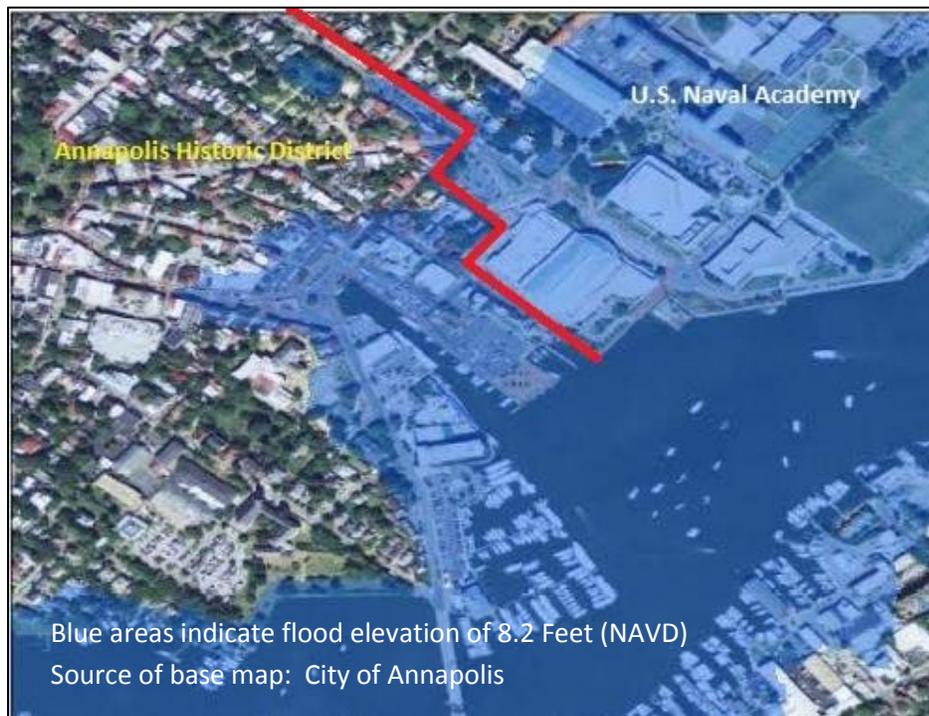


City of Annapolis – Weather It Together: *Revising Floodplain Regulations for the Increased Protection of Historic Structures from Flooding*

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The Threat

Founded in 1649, the City of Annapolis has felt the effects of coastal storms and flooding throughout the centuries of its existence, beginning with the City’s earliest recorded storm in 1667, “the Year of the Hurricane.” The Annapolis Historic District, which contains the National Historic Landmark District, encompasses the colonial portions of the city and is surrounded by three tidally influenced bodies of water: the Severn River, Spa Creek, and College Creek. Since 1970, there has been a “more than fourfold increase in tidal flooding” in the City (Source: Union of Concerned Scientists). Sea level rise is the underlying cause behind the increased flooding. Along the Maryland coast, sea levels are expected to rise up to three feet by 2050 (Source: *State of Maryland Climate Action Plan*, 2008). For the City of Annapolis this means that areas at or below the topographic elevation of 8.2 feet (NAVD88) will become part of the 100-year floodplain by 2050. This area includes 147 historic buildings in the Annapolis Historic District.



Current Floodplain Regulation: Balancing Integrity and Protection

When addressing historic buildings, floodplain regulations seek to achieve a balance between adaptations to flood protection and the retention of as much of the building’s original materials, form and appearance (i.e. its integrity) as possible. Elevation, floodproofing, and relocation are all examples of flood

adaptations that provide protection from flooding but may compromise integrity. Relocation – moving a building from its original to another location- is usually a detrimental impact to a building’s integrity except in rare cases. However, elevation (e.g. raising a building above flood levels) and floodproofing (e.g. making a building watertight or allowing water to enter and exit a building without damaging it) could also be a detrimental impact to a building’s integrity depending upon the specific strategies that are employed. Both elevation and floodproofing if done carefully could minimize the impact to integrity while still providing protection from flooding.

In general, as they relate to historic buildings the floodplain regulations emphasize maintaining integrity first and providing flood protection second, often to the extent practicable rather than to the same extent that is prescribed for non-historic buildings. The terms “extent practicable” are left open to interpretation, but their plain meaning indicates that the protection provided is likely to be less than what is required in the I-Codes (model building codes used by most of the municipalities in the United States) and National Flood Insurance Program’s floodplain regulations for new and existing buildings.

The Annapolis Historic District, which encompasses the National Historic Landmark District, is regulated in the Annapolis Code of Ordinances as an overlay district. An overlay district is an area applied over the existing zoning regulations to establish additional requirements like preserving historically and culturally significant buildings and streetscapes. Where zoning conflicts may arise between the overlay zone and the underlying zone, the requirements of the overlay zone govern.



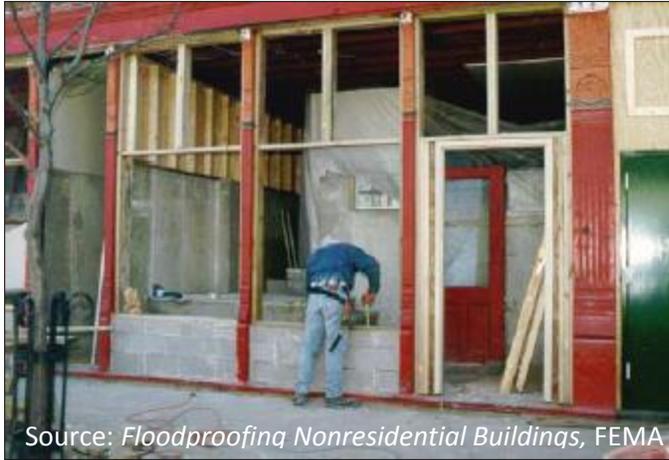
The height of this house’s elevated foundation places the house far above its original relationship to the ground.

The new height at which the building sits, the loss of the original windows and siding and their replacement with products of dissimilar materials, and changes to exterior features, like enclosing the front porch, have severely eroded the integrity of the building.

Were this building to be evaluated for inclusion on the National Register of Historic Places, it would likely be considered ineligible.

Source: Jen Sparenberg

Substantial improvement is any improvement of a building or structure for which the cost of the improvement equals or exceeds fifty percent of the market value of the building or structure before the start of construction of the improvement (Annapolis City Code, §17.11.263 Substantial improvement). In this way, substantial improvement provides a regulatory trigger to require property owners to protect their building from flooding when making changes to buildings in the regulatory floodplain (the 100-year floodplain). This approach calls for the proactive protection of buildings before the next disaster strikes, rather than reactionary protection of adapting a building for flood protection after it has been damaged in a disaster.

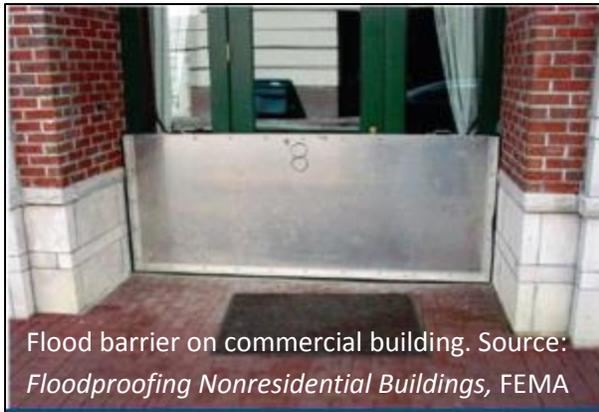


Within the Annapolis Historic District exterior changes to buildings are subject to approval by the City's Historic Preservation Commission. The purpose of this overlay district is to preserve the historic integrity of those designated landmarks, structures, sites, and districts and safeguard the historical and cultural heritage of Annapolis. In the broader sense, maintaining the integrity of historic properties is important in maintaining the City's National Historic Landmark District designation at the federal level, which ensures protection through the Section 106 process of the National Historic Preservation Act and makes historic property owners eligible for state and federal rehabilitation tax credits.

Historic commercial structures in Darlington, Wisconsin were adapted to be flood resistant by raising the interior elevation of the first floor and using flood damage-resistant materials on the interior.

In this case, City officials felt that the impact to the integrity of the interior portion of the building was an acceptable alteration to achieve the flood protection needed to ensure the building's continued use.

The Secretary of the Interior's *Standards for the Treatment of Historic Properties* provide preservation principles and guidelines for physical changes made to historic properties, specifically in regard to activities involving preservation, rehabilitation, restoration, and reconstruction. The *Standards* are



preservation best practices that are followed by federal, state, and local governments and are often incorporated by reference into regulation and municipality-specific guidelines like *Building in the Fourth Century: Annapolis Historic District Design Manual*. Through its series of technical Preservation Briefs, the National Park Service provides recommended methods and approaches for rehabilitation of historic properties that are consistent with the property's historic character. Unfortunately, the *Standards* do not address flood adaptation measures like elevation or the

alterations that might be needed to install flood barriers like brackets and hardware that would be mounted to historic building surfaces or changes to foundation types and materials that might be required by floodproofing.

In many cases historic structures have not been adapted to be flood damage-resistant because according to the federal, state, or local floodplain regulations, they are exempt if such alterations would compromise their integrity (i.e. historic materials, form and appearance). While on the one hand this exemption for historic structures was designed to ensure their protection from insensitive alterations, failure to make any adaptations to flood-prone structures may lead to a total loss of the building itself. Many jurisdictions have been hesitant to use pre-disaster or recovery funding to alter historic structures in the absence of state or federal guidance on how to adapt these buildings and still maintain their integrity. The City of Annapolis is a pioneer in considering how to proactively and comprehensively address these threats while at the same time applying historic preservation values.

Future Floodplain Regulation: Compromise and Difficult Decisions

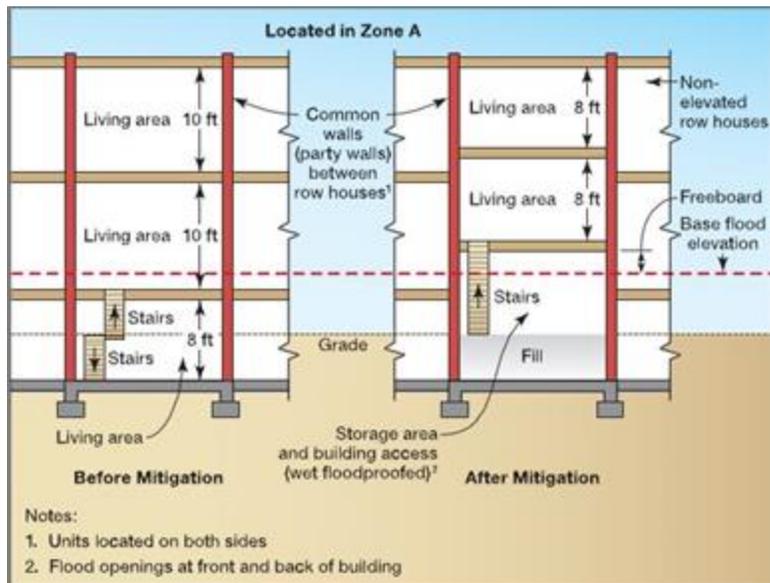
Rising seas, nuisance flooding, and intense storms are occurring now and are projected to increase in frequency and severity. In the context of this threat, the City should consider whether the practice of exempting historic buildings from floodplain regulations in the best long-term interest of the Annapolis Historic District. The City could require historic structures to be protected from the effects of flooding through changes to building codes and floodplain regulations. In some cases the City may be successful in safeguarding historic integrity by developing standards and guidance that will ensure these new codes and regulations are applied sensitively. In other cases, it may be necessary for the City to readjust its understanding of what constitutes integrity when faced with the alternative of an unending cycle of repetitive flooding, damage and repair.

Several recommendations for revising the City's floodplain chapter were set forth in the report *Regulatory Response to Sea Level Rise and Storm Surge Inundation* that was produced for the City in October, 2011. These recommendations provide a path for the City by addressing additional regulatory protection, while

still balancing that increased protection with respect for the integrity of historic properties. The report’s recommendations are:

1. When applying for a variance to the floodplain ordinance, require that the electrical and plumbing systems be relocated to the elevations required by §17.11.420, Buildings and Structures, if interior renovations are made to a historic structure;
2. When applying for a variance to the floodplain ordinance, require floodproofing to the extent practicable while preserving the exterior of the historic structure;
3. Amend the Approval of Exterior Changes in the Historic Overlay District to include a process for expedited approval of emergency repairs after a natural disaster (e.g. flood, fire, etc.);
4. Amend the Historic Overlay District to include language that addresses the installation of temporary storm protective measures (e.g. temporary floodwalls, storm shutters), and
5. Amend the height limits in the historic district overlay to accommodate the elevation of historic structures as a method of flood protection.

A review of the City’s Code of Ordinances reveals that none of the above recommendations have been incorporated into the code, although subsequent discussion with City Officials indicated that the City is



considering language that will address items 4 and 5. If the City of Annapolis was to incorporate all five recommendations into its floodplain ordinance, there will also be a need to revise the regulations of the Historic District Overlay to ensure that work done on historic structures to meet the new floodplain regulations is consistent with the authority, purpose and regulations of the overlay district. New floodplain regulations could impact the historic integrity of these properties. To lessen the impact on integrity, there will be a need to revise the *Annapolis Historic*

FEMA’s Idea for raising the first floor on the interior of a historic rowhouse to provide flood protection without altering the exterior façade. Source: *Hurricane Sandy Mitigation Assessment Team Report*, FEMA

District Design Manual to ensure guidance is in place to help property owners protect their property in ways that are consistent with the Secretary of the Interior’s *Standards for the Treatment of Historic Properties*.

This practice of protecting a historic structure to the extent practicable is consistent with the American Society of Civil Engineers’ *Flood Resistant Design and Construction* (ASCE 24-14), a standard that is incorporated by reference into the 2015 International Codes (known as “I-Codes”). The I-Codes are developed by the International Code Council and are used as model building codes in most communities

in the United States. The City of Annapolis has adopted the 2012 I-Codes, with revisions, which reference the earlier version of the standard from 2005 (ASCE/SEI 24-05). Further, FEMA’s Hazard Mitigation Assistance grant programs require compliance with ASCE 24-14 design criteria to meet the program’s minimum design standards for projects in flood hazard areas (Source: *Guidance for Applying ASCE 24 Engineering Standards to HMA Flood Retrofitting and Reconstruction Project*, 2013).

Another example of higher standards in floodplain regulations with regard to historic properties can be found in the City of Baltimore’s Floodplain Ordinance. Baltimore City’s floodplain regulations contain additional requirements that are not included in Annapolis’s floodplain regulations. Similar to Annapolis’ floodplain regulations, the City of Baltimore’s regulations also contain a variance that allows alterations to historic structures to be exempted from substantial improvement requirements, so long as the alterations do not preclude their continued designation as historic. However, unlike Annapolis, the City of Baltimore’s floodplain regulations place additional conditions for a historic structure to be eligible for the variance. Further, the City of Baltimore’s regulations specifically state that variances *may be* [author’s emphasis] considered by the Planning Department, after a review of appropriate City agencies for, among others reasons: “reconstruction, rehabilitation, or restoration of historic structures as provided in §5.8, Historic Structures, of this subtitle” (Source: City of Baltimore Code, Article 7, Natural Resources, Subtitle 5, Variances, §5.1, In General). In other words, variances to the substantial improvement regulations are not automatically granted for work done to historic structures even if the building will retain its historic designation. Historic property owners must meet all four additional flood protective measures to be considered for a variance, although the protections are less than those required for new and existing buildings. The City of Baltimore’s additional requirements include relocating mechanical, electrical and plumbing equipment above the base flood elevation and requiring all materials below the flood protection elevation to meet the requirements for dry or wet floodproofing.

Baltimore City’s floodplain ordinance is more restrictive than many coastal cities including New Orleans and Boston, both of which allow a substantial improvement

variance for historic structures much like Annapolis does. The choices a municipality makes with regard to its code are highly personal – they reflect the will of the elected officials and the citizens. There is no right or wrong approach to how a municipality chooses to protect its citizens and property. Baltimore City’s approach is one among many, and it is presented here not as a recommended model, but as a catalyst for debate about how to balance flood protection and integrity.

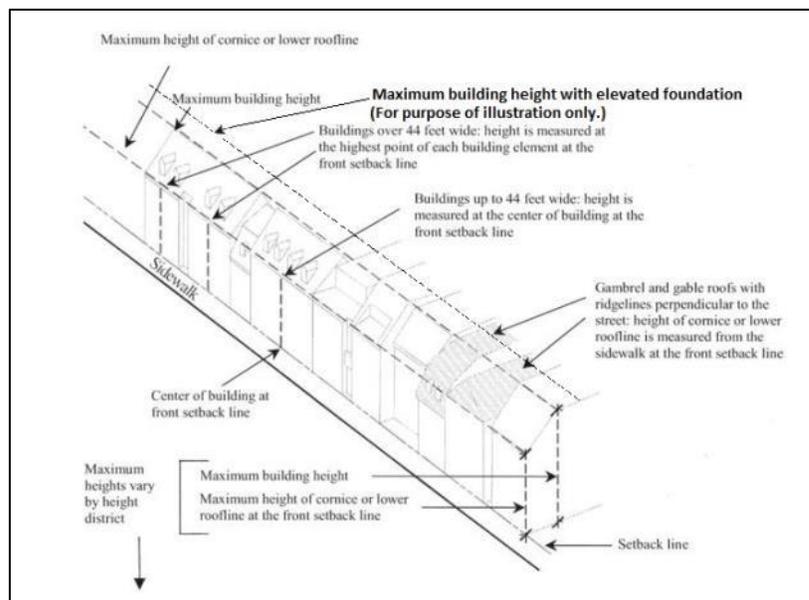


Illustration of how elevated buildings could relate to existing height requirements; Source (original illustration): Annapolis, Maryland - Code of Ordinances

Requiring additional protections in the floodplain ordinance for historic structures may also have repercussions in the City's Planning and Zoning Ordinance. For example, the City may also need to amend its zoning ordinance to increase the height limit for historic structures within the Special Height Limit Districts to allow room for elevating historic structures above the flood protection elevation. A variance could accomplish this while still restricting the height of buildings that have not been elevated in the Special Height Limit Districts. Any increase in building height will be a major detrimental impact to the integrity of the Annapolis Historic District. If such a change was considered, the City should consult with both the National Park Service and the Maryland Historical Trust.

An expedited review that applies in post-disaster situations could be beneficial in helping historic property owners recover after a disaster. A caveat, however, is that often after a disaster there is a desire among citizens and government to return to business as usual as quickly as possible. This can lead to repairs that return a building to its pre-disaster condition without stopping to consider ways to adapt the



A historic structure stabilized and awaiting repair almost seven months after being damaged by Hurricane Katrina.

Source: Jen Sparenberg

building to provide protection against flooding. Further, the post-disaster situation can be complicated by meeting the requirements of FEMA and HUD disaster relief funding. When crafting language for an expedited review to address post-disaster recovery, how the ordinance fits into the City's disaster recovery process and how it could affect federal recovery funding should it be considered.

A review of the building codes for various municipalities revealed that expedited review for work related to historic structures is focused on routine maintenance or repairs and work that will not alter the exterior façade or demolition. The City could amend its Historic District Overlay to include an expedited review procedure for the approval of disaster recovery work. The ordinance should define what work is eligible for expedited review, the conditions that must be met in order to be eligible for an expedited review, and what the result will be if those conditions are met (generally this is the issuance of a permit allowing the work). One condition could be that the expedited review is only invoked in the event of a Presidential Disaster Declaration and/or the Governor's Declaration of a State of Emergency. The City should carefully consider how to word the language of an expedited review such that it does not make the City vulnerable to liability. For example, the City of New Orleans makes an exception from the requirement of obtaining a certificate of appropriateness for "temporary construction, reconstruction, demolition or other repairs on a landmark, landmark site, or building in a district pursuant to the order of any governmental agency or court for the purpose of remedying emergency conditions determined to be dangerous to life, health, or property" (Source: City of New Orleans Code of Ordinance, Division 3, Certificates of Appropriateness,

§84-76 – Required; exception). While the Annapolis Historic District Commission will most certainly want to retain their power to issue certificates of approval for demolition, there may be cases that involve life safety issues that can be exempt from meeting the requirements of an expedited review.

Alternatively, the City’s floodplain regulations could be phased to implement regulations requiring flood protection to the extent practicable for historic properties until 2050, when the floodplain regulations as they relate to historic properties could be reevaluated to respond to current conditions. Bear in mind that current projections place sea level rise between 0.6 to 3 feet by 2050. If the rise is more towards the 3-foot end of the spectrum, protecting historic structure from flooding to the extent practicable may not provide enough protection.

Revisions to the floodplain regulations could address situations where providing a lower level of flood protection will place the building at risk to irreparable damage or destruction, and for those specific cases require a level of protection equal to that of new and existing buildings. This approach will cause a detrimental impact (e.g. adverse effect) to a building’s integrity. Perhaps by 2050 there will be advances in how to protect buildings from flooding without causing a severe loss of integrity through new technologies and new federal preservation standards and guidance. Any revisions to how floodplain regulations treat historic structures should carefully consider how to manage changes to historic structures to keep the focus on retaining integrity, and where a high degree of integrity cannot be maintained, how to retain as much integrity as possible while protecting the building from sea level rise and flooding.

Depending on the circumstance, floodplain regulation may have to focus on flood protection first and then on retaining as much integrity as possible, rather than the current focus on retaining integrity and providing as much protection as possible. Adaptation to future climatological conditions may change how the Annapolis Historic District looks now, but managing that change by balancing protection and integrity can ensure that the historic district is still extant and recognizable as Annapolis for future generations to enjoy.

Glossary

§17.11.125 – Base flood elevation.

The flood having a one-percent chance of being equaled or exceeded in any given year; the base flood is also referred to as the one-percent annual chance (one-hundred year) flood.

(Ord. No. O-24-12, §I, 7-23-2012) Source: City of Annapolis Code of Ordinances

§17.11.179 – Flood protection elevation.

The base flood elevation plus two feet of freeboard. Freeboard is a factor of safety that compensates for uncertainty in factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, obstructed bridge openings, debris and ice jams, climate change, and the hydrologic effect of urbanization in a watershed.

(Ord. No. O-24-12, §I, 7-23-2012) Source: City of Annapolis Code of Ordinances

§17.11.209 - Historic structure.

Any structure that is:

- (1) Individually listed in the National Register of Historic Places (a listing maintained by the U.S. Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listings on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (3) Individually listed on the Maryland Register of Historic Places; or
- (4) Individually listed on the Inventory of Historic Places Maintained by City of Annapolis whose Historic Preservation Program has been certified by the Maryland Historical Trust or the Secretary of the Interior.

(Ord. No. O-24-12, § I, 7-23-2012; Ord. No. O-5-15 Amended, § I, 4-27-2015) Source: City of Annapolis Code of Ordinances

National Register of Historic Places.

“The official list of the Nation’s historic places worthy of preservation.” Source: National Park Service.

§17.11.260 - Substantial damage.

Damage of any origin sustained by a building or structure whereby the cost of restoring the building or structure to its before damaged condition would equal or exceed fifty percent of the market value of the building or structure before the damage occurred. Also used as "substantially damaged" structures. [Note: See "Substantial Improvement/Substantial Damage Desk Reference" (FEMA P-758).]

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§17.11.263 - Substantial improvement.

Substantial improvement: Any reconstruction, rehabilitation, addition, or other improvement of a building or structure, the cost of which equals or exceeds fifty percent of the market value of the building or

structure before the start of construction of the improvement. The term includes structures which have incurred substantial damage, regardless of the actual repair work performed. The term does not, however, include either:

- (1) Any project for improvement of a building or structure to correct existing violations of State or local health, sanitary, or safety code specifications which have been identified by the local Code Enforcement Official prior to submission of an application for a permit and which are the minimum necessary to assure safe living conditions; or
- (2) Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

[Note: See "Substantial Improvement/Substantial Damage Desk Reference" (FEMA P-758).] Source: City of Annapolis Code of Ordinances

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