Development in Apalachicola's Commercial Historic District

A Study of Adaptative Measures for Special Flood Hazard Areas

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Architecture in Apalachicola's Historic Commercial District

Design of commercial buildings in Apalachicola and Florida mirrored national trends. During the mid-19th century, commercial buildings were constructed up to the sidewalk or street and hugged the lot lines and were nearly always rectangular. The narrow elevation facing the street became the focus of the design and provided the building's identifying features. Facades were organized into district sections or zones commonly containing either one or two parts.

The ONE-PART COMMERCIAL BLOCK was seen on one-story buildings and was formed by a structural framework consisting of columns, bulkheads or a kick panels, and a cornice topped by a parapet. Large display windows were placed within this framework to display merchandise and light the interior. This framework formed a basic compositional arrangement. Materials, doors, and windows, and decorative details constituted secondary characteristics that could be organized in a variety of ways.

The TWO PART COMMERCIAL BLOCK was a multistory building organized into upper and lower zones. The design of the lower zone was essentially the same as the one-part façade. The lower zones generally housed public spaces such as retail space, while the upper zones housed apartments, meeting halls, or offices.

Historic Building Materials

Apalachicola's historic commercial buildings are predominated by three distinctive building materials - brick, metal and wood. Both commercial and residential historic structures feature architectural details such as siding, cornices, brackets, entablatures, shutters, columns, and balustrades.

Although the most common building material in Apalachicola is wood, numerous historic masonry structures of stone, brick, concrete or stucco are located in the historic zoning districts, especially in the commercial district. Masonry features such as brick cornices, stone window architraves, masonry pediments and terracotta brackets contribute to the historic significance of Apalachicola's masonry structures. Masonry surfaces such as textured stucco and patterned brick are distinguished architecturally and historical different bonding styles, jointing techniques, surface treatments, brick types and colors.

The City adopted Architectural Guidelines into regulation in 2013. In the document are specific standards for the renovating wood and masonry structures. The City's Guidelines are firmly based on the Secretary of the Interior's Standards for Rehabilitation and were developed to interpret and assist in the respectful restoration and compatible new construction within the historic district.

Flood Resistant Materials

Much of Apalachicola's historic downtown commercial district is located within the FEMA Area of Special Flood Hazard - rated A and V zones. Development and redevelopment in this area is vulnerable to flooding during storms and coastal flooding events. Property owners can reduce the damage caused by flood waters and make cleanup easier by using flood damage resistant building materials.

Building materials are considered flood resistant if they can withstand direct contact with flood waters for at least 72 hours without being significantly damaged. "Significant damage" means any damage that requires more than low cost, cosmetic repair (such as painting).Flood damage resistant materials should be used for walls, floors, and other parts of a building that are below the base flood elevation (BFE). FEMA has a published list of these materials. Commonly available flood damage resistant materials include the following:

Flooring Materials

- concrete, concrete tile, and pre-cast concrete
- latex or bituminous, ceramic, clay, terrazzo, vinyl, and rubber sheets and tiles
- pressure-treated (PT) or decay resistant lumber
- PT wood and cold-formed steel

Wall and Ceiling Materials

- brick, metal, concrete, concrete block, porcelain, slate, glass block, stone, and ceramic and clay tile
- cement board, cold-formed steel, and reinforced concrete
- polyester epoxy paint
- PT and decay resistant lumber
- PT and marine grade plywood
- Foam and closed-cell insulation
- decay-resistant wood

Flood Damage-Resistant Materials Requirements (Aug. 2008), Federal Emergency Management Agency, Technical Bulletin 2

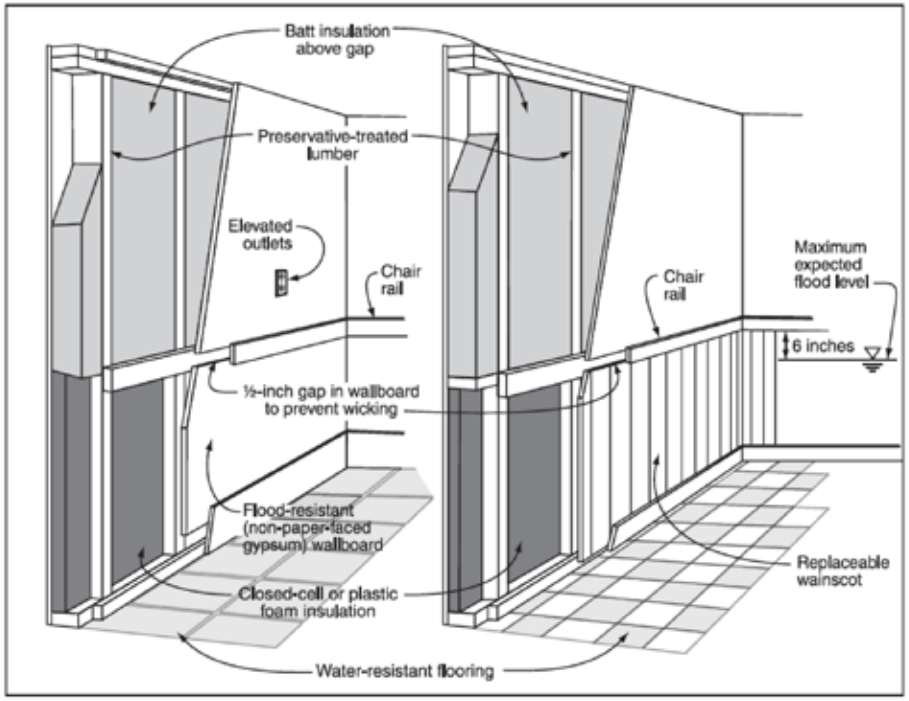
Floodproofing in the Commercial District

Floodproofing includes any combination of structural and non-structural additions, changes, or adjustments to structures that reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

The intent of dry floodproofing is to make a building watertight to one foot above BFE by applying a waterproof coating or impermeable sheeting to the exterior. All openings, such as windows and doors, must be closed off during a flood with temporary or permanent shields.

DRY FLOODPROOFING with waterproof coatings must be considered carefully because the coatings used are difficult to remove without damaging the underlying materials and would change the appearance of the building where they are applied. Even with a waterproof coating, the building must still be anchored to its foundation in order to resist the forces of water and movement. This method works best for new construction and only works for buildings that are built of grade (i.e., built level with the ground) and have an impervious exterior wall material like brick or concrete. The method also works best only for short flooding events since coatings may deteriorate during extended flooding.

WET FLOODPROOFING involves planning for the structure to flood and making preparations to reduce the damage when it happens. Wet floodproofing is achieved by raising utilities, structural components, and contents above BFE. This treatment is only recommended for certain situations, such as a historic building that cannot be elevated or otherwise protected or for new construction when architectural design is flexible enough to accommodate the requirements. This treatment requires some work in advance of a storm and more intervention than many of the other options available.



This illustration shows partial wet floodproofing techniaue using flood damage-resistant materials for finished wall construction. (Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas, FEMA Technical Bulletin 2)

Resilient Heritage Protecting Your Historic Home from Natural Disasters (May, 2015), Louisiana Office of Cultural Development, Division of Historic Preservation

Drainage

Part of the task of keeping water out of a any building is to direct the water away from it. This is done by keeping roofs, gutters, and downspouts in working condition and channeling water collected by these into appropriate subsurface drainage. Grade the soil so that the water drains away from the building. Point downspouts away from the building and onto splash blocks when grading alone is not sufficient. Catch basins, trench drains, or perforated French drains may be needed in some cases. For these retrofits, it may be necessary to consult a landscape architect or a civil engineer who can visit the site to determine the best course of action.

Trench drains with grating covers can be a good option for difficult to drain sites. These differ from French drains in that the bottom of the drainage channel is not perforated. It is possible to empty downspouts into a trench drain. A trench is dug and a drain pipe is laid in the trench to carry water away from the structure. French drain pipes may also be wrapped in filtering fabric or filed with gravel to assist in keeping them free of silt and other debris that will hamper their effectiveness.

Apalachicola has stringent stormwater management requirements. Gutters must direct stormwater into a treatment area BEFORE emptying into a storm drain.

Architectural screening approaches for elevated structures may take the form of open or enclosed panels of various sizes such as the lattice-work shown on the historic Gibson Inn. The panesl can be designed to cover the foundation areas. Small panel treatments may include new lattice patterns or other designs for projects with limited elevation.

New Construction/Renovation in the Historic District

Within the City's historic district, there are sites that are undeveloped or vacant land. Vacant lots in historic districts remain subject to all of the floodplain management requirements that apply to new construction and substantial improvements.

There are ways to elevate or floodproof new structures and substantially improve non-contributing structures so that they comply with the NFIP regulations, but that are still in harmony with the historic nature of the district. An architect should be able to design a new building that is both compliant with NFIP floodplain management requirements and compatible with the historic nature of the district. For example, the protection does not have to be achieved by unsightly mounds of dirt or bare pilings or other elevated foundations. The structure could be elevated on pilings or other foundation elements and the lower area then covered by an architecturally pleasing façade that will not impair the aesthetics of a historic district. The foundation could be camouflaged with landscaping, porches, or staircases.

Elevation

One of the common methods of protecting flood-prone buildings is to elevate the lowest floor of a structure above the BFE (elevation of the one-percent-annual chance flood). Elevation is an effective mitigation measure, if designed and constructed appropriately to withstand flood forces. Although elevation is a practical solution for flooding problems, the flooding conditions and other hazards at the site must be carefully examined so that the most suitable technique and foundation type can be determined.

There are two types of elevation to consider: (1) The entire building is lifted and placed on a new elevated foundation (columns, piers, posts, or raised foundation walls such as a crawl space). (2) In situations where it is possible to leave the exterior of the building the same, raise the interior floor of the building above the BFE.

Essentially, the steps required for elevating a building are largely the same in all cases. A cradle of steel beams is inserted under the structure; jacks are used to raise both the beams and structure to the desired height; a new elevated foundation for the house is constructed; and the structure is then lowered back onto the new foundation and reconnected. At a minimum, the foundation of the elevated structure must be able to withstand the expected loads at a site which may include hydrostatic pressure, hydrodynamic loads from velocity water, wave and debris resulting from the flood, and buoyancy.

While elevating a structure above the BFE will provide the structure the most protection, a less intrusive elevation may be desired or more feasible for a historic structure. Other protection measures, such as elevating utilities and equipment above the BFE, should be considered if elevating a historic structure to the BFE is not practicable.

Elevation of a historic structure does not have to be achieved by unsightly pilings or other foundation that would impair the aesthetics of a historic district. The structure could be elevated on pilings or foundation walls and the foundation area could then be covered by an architecturally pleasing facade that is consistent with materials from the historic structure. The lower area can also be camouflaged with landscaping.

Historic Structures, (May 2008), Federal Emergency Management Agency National Flood Insurance Program, FEMA P-467-2

Substantial Improvements to Structures

Property owners have the option to substantially improve a non-contributing structure in a historic district, so that it can become a contributing structure to the historical significance of the registered historic district. If the improvement is a substantial improvement to a non-contributing structure, the structure still could qualify for relief from the NFIP floodplain management requirements in the following ways (44 CFR §60.3). In all cases, the property owner should discuss their proposed plans with the City planning staff and seek guidance from the State Historic Preservation Officer before undertaking any improvements to make sure the proposed work would qualify the building for the designation as a contributing structure. Benefits to retrofitting an existing structure to contributing status:

• Apply through the State Historic Preservation Office for contributing status for the structure as is, prior to any improvements. If the building qualifies as "contributing to the historical significance of a registered historic district", the community can grant a variance or exclude the improvements from the NFIP substantial improvement requirement depending on which provision the community has adopted [44 CFR §60.3(c)(2), (c)(3), and (e)(4)].

• Undertake the minimum work necessary to make the building a contributing structure, as long as the work is less than a substantial improvement. Once the structure is designated as "contributing", any additional improvements including a substantial improvement could qualify for relief from the NFIP floodplain management requirements, so long as those improvements do not interfere with the designation as "contributing to the historical significance of a registered historic district" (44 CFR §60.3).

• Contact the community for guidance on how they might qualify for relief from the NFIP substantial improvement requirement [44 CFR §60.3(c)(2), (c)(3), and (e)(4)]. In this situation, the community would have to issue a variance from the floodplain management ordinance. The community should obtain documentation for assurance that the improvements being proposed would qualify the building for "contributing" status before signing off on permits that would grant them relief under the NFIP.

Historic Structures, (May 2008), Federal Emergency Management Agency National Flood Insurance Program, FEMA P-467-2

Reference Resources

Disaster Mitigation for Historic Structures, Protection Strategies, (Aug. 2008), 1000 Friends of Florida, Florida Department of State, Division of Historical Resources, Florida Division of Emergency Management

Elevation Design Guidelines, (n.d.), Mississippi Development Authority

Flood Damage-Resistant Materials Requirements (Aug. 2008), Federal Emergency Management Agency, Technical Bulletin 2

Floodplain Management Ordinance (July 2013), City of Apalachicola

Historic Apalachicola Design Guidelines, A Guide to Rehabilitation and New Construction, (Aug. 2006), City of Apalachicola

Historic Structures, (May 2008), Federal Emergency Management Agency National Flood Insurance Program, FEMA P-467-2

Land Development Code, Ordinance 91-7, (Dec. 1991), City of Apalachicola

Non-Residential Floodproofing - Requirements and Certification for Buildings Located in Special Flood hazard Areas, (n.d.) Federal Emergency Management Agency Technical Bulletin 3-93

Resilient Heritage Protecting Your Historic Home from Natural Disasters (May, 2015), Louisiana Office of Cultural Development, Division of Historic Preservation

Glossary

Base Flood Elevation (BFE) — The height of the base flood, usually in feet, in relation to the National Geodetic Vertical Datum of 1929 or other datum as specified.

Coastal High Hazard Area — An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or seismic sources.

Federal Emergency Management Agency (FEMA) — The independent federal agency that, in addition to carrying out other activities, oversees the administration of the National Flood Insurance Program.

Flood Insurance Rate Map (FIRM) — The insurance and floodplain management map issued by FEMA that identifies, on the basis of detailed or approximate analyses, areas of 100-year flood hazard in a community.

Floodprone area — Any land area susceptible to being inundated by floodwater from any source.

Lowest floor — The lowest floor of the lowest enclosed area of a building, including a basement. Any NFIP-compliant unfinished or flood-resistant enclosure useable solely for parking of vehicles, building access, or storage (in an area other than a basement) is considered a building's lowest floor.

Special Flood Hazard Area (SFHA) — Area delineated on a Flood Insurance Rate Map as being subject to inundation by the base flood and designated as Zone A, AE, A1-A30, AR, AO, AH, V, VE, or V1-V30.

Substantial improvement — Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial damage," regardless of the actual repair work performed.

Design Ideas for New Construction in the Commercial District Area of Special Flood Hazard.

Design professionals from Florida A&M University drafted four FEMA-compliant yet historically compatible elevations to show options for new development in the downtown district.

Two Story Wood Vernacular Mixed Use

Features: Commercial Ground Floor, Residential Second Floor.

This illustration demonstrates flood-proofing design compatible with Apalachicola's Historic Commercial Vernacular design. As is a typical style referenced in the City's Historic Guidelines, the rectangular building is designed to be constructed up the sidewalk and hug the lot lines. The elevation faces the street and becomes the focus of the design, providing the building's identifying features. Facades are organized into distinct zones - commercial downstairs and residential or transient lodging upstairs. The use is compatible with the City's downtown commercial zoning districts.

This particular design would be appropriate for a two-lot or more building parcel.

The illustration demonstrates flood-proofing design decisions that reduce the impacts of coastal flooding on two story vernacular mixed-use structures. The residential second floor has a private entrance (to the left) and extensive balcony that accents the main facade. The commercial uses are accessed by the public stair (to the right) or the ADA ramp hidden behind the half wall in the middle of the elevation. The ADA ramp helps to disguise the raised floor to meet the FEMA requirements.

The vernacular mixed-use structure reduces significant damage from flooding in three ways.
(1) elevating the commercial ground floor and its important utilities above the floodplain. The second floor residential use exceeds required base flood elevation requirements.
(2) allowing flood waters to easily enter and exit the structure (through the ADA ramp and stairs) in order to minimize structure damage.
(3) using flood damage resistant materials as identified elsewhere in this brochure. The materials will be used to construct the ramp and the ground flood stairs. In addition, the residential entrance lobby needs dry flood-proofing. The lobby interior requires sealing the walls with waterproof coatings, impermeable membranes and installing watertight shields on openings.

This downtown business building is an example of a two story vernacular wood frame structure.

Two Story Wood Vernacular Mixed Use or Commercial Two Story Duplex

Features: Commercial Ground Floor, Residential Second Floor or Two Story Commercial Duplex.

This illustration is a more narrow example of flood-proofing design compatible with Apalachicola's Historic Commercial Vernacular design. As referenced in the City's Historic Guidelines, the rectangular building is designed to be constructed up the sidewalk and hug the lot lines. The narrow elevation faces the street and becomes the focus of the design, providing the building's identifying features. Facades are organized into distinct zones - either a two story commercial duplex or commercial downstairs and residential or transient lodging upstairs. Either use is compatible with the City's downtown commercial zoning districts.

This particular design would be appropriate for a one-lot building parcel.

As in the larger version of this style, the illustration demonstrates flood-proofing design decisions that reduce the impacts of coastal flooding on two story vernacular mixed-use structures. The residential second floor has a private entrance (to the left) and extensive balcony that accents the main facade. The commercial uses are accessed by the public stair (to the right) or the ADA ramp hidden behind the half wall in the middle of the elevation. The ADA ramp helps to disguise the raised floor to meet the FEMA requirements.

The vernacular mixed-use structure reduces significant damage from flooding in three ways.
(1) elevating the commercial ground floor and its important utilities above the floodplain. The second floor residential use exceeds required base flood elevation requirements.
(2) allowing flood waters to easily enter and exit the structure (through the ADA ramp and stairs) in order to minimize structure damage.
(3) using flood damage resistant materials as identified elsewhere in this brochure. The materials will be used to construct the ramp and the ground flood stairs. In addition, the residential entrance lobby needs dry flood-proofing. The lobby interior requires sealing the walls with waterproof coatings, impermeable membranes and installing watertight shields on openings.

The Historic Sponge Exchange now serves as the City's Center of History, Culture and Art and is an example of a brick commercial warehouse design.

Two Story Brick or Masonry Commercial Warehouse Design

Features: Two Story Commercial

This illustration is an example of the brick or masonry style commercial warehouse that was prevalent in the downtown district during the early 1800s. The one or two story building were formed by a structural framework consisting of columns and a cornice topped by a parapet. Large display windows were traditionally placed within this framework to display merchandise and light the interior. This interpretation is a flood-proofed example of that style and is compatible with Apalachicola's Historic Commercial Vernacular design. As with the wood-frame vernacular style, the rectangular building is designed to be constructed up the sidewalk and hug the lot lines. The narrow elevation faces the street and becomes the focus of the design, providing the building's identifying features. Facades are organized into distinct zones - either a two story commercial duplex or commercial downstairs and residential or transient lodging upstairs. Either use is compatible with the City's downtown commercial zoning districts.

This particular design would be appropriate for a one or more lots.

The illustration demonstrates flood-proofing design decisions that reduce the impacts of coastal flooding on commercial structures. The commercial warehouse can be accessed by the public stairs (to the right and left) or the ADA ramp hidden behind the half wall in the middle of the elevation. The ADA ramp will also be used for deliveries.

The vernacular warehouse structure reduces significant damage from flooding in three ways.
(1) elevating the commercial ground floor and its important utilities above the floodplain.
(2) allowing flood waters to easily enter and exit the structure (through the ADA ramp and stairs) in order to minimize structural damage.
(3) using flood damage resistant materials as identified elsewhere in this brochure. The materials will be used to construct the ADA ramp and the ground floor stairs.

The Historic Dixie Theatre is an example of a mixed use historic brick commercial warehouse design.

Two Story Brick or Masonry with Wood Commercial Warehouse Design with Porch/Balcony

Features: Gound Level Commercial/Residential Second Floor

As with the simpler masonry or brick style warehouse, this illustration is an example of the commercial warehouse style that was prevalent in the downtown district during the early 1800s. The one or two story buildings were formed by a structural framework consisting of columns and a cornice topped by a parapet. This interpretation features a second floor balcony/porch to service the residential use upstairs.

Large display windows were traditionally placed within this framework on the first flood to display merchandise and light the interior. The modern interpretation features windows and appropriate french doors to achieve the same look. This interpretation is a flood-proofed example of that style and is compatible with Apalachicola's Historic Commercial Vernacular design. As with the wood-frame vernacular style, the rectangular building is designed to be constructed up the sidewalk and hug the lot lines. The narrow elevation faces the street and becomes the focus of the design, providing the building's identifying features. Facades are organized into distinct zones - either a two story commercial duplex or commercial downstairs and residential or transient lodging upstairs. Either use is compatible with the City's downtown commercial zoning districts.

This particular design would be appropriate for a one or more lot building parcel.

The illustration demonstrates flood-proofing design decisions that reduce the impacts of coastal flooding on commercial structures. The commercial warehouse can be accessed by the public stairs (to the right and left) or the ADA ramp hidden behind the half wall in the middle of the elevation. The ADA ramp will also be used for deliveries.

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