LOUISIANA
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF HISTORIC PRESERVATION
DEVELOPING OUR CULTURAL ASSETS

URS

Elevation Design Guidelines

For Historic Buildings in the Louisiana GO Zone

Elevation Design Guidelines

For Historic Buildings in the Louisiana GO Zone

LOUISIANA
OFFICE OF CULTURAL DEVELOPMENT

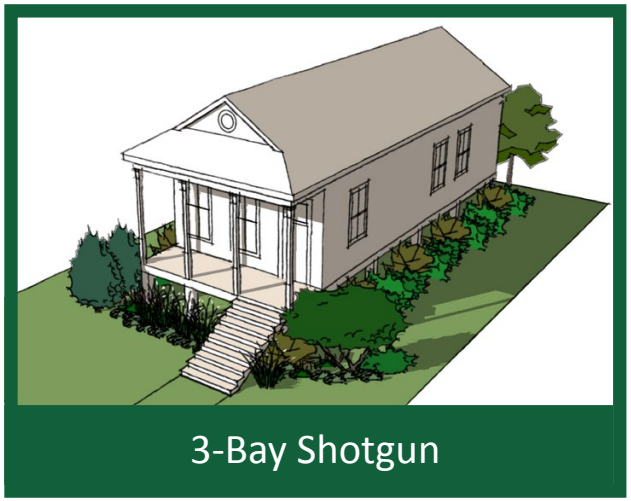
DIVISION OF HISTORIC PRESERVATION

DEVELOPING OUR CULTURAL ASSETS

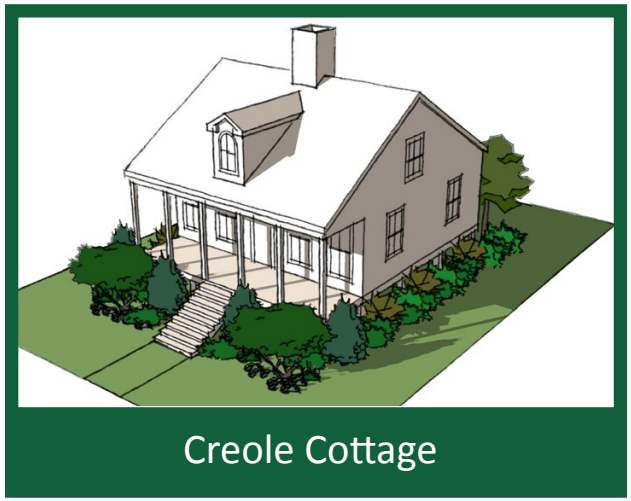
Photo on the cover: Raised Cottage, Garden District, New Orleans (2014)
All renderings and diagrams in the publication by URS (2014) unless otherwise noted

Table of Contents

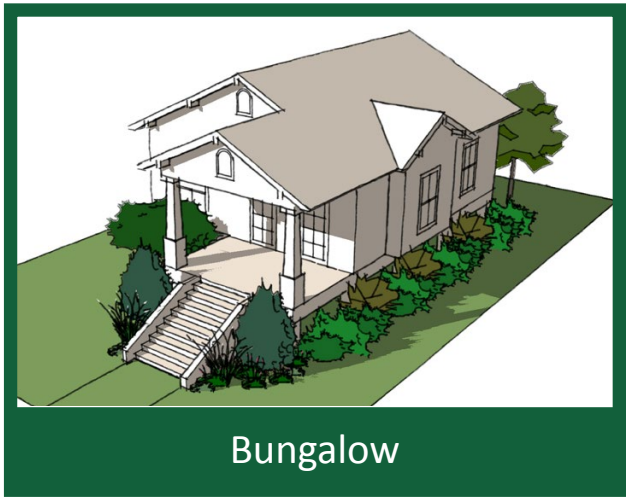
Raised Plantation Style House, 905 Esplanade Avenue (The Historic New Orleans Collection, used with permission)



3-Bay Shotgun



Creole Cottage



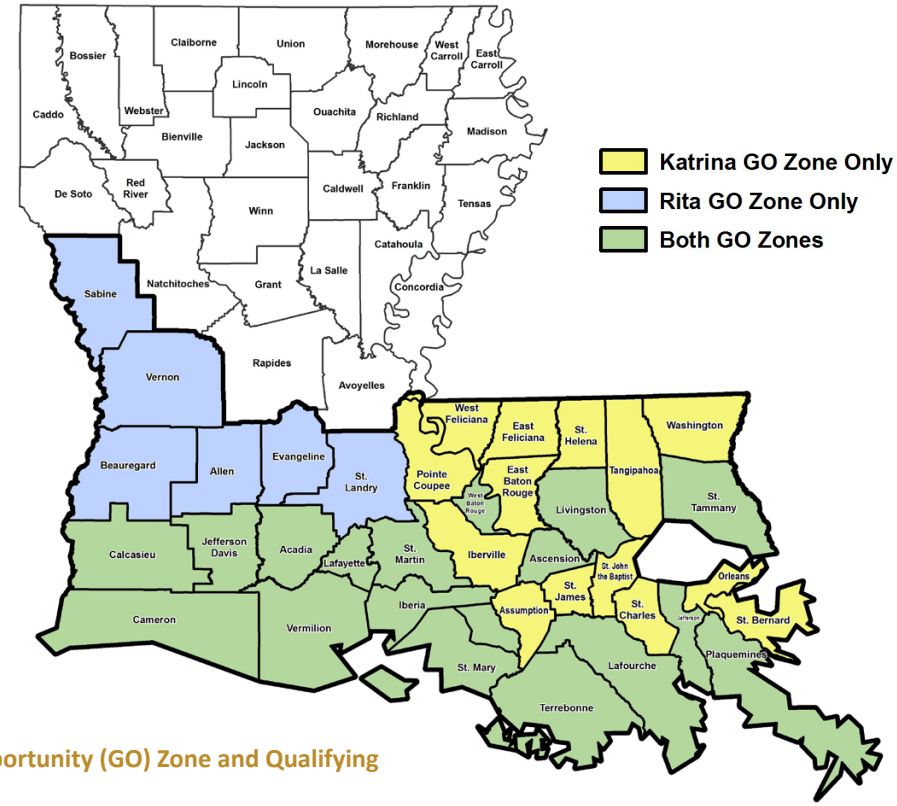
Bungalow

The Louisiana Division of Historic Preservation (DHP) has prepared these **Elevation Design Guidelines** in collaboration with participating local historic preservation commissions representing historic preservation interests in the 37 Gulf Opportunity (GO) Zone parishes in Louisiana. In addition, DHP invited participation by local building officials, planning and zoning representatives, flood plain managers, architects and members of the public. This collaborative approach allows the Guidelines to reflect accurately a current process for owners of historic properties to elevate their residential or commercial buildings in a sensitive manner. DHP expressly thanks those who have actively participated in this important process to help conserve the unique character of Louisiana's historic communities.

Intent of the Louisiana Elevation Design Guidelines

The intent of these Guidelines is to conserve the historic character of Louisiana's cities, towns, neighborhoods and buildings, where possible, by integrating both traditional and innovative elevation design approaches in a sensitive manner. With environmental factors changing very quickly, the preservation community's response must be proactive instead of reactive. By utilizing these Guidelines, owners of historic properties will discover a myriad of options to reinforce a historic building's physical relationship to its site, the street on which it is located, as well as neighboring homes. Part of what makes Louisiana so unique is the breadth and depth of the historic architecture, found both in rural settings, individual properties, as well as grouped together in an assemblage or historic district. Louisiana also has a relatively unique history of elevating buildings as a means by which to protect the structure, contents, and inhabitants from the regular threat of flooding. As a result, the historic architecture of Louisiana has evolved, somewhat organically, to address these concerns and other environmental influences. Through analysis of historic elevation design and methodology, as well as discussion of modern elevation techniques, these Guidelines provide insight into how to raise buildings out of harm's way. These Guidelines are primarily intended to be used by local planning and building officials engaged in community-based disaster recovery and mitigation efforts, as well as provide guidance to owners of historic buildings and local municipal agencies located within the 37 designated GO Zone parishes. This publication also was designed to offer helpful building elevation guidance to all Louisiana historic property owners who may not be in a designated historic district, but who are considering elevating their historic or older building.

Lombard Plantation House, Bywater Historic District, New Orleans (2014)



Map of Gulf Opportunity (GO) Zone and Qualifying Parishes

Gulf Opportunity (GO) Zone and Qualifying Parishes

In the aftermath of Hurricane Katrina, which struck on August 29, 2005, and Hurricane Rita, which made landfall a month later on September 24, the State of Louisiana's Road Home Program purchased approximately 10,600 damaged properties with the hope of returning them to productive use through their respective parishes' governing authorities. Because Community Development Block Grants (CDBG) funds from the Federal Department of Housing and Urban Development (HUD) are being used, in part, to renovate houses that are historic, this action is considered an Undertaking, as defined under Section 106 of the National Historic Preservation Act (NHPA). Under these regulations, actions must be taken to avoid, minimize, or eliminate adverse effects on historic proper-ties.

Due to the large number of individual buildings involved, a Programmatic Agreement was executed to more efficiently perform the required NHPA Section 106 reviews, including the development of alternative mitigation strategies that can be applied to multiple buildings. The development of this publication is one such comprehensive alternative mitigation measure. These guidelines have been created to effectively assist communities when elevating residential or commercial historic buildings to protect them from future flood events.

This publication is tailored to residential and commercial historic buildings that fall within the 37 qualifying parishes that have been designated Gulf Opportunity (GO) Zones in the aftermath of Hurricanes Katrina and Rita. These qualifying parishes may include Main Street districts, Certified Local Governments, or National Register of Historic Places (NRHP) Historic Districts. The GO Zone parishes range from Sabine in the northwest to Plaquemines in the southeast, as illustrated in the figure (above). Table 1 lists the individual parishes and the eligible districts, though other buildings outside these areas may benefit from these Guidelines.

Table 1: Go Zone Parishes and Qualifying Districts

Go Zone Parish	Go Zone Main Street	Go Zone CLG District	Go Zone NRHP District
Acadia	Crowley	Crowley	Crowley
Allen		Kinder	
Ascension	Donaldsonville	Donaldsonville	Donaldsonville
Assumption			
Beauregard	DeRidder	DeRidder	DeRidder
Calcasieu		DeQuincy; Lake Charles	Lake Charles
Cameron			
East Baton Rouge		Baton Rouge	Baton Rouge
East Feliciana	Clinton	Clinton	Jackson
Evangeline		Mamou; Ville Platte	
Iberia	New Iberia	Jeanerette; New Iberia	New Iberia
Iberville	Plaquemine	Plaquemine	Carville; Plaquemine
Jefferson			Gretna
Jefferson Davis			
Lafayette			Broussard; Lafayette
Lafourche	Thibodaux	Thibodaux	
Livingston	Denham Springs	Denham Springs	
Orleans	New Orleans		New Orleans
Plaquemines			
Pointe Coupee	New Roads	New Roads	
Sabine			Fisher
St. Bernard			Arabi
St. Charles			
St. Helena			
St. James			
St. John the Baptist			Garyville
St. Landry	Eunice; Opelousas	Eunice; Opelousas	Grand Coteau; Opelousas; Washington
St. Martin	St. Martinsville	St. Martinsville	Breaux Bridge; St. Martinsville
St. Mary	Franklin; Morgan City	Franklin; Morgan City	Franklin; Morgan City
St. Tammany	Slidell	Covington; Mandeville; Slidell	Abita Springs; Covington
Tangipahoa	Hammond; Ponchatoula	Hammond; Ponchatoula	Amite; Independence; Hammond; Ponchatoula
Terrebonne	Houma	Houma	Houma
Vermilion	Abbeville	Abbeville	Abbeville
Vernon	Leesville	Leesville	Leesville
Washington		Bogalusa	
West Baton Rouge			
West Feliciana	St. Francisville	St. Francisville	St. Francisville

Disclaimer – Please check with the Division of Historic Preservation (DHP) to ensure that the communities identified on this table are accurate and up-to-date.

Throughout this document, three building types common to the region are used to illustrate the variety of methods and means to elevate historic structures in the most sensitive manner possible. These three types are: the Creole Cottage, the 3-Bay Shotgun and the Bungalow. Two broad, recurring themes explored in the publication relate to site and building considerations. These will be explored in greater detail in the forthcoming chapters and are accompanied by illustrations using the three building types.

Site Considerations

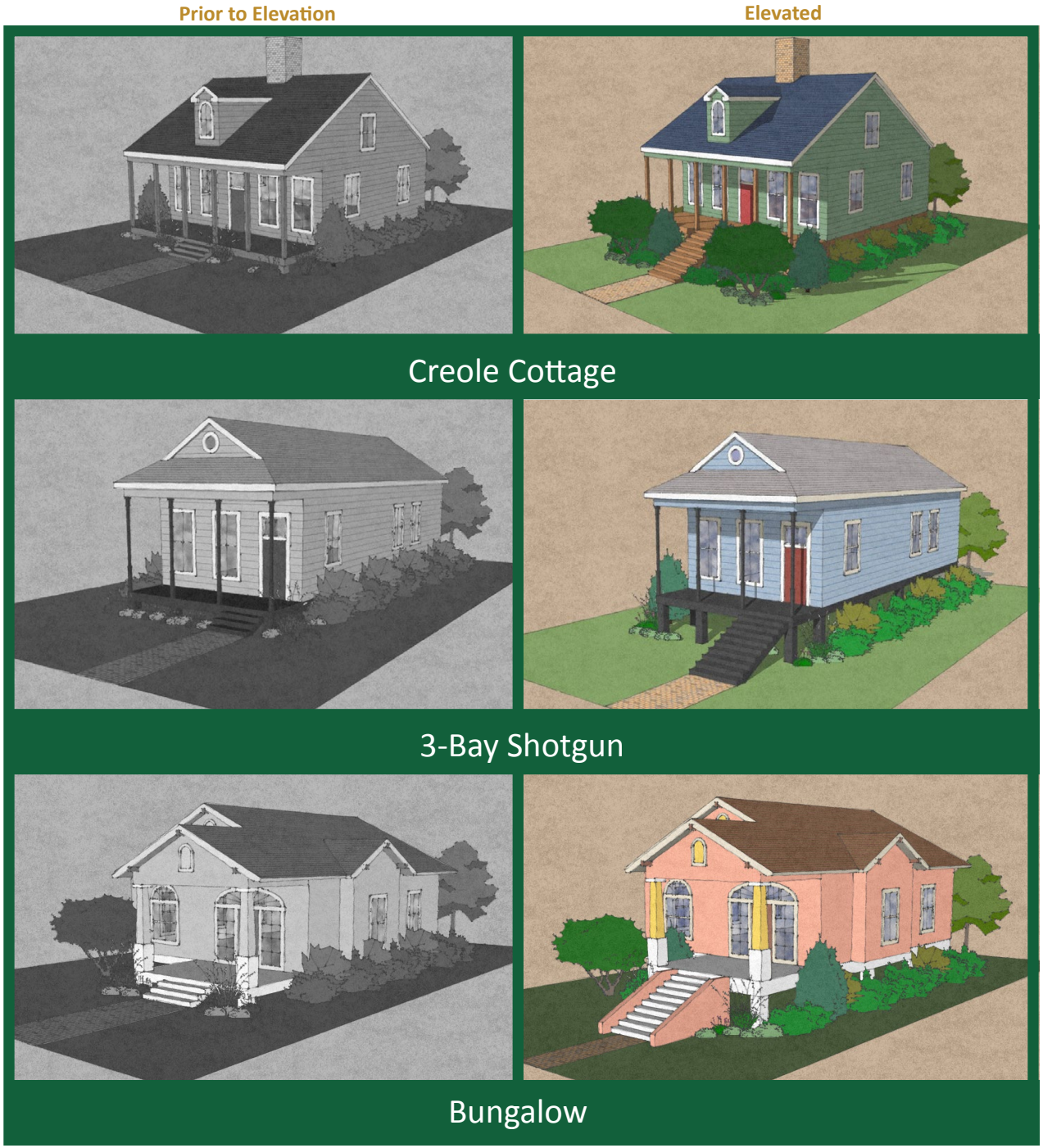
The treatment of the property's site features can play a critical role in avoiding or minimizing the potentially disruptive visual impact an elevated house can have on the surrounding neighborhood context depending on the initial height and the newly required height by code. In these guidelines, emphasis is placed on important site features such as:

- Site Elevation and Topography
- Parcel Configuration and Access
- Building Footprint and Orientation
- Adjoining/Adjacent Property Considerations
- Driveways, Parking and Garages
- Landscape Screening and Enhancement

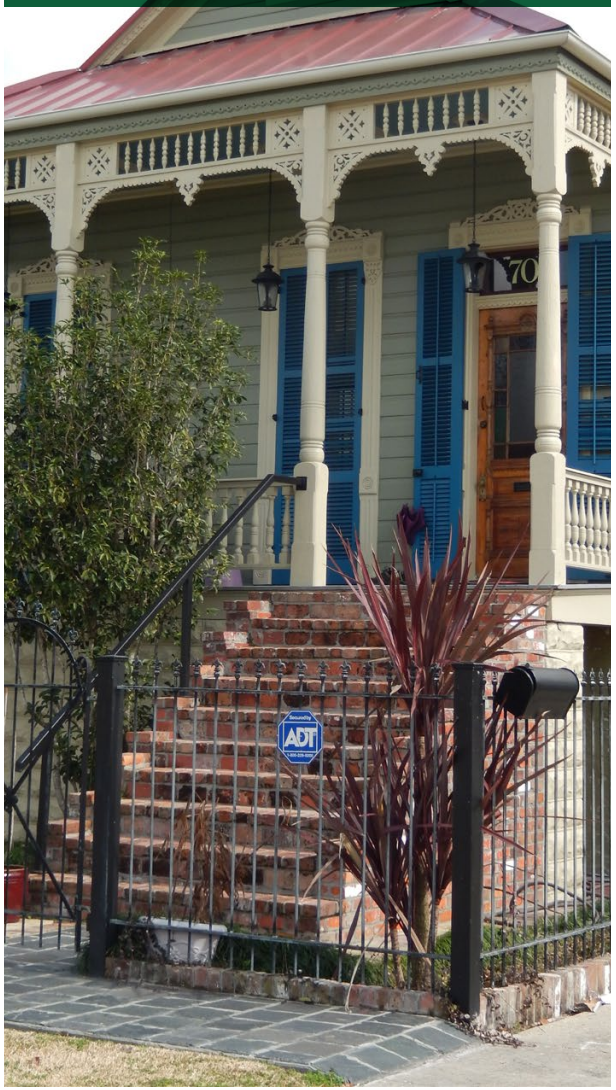
Building Considerations

Attributes of each historic building's architectural character that will be addressed include:

- Historic Neighborhood Context
- Potential Elevation Alternatives
- Typical Historic Building Types and Styles
- Composition and Scale
- Existing Façades
- Stairs and Porches
- Foundations and Screening
- Fences and Walls



Introduction



Natural Disasters and Historic Properties in Louisiana

The effects of hurricanes and flooding on the people and places of Louisiana are well known. When Hurricane Katrina made landfall on August 29, 2005, the impacts of one the nation's largest natural disasters were immediately seen and felt in Louisiana and by all Americans across the nation. In its wake came Hurricanes Rita (September, 2005), Gustav (September, 2008) and Ike (September, 2008). The devastating combined effects of wind and water from these storms alone destroyed tens of thousands of homes in Louisiana, and heavily damaged scores of other properties along the Gulf of Mexico. While Louisiana has accomplished significant rebuilding, there is much more to be done, particularly in reducing the risks from future storm events.

Although the majority of properties affected by recent hurricanes were not historic, hurricane effects on the region's historic buildings were substantial, and without precedent nationally. In many communities, scores of historically significant properties were literally shorn from their foundations, and others were so heavily damaged that they could not be saved. Because of health and safety concerns, many of these properties were subsequently demolished.

Because of this unprecedented level of damage and loss, future protection of historic properties in the GO Zone has become even more important due to the scale and extent of prior damage. The buildings that remain represent special places that must—now more than ever— be protected as community resources. These structures also have unique architectural and design characteristics that many historic communities strive to maintain and enhance.

The over arching goal of this effort is to reduce risk from future flood events through elevation, and to preserve the physical integrity and character of historic buildings. **Specifically, one of the most important outcomes of this effort is to limit the total height of elevation for historic buildings so they maintain their historic character in relation to other historic buildings within each historic district, thus protecting the architectural qualities of each historic district as a whole.**

The DHP acknowledges the importance of life safety issues and also understands that in certain areas of the state, there may be no alternative but to enforce elevations. This requirement may result in historic buildings not meeting the Secretary of the Interior's Standards - depending on the height of elevation required and the initial height of the historic house and its character. Nonetheless, these guidelines will serve to provide that sensitive approaches to elevating historic buildings where possible.

Mitigation options such as building elevation can help historic property owners reduce their risk from future flood events (2007)

Raised versus Elevated Buildings

Is there a difference between a "raised" and an "elevated" building? Because these terms are often used interchangeably, the answer may not be abundantly clear.

Historically, buildings in Louisiana have been raised above the ground, either during their initial construction, or following flooding or the threat of flooding. Raising a house also allowed welcoming breezes to circulate under the house. Over the course of three centuries, Louisiana has produced a number of identifiable "raised" house forms, and among them are the Louisiana Plantation House, the Raised Creole Cottage, the Raised (or American) Cottage, and the Raised Basement House. In earlier times, when building owners wished to raise their house, often the services of a local "house raising firm" were sought.

More recently, in the era of government-sponsored elevation grant programs, the term "elevation" has become more widely popular. It refers to a technical process in which a house is elevated to a required or desired flood protection elevation. When properly elevated, the living area of a house will be above all but the most severe floods. In comparison with the more traditional "house raising" term, "building elevation" refers to a far more complex process, which may involve engineers, architects, designers, flood plain managers, and contractors.

In offering elevation design guidance for historic properties, this publication seeks to strike a balance. It does so by respecting Louisiana's long-standing traditions of house raising and its raised house types as well as incorporating the beneficial technical aspects of contemporary building elevation.

Purpose of Elevation Design Guidelines

Based upon the historic preservation and flood protection requirements established by the U.S. Department of Interior (DOI) and the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA), respectively, these Elevation Design Guidelines are intended to inform property owners and local Historic Preservation Commissions (HPCs) of elevation design principles to best ensure that historic properties are mitigated in a manner that protects their historic features. The Guidelines represent a framework in which a range of potential elevation actions, each with a range of planning considerations, including neighborhood context, treatment of elevation and historic fabric interface, and vacant parcels, may be evaluated to produce the best, individualized approach for a given historic building and/or historic district. While tailored to the 37 qualifying parishes within the GO Zone, information contained in these Guidelines is presented for any property owner's use in planning changes to historic buildings within a historic district, or to an individual historic building outside the boundaries of these districts. Building upon nationally recognized historic preservation principles described in the Secretary of the Interior's Standards for Rehabilitation (see Section 9, Resources and Publications), these Guidelines have been designed to assist and remind members of local HPCs of the issues they should consider when reviewing an elevation project.

While limiting the elevation of historic properties, or minimizing other mitigation improvements to these buildings, may be the preferred approach from a historic preservation perspective, these actions may not always be readily supported by floodplain managers and the communities for which they are responsible. Should a variance be required for a historic building, the community's National Flood Insurance Program (NFIP) rating, and therefore, the community's flood insurance rates, could be directly affected. Property owners and other stakeholders should take into account all current NFIP and local floodplain regulations and requirements when determining the best approach for each historic property.

Because the architectural character may be different among communities, information contained in the *Louisiana Historic Building Types, Styles and Important Architectural Features and Louisiana Speaks: Pattern Book*, prepared by Urban Design Associates (refer to Section 9, Resources and Publications), have also been incorporated into the Guidelines, so that property owners can integrate this information into the individual elevation plans they produce.

These Guidelines illustrate principles to help preserve the historic elements of homes located in historic districts. Shown here is a raised 3-Bay Shotgun house in the Lower Garden District, New Orleans (2014)

These Guidelines are intended to be used as an aid for appropriate design and not as a checklist of items for compliance. These Guidelines illustrate principles and practices in residential and commercial elevation design that will identify, retain, and preserve historic buildings. *Note:* Your Certified Local Government or Historic Preservation Commission may have more detailed guidelines, which would take precedence.

Elevation Action Alternatives

In considering the opportunities for protecting their historic property, each property owner should understand the range of alternative elevation scenarios available to them.

Taking no action is one alternative in which the owner of a historic home elects not to raise the building above its present elevation. A property owner might consider this alternative if the difference between the existing height of your property and the Base Flood Elevation (BFE) on the community's effective Flood Insurance Rate Map (FIRM) or recommended Advisory Base Flood Elevation (ABFE) on the community-adopted ABFE Map is not great enough to justify the expense of elevation, or there is not enough room on the lot to accommodate an elevated property without loss of historic integrity and significance. As described in a variety of Federal Emergency Management Agency (FEMA) publications (see Section 9, Resources and Publications), an owner may also elect to reinforce the existing foundation system for the house.

Another alternative includes raising the elevation of a historic residential structure in response to potential flood hazards. The extent of the elevation change needed to bring a building above the designated flood elevation will vary depending upon its location, with the elevation changes ranging from a few feet to an entire story or more. In some cases, property owners may consider moving a building—although this is not generally considered acceptable from a historic preservation perspective— elsewhere on the property to provide improved setbacks and access to the elevated home from within the site. **In general, minimal changes in elevation or location are the preferred mitigation actions.**

Responses to the regulatory requirements of building codes and local historic preservation commission precedents must be balanced as proposals for elevation changes are made. Property owners must work closely with local building code and historic preservation representatives to determine an appropriate elevation level and related methods to mitigate associated project impacts on historic buildings. Also, if property owners are seeking federal or state historic tax credits or grants, early discussions with the office providing the incentives are essential to achieving approval.

Low Elevation, Franklin (2014)

Medium Elevation, Lake Charles (2014)

High Elevation, New Orleans (2014)

In choosing an action to protect a historic property from potential future flood damage—whether elevation or another mitigation measure—the property owner must understand that their property needs to continue to retain its historic integrity after rehabilitation and elevation in order to meet the "historic structure" criteria of the National Flood Insurance Program (NFIP; refer to Section 4, Foundation Design Guidelines, and Section 9, Resources).

Elevation Design Review Process

If a property is located within a locally-designated historic district, property owners should consult with their local historic preservation commission and consider formal retention of a professional building elevation practitioner trained to assist in determining elevation design strategies.

Once a property owner has initiated the local building permit application process, the local HPC will consider the potential impact of elevation on historic properties.

Early coordination with local officials and design consultants will provide crucial site planning, architectural, and engineering assistance and information for use in developing the elevation proposal. If a property is in a jurisdiction with an HPC, the elevation plans will be referred to the local HPC for review. If approved by the HPC, a Certificate of Appropriateness (COA) will be awarded to the property owner. For buildings located within a local historic district, the building permitting office may deny a building construction permit if a signed COA has not been issued by the local HPC.

Working with an Elevation Design Consultant

Owners of historic residential properties are making an important decision when they proceed with plans for elevating their homes. As they move forward with their elevation, professional planning, design, and engineering advice is crucial. Local HPCs and historic preservation consultants can provide initial guidance to assist property owners. Property owners should also consider the services of a registered architect and a licensed engineer who can prepare elevation design plans and provide support through the building permit and historic preservation reviews, as well as ongoing feedback during the elevation construction process.

As described in Sections 2 through 4 of these Guidelines, key aspects of preparing building elevation plans include: (not in order of importance)

- Adjoining property considerations
- Site elevation and topography
- Parcel configuration and access
- Building footprint and orientation
- Parking and circulation
- Landscape elements
- Neighborhood context
- Elevation alternatives
- Historic building types
- Composition and scale
- Stair considerations
- Fence and wall considerations
- Entrances, porches, and balconies
- Foundation design guidelines
- Elevation requirements
- Flood zones
- National Flood Insurance Programs
- Elevation considerations
- Architectural considerations
- Foundation screening systems
- Permit requirements

In order to provide sufficient design information for local building permit submissions and reviews, property owners may be required to prepare elevation design plans. By working with the local HPC, a registered architect and the DHP, property owners can benefit from the experience these professionals have with similar projects, submission requirements, and the local review procedures.

How to Complete a Successful Elevation Project

Local HPCs understand that property owners are anxious to complete the repair and rehabilitation of their homes and businesses so that they can move forward with their lives. One of the primary purposes of the Elevation Design Guidelines is to facilitate the decision-making process to successfully complete the required historic preservation review, allowing elevation projects to be funded in a manner that achieves both risk reduction and preservation of irreplaceable historic buildings and districts.

To further protect the physical integrity of an historic house or commercial building and ensure that it will continue to maintain the characteristics for which it was designated as historic at the local level, the property owner(s) must have their project reviewed and approved by the local HPC.

If the building is in a National Register Historic District and the owner is not applying for historic tax credits, the plans should also be reviewed by the DHP's National Register Coordinator to determine if the elevation will impact the National Register status of the house. Written feedback would be provided and should be shared with the HPC where appropriate.

Based on the individual elevation plan for an historic building, the Commission will issue a COA to the property owner and local building department as verification that the elevation project complies with local historic district guidelines.

After the property owner has submitted an individual elevation plan, the local HPC has issued a COA, and a building permit has been approved, the property owner may proceed with the building elevation.

Organization and Implementation of these Elevation Design Guidelines through the Use of the SOI Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation is notably the most flexible of the four standards, with the others being Preservation, Reconstruction, and Restoration. There are a plethora of issues that must be considered when determining compliance with the Standards for Rehabilitation. In the process of elevating a historic building, depending on the new height, features and spaces that characterize a property may undoubtedly be impacted in a negative way, with no way to avoid it. For this reason, these guidelines may include some photographs of houses with very high elevations that may not necessarily meet Standards for Rehabilitation; for instance, where a house is located outside of a US Army Corps of Engineers flood protection levee. Where historic tax credit applications are involved, each project is reviewed on a case-by-case basis and discussions must begin at the earliest stage possible.

House undergoing elevation in the Broadmoor neighborhood of New Orleans (2014)

These Guidelines include 10 report sections, each of which is summarized briefly below. DHP's intent is to provide essential information for the property owner to use to develop an individualized elevation design project that addresses the broad principles outlined in the Secretary of the Interior's Guidelines and in the Standards for Rehabilitation. The intent of the Standards is to assist the long-term preservation of a property's significance through the preservation of historic materials and features. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction.

In addition to **Section 1**, Introduction, this document is organized around the following topic areas:

Section 2: Site Design Guidelines: Provides information about the site on which the historic building is located.

Section 3: Architectural Design Guidelines: Discusses considerations regarding neighborhood urban design context, evaluating elevation alternatives, historic building types and architectural features, data needed for designing elevation plans and evaluating their effects on the historic building, and goals for new screening and scale minimization.

Section 4: Foundation Design Guidelines: Identifies engineering factors for designing new foundations for elevated buildings and includes detailed illustrated approaches to foundation screening.

Section 5: Elevation Design – Next Steps: Summarizes the process for designing a new elevation plan and illustrates elevation approaches for some of Louisiana's most common historic building types.

Section 6: Elevation Construction: Provides a guide to the basic steps in building elevation and describes the most common elevation techniques, including extending existing piers or walls, whole house elevation, open foundation (piers, posts, columns, and pilings), slab elevation, slab separation, wall extension, and hybrid elevation.

Section 7: Commercial Buildings: Discusses elevation and alternative methods, such as the integration of interior stairs and exterior stair insets. This section also includes two commercial building case studies, one highlighting wet flood proofing techniques and the other illustrating principles of dry flood proofing.

Section 8: Contemporary Elevated Buildings: Illustrates the next generation of elevated building design through contemporary architectural examples by the Make It Right Foundation, Global Green and Build Now.

Section 9: Resources: Includes Architectural Types, Styles and Features, National, State and Local reference materials for use in designing an elevation plan.

Appendix: Includes a glossary of terms, a list of the publication's participants, and the consulting team.

Users of these Elevation Design Guidelines are strongly encouraged to read the document completely and avoid the temptation of looking only at a few sections. Although certain portions of this guide may contain information pertaining to a specific issue, all sections contain essential information with which the user should become familiar. As noted previously, the Louisiana DHP encourages property owners to seek the services of a design professional who can assist in developing customized elevation plans.

Raised House, 642 Broadway Street, New Orleans (The Historic New Orleans Collection, used with permission)

Site Design Guidelines

The overall character of a historic district is defined not only by individual historic buildings, but also by site features and plantings. Historic districts include important non-architectural features that form spaces, including topography, setback and the orientation of buildings, vistas and views, and plantings, such as hedges, foundation plantings, lawns, gardens, and tree canopies; features that define circulation, such as walkways, streets, driveways, and parking areas; and features that articulate or develop a site, such as accessory buildings, fences, walls, lighting, swales, fountains, sculptures, arbors, and planters.

Landscaping and plantings play a significant role in creating the character of the historic districts in Louisiana, and also reflect the regional climate. Mature gardens, grassy lawns, shrubs, climbing vines, ornamental trees, and tree canopies, some draped with Spanish moss, are typical of residential historic districts. Elements such as mature trees, judiciously placed, and foundation plantings soften the interface between raised first floors and the ground level.

Raised American Cottage, 5824 St. Charles Avenue, New Orleans (The Historic New Orleans Collection, used with permission)

Adjoining property considerations- type, scale, location and patter of block create neighborhood character, Bywater Historic District (above) and Esplanade Ridge Historic District (below), New Orleans (2014)

Site Elevation and Topography

Determining the appropriate height to which a historic residence should be raised begins with establishing the site elevations associated with the existing property. A professionally produced property survey of the parcel, including a finished floor elevation for the residence, will provide initial data for the elevation design plans.

To prepare a customized elevation design plan, the property owner must first determine the existing elevation level of the historic home, and then secure information from the local building department regarding the recommended elevation level in conjunction with attaining a flood elevation certificate. FEMA flood elevation data and requirements, as well as local building codes, will specify the height to which the first floor of a new structure in the vicinity should be raised. The new ABFEs established by FEMA and shown on preliminary FIRMs for each locale should also be carefully examined. These new elevation standards are used by local and Federal authorities to limit impacts from future flood events. The property owner should then consult with the local HPC and building permit offices to set an appropriate strategy for the new elevation proposal.

Topographic conditions within local historic district parcels in Louisiana will generally feature level terrain with limited slopes. This baseline terrain condition of parcels within historic districts in Louisiana suggests a consistent approach is needed to establish the heights of related elevation design projects. Local HPCs will consider this consistency in their review of individual elevation plans.

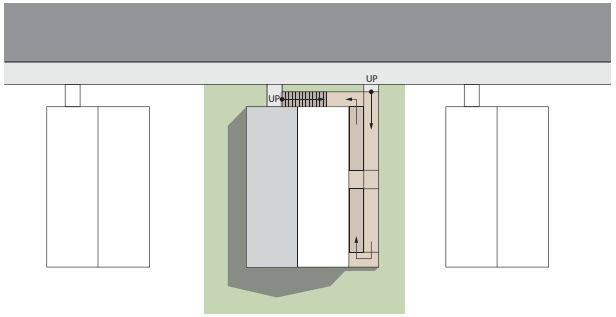
Parcel Configuration and Access

Planning an elevation design project requires a thorough understanding of the historic property's parcel configuration, boundaries, setbacks, and access. Parcel size and configuration determine the range of elevation design project alternatives and directly affect both the ability to accommodate any proposed site feature improvements and mitigate the visual impacts of the elevated structure on surrounding historic buildings. Parcels with limited area and width will present greater design challenges than larger sites with ample front and side yard conditions and setbacks. Existing access to the parcel from both street and sidewalk should be evaluated for any elevation change that warrants new site circulation features. Special consideration should also be given to the relationship of the parcel to adjoining properties, especially if they are historic.

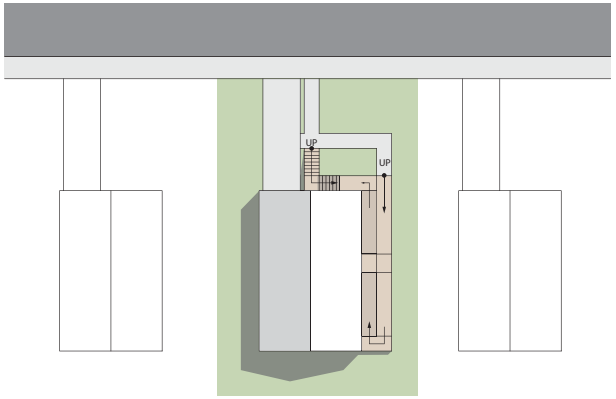
In developing a customized elevation design plan, the parcel owner should think about the following:

Parcel Layout

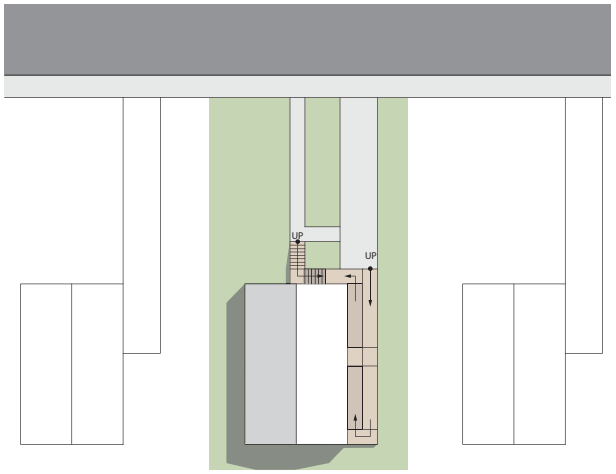
- Is sufficient space available within the parcel for new or expanded stairs? Elevating a residence requires construction of additional steps, and generally adds 11 inches to the length of stairs for each 7-inch increase in height.
- Is adequate space available on the parcel for new architectural or landscape screening elements to conceal new sub-story columns or piers? These features may require dedicated areas near the foundation of an elevated building.
- Is sufficient space available on the parcel to accommodate both new screening elements and existing site features, such as driveways and walkways?
- The size and configuration of parcels within historic districts will not generally include areas of higher elevations to which buildings could be moved to mitigate flood hazards.



Example of limited setback



Example of average setback



Example of ample setback

Parcel Access

Any proposed changes to existing site access elements, such as stairs, porches, and walkways must carefully consider existing stairs, sidewalks, and driveway conditions. Property owners should evaluate the relationship of existing site features to proposed design elements by referring to:

- The parcel boundary
- An existing conditions survey
- Local zoning and building code requirements that establish development setbacks for residential uses

KEY PRESERVATION GOALS

- Limit changes to parcel layout and access.
- Be sensitive to, and maintain the relationship to adjacent properties in historic districts.
- Where possible limit elevation to, or under, the ABFE.
- Match existing topography wherever possible.

Raised House, 1224 Peniston Street, New Orleans (The Historic New Orleans Collection, used with permission)

Building Footprint and Orientation

The existing location of a historic structure within its property boundary is another factor that affects the flexibility of elevation design and related circulation design proposals. Front, rear, and side yard conditions affect the potential to provide modified entrance stairs and other exterior design features.

Many historic residential structures surveyed for these Guidelines feature front entrance stairs and porches with side yard driveways. Because the depth of front yard conditions are generally limited and the location of driveways are often close to the residence, design challenges to elevating these structures and providing new entrance stair conditions within these front and side yards should be anticipated. These challenges can be addressed with new compact stair and landing layouts that have limited projections from existing entrance conditions. Any circulation improvement should be evaluated for its historic appropriateness.

Elevated options can be limited by building footprint and orientation, setbacks, parking and access, New Orleans (2014)

The location of the building footprint within its site also influences the feasibility of any potential changes in the topographic elevation of the parcel. In some cases, property owners may consider raising the elevation of both site and building in order to address flood hazards. Building footprints located within central areas of larger parcels are better suited to accommodate changes in site grade levels. Front, side, and back yards with greater depths provide an opportunity for gradual transition between grade levels. The size and orientation of a building footprint relative to the parcel's acreage affects potential elevation design screening approaches. New architectural and landscape treatments intended to visually screen a new residential base or sub-story are most effective on sites with sufficient front and side yard depths. Note that changes to the topographic elevation and/or footprint may require permits, and possibly approval from the local floodplain manager. In addition, many parishes have "no net fill" initiatives in place. Property owners should ensure they are meeting all local and floodplain regulations before pursuing any changes to the topographic elevation of the subject parcel.

A building's footprint within its site will influence the design of stairs and porches. 1918 rendering of Raised Basement house, 6037-6039 Chestnut Street, New Orleans. Plan Book 109, Folio 9, New Orleans Notarial Archives, for educational and research purposes

Adjoining Property Considerations

An elevation design proposal for a single historic property must consider its relationship to other properties within the neighborhood in which it is located. The type, scale, location, and pattern of adjoining historic properties create the overall character of a neighborhood. Protecting these features within local historic districts and Main Streets in Louisiana is a principal objective of the Guidelines. This character and potential visual impacts must be carefully evaluated in any elevation design proposal.

New side yard elevation design features, such as stairs or other circulation elements, introduce new visual and functional features between parcels. Potential impacts from these features must be evaluated to ensure design proposals complement the architectural setting of both the property owner and adjoining properties.

Street-level view of streetscape showing consistent low-elevation level; some handrails and pickets not included for visual clarity

Aerial view of streetscape showing consistent low-elevation level; some handrails and pickets not included for visual clarity

On parcels with limited space between residences, any change in the elevation of one structure affects the visual setting of another. Because the relative heights and proximity of existing structures establish the visual character of an historic district, elevation design proposals must carefully consider the heights and massing of adjoining structures.

Another consideration that should be kept in mind is that construction activity has the potential to alter drainage patterns, both for the subject property, and all neighboring properties. Potential impacts could arise from topographic changes, such as grading, the use of fill, or the creation of a berm.

Street-level view of streetscape showing consistent medium-elevation level; some handrails and pickets not included for visual clarity

Aerial view of streetscape showing consistent medium-elevation level; some handrails and pickets not included for visual clarity

Disclaimer - High elevation levels may be required by some municipalities, which may render a project ineligible for historic tax credits. Each property is reviewed on a case-by-case basis for tax credits.

Accessibility Considerations

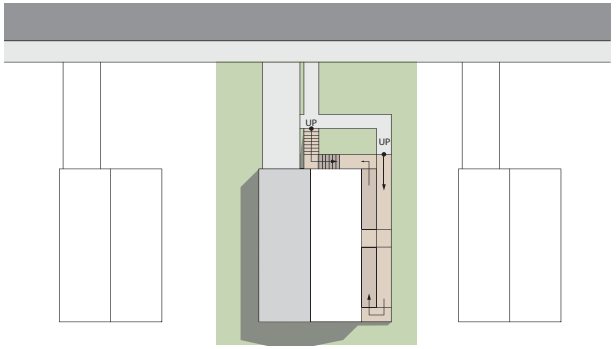
Providing accessibility at historic properties is a complex issue, and underscores the need to balance accessibility and historic preservation. The National Park Service's Preservation Brief 32, *Making Historic Properties Accessible,* provides guidance on making historic properties accessible while preserving their historic character.

An elevated building's new height may pose barriers to persons with disabilities, particularly to wheelchair users. A three-step approach is recommended to identify and implement accessibility modifications that will protect the integrity and historic character of historic properties.

- Review the historical significance of the property and identify character-defining features
- Assess the property's existing and required level of accessibility
- Evaluate accessibility options within a preservation context.

Creating an Accessible Route

The route or path through a site to a historic building's entrance should be wide enough, generally at least 3 feet, and must be appropriately graded with a stable, firm, and slip-resistant surface.



Accessibility Diagram

Entrances

Whenever possible, access to historic buildings should be through a primary entrance. In historic buildings, if this cannot be achieved without permanent damage to character-defining features, at least one entrance should be made accessible.

Incorporating Ramps

Permanent ramps are perhaps the most common means to make an entrance accessible. As a new feature, ramps should be carefully designed and appropriately located to preserve a property's historic character. Ramps should also be located to minimize the loss of historic features at the connection points - porch railings, steps, and windows - and should preserve the overall historic setting and character of the property.

Considering a New Entrance

When it is not possible to modify an existing entrance, it may be possible to develop a new entrance by creating an entirely new opening in an appropriate location. This solution should only be considered after exhausting all possibilities for modifying existing entrances.

Parking and Circulation

A large area within each parcel is often dedicated to vehicular parking and circulation needs. In preparing an elevation design plan, present and proposed driveway and parking requirements must be considered. To accommodate new architectural and landscape screening, alternatives to existing driveway and parking layouts may be appropriate. Many historic parcels in the GO Zone's Qualifying Parishes feature driveways with side yard alignments in close proximity to the building. Depending upon the extent of elevation proposed and existing side-yard depth, a property owner may find that the configuration of an existing driveway and parking may be affected.

Whether a limited or significant elevation change is proposed for a historic property, the existing circulation features may require reconfiguration to provide improved entrance stair systems, terrain modification, or landscape screening. Should the elevation design include a new unoccupied sub-story, the property owner should evaluate measures to mitigate the potentially significant visual and historic effects associated with an increase in the first floor elevation. Any sub-story uses will be subject to local building codes and historic preservation reviews, and can effect a homeowner's insurance rate. These architectural design alternatives are discussed in Section 3, Architectural Design Guidelines.

KEY PRESERVATION GOAL:

- Minimize changes to parking and circulation that affect the historic setting.

Design required new parking so that it is as unobtrusive as possible, thus minimizing the effect on the historic character of the setting, Mandeville Historic District (2014).

Landscape Elements

Complementing the historic character of residential districts, landscape elements provide important visual screening functions and outdoor space defining amenities. When hurricanes and/or flooding damage landscape elements, elevation design plans should incorporate the replacement of these elements with similar landscape features indigenous to the locality to minimize the often-jarring nature of a new foundation system and an elevated historic building. When situated in areas adjoining foundations and sub-story facades, landscape plantings can provide effective scale transitions between the ground plane and an elevated frontage of new sub-story walls.

Landscape screening should complement the architectural elements of the residence and represent part of an overall strategy for mitigating the effects of elevated structures. In many cases, a well-planned landscape pattern of shrubs and small trees within the structure's foundation perimeter zone can complement or replace architectural breakout panels for sub-story screening.

Landscape plantings near the new base or sub-story of an historic residence offer one of the most cost-effective means to mitigate the visual impacts of elevating the historic structure. Specific approaches for landscape screening are provided in Section 3, Architectural Design Guidelines.

KEY PRESERVATION GOAL

- Use indigenous landscape plantings to minimize the visual impacts of elevation.

Landscaping elements for this home prior to the post-Katrina elevation (right) were minimal in terms of vegetation, but did include a white picket fence. The photo to the right shows the difference in the front elevation and yard once the home was elevated, the stairs were added, and porch presentation altered, Mandeville Historic District (2014)

Driveways, parking areas and walkways can have significant influence on the appropriate elevation option, Mandeville Historic District (2014)

Landscape screening strategies provided visual buffers and scale transitions for an elevated home, Uptown Historic District, New Orleans (2014)

Landscape screening strategies provided visual buffers and scale transitions for an elevated home, New Iberia (2014)

Foundation plantings should be scaled to the height of the foundation, Uptown Historic District, New Orleans (2014)

Site Design Guidelines – Specific Recommendations

The following recommendations support over arching historic preservation goals and should be incorporated, whenever possible, into customized elevation plans:

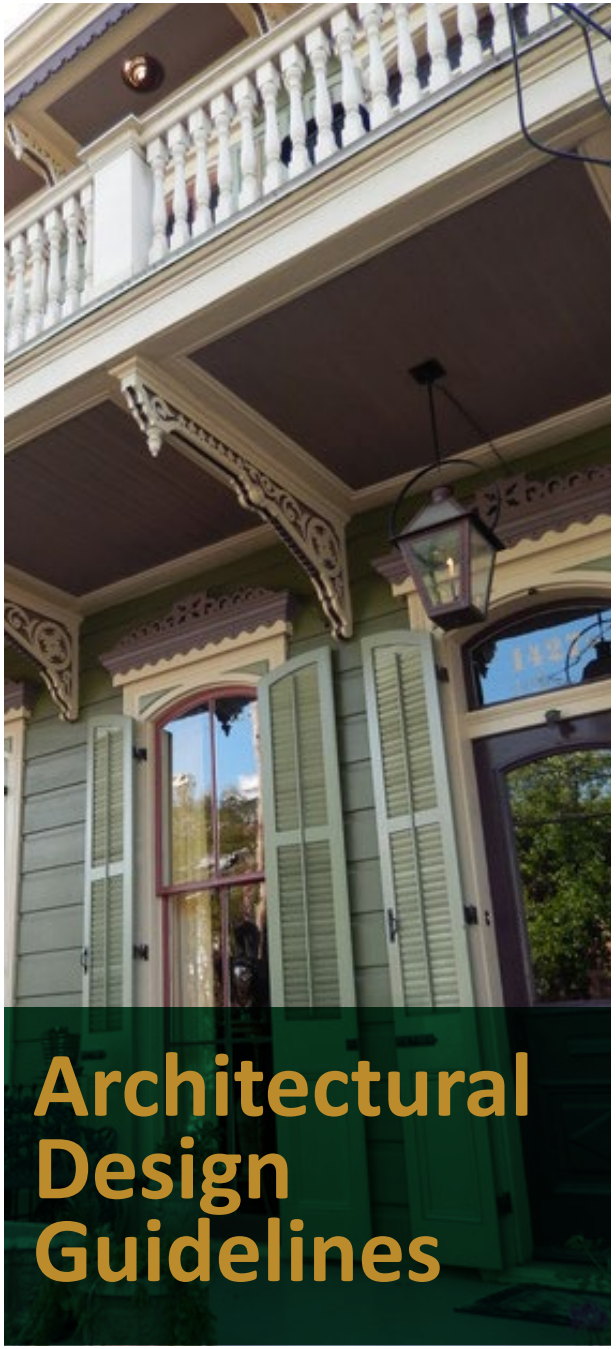
- Retain and preserve building and landscape features that contribute to the overall historic character of the individual building and/or the historic district, including trees, gardens, yards, arbors, ground cover, fences, foundations, and significant vistas and views.
- Retain and preserve the historic relationship between buildings and landscape features of the district setting, including site topography, retaining walls, foundation plantings, hedges, streets, walkways, and driveways.
- Protect and maintain historic building materials and plant features through appropriate routine maintenance and repair of constructed elements and pruning and management of plantings.
- Protect large trees and other significant site features from construction activities and from delayed damage due to construction activities, such as loss of root area or compaction of soil by equipment. Avoiding compaction of the soil within the drip line of trees is critical to maintaining the health of root systems.
- Elevate your Heating, Ventilation, and Air Conditioning (HVAC), or any other exterior equipment, in a manner that is unobtrusive and inconspicuous to the extent possible. This holds true for historic residential and commercial buildings. If possible, place this equipment in the rear of the building, or in a place where it can be readily masked or screened.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Within historic districts, altering the residential character of the district by significantly reducing the proportion of built area to open space on a given site through new construction or additions.

X Introducing contemporary equipment or incompatible site features, including mechanical units, in locations that compromise the historic character of the building or historic district. Such features should be located unobtrusively, to shield them from view.

Protect large trees and preserve historic vistas, Esplanade Ridge Historic District, New Orleans (2014)



Architectural Design Guidelines

As described in Section 1, for properties located within locally-designated historic districts, the property owner's elevation design plan must be reviewed by the local HPCs. Each plan may be evaluated on a number of criteria, to include the plan's demonstrated understanding of neighborhood, site, and architectural conditions and features. This review will determine whether a property owner has limited visual and material impacts on historic buildings and districts created by their proposed building elevation. The following architectural guidelines should be addressed by each property owner in designing their elevation design plan.

Neighborhood Context – Urban Design

Whether the property owner's historic residential property is situated within an historic district or it stands within the context of another setting, it is part of a distinct environment of related uses. This setting reflects village, suburban, or rural conditions with a range of adjoining uses. Considering these settings through the perspectives of development and landscape character is an initial step in the elevation design process.

The arrangement of historic structures within their community represents a distinct pattern of cultural development that should be valued and preserved. Within the 37 parishes of the Louisiana GO Zone, historic development patterns may take the form of residential structures situated together on modest lots, situated nearby within ample parcels, or situated in isolation on several acres. Each elevation design plan should reflect an understanding of the overall context of the neighborhood.

Example of context reveal neighboring historic houses with different elevations in Algiers Point Historic District (above) and the Irish Channel Historic District (below), New Orleans (2014)

As noted in Section 2, Site Design Guidelines, relative building heights, setbacks from local streets, and distances between homes are principal features that characterize residential neighborhoods. These features and their landscape elements contribute to the character of each neighborhood setting. Property owners should identify elements of the local neighborhood character and integrate them in the customized elevation plan for each parcel. Each elevation design plan should complement or enhance the principal features of both its neighborhood context and its individual site.

Once elements of the neighborhood character are identified, options for integrating these elements into the elevation design should be developed for the residential site. Mitigating, or offsetting, damaging visual effects of elevating an historic residential structure will depend upon the extent of proposed elevation change, architectural treatments, parcel size and setbacks, distance between homes, and landscape screening measures.

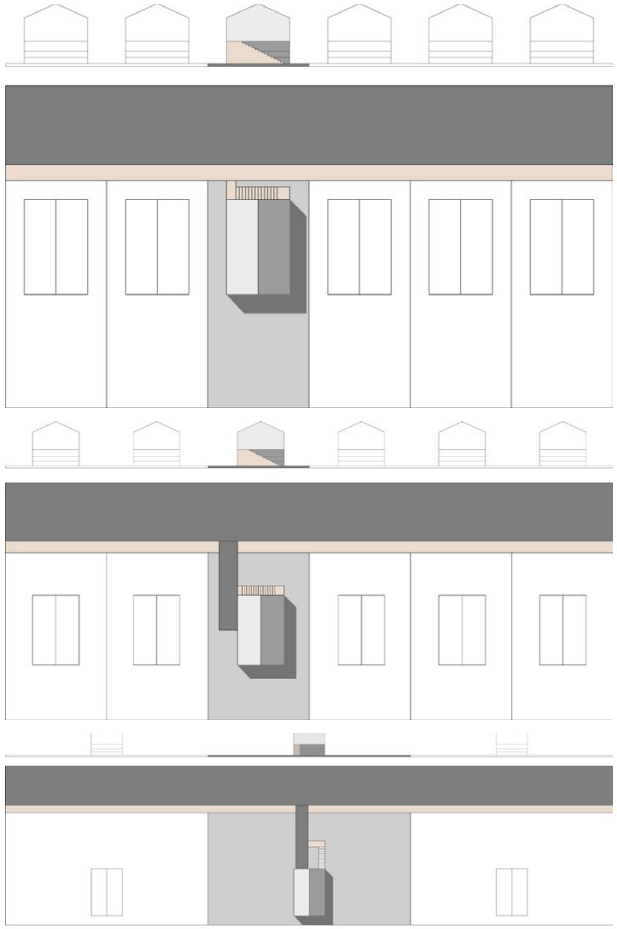
Across much of South Louisiana, rural properties have featured historic residential buildings that were originally constructed to avoid flood waters, or were retroactively elevated. Historic rural homes of the region offer useful insight into appropriate construction and design techniques for building elevation, particularly as larger parcel/lot sizes allow less constraints in terms of elevation height, foundation screening options, berm construction, and driveway and exterior stairway placement. Landscape screening can include both the immediate perimeter of the building and foundation, as well as the perimeter of the property itself. In addition, any negative effects of elevation improvements (such as fill placement and potential correlated drainage issues) on surrounding properties are significantly reduced, the further the neighboring buildings are from one another.

KEY PRESERVATION GOAL:

- Identify local neighborhood character elements.
- Integrate these elements into your design.

Exploring and Evaluating Elevation Alternatives

The allowed level of elevation for the majority of historic homes within locally designated historic districts is below the standard ABFE or effective BFE, depending upon which standard the local community, and/or a local HPC, has adopted. Developing a customized elevation plan that adheres



The proximity of neighboring homes within an historic district must be considered when evaluating the potential impacts associated with a proposed elevation project

to the appropriate level and to the Standards for Rehabilitation for grant-assisted work affecting historic building fabric, should ensure that the local HPC issues an approved COA.

KEY PRESERVATION GOAL:

- Minimize elevation changes for historic buildings.

Elevation alternatives are illustrated below, and include:

Foundation Strengthening

This alternative is appropriate when the elevation height required for a specific parcel is minimal, and strengthening the foundation would save the property owner a considerable amount of money compared to other elevation alternatives.

Limited Elevation Change

This alternative will result in only a nominal visual effect on the historic character of the property, and can be achieved through:

- Minor changes in the existing ground level that will provide a modest elevation level of less than 4 feet for both the parcel and the residence. This approach maintains the physical relationship between the ground level and the residence.
- An increase to the base of the existing home of less than one story.
- A combination of the above, with a slight change in ground elevation and a slight increase in height.

Significant Elevation Change

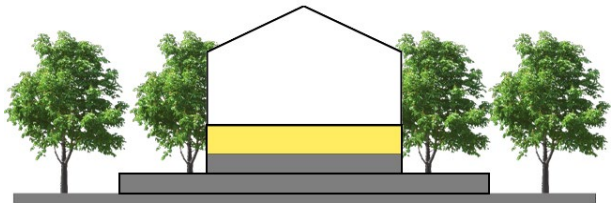
This alternative increases the elevation of a home to a greater extent by raising the residence a full story or more. This approach could result in greater impacts to the historic character of the property and building, and may require significant screening and scale transition actions in order to access these concerns.

Property owners must work with local building permit offices, DHP and HPCs to determine an appropriate elevation for the property. Local and Federal guidelines must be considered in selecting the elevation to maintain historic character and address ABFE levels and flood hazard protection for structures. Also, if tax credits are being sought, early submittal is important, despite approval at the local level.

Existing Grade

Elevated grade and building

Elevated grade, base, and building



Elevated grade, base, sub-story, and building

Historic Building Types and Architectural Character

A thorough understanding of historic building types and their related architectural character is fundamental to a successful elevation design project. Historic buildings reflect long-standing traditions of residential design in the 37 Louisiana GO Zone parishes and exhibit a vast array of architectural references used in the development of the Elevation Design Guidelines. The use of these Guidelines offers a new opportunity to preserve and protect these valuable buildings by mitigating flood hazards.

A wide range of building types comprise the GO Zone's historic districts and communities, and are described in Section 9, Resources and Publications, under the heading: Louisiana Historic Building Types, Styles and Important Architectural Features. Property owners may also benefit from the information contained in the *Louisiana Speaks: Pattern Book*, prepared by Urban Design Associates.

Historic building types are distinguished by their relative size, form, height, roof pattern, and principal external elements, such as porches, stairs, and chimneys. These massing characteristics can provide important insights for assessing the effects of elevating a home and mitigating these effects within the existing setting.

A successful elevation design program often begins with an examination of elevation design plans for other historic properties. As documented in The History of Building Elevation in New Orleans (FEMA 2012:31-50), southern Louisiana has a long history of building raised houses and other structures on pilings, piers, or raised basements to avoid or mitigate the effects caused by flood damage. These Guidelines consider a range of architectural typologies and styles to provide insights for property owners as they move forward with the elevation design.

Visualizations of three residential building types will serve as a basis for developing broad design guidelines for elevating prototypical residential historic structures in this publication. These schematic building types are considered representative of many other distinguished residential forms found within the region. The building types selected include:

- 3-Bay Shotgun
- Creole Cottage
- Bungalow

As models, these building types provide a sufficient range of design features that can be included within the development of individual design plans. Property owners should consider relevant examples as they prepare elevation design proposals for their specific architectural types and styles. These examples provide a variety of architectural elements, including the configuration of exterior entrances, stairs, porches, windows, columns, and other impacts created by elevating a structure and introducing new exterior elements. Two examples illustrate these relationships:

Example 1: The overall visual effect of raising a residential structure by one floor level depends to a great extent on its site context. Far greater negative visual effects may result from changes to a one-story home on a small urban lot than one on a larger home on a large parcel, due to the range of screening and scale transition actions that are possible on the larger site.

Example 2: Adding new exterior stair and landing systems to a home that already has a porch feature represents less of a visual impact than does adding new stair elements to a home without a porch.

Composition and Scale

The essence of an historic building's visual character is closely tied to the composition and scale of its principal architectural features. One goal for a successful elevation design project is to minimize the effects of any elevation change upon its visual character. Historic preservation reviews will focus on maintaining the proportions and relationships of these original architectural features within the proposed new elevation setting.

Elevation design plans should consider existing architectural composition and scale of historic features. The composition and scale of existing elements, such as multiple building levels, projecting wings, exterior columns, and the arrangements of doors and windows, provide design references for the location of any new entrance features, stair systems, and other sub-story elements.

The design of new elevated base conditions, whether they are open, enclosed, or screened through landscape plantings, should reflect, wherever possible, existing composition and scale features. Existing façade elements should be integrated in the elevation design plan for the new base or sub-story levels by repeating, contrasting, or complementing elements.

The composition and scale of elevation design proposals should be consistently applied to adjoining homes, Irish Channel Historic District, New Orleans (2014)

Adjoining properties in the Holycross neighborhood, New Orleans, illustrate the challenges of contrasting elevations, Holycross Historic District (2014)

Composition and scale of features provide design references, Esplanade Ridge Historic District, New Orleans (2014)

An additional example of adjoining properties with contrasting elevations, Bywater Historic District (2014)

KEY PRESERVATION GOAL:

- Minimize change to visual character by maintaining proportions, relationships, and scale of architectural features.

Evaluating the scale of existing features is important, as the visual relationship between building features and the site may be changed significantly by an elevation design plan. Design efforts to manage the scale transition between the new elevation and existing grade will almost always require appropriate architectural and landscape treatments.

Elevation and Existing Façades – Design Considerations

An evaluation of elevation options for the principal design elements of an historic home should include consideration of its most important feature, called the façade, and its entryway. The façade faces the street, and is often the most-highly decorated of all building elevations. This feature establishes the building face, and sets the stage for the design of each adjoining façade.

Most historic façades feature a prominent and central location for the front entrance door, which may be further defined by entrance steps, porches, and adjoining windows. Other defining features include the size, extent, symmetry, and character of façade treatments and ornamentation. The elevation design plan should focus on these design elements to minimize visual impacts on the historic structure. New stairs and landings introduced to compensate for elevation changes must complement the design of the existing front façade, which may already include porch structures and related details.

Corner lots present interesting opportunities for architectural and elevation design, in that there are ordinarily two exposed sides of each building. As the design of the original structure would typically have taken this into account, the elevation design should also focus on both building "faces." Every effort should be made to ensure the foundation, exterior stairs (and/or ramp), and landscaping plans include the exposed side of the building, as well as the facade.

Porch structures and associated roof, column, and balustrade elements provide design references that should be incorporated in elevation design proposals. Placement of new foundation, base and sub-story elements should also coincide with existing vertical references to porch columns and other repeating façade elements.

Important facade elements set the stage for the placement of all other elements, Franklin (2014)

Sub-story elements should coincide with existing vertical references to columns, Mandeville Historic District (2014)

Structural supports take into account the location of prominent features and repeat vertical elements, Covington (2014)

Elevation changes need to complement existing facade, porches, fences and related details, Algiers Point Historic District, New Orleans (2014)

Note: Several factors may influence the redesign of the façade and entryway during the elevation process, including: an urban versus rural setting; lot size, shape, and placement on the block; and the location of the house on the lot.

KEY PRESERVATION GOAL:

- Use historic building façade and entry features to develop new design elements.

Placement of new structural supports should account for the location of prominent external façade design elements and reflect or complement existing repeating vertical elements on the façade, such as columns, posts, or other trim details. This approach promotes continuity of the historic design elements of the façade as they are expressed through the new base treatments, thereby minimizing the visual impacts of the new elevation change on the historic building, as a whole.

Other significant façade components, such as chimneys and major masonry features, require special consideration in an elevation design project. In order to maintain their historic and functional attributes, these masonry elements require continued physical connections to established grade conditions within the project site. Adapting major masonry features to address elevation changes may act to shape the overall strategy of an elevation design project.

Significant facade components such as major masonry features require special consideration, N. Lopez Street, New Orleans (2014)

Elevation and New Foundations – Screening and Scale Minimization Considerations

Appropriate measures to reduce or eliminate negative visual effects resulting from the elevation of a historic residential structure will depend upon the extent of the new elevation proposed and proportion of the new base area. When establishing the proposed elevation, the property owner and elevation design consultant should prepare plans that include appropriate screening and other treatments for the elevated residence.

The proposed screening approaches for an elevation design plan should focus on providing new visual buffers to the elevated area. Related design approaches may also focus on providing new shielding elements that create a gradual transition for the space between the existing ground level to the new first floor level.

These approaches can reduce the damaging visual effects of elevating an historic property in a manner that maintains or complements its character and setting.

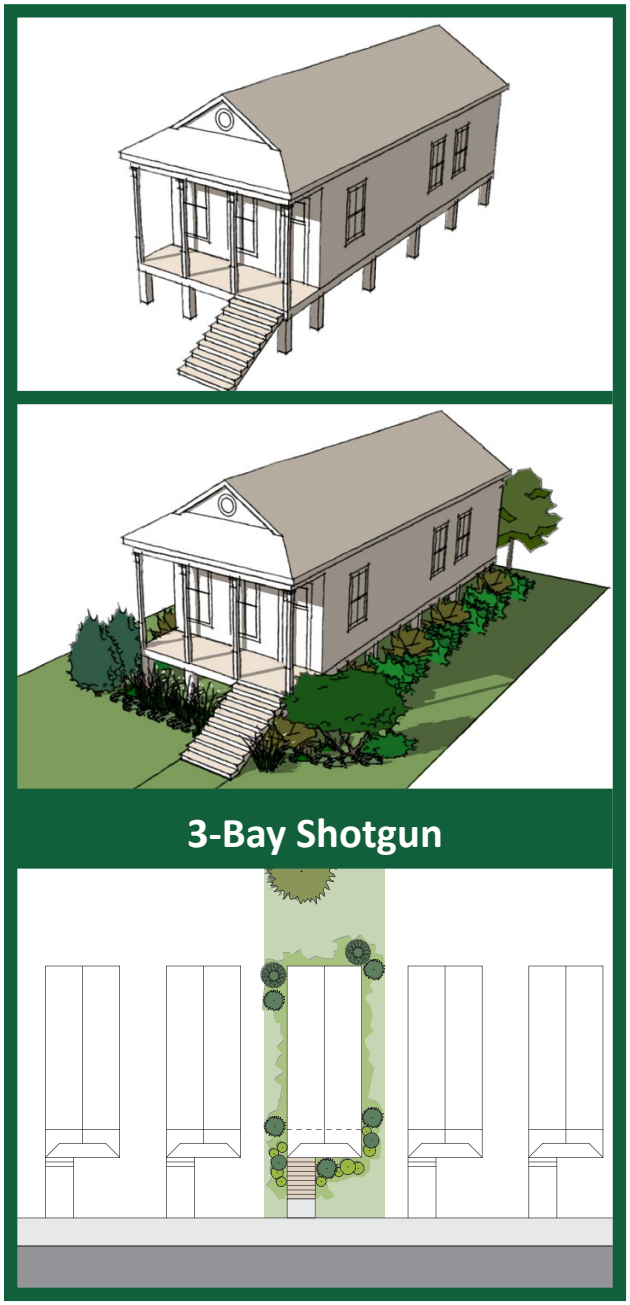
Landscape screening strategies can provide an effective means to minimize the visual impacts of elevation, Mandeville Historic District (2014)

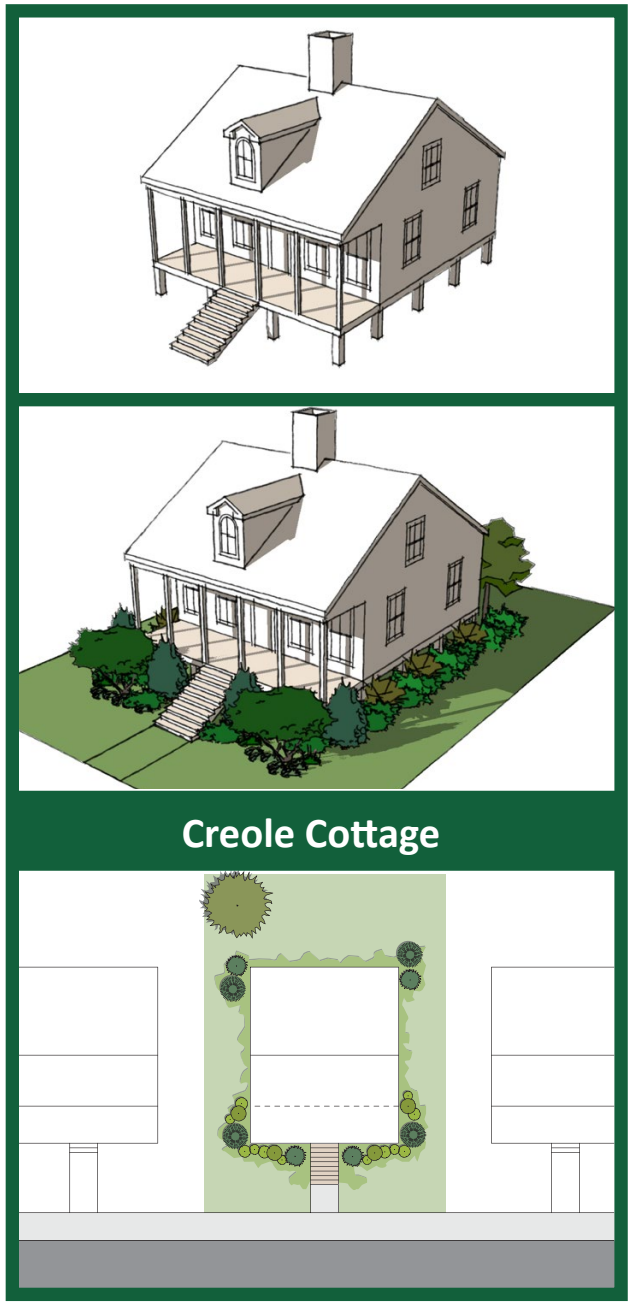
Framed wood louvers can provide effective screening to address elevation changes, Garden District, New Orleans (2012)

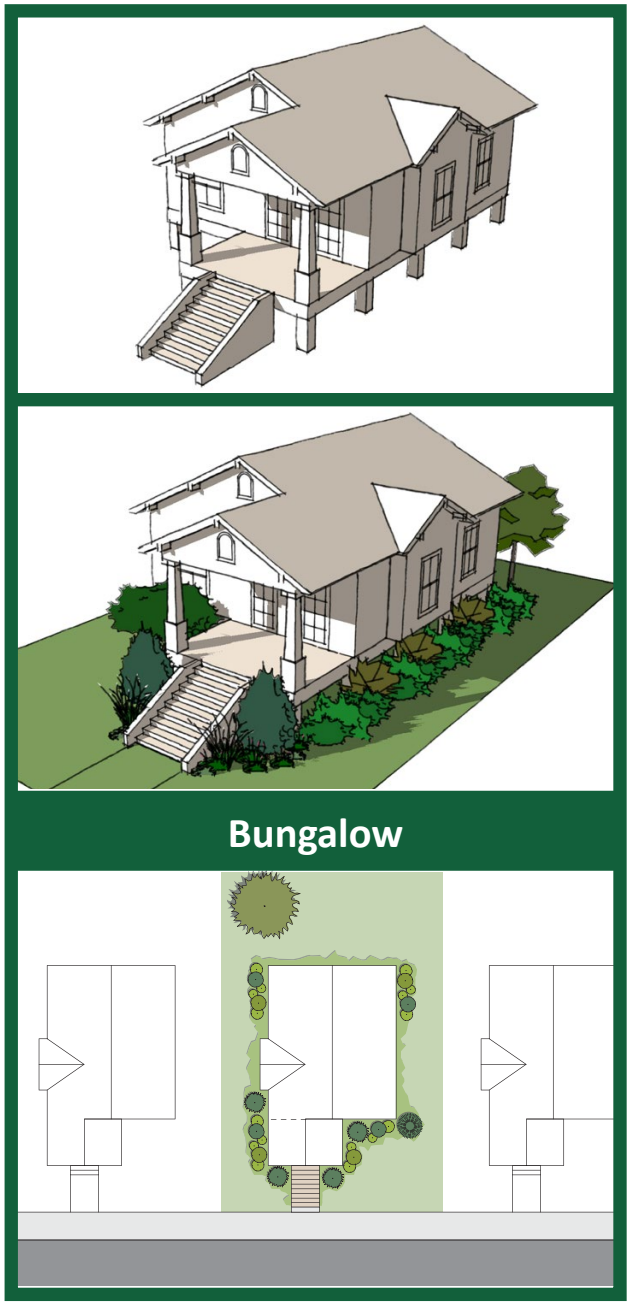
Existing façade features offer helpful architectural design references that can be repeated, contrasted, or complemented within the new base or sub-story levels in elevation design projects. Both architectural and landscape screening strategies can provide effective means to minimize the visual impacts on the historic residence.

For new base or sub-story proposals, architectural screening approaches may take the form of open or enclosed panels of various sizes. These panels can be designed to cover the newly elevated foundation areas. Small panel treatments may include new lattice patterns or other designs for projects requiring limited elevation changes.

Architectural screening treatments for larger areas can be designed to convey features of the existing façade within the new sub-story zone. In each case, the panels must be designed as flow-through or breakaway structures that will not restrict potential flood waters.







Note: Handrails and pickets have not been illustrated for visual clarity purposes.

Architectural screening for large areas should complement the features of an existing facade within a new sub-story zone, Mandeville Historic District (2014)

KEY PRESERVATION GOAL:

- Incorporate screening and scale minimization measures to mitigate elevation visual impacts.

To achieve scale minimization associated with higher elevation projects, several approaches are available to provide site transitions through both architectural and landscape treatments. Architectural approaches include new stair and landing designs that complement existing porches and entrances, while the landscape strategies include new foundation planting areas that provide visual buffers for the newly elevated areas.

Elevation design consultants can assist property owners in designing alternative treatments and selecting one that most successfully minimizes adverse effects on the historic building, while also reducing risk through some level of elevation. Elevation design plans that effectively incorporate screening and/or scale minimization measures to complement the architectural character of the historic building and historic district will generally be well received by local HPCs and facilitate approval.

Stair Considerations

For elevated historic buildings, exterior stairs are critical elements, not only in their design, materials, and workmanship, but in their spatial relationship to the rest of the building. When planning an elevation project, the owner of a historic property should consider engaging the services of a design consultant who will provide crucial architectural and engineering assistance. If a property is in a jurisdiction of a HPC, the reworking of any stairs will be subject to review by this body. In general, the retention of existing stair configurations, where possible, is always recommended as the first option in an elevation project. Significant alterations to historic stair configurations usually result in substantial redefinition of a building's historic entrance, and the loss of historic character. Such alterations can complicate the local HPC review process and result in denial of a COA. Because exterior stairs are frequently the single most dominant feature of an elevated building's exterior, care and attention must be given to their initial planning, design development, and materials selection. Lot size and configuration will also play a major role in the design for the stairs and entrance way.

Center/Linear Split Stair, Faubourg Marigny Historic District, New Orleans (2014)

Stair Design Guidelines – Specific Recommendations

- When possible, retain all significant existing stairs or portions of such stairs.
- Retain significant details of stairs, such as newel posts, balustrades, stringers, or other features.
- Extensions of stairs and new stair assemblages should be designed to be compatible with the historic stairs, in configuration, scale, materials, and detailing. Elevated historic buildings of similar type and style can help inform the owner and architect of the appropriate means and methods to extend existing stairs.
- Avoid the relocation of significant stairs to new locations or new configurations. Relocations, while they may preserve the historic materials, usually result in loss of the historic circulation pattern, and frequently involve loss of historic craftsmanship and architectural integrity.
- Some old stairs do not comply with current building codes. Rehabilitations of buildings with such stairways should be studied carefully so that the historic character of the building can be retained, while still satisfying the intent of the codes. Balustrades and handrails of insufficient height can be augmented without destroying significant materials.
- Where new stairways are considered in historic buildings, they should be located so that they do not require alterations to significant exterior or interior spaces or materials, thereby ensuring that the historic plan and circulation pattern remains intact.
- If new exterior stairways or elevator towers are proposed, the location, massing, and exterior finish should be planned so that the new work does not destroy or obscure significant historic features of the building. Some historic buildings are so arranged that new exterior stairways or elevators would inevitably diminish the historic character of the building.

- Almost all elevated buildings also have secondary staircases, typically placed on side or rear elevations. While these may have less distinctive designs than the main stair, all stairs are important in defining the character of these buildings, and should be given priority in preservation planning.
- Where historic stairs have been removed prior to the elevation undertaking, historical and architectural research should be conducted to determine what stairs are historically appropriate for the building's type and style.

Common Stair Configurations:

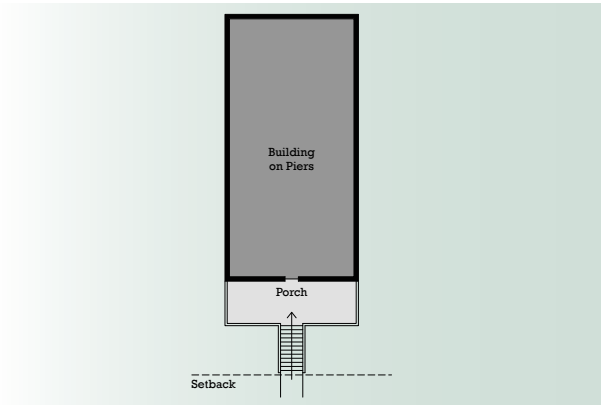
Straight Run Stair

The Straight Run stair configuration is the most widely used form for low- and medium-height elevations. When it incorporates an intermediate landing (rest), this stair type is also well-suited for some high elevations. Straight-Run stairs, as the name implies, have no turns. By definition, the straight run stair features a single, straight flight of stairs that connects two levels or floors in a building. In contrast, L- and U-Plan stairs require landings in between stair runs.

Bywater Historic District, New Orleans (2014)

Garden District, New Orleans (2014)

Algiers Point Historic District, New Orleans (2014)



Straight Run Diagram

Here are some of the main advantages and disadvantages of straight run stairs:

Straight Run Stair Advantages

- Because of its simplicity, a straight staircase may be less expensive to build than other types of staircases such as an L- or U-Plan stair.
- A person moving up or down the stairs has a clear view of the entire flight.
- For a building undergoing an elevation, it is easy to accommodate extensions and modifications on a straight run stair.

Straight Run Stair Disadvantages

- Straight Run staircases require more space as compared to curved or platform staircases. As a result, they typically are better suited to buildings with sizable front yards with less restrictive setback requirements.
- The use of an extended or new straight run stair can have a substantial visual effect on the historic building's façade. Because a straight run stair is less compact in plan than a L- or U-Plan stair, a straight run stair has the potential to alter the overall massing of the building and the existing façade composition.

KEY PRESERVATION GOAL:

- The new configuration of the stair should not degrade the character and overall architectural integrity of the historic building.

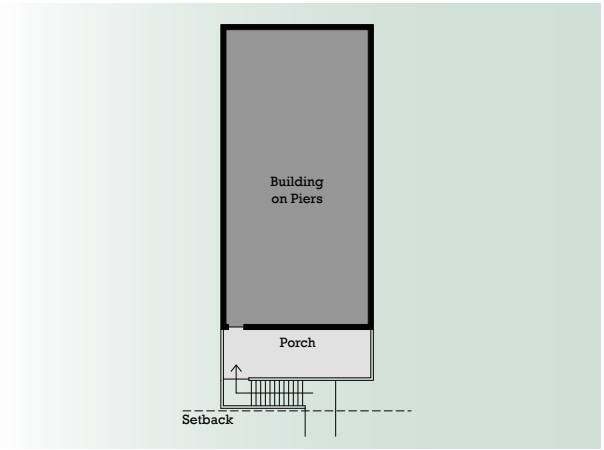
Side/Linear Stair

The Side/Linear stair configuration is a simple variation of a straight run stair. Generally suited to urban lots which offer limited space and restrictive setbacks, this configuration includes a single flight of steps that adjoins and parallels the width of the porch or building façade wall. Because of its linear orientation, this stair type requires a landing. For high elevation examples, the stair run may be broken by an intermediate landing, which is sometimes called a rest.

Algiers Point Historic District, New Orleans (2014)

Faubourg Marigny Historic District, New Orleans (2014)

Holy Cross Historic District, New Orleans (2014)



Side/Linear Stair Diagram

Some of the advantages and disadvantages of this stair type are as follows:

Side/Linear Stair Advantages

- As with a Straight Run stair, the Side/Linear stair may be less expensive to build than other types of stairs such as an L- or U-Plan stair.
- Its compact design may have less visual impact on the façade composition.
- It is well suited to urban lots with shallow setbacks and limited front yard depths.

Side/Linear Stair Disadvantages

- As an attached assemblage, a Side/Linear stair typically is not covered and therefore remains exposed to weather.
- A single run of steps may prove to be an inconvenience for separate tenants who would be sharing a single stair. For a duplex or a multi-family dwelling, a split stair may be a more appropriate design.
- A disproportionately wide Side/Linear stair may be visually out of scale with the porch or main body of the house and thus is generally a relatively narrow stair, not exceeding 3 or 4 feet in width.

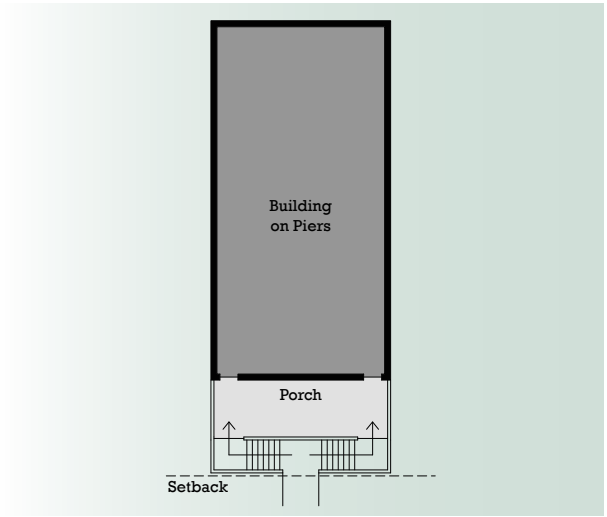
Split Stair

Historically, the Split stair is associated with Shotgun Double houses in New Orleans. In essence, the split stair is comprised of two bilaterally symmetrical Side/ Linear stairs. In urban settings where residences are built to the edge of the sidewalk, a split stair offers a simple design solution, particularly for low-elevation examples. Each entrance is served by a single flight of steps that adjoins and parallels the width of the porch or building façade wall. Because of its linear orientation, the split stair requires a landing.

Faubourg Marigny Historic District, New Orleans (2014)

Bywater Historic District, New Orleans (2014)

Split Stair Examples, New Orleans (2014)



Split Stair Diagram

Some of the advantages and disadvantages of this stair type are as follows:

Split Stair Advantages

- As with a Side/Linear stair, the split stair may be less expensive to build than other types of stairs.
- The Split Stair serves two separate entrances on the facade.
- Its compact design may have less visual impact on the façade composition.
- It is well suited to urban lots with little or no setback and no front yard.

Split Stair Disadvantages

- The Split Stair typically is not covered and therefore remains exposed to weather.
- The Split Stair generally is relatively narrow stair, not exceeding 3 or 4 feet in width.
- The split stair is not well suited to medium- and high-elevation examples.
- Two runs of steps may not be needed should the duplex be converted to a single-family residence.

L-Plan Stair

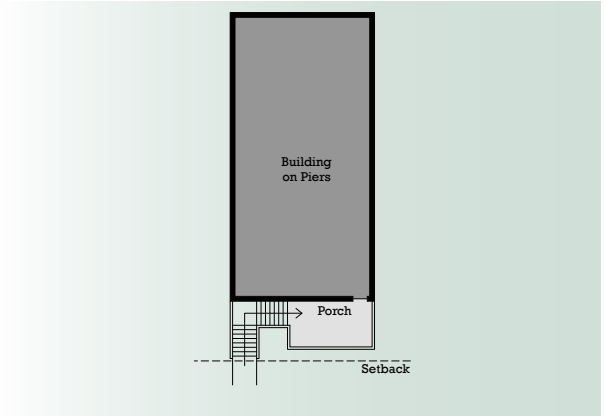
The L-Plan stair, also known as a “Quarter Turn” stair, features one landing placed at some location along the flight of steps. Historically, the L-Plan stair is associated with the Raised Basement type house. Many of these houses were built on narrow urban lots with limited building setbacks. In many cases, sufficient space for a straight-run stair may not be available. Due to its relatively compact form, the L-Plan stair solves this problem and offers additional opportunities for design, such as decorative railings, posts, and stair walls. Often these are designed to blend with the architecture of the main body of the house.

As a variation, the Paired L-Plan stair offers two sets of stairways on opposing sides of the porch. Offering a more symmetrical, balanced appearance, this stair type will be discussed in the next entry.

Algiers Point Historic District, New Orleans (2014)

Broadmoor Historic District, New Orleans (2014)

Edgewood Park, New Orleans (2014)



L-Plan Stair Diagram

Here are some of the main advantages and disadvantages of the L-Plan (or Quarter Turn) stair type:

L-Plan Stair Advantages

- These are useful alternative to a straight run stair when the space is required for a straight run is not available.
- It is possible to locate these in a corner to provide for intermediate landings (rest).
- The configuration and position of L-Plan offers greater number of design options than a straight run stair.

L-Plan Stair Disadvantages

- Due to landings and turns, this stair type is more expensive to design and construct than a straight run stair.
- The L-Plan stair typically is not covered or only partially covered and therefore remains exposed to weather.
- The width of a straight run stair may have variable width, depending on the building type and style, whereas the L-Plan stair’s configuration limits width.
- The number of turns and rise increases with the level of building elevation.

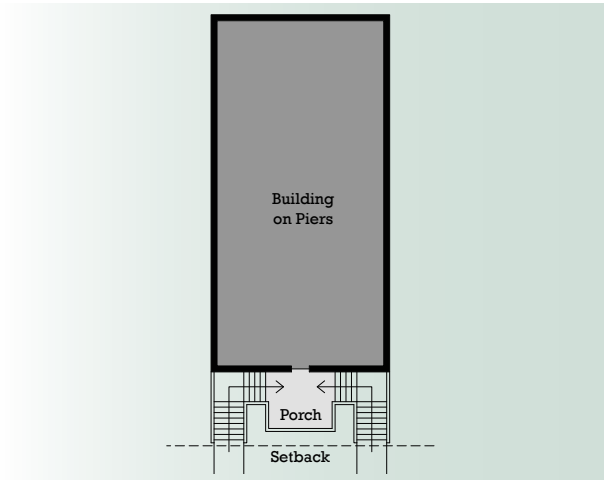
Paired L-Plan Stair

Often associated with the architecture of grand or even palatial residences, the Paired L-Plan Stair exhibits a balanced, symmetrical form that typically is integrated with the main body of the house. This stair assemblage is comprised of two L-Plan stair sets, each ascending to a central landing, often covered by a projecting porch or portico. Its form also offers the opportunity to create a central passage at the ground level, at times leading to the raised basement level of the house or simply to a covered area beneath the porch. With two flights of steps broken by an intermediate landing at the turn, the Split L-Plan step is not suited for low-elevation examples. When integrated into medium- and high-elevation examples, this form adds scale and depth to the façade, while also softening the transition between lower and upper levels.

Paired L-Plan Stair Example, Covington (2014)

Vieux Carre Historic District, New Orleans (2014)

Esplanade Ridge Historic District, New Orleans (2014)



Paired L-Plan Stair Diagram

Some of the advantages and disadvantages of this stair type are as follows:

Paired L-Plan Stair Advantages

- In comparison to the straight run stair, this form invites a wider variety of architectural treatments, including multiple stair walls and a central passage, or openings sheathed with latticework.
- It is well suited to larger residential lots with lawns or urban lots with ample frontage along the façade.
- Stair walls offer opportunities to integrate planting beds and landscaping elements.

Paired L-Plan Stair Disadvantages

- Its grand or palatial appearance is not well suited to rural, vernacular, or asymmetrical examples of architecture.
- In comparison to a straight run stair, this form is more expensive to design and build.
- It has little applicability to low-level elevations.
- When it is used, only the top landing is generally covered, and therefore steps remain exposed to weather.

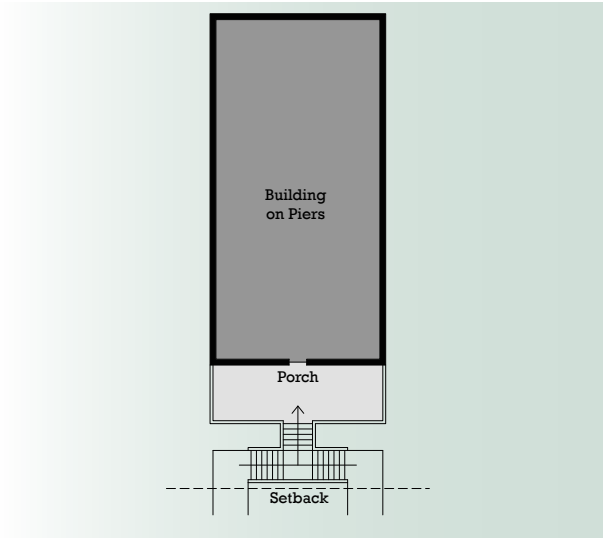
Center/Linear Split Stair

Because it incorporates a symmetrical form, the Center/Linear Split stair exhibits a formal architectural appearance, typically associated with high-style examples of architecture. In its simplest form, this type of stair is comprised of two primary components, a lower-level linear split form and a single upper-level run of stairs, which almost always lead to the main entry door. Because of its formal appearance and relatively compact plan, this stair type is best suited to urban residences where front yard space and setbacks are limited. A variety of architectural wall treatments, including brick and stone facing, copings, spheres, and sometimes urns resonate with the architectural themes present on the main body of the house and its front porch.

Lower Garden District, New Orleans (2014)

Garden District, New Orleans (2014)

Garden District, New Orleans (2014)



Center/Linear Split Stair Diagram

Some of the advantages and disadvantages of this stair type are as follows:

Center/Linear Split Stair Advantages

- In comparison to the straight run stair, this form invites greater use of architectural stair walls, providing visual richness to the façade.
- It is well suited to urban lots with shallow-depth front yard and setback limitations.
- Stair walls offer opportunities to integrate planting beds and landscaping elements.

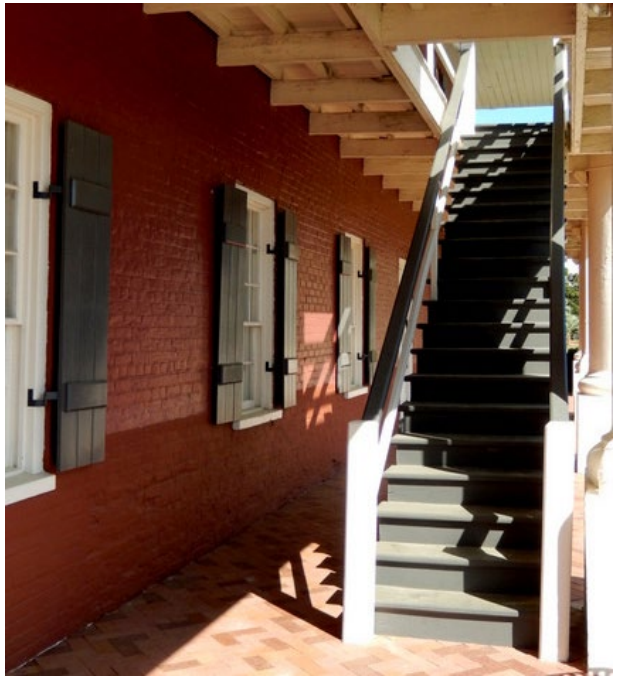
Center/Linear Split Stair Disadvantages

- It is not well suited to rural, vernacular or asymmetrical examples of architecture.
- In comparison to a straight run stair, this form is more expensive to design and build.
- It is generally relatively narrow, not exceeding 3 or 4 feet in width, due to intermediate landing and turns.
- It has little applicability to low-level elevations.

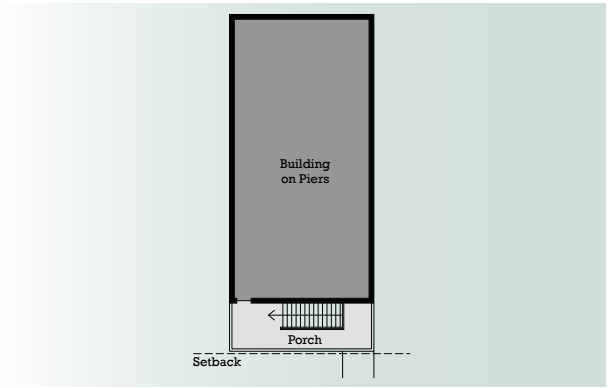
Interior Stair

Located under the protective cover of a gallery or porch, the interior stair takes its design cues from the Louisiana Plantation house type. Because of the need for shade as well as shelter from the frequent and unpredictable downpours, deep porches became a familiar architectural feature in Louisiana building design. Generally, the interior stair is a straight run in configuration or may have a single landing or turn in some high elevation examples. Because the interior stair is tucked away, and sometimes almost hidden, beneath the gallery, the stair, railings, and newel are often of simple, straightforward design. In some cases, the interior stair serves as a secondary stair to a more formal and elaborate stair adorning a façade.

Pre-Katrina home with minimal elevation. The photo illustrates the same structure with its post-Katrina elevation and interior stair plan, Mandeville Historic District (2014)



Interior Plan Stair Examples, Baton Rouge (2014)



Interior Stair Diagram

Here are some of the main advantages and disadvantages of interior stairs:

Interior Plan Stair Advantages

- Because of its simplicity, an interior straight run staircase may be less expensive to build than other types of staircases.
- Because the stair is located beneath a gallery, it allows for a relatively uninterrupted façade composition.
- For a building undergoing an elevation, it is easy to add an interior stair (or more than one) at multiple locations.
- The interior stair is contained within the building footprint, and thus does not require an encroachment into the yard or setback.

Interior Plan Stair Disadvantages

- An interior stair requires a deep porch or gallery (no less than eight feet in depth).
- This form is well suited to monumental architectural building types, Louisiana Plantation houses, and raised Creole Cottages, which incorporate a gallery. The interior stair may not be well adapted to a wider range of building types.
- An interior stair may interrupt circulation, column, windows and doors on the ground level and should be positioned with care.

Fence Considerations

Fence Example, New Orleans (2014)

Fence Example, Mandeville Historic District (2014)

Fence Example, Mandeville Historic District (2014)

Fence and Stanchion Example, Esplanade Ridge Historic District, New Orleans (2014)

Wall Example, Garden District, New Orleans (2014)

Fences are important site features, not only in their most essential function, which is to protect a property, but also to mark a boundary and add visual interest. For elevated properties, a thoughtfully designed fence (or wall) adds an additional means to screen an elevated building. It also affords the property owner opportunities to introduce additional landscaping or other features such as gates and trellises at the fence line. When fences are designed in coordination with foundation screening and plantings, the effect of a medium or high elevation can be softened dramatically.

When planning to incorporate fences in conjunction with an elevation undertaking, the owner of a historic property should consider engaging the services of a design consultant who will provide helpful architectural and landscaping design assistance. If a property is in a jurisdiction of a HPC, the addition of new site features such as a fences or walls will be subject to review. If portions of a fence are already present, those elements should be retained, even if the fence is to be extended or enhanced. Significant alterations to historic site features and their configurations usually result in substantial redefinition of a historic property and its immediate landscape, and loss of historic character. Such alterations can complicate the local HPC review process and result in the denial of a COA.

Because fences are almost always sited along the perimeter of a property, they are prominent character-defining features of both the property and the streetscape within the historic district. When designed with forethought and care, fences can help soften the effect of a medium and high-level elevation, as well as add visual interest to the surrounding streetscape.

Fence Guidelines – Specific Recommendations

- Where no fences (or walls) were historically present at the property, a new fence or wall may not be an appropriate landscape or elevation mitigation treatment option. Well before introducing a new site or landscape feature, the owner of a historic property should consider engaging the services of a preservation design consultant who will be able to offer advice.
- If portions of a historic fence are present, whenever possible, all significant existing features, such as gates, trellises, posts, stanchions, pickets, or other features should be retained.
- Extensions of fences, either vertically or horizontally, should be designed to follow local building and zoning codes and to remain compatible with the historic sections of these elements, in configuration, scale, materials, and detailing.
- When a new fence is being introduced to a historic property, it should be located so that it does not adversely affect the building and property's significant exterior site features or historic circulation patterns.
- The selected design, materials, and exterior finishes for a fence should be carefully planned so that the new work does not compromise or obscure significant historic features of the building, parcel, adjacent properties, and the surrounding streetscape. New features also should be located so that they do not disturb the historic circulation patterns.
- Where historic fences have been removed prior to the elevation undertaking, historical and architectural research should be conducted to determine what type of fence is historically appropriate for the building's type and style.

Lombard Plantation House, Bywater Historic District, New Orleans (2014)

Architectural Design Guidelines – Specific Recommendations

Additions to Historic Buildings

- Minimize the loss of historic fabric and ensure that character-defining features of the historic building are not destroyed, damaged, or obscured.
- Retain the overall character of the site, site topography, character-defining site features, trees, and significant district vistas and views.
- Protect large trees and other significant site features from immediate and delayed construction damage.
- Limit the size and scale of an addition to avoid diminishing or visually overpowering the historic building.
- Design additions to be compatible with the historic building in mass, materials, color, and the relationship of solids and voids to exterior walls, yet make the addition discernible from the original.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Constructing an addition that detracts from the overall historic character of the principal building and the site, or requires the removal of a significant element or site feature.

X Constructing an addition that significantly changes the proportion of built mass to open space on an individual site.

Elevation design plans involving NEW CONSTRUCTION should incorporate the following design recommendations, as applicable:

New Construction

- Site new construction to be compatible with the overall character of surrounding buildings and the historic district in terms of setback, orientation, scale, spacing, and distance from adjacent buildings.
- Preserve the overall character of the site, site topography, character-defining site features, trees, and significant vistas and views.
- Protect large trees and other significant site features from immediate and delayed construction damage, such as loss of root area and compaction of the soil by heavy equipment.
- Design the height, form, size, scale, massing, proportion, and roof shape to be compatible with the overall character of surrounding buildings and the historic district.
- Design the proportion of the proposed new building's front façade to approximate the front façade proportion of surrounding historic buildings.
- Design the spacing, placement, scale, orientation, proportion, and size of window and door openings to be compatible with the overall character of surrounding buildings and the historic district.
- Select windows and doors with material, subdivision, proportion, pattern, and detail compatible with the windows and doors of surrounding buildings and that contribute to the character of the historic district.
- Select materials and finishes compatible with the materials and finishes of surrounding buildings in terms of composition, scale, module, pattern, detail, texture, finish, color, and sheen to contribute to the character of the historic district.
- Design new buildings to be compatible with, but discernible from, historic buildings in the district.

Elevation design plans involving REPAIR AND REPLACEMENT of exterior building features should incorporate the following recommendations, as applicable:

Wooden Architectural Features

- Retain and preserve wooden features that contribute to the overall historic character of a building and its site, including such functional and decorative elements as siding, shingles, cornices, architraves, brackets, pediments, columns, balustrades, and architectural trim.
- Use recognized preservation methods for patching, consolidating, splicing, and reinforcing.
- Replace only deteriorated details or elements in kind, rather than replacing entire features. Match the original detail or element in design, dimension, texture, and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace missing features with equivalent features, based on accurate documentation of the original feature, or a new design compatible in scale, size, material, texture, and color with the overall character of the building and historic district.
- Repaint wooden surfaces and features in colors

that are appropriate to the historic building and district.

- Clean wooden architectural features using gentle methods such as low-pressure washes with detergents and natural bristle brushes. Chemical stripping may be used only if gentler methods are ineffective.
- Exercise caution in handling lead-based paint, which can be found on (or in) any surface painted before 1978. Follow Federal and State guidelines for handling and disposing of lead-based paint, potentially including encapsulation, and incorporate those costs into your construction budget. For more information, see http://www.nps.gov/tps/how-to-preserve/briefs/37-lead-paint-hazards.htm, as well as other federal, state, and local resources on the topic.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Cleaning wooden features and surfaces with destructive methods such as sandblasting and power washing, or using propane or butane torches.

X Stripping painted surfaces down to bare wood and applying clear stains or finishes to create a natural wood appearance.

X Replacing sound, painted wooden siding with new siding to achieve a uniformly smooth wooden surface.

X Replacing or covering wooden siding, trim, or window sashes with contemporary substitute materials such as aluminum or vinyl.

X Introducing wooden features or details to an historic building in an attempt to create a false sense of historical appearance.

Masonry

- Retain and preserve, as practicable, masonry features that contribute to the overall historic character of a building and a site, including walls, foundations, roofing materials, chimneys, cornices, quoins, steps, buttresses, piers, columns, lintels, arches, and sills.
- Protect and maintain historic masonry materials, such as brick, terra-cotta, limestone, granite, stucco, slate, concrete, cement block and their distinctive construction features, including bond patterns, corbels, water tables, and unpainted surfaces.
- Use recognized preservation methods for piecing-in, consolidating, or patching damaged or deteriorated masonry surfaces.
- Repoint masonry mortar joints if the mortar is cracked, crumbling, or missing, or if damp walls or damaged plaster indicate moisture penetration. Before repointing, carefully remove deteriorated mortar using hand tools. Replace the mortar with new mortar that duplicates the original in strength, color, texture, and composition. Match the original mortar joints in width and profile.
- Replace only the deteriorated portion of a detail, module, or element of a masonry surface or feature in kind rather than replacing the entire surface or feature. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace large masonry surfaces or entire features, if necessary, in kind, matching the original in design, detail, dimension, color, pattern, texture and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace missing masonry features with equivalent features, based on accurate documentation of the original feature, or a new design compatible in scale, size, material, and color with the overall character of the building and historic district.
- Test any cleaning technique, including chemical solutions, on an inconspicuous sample area well in advance of the proposed cleaning to evaluate its effects. Cleaning masonry features with destructive methods, including sandblasting, high-pressure water blasting, and power washing is not appropriate.
- Repaint previously painted masonry surfaces in colors that are appropriate to the historic material, building, and district.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Applying a waterproof coating to exposed masonry rather than repairing it.

X Painting previously unpainted masonry surfaces.

Architectural Metals

- Retain and preserve architectural metal features that contribute to overall historic character of a building and a site, including such functional and decorative elements as roofing, flashing, cornices,

railings, hardware, casement windows, and fences.

- Retain and preserve architectural metals, such as copper, tin, brass, cast iron, wrought iron, and lead, that contribute to the overall historic character of the building and historic district.
- Repair deteriorated architectural metal features and surfaces using recognized preservation methods for splicing, patching, and reinforcing.
- Replace only the deteriorated detail or element of an architectural metal feature in kind rather than replacing the entire feature. Match the original detail or element in design, dimension, texture, and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace entire architectural features, if necessary, in kind, matching the original feature in design, detail, dimension, texture and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a missing architectural feature with an equivalent feature, based on accurate documentation of the original feature, or a new design compatible with the scale, size, material, and color of the historic building and district.
- Repaint architectural metal surfaces and features in colors that are appropriate to the building and historic district.
- Pretest chemical solutions before cleaning soft metals, including lead, tin, and copper, to ensure they do not damage the color and the texture of the metal surface.
- Clean hard metals such as cast iron, wrought iron, and steel using the gentlest means possible. Consider low-pressure glass bead blasting only if hand scraping and wire brushing are ineffective.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Introducing metal features or details to historic building in an attempt to create a false historical appearance.

X Patching metal roofs or flashing with tar or asphalt products.

X Cleaning soft metal surfaces with destructive methods like grit blasting.

Roofs

- Retain and preserve roofs and roof forms that contribute to the overall historic character of a building, including their functional and decorative features, such as roofing materials, cresting, dormers, chimneys, cupolas, and cornices.
- Repair historic roofs and their distinctive features through recognized preservation methods for resetting or reinforcing.
- Replace only the deteriorated portion of a partially deteriorated roof feature in kind to match the original feature in design, dimension, detail, color, and material, rather than replacing the entire feature. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a deteriorated historic roofing material or feature, if necessary, in kind to match the original feature in scale, detail, pattern, design, material, and color. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a missing roof feature with an equivalent feature, based on accurate documentation of the original feature, or a new design compatible with the scale, size, material, and color of the historic building and district.
- Install new gutters and downspouts, if necessary, so that no architectural features are lost or damaged. Select new gutters and downspouts that match the trim color, unless the existing features are copper. Replace traditional half-round gutters and downspouts with like gutters and downspouts.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Removing a roof feature that is important in defining the overall character of an historic building, rather than repairing or replacing it.

X Replacing concealed, built-in gutter systems with exposed gutters.

X Introducing new roof features, such as skylights, dormers, or vents, which can compromise the historic roof design, damage character-defining roof materials, or deviate from the character of the historic district.

X Installing ventilators, solar collectors, antennas, skylights, or mechanical equipment in locations that compromise character-defining roofs or on roof slopes prominently visible from the street.

X Installing exposed tar paper rolls as finished roofing material or roofing tar as a replacement for valley flashing.

X Patching any roofing or flashing with tar or asphalt products.

Exterior Walls

- Retain and preserve exterior walls that contribute to the overall historic form and character of a building, including their functional and decorative features, such as cornices, foundations, bays, quoins, arches, water tables, brackets, and entablatures.
- Retain and preserve exterior wall materials that contribute to the overall historic character of a building, including brickwork, stucco, stone, wooden shingles, wooden siding, asbestos siding, and metal, wooden, or masonry trim work.
- Repair exterior wall surfaces, details, and features using recognized preservation repair methods for the surface material or coating.
- Replace only the deteriorated detail or element of an exterior wall in kind to match the original feature in design, dimension, detail, color, and material, rather than replacing the entire exterior wall. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace an entire exterior wall or feature, if necessary, in kind, matching the original in design, dimension, detail, texture, color, and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a missing exterior wall or feature with an equivalent wall or feature, based on accurate documentation of the original feature, or a new design compatible with the historic character of the building and the historic district.

Actions that are inconsistent with established preservation goals and should be avoided include:

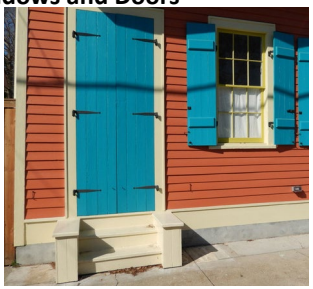
X Introducing new features, such as window or door openings, bays, vents, balconies, or chimneys to character-defining exterior walls if they will compromise the architectural integrity of the building.

X Removing or covering any material detail associated with exterior walls, including decorative shingles, panels, brackets, bargeboards, and cornerboards, unless an accurate restoration requires it.

X Covering historic wall material, including wooden siding, wooden shingles, stucco, brick, and stonework, with coatings or temporary substitute materials.

X Introducing features or details to an exterior wall in an attempt to create a false historical appearance.

Windows and Doors



- Retain and preserve windows that contribute to the overall historic character of a building, including their functional and decorative features, such as frames, sash, muntins, sills, heads, mouldings, surrounds, hardware, shutters, and blinds.
- Retain and preserve doors that contribute to the overall historic character of a building, including their functional and decorative features, such as frames, glazing, panels, sidelights, fanlights, surrounds, thresholds, and hardware.
- Repair historic windows and doors and their distinctive features using recognized preservation methods for patching, consolidating, splicing, and reinforcing.
- Replace only the deteriorated window or door feature in kind, rather than replacing the entire unit. Match the original feature in design, dimension, and materials. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a deteriorated window or door, if necessary, in kind, matching the design and the dimension of the original sash or panels, pane configuration, architectural trim, detailing, and materials. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a missing window or door with an equivalent unit, based on accurate documentation of the original unit, or a new design compatible with the original opening and the historic character of the building.
- Replace deteriorated or missing wooden shutters with wooden shutters sized to fit the opening and mounted to be operational.
- If desired, introduce narrow-profile exterior or interior storm windows so that they do not obscure or damage the existing sash and frame. Select exterior storm windows with a painted or baked enamel finish color that is compatible with the sash color. For double-hung windows, operable storm window dividers should align with the existing meeting rail.
- If desired, introduce full-light storm doors constructed of wood or aluminum so that they do not obscure or damage the existing door and frame. Select storm doors with a painted, stained, or baked-enamel finish color that is compatible with the color of the existing door.
- If desired and where historically appropriate, carefully install fabric awnings over window, door, or porch openings to ensure that historic features are not damaged or obscured.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Removing original doors, windows, shutters, blinds, hardware, and trim from a character-defining façade.

X Removing any detail material associated with windows and doors, such as stained glass, beveled glass, or tracery, unless an accurate restoration requires it.

X Using snap-in muntins to create a false divided-light appearance.

X Replacing clear glazing with tinted or opaque glazing.

X Introducing shutters on an historic building with no evidence of previous shutters.

X Using bare aluminum storm doors.

Entrances, Porches, and Balconies

- Retain and preserve entrances, porches, and balconies that contribute to the overall historic character of a building, including functional and decorative elements as columns, pilasters, piers, entablatures, balustrades, sidelights, fanlights, transoms, steps, railings, floors and ceilings.
- Repair historic entrances, porches, and balconies and their distinctive features and materials using recognized preservation methods for patching, consolidating, splicing, and reinforcing.
- Replace only the deteriorated detail or element of an entrance, porch, or balcony feature in kind, rather than replacing the entire feature. Match the original in design, dimension, and material and consider compatible substitute materials only if using the original material is not technically feasible.
- Replace an entire entrance, porch, or balcony, if necessary, in kind, matching the original in design, dimension, detail, texture, and material. Consider compatible substitute materials only if using the original material is not technically feasible.
- Replace a missing entrance, porch, or balcony with an equivalent feature, based on accurate documentation of the original feature, or a new design compatible with the historic character of the building and district.
- Consider the enclosure of an historic porch to accommodate a new use only if the enclosure can be designed to preserve the historic character of the porch and the building.

Actions that are inconsistent with established preservation goals and should be avoided include:

X Removing any detail material associated with entrances and porches, such as spindlework, beveled glass, or beaded board, unless an accurate restoration requires it.

X Introducing features or details to an historic entrance, porch, or balcony in an attempt to create a false historical appearance.

X Enclosing a front porch or a front balcony.

Foundation Design Guidelines

Foundation Design

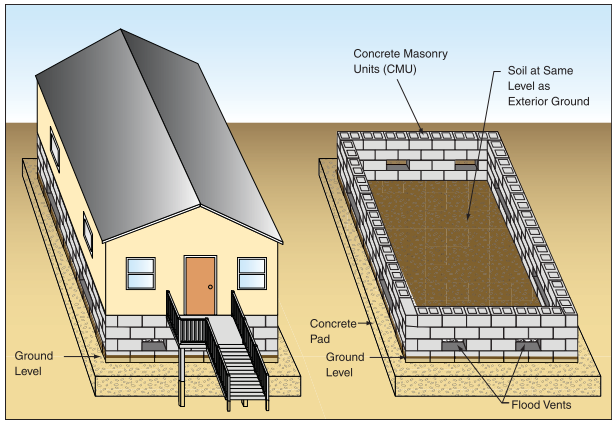
Buildings have been erected in Louisiana over three centuries in ways which attempt to minimize damage from flooding. Historic buildings, like the one shown below in the Algiers Point neighborhood of New Orleans, demonstrate traditional methods used to treat architectural foundations and raise the living area above the flood zone. Many of the same foundation design treatments can be used in today's elevation

Algiers Point Historic District, New Orleans (2014)

Because of the unique challenges involved in designing an appropriate foundation system for an elevated building, this topic is presented separately from the architecturally-related factors that must be evaluated in developing an elevation design plan. Much of the information presented in this section relates to specific engineering factors a property owner must consider in designing a foundation system. These factors include the applicable FEMA flood zone and the ABFE (or effective BFE if no ABFE is available) for the location of the historic building. Foundation systems must be designed by professional engineers familiar with relevant safety considerations.

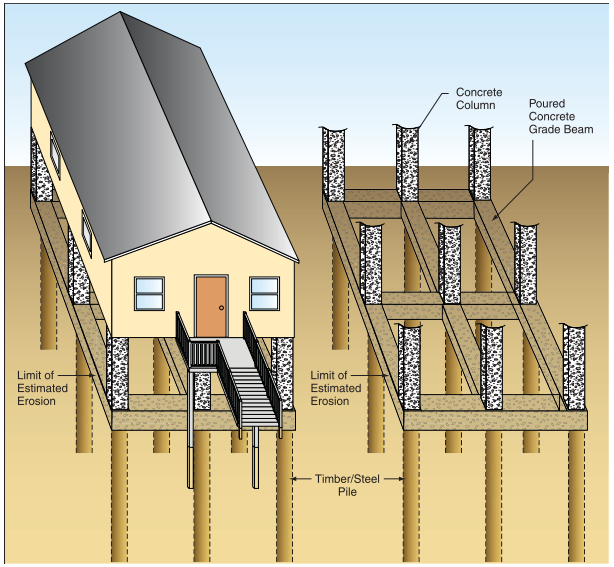
The following discussion provides an overview of recommended foundation designs for the elevation of residential buildings in Coastal Louisiana. This information will assist a historic property owner in choosing a foundation design that reduces flood risk and preserves the visual and architectural integrity of the property. These foundation design recommendations have been prepared by FEMA for new construction in the Gulf Coast region.

The two major types of residential foundations within the Gulf Coast region include open and closed foundations.



Closed Foundation with Crawl Space (FEMA 550)

Closed foundations are distinguished by perimeter walls of masonry construction that enclose the footprint of a residence. These foundations may also include concrete slab-on-grade construction. Generally, closed foundations are limited to an elevation lower than 8 feet above adjoining grade. Historic homes located within the immediate vicinity of the Gulf Coast may not be suited for closed foundation design, considering the local flood hazards, wave action, water pressure, and wind hazards.



Open Foundation with Grade Beam (FEMA 550)

Open foundations are characterized by raised piers or piles with open area under the elevated structure. In some cases, open foundations may be fitted with non-structural, porous, architectural screening panels through which rising water levels can flow with minimal restriction.

The selection of an open or closed foundation depends upon the proposed height of a foundation above grade and the potential storm-related hazards within the flood zone. Open foundations are generally most appropriate where the foundation height is greater than 8 feet above grade and for sites that are located in a flood zone where the highest potential flood-related forces, especially those pertaining to high wind and water levels associated with storm surges, can be anticipated. Waterfront locations within the designated velocity zone, or "Zone V," require open foundations.

For detailed foundation design criteria and strategies, property owners and their design professionals should refer to local building codes and FEMA publication 550, *Recommended Residential Construction for the Gulf Coast: Building Strong and Safe Foundations.* Typical residential foundation plans are illustrated in the *Louisiana Renewal Forum Publication: A Pattern Book for Gulf Coast Neighborhoods.*

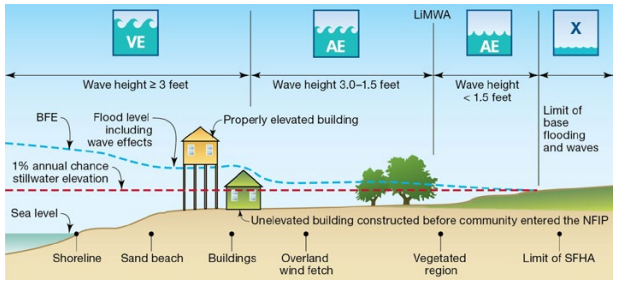
Residential Foundations Types

Closed Foundation:

- Foundations up to 8 feet above grade
- Generally for inland areas
- Reinforced masonry – crawl space
- Reinforced masonry – stem wall

Open Foundation:

- Foundations up to 15 feet above grade
- Generally for coastal areas
- Timber pile
- Steel pipe pile, concrete column, grade beam
- Timber pile, concrete column, grade beam
- Concrete column, grade beam
- Concrete column, grade beam, slab



Typical Shoreline Perpendicular Transect Showing Stillwater and Wave Crest Elevations and Associated Flood Zones. (Adapted after Figure 3-53, FEMA, Coastal Construction Manual: Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas (Fourth Edition) FEMA P-55, Volume I, August 2011.)

Wind Hazards Associated with Elevation

The higher a building is elevated, the greater the chances of future structural damage associated with wind and/or airborne debris. There are a number of methods of retrofitting a building to better protect and harden its envelope from such concerns, with a series of Individual Mitigation Measures (IMMs). IMMs can include such retrofits as roof clips to further secure the roof to the exterior walls, the installation of storm shutters, and bolting the exterior walls/sills to the elevated foundation system. Other IMMs are intended to further protect associated household systems, such as the elevation (and associated tie-down) of HVAC , and strapping exterior propane or heating fuel tanks to their slab. The intention is for this combination of IMMs to work together to better protect an elevated property from future storm loss. For further information, visit *http://www.fema.gov/media-library-data/20130726-1737-25045-4275/final_june_1_2010_hma_unified_guidance_09252012a_508.pdf.* See also http://www.1000friendsofflorida.org/building-better-communities/disaster-planning/.

Elevation Requirements

Elevation of residential buildings has been commonplace throughout the State of Louisiana since the earliest days of settlement. Given the region's proximity to both the Gulf of Mexico and the Mississippi River, among other flood-prone waterways, Louisianans have contended with the very real threat of flooding for centuries. The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP enables property owners in participating communities to purchase flood insurance as a protection for flood losses, in exchange for State and community floodplain management regulations that reduce future flood damages.

Flood Zones

FEMA has developed a series of flood zone maps, which are based on the ground level's height relationship to mean sea level. FIRMs, in either digital or paper format, identify floodplains and assess the potential for flooding in very specific detail. FIRMs specify the BFE in each participating community, which is the computed level to which floodwaters are expected to rise during a 100-year flood event. The BFE is the regulatory requirement for the elevation or flood proofing of buildings. The relationship between the BFE and the actual height to which a subject building is elevated is what determines the cost of flood insurance premiums. Statewide, there are a variety of flood zones, applicable to both coastal and riverine flooding.

Advisory Base Flood Elevations (ABFEs), shown on preliminary FIRMs, are updated BFEs that are calculated using more recent data, and are not used as the regulatory minimum elevation for rating insurance policies until the FIRM becomes effective.

Zone A
This identifies areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Coastal A Zone
This includes areas within a Special Flood Hazard Area (SFHA), landward of a Zone V, or landward of an open coast without a mapped Zone V. During base flood conditions, breaking wave heights in a Coastal A Zone are potentially greater than or equal to 1.5 feet. The inland limit of the Coastal A Zone is either a) the Limit of Moderate Wave Action (LiMWA) if delineated on a Flood Insurance Rate Map (FIRM) or b) designated by the authority having jurisdiction. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone AE and Zone A1-30
These identify areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. AE Zone delineations are now used on new FIRMs instead of A Zones. (Zone AE is used on new and revised maps in place of Zones A1–A30.)

AE with Floodway
This defines areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height, typically 1 foot. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations.

Zone AH
This identifies areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. BFEs derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone AO
This describes areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply. Some AO zones have been designated in areas with high flood velocities such as alluvial fans and washes. Communities are encouraged to adopt more restrictive requirements for these areas.

Zone AR
This zone is associated with areas that result from the decertification of a previously accredited flood protection system that is in the process of being restored to provide base flood protection. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone A99
This zone identifies areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction Federal flood protection system. These are areas of special flood hazard where enough progress has been made on the construction of a protection system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. Zone A99 may only be used when the flood protection system has reached specified statutory progress toward completion. No BFEs or depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone B, X
These zones identify moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones. Mandatory insurance purchase requirements do not apply, but coverage is available in participating communities.

Zone C, X
This zone is associated with minimal risk areas outside the 1-percent and 0.2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Mandatory insurance purchase requirements do not apply, but coverage is available in participating communities.

Zone D
This zone identifies unstudied areas where flood hazards are undetermined, but flooding may be possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

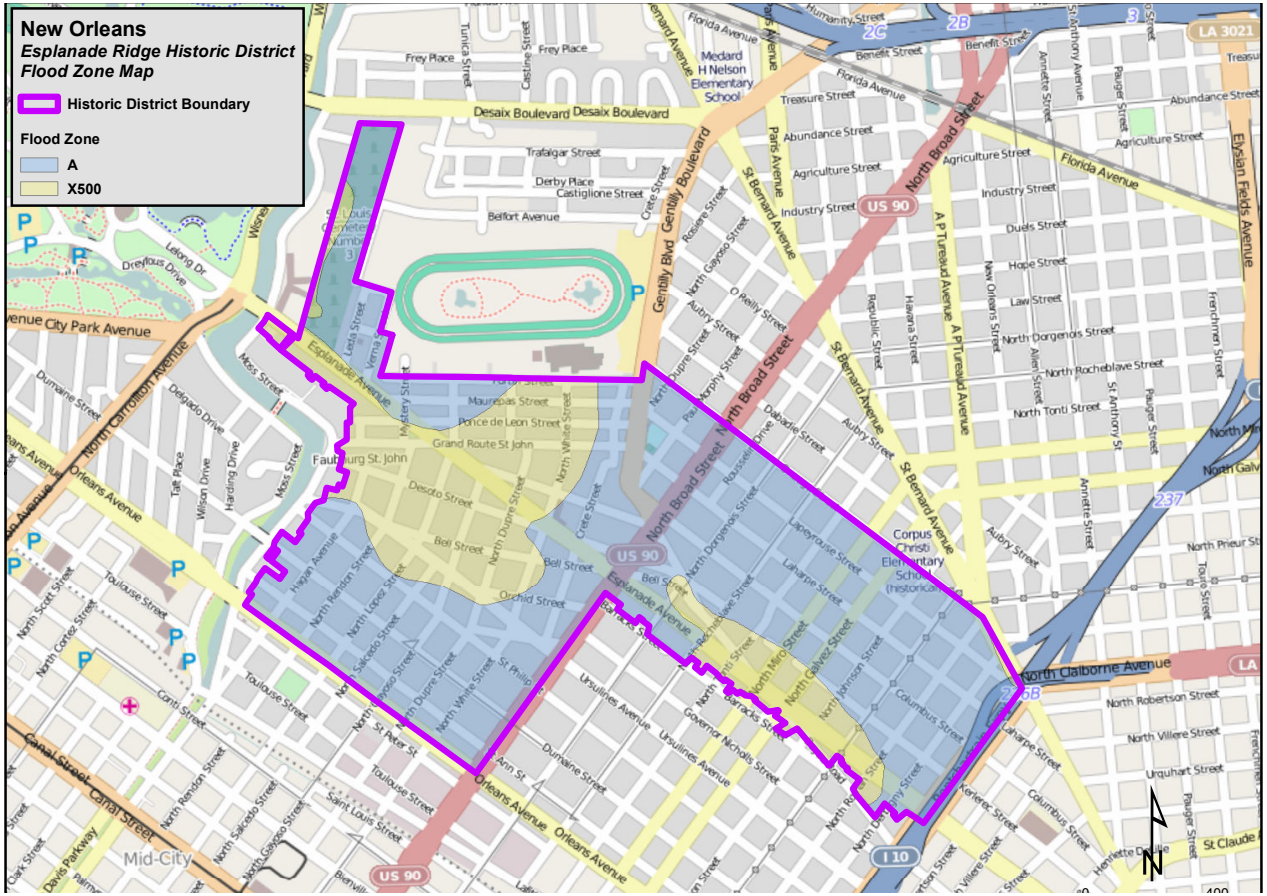
Zone V
These are areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed coastal analyses have not been performed, no BFEs or flood depths are indicated. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone VE and V1-30
These zones identify areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. (Zone VE is used on new and revised maps in place of Zones V1–V30.)

Flood Zones throughout the local historic districts of New Orleans are organized and identified as follows:

A Zone
Areas in which no BFEs have been delineated, because it has been determined that there is only a 1% annual chance of flooding.

X500 Zone
Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding. Mandatory insurance purchase requirements do not apply, but coverage is available in participating communities.



New Orleans- Esplanade Ridge Historic District Flood Zone Map- This map delineates the two more common flood zones found in New Orleans' historic districts: Zone A and X500. Protected by the levee system, much of downtown New Orleans is located in Flood Zone A: no BFE has been delineated, as metrics suggest only 1% chance of flooding. Two areas within Esplanade Ridge Historic District are within Flood Zone X500: These areas are also protected by the levee system, and it has been determined that they would flood less than an average depth of one foot during a 100-year flood event. (https://data.nola.gov/)

National Flood Insurance Program (NFIP)

The NFIP is a Federal program administered by FEMA that makes flood insurance available to owners of property in participating communities nationwide through the cooperative efforts of the Federal Government and the private insurance industry. The NFIP policy defines historic structures as any structure that is (verbatim from NFIP Floodplain Management Bulletin – Historic Structures; FEMA P-467-2; 2008:3-4):

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; (This includes structures that are determined to be eligible for listing by the Secretary of the Interior as a historic structure.) A determination of "eligibility" is a decision by the Department of the Interior that a district, site, building, structure or object meets the National Register criteria for evaluation although the property is not formally listed in 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 a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

   (a) By an approved state program as determined by the Secretary of the Interior or

   (b) Directly by the Secretary of the Interior in States without approved programs."

This definition was coordinated with the Department of Interior when it was added to the NFIP Regulations in 1989.

The purpose of this definition is to provide NFIP communities with criteria to distinguish between "historic structures" and the other existing buildings which remain subject to NFIP floodplain management requirements (44 CFR §60.3). While it is important to preserve historic structures and other cultural resources, it is also critical to ensure that other existing flood-prone structures are protected from flood damage when they are substantially improved or substantially damaged.

Historic buildings may be exempt from NFIP substantial improvement and substantial damage requirements through either their definition of substantial improvement, or by issuing variances for historic structures. However, in this situation, the NFIP requires that the improvement "not preclude the structure's continued designation as a historic structure and must be the minimum necessary to preserve its historic character." NFIP guidance specifies that any new construction infill in historic districts is not exempt from the floodplain ordinance requirement, and it must be elevated to the maximum BFE level.

As discussed previously, pursuing a variance for a historic building may not always be readily supported by floodplain managers and the communities for which they are responsible. Should a variance be required for a historic building, the community's NFIP rating and flood insurance rates could be directly (and negatively) affected.

Located in the Lower Garden District, this house depicts a raised first floor living area reached by flanking entry stair, Garden District, New Orleans (2014)

FEMA will require the use of best available data in administering its grant programs. At times, this may be different from BFE, ABFE, or what the local floodplain administrator may require. It is also important to point out that funding from other Federal agencies, such as HUD-funded CDBG awards, may follow other standards and have different requirements. It is essential that the property owner research and understand the rules of any governmental or privately funded grant program, prior to initiating elevation or other mitigation construction work.

Relationship of Foundation Design to Architectural Design and Historic Preservation

The foundation design and elevation height should be selected to preserve the physical integrity of the historic building. Property owners should consider working with a design professional or elevation contractor, in concert with a professional engineer, to choose the appropriate foundation and treatment. The local HPC and building permit staff can provide guidance on complying with design guidelines and building codes.

Successful elevation designs preserve the visual and architecturally significant features of an historic property while minimizing the flood risk. Preparing elevation design proposals for historic residential structures requires careful analysis of architectural elements and the context of the property. Some properties may require a minimal change in elevation with little impact on the historic integrity of the property or surrounding neighborhood. In other situations, there may be a dramatic difference between the existing elevation and the maximum ABFE (or effective BFE if an ABFE is not available) height requirement.

Elevation Considerations

- Consider the location of the historic property, determine the flood zone of the site, and identify local building code requirements.
- Review local flood mapping sources and then determine the ABFE (or effective BFE if an ABFE is not available) for the property. The height for the first floor elevation of the building is based on the ABFE for the flood zone for the property.
- Compare the existing first floor elevation of the residence to the ABFE (or effective BFE if an ABFE is not available).

Architectural Considerations

Determine the most appropriate elevation based on the analysis presented in Section 3, Architectural Design Guidelines, of these Guidelines:

- Review building massing, architectural style, and façade design.
- Review distinguishing features of the property, including its site.

Today a restaurant, the circa 1830's Bechac House in Mandeville represents a pre-Hurricane Katrina elevation of approximately 9 feet above grade and exhibits a repetition of architectural forms, Mandeville Historic District (2014)

Garden District, New Orleans (2014)

Lower Garden District, New Orleans (2014)

These houses offer excellent examples of foundations designed with a combination of architectural treatments and landscaping screening, Garden District, New Orleans (2014)

- Evaluate and assess the potential visual impacts on adjoining properties.
- Identify architectural and landscape screening alternatives.

Taking these considerations into account, choose a foundation design that will minimize the flood risk but preserve your property's historic features.

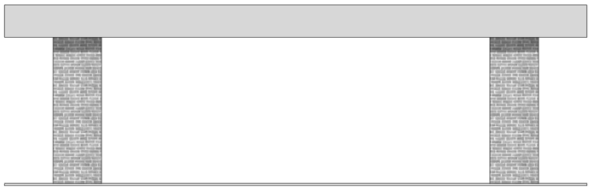
The placement of potential piers, columns, and other foundation elements must reflect an understanding of the architectural elements of the historic structure. Placement of the foundation components should complement existing locations of façade features such as columns, colonnades, corners, trim elements, and other vertical features. The existing elements provide visual references that can be repeated and extended throughout the new foundation design.

Foundation Screening Systems

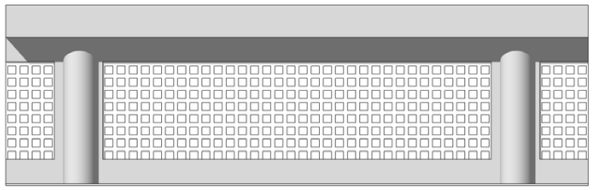
Architectural and landscape screening approaches for new foundation conditions can provide effective means to mitigate the adverse visual effects associated with elevating a historic property. These approaches must carefully consider foundation requirements associated with relevant flood hazard zones. Architectural screening of open foundations must address potential flood and wind forces and consider their effect upon the historic character of the structure.

Landscape screening near the foundation perimeter may offer the most flexible and effective approach to maintaining the scale of an historic property and its site. Evergreen and deciduous shrubs and small trees can provide scale transition, without restricting potential flood flows under the open foundation. This benefit is particularly important in zones where flood forces may be significant.

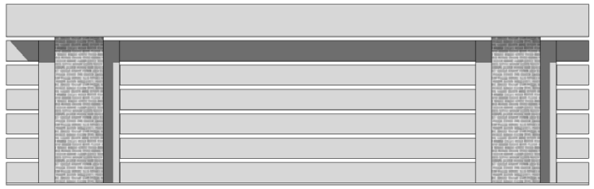
Because many architectural screening systems are prohibited in the highest hazards zones (V Zone),



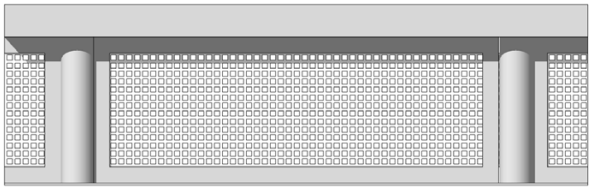
Elevation with no screen



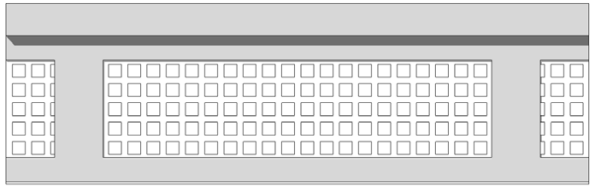
Elevation with lattice covering piers



Elevation with louver screen panel



Elevation with fine pattern lattice screen panel



Elevation with bold pattern lattice screen panel

Architectural screening of base

Garden District, New Orleans (2014)

Landscape screening can help buffer parts or almost all of exposed foundations, Lower Garden District, New Orleans (2014)

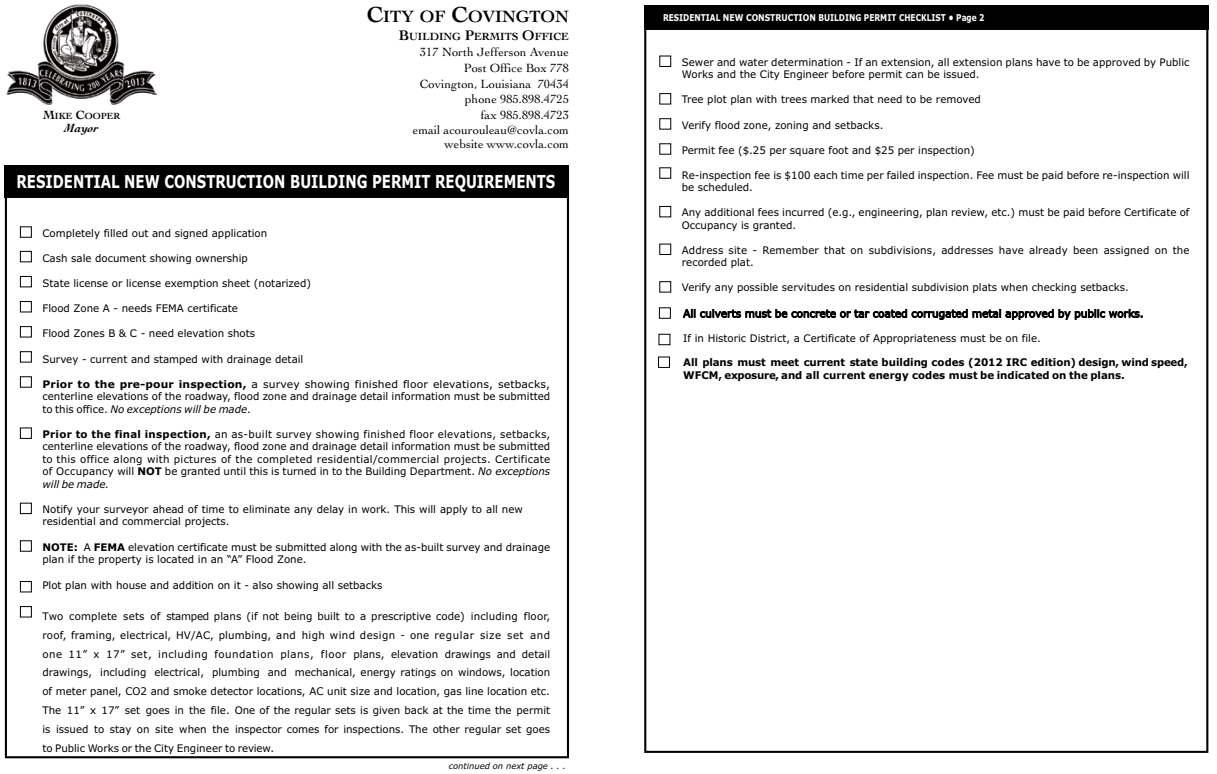
property owners and designers must determine at the outset whether an architectural screening system is practical or feasible. In other hazard zones, the use of open lattice screening panels and other non-structural breakaway façade panels for a new base or sub-story can offer effective means to buffer the changes in elevation to an existing structure.

The key considerations for foundation screening systems include: design provisions that allow unrestricted flows of rising flood waters, breakaway features that do not add wind loads to a structure, and design elements that provide a suitable architectural statement for the base or sub-story that complements the historic property.

FEMA's Technical Fact Sheet No. 27, *Enclosures and Breakaway Panels*, summarizes building code requirements and design considerations for these architectural screening systems.

Permit Requirements

All elevation design plans and related foundation designs must be reviewed and approved by the local building permit office and the HPC. The historic property owner must submit elevation and foundation design plans prepared by a qualified professional designer. Successful elevation design plans demonstrate a thorough understanding of architectural, engineering, historic preservation, and flood hazard mitigation concerns. Once a project has received approval by the local building permit office and HPC, the elevation of the building may commence.



CITY OF COVINGTON
BUILDING PERMITS OFFICE
317 North Jefferson Avenue
Post Office Box 778
Covington, Louisiana 70434
phone 985.898.4725
fax 985.898.4723
email acourouleau@covla.com
website www.covla.com

MIKE COOPER
Mayor

RESIDENTIAL NEW CONSTRUCTION BUILDING PERMIT REQUIREMENTS

- ☐ Completely filled out and signed application
- ☐ Cash sale document showing ownership
- ☐ State license or license exemption sheet (notarized)
- ☐ Flood Zone A - needs FEMA certificate
- ☐ Flood Zones B & C - need elevation shots
- ☐ Survey - current and stamped with drainage detail
- ☐ **Prior to the pre-pour inspection,** a survey showing finished floor elevations, setbacks, centerline elevations of the roadway, flood zone and drainage detail information must be submitted to this office. *No exceptions will be made*.
- ☐ **Prior to the final inspection,** an as-built survey showing finished floor elevations, setbacks, centerline elevations of the roadway, flood zone and drainage detail information must be submitted to this office along with pictures of the completed residential/commercial projects. Certificate of Occupancy will **NOT** be granted until this is turned in to the Building Department. *No exceptions will be made.*
- ☐ Notify your surveyor ahead of time to eliminate any delay in work. This will apply to all new residential and commercial projects.
- ☐ **NOTE:** A **FEMA** elevation certificate must be submitted along with the as-built survey and drainage plan if the property is located in an "A" Flood Zone.
- ☐ Plot plan with house and addition on it - also showing all setbacks
- ☐ Two complete sets of stamped plans (if not being built to a prescriptive code) including floor, roof, framing, electrical, HV/AC, plumbing, and high wind design - one regular size set and one 11" x 17" set, including foundation plans, floor plans, elevation drawings and detail drawings, including electrical, plumbing and mechanical, energy ratings on windows, location of meter panel, CO2 and smoke detector locations, AC unit size and location, gas line location etc. The 11" x 17" set goes in the file. One of the regular sets is given back at the time the permit is issued to stay on site when the inspector comes for inspections. The other regular set goes to Public Works or the City Engineer to review.

continued on next page . . .

RESIDENTIAL NEW CONSTRUCTION BUILDING PERMIT CHECKLIST • Page 2

- ☐ Sewer and water determination - If an extension, all extension plans have to be approved by Public Works and the City Engineer before permit can be issued.
- ☐ Tree plot plan with trees marked that need to be removed
- ☐ Verify flood zone, zoning and setbacks.
- ☐ Permit fee ($.25 per square foot and $25 per inspection)
- ☐ Re-inspection fee is $100 each time per failed inspection. Fee must be paid before re-inspection will be scheduled.
- ☐ Any additional fees incurred (e.g., engineering, plan review, etc.) must be paid before Certificate of Occupancy is granted.
- ☐ Address site - Remember that on subdivisions, addresses have already been assigned on the recorded plat.
- ☐ Verify any possible servitudes on residential subdivision plats when checking setbacks.
- ☐ **All culverts must be concrete or tar coated corrugated metal approved by public works.**
- ☐ If in Historic District, a Certificate of Appropriateness must be on file.
- ☐ **All plans must meet current state building codes (2012 IRC edition) design, wind speed, WFCM, exposure, and all current energy codes must be indicated on the plans.**

CERTIFICATE OF APPROPRIATENESS

Historic District Landmarks Commission
City of New Orleans

C of A #:

THIS DOCUMENT MUST BE POSTED AT ALL TIMES

Date:

PREMISES:
OWNER:
BUILDING RATING:
☐ by NISTOP WORK/VIOLATION
APPLICANT:
WORK APPROVED:

WORK to COMMENCE AFTER ALL PERMITS ARE OBTAINED AND ALL ZONING REQUIREMENTS ARE SATISFIED

Signed: _____ Applicant
Approved: _____ Executive Director
Approved: _____ Chairman

Note: An additional permit may still be required from the Department of Safety and Permits, Room 7E04, City Hall
All work shall be in compliance with all Building Codes and Zoning regulations.

Elevation Design – Next Steps

Sections 1 through 4 of these Guidelines have presented a series of factors that must be carefully evaluated in developing an elevation design plan that achieves both risk reduction and preservation of important historic buildings and historic districts. This process requires careful discernment of patterns for entire neighborhoods, topography, site design, and architectural context related to both individual historic buildings and larger historic districts. Whereas individual elements are presented in previous sections of the Guidelines, this section assembles and integrates these factors to provide a series of broad design approaches for use in the 37 parishes within the GO Zone in Louisiana.

The goal of this effort is to visually depict the ways in which elevation design involving historic buildings can be successfully completed. These designs should not be viewed as the only ways in which historic preservation concerns can be addressed in the elevation design process. Hopefully, these will spark property owners and their design professionals to think creatively about how elevation can be handled in a positive and sensitive manner. Because of the national import of Hurricane Katrina on Coastal Louisiana, these elevation projects may be viewed over time as "historic" in their own right.

Design and Construction Guidance

Considering the range of building permit and local historic preservation commission requirements, property owners must work closely with a design professional to prepare the elevation design plans and a home elevation contractor to implement the project. Some firms may be able to provide both design and construction services.

These professionals will serve as the property owner's representatives in preparing and submitting elevation design plans to local building permit offices and HPCs. This manual offers initial architectural guidance to the property owner, who will then contract with the design and construction professionals to complete the project planning, design, and construction efforts.

Within historic districts, members of the historic district commission will provide useful advice to property owners in the development of elevation plans; Margaret Place Historic District, Lake Charles (2014)

Project Coordination

Although the responsibility of initiating and completing an elevation design project rests with the property owner, advice and direction for the project may be available through local planning and preservation authorities. Once a property owner approaches the local HPC on a potential project, their historic preservation staff will be available for local project coordination aspects.

Elevation Approaches – Illustrated Alternatives

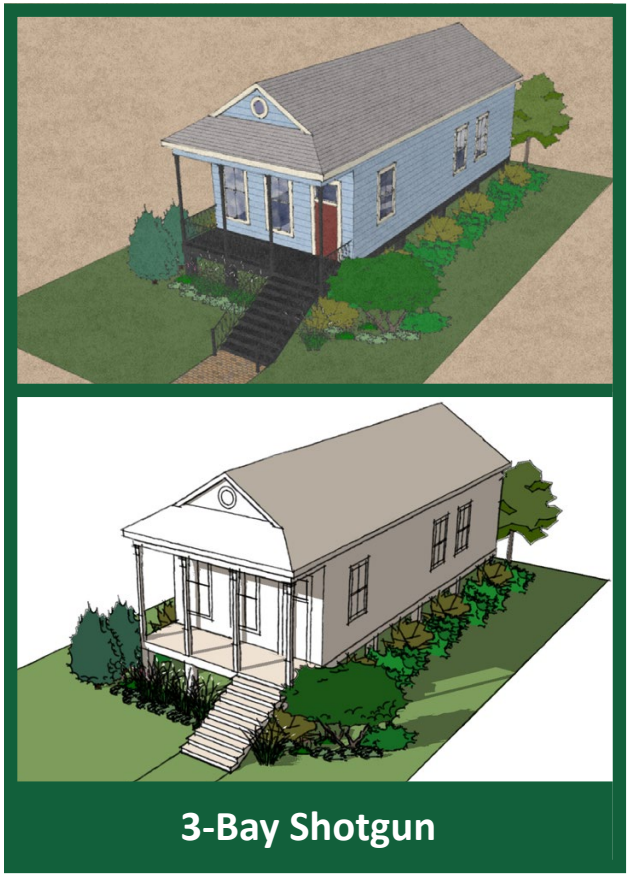
These Guidelines outline a series of factors to be weighed by the property owner/property owner in the customized design plan development process.

Elevation Decision Factors

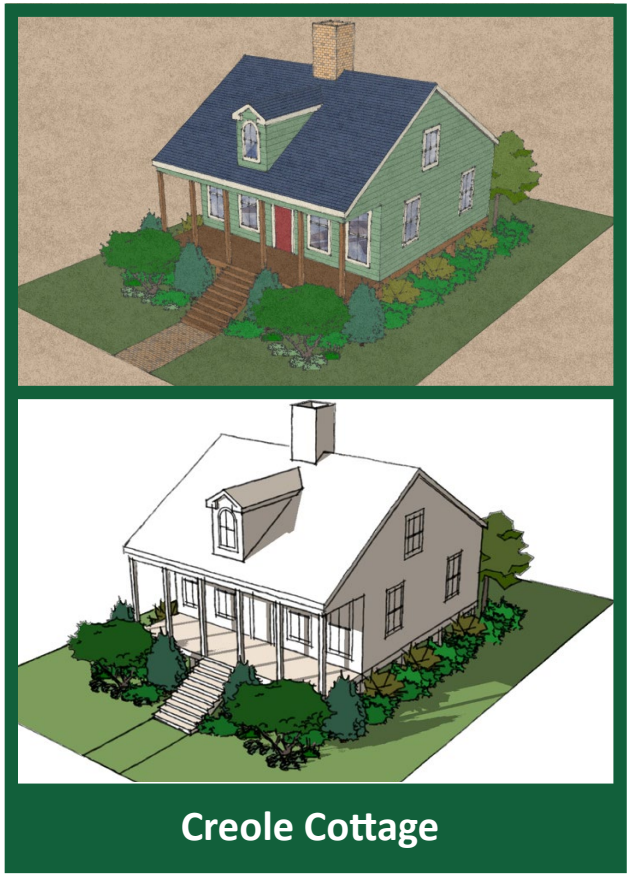
The decision to elevate a historic home involves the owner's assessment of the long-term benefits of the elevation alternatives. The decision-making should include a careful appraisal of the effects of an elevation action upon the historic character of the property, the protection of the home against future storm events, the mitigation measures to screen the new foundation, and the overall costs and potential savings over time from the elevation project.

The practical aspects of elevating a property above the flood hazard elevations must be carefully weighed against the potential adverse effects on the historic character of the home. Property owners are encouraged to consider smaller elevation increases in order to prevent significant negative visual impacts on their historic properties. This approach requires close coordination with local building permit offices and HPCs to arrive at a successful outcome.

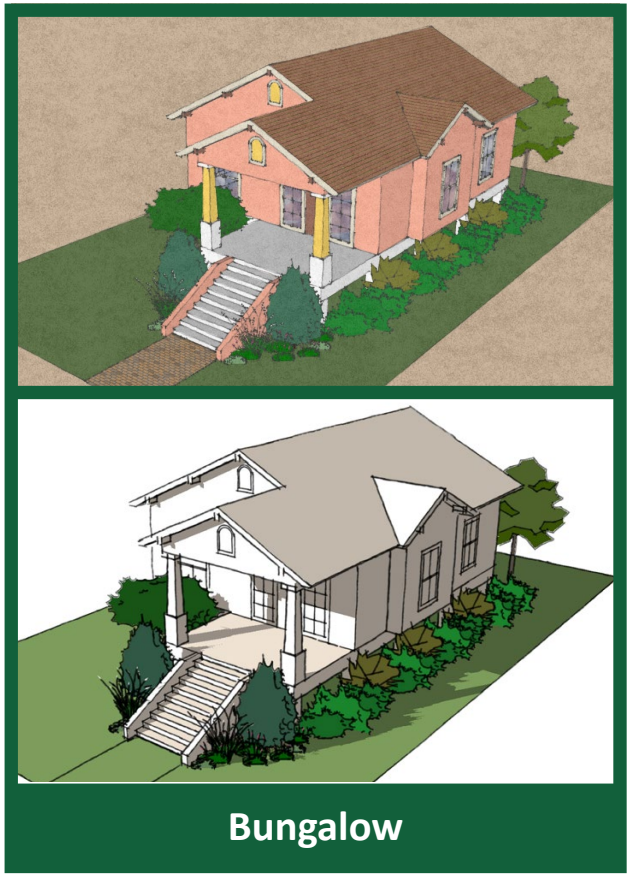
The architectural and landscape screening and scaling measures identified in these Elevation Design Guidelines provide important ways to limit the effects of an elevation project and support lasting flood hazard protection for the historic home.



3-Bay Shotgun



Creole Cottage

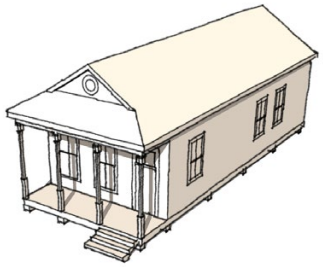


Bungalow

Based on site design factors, topography, and ABFE/DFIRM requirements, foundation screening and circulation alternatives can then be developed for further evaluation

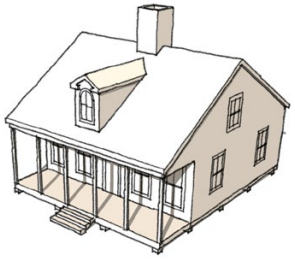
Disclaimer – High elevation levels may be required by some municipalities, which may render a project ineligible for historic tax credits. Each property is reviewed on a a case-by-case basis for tax credits.

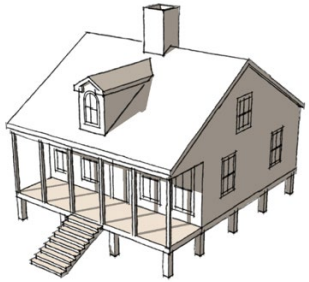
Near Grade



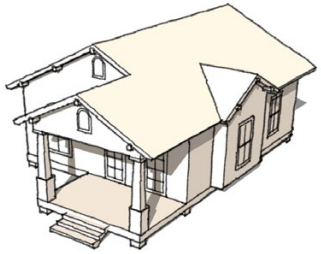
Elevation at 5-Feet

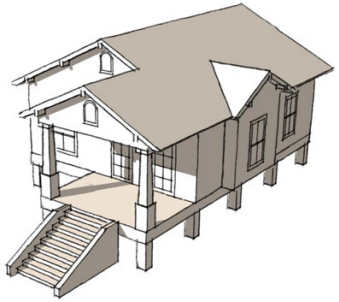
3-Bay Shotgun





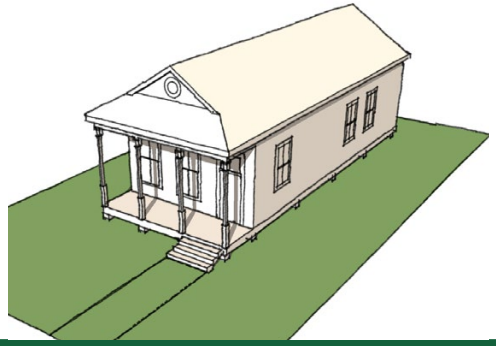
Creole Cottage





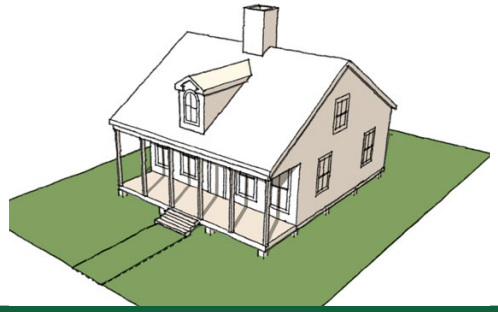
Bungalow

Near Grade

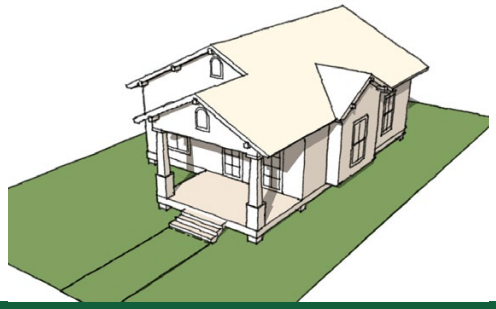


Elevation at 5-Feet

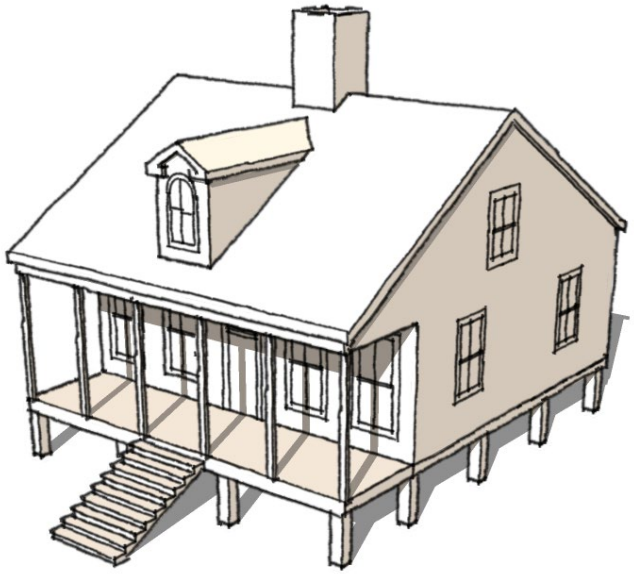
3-Bay Shotgun



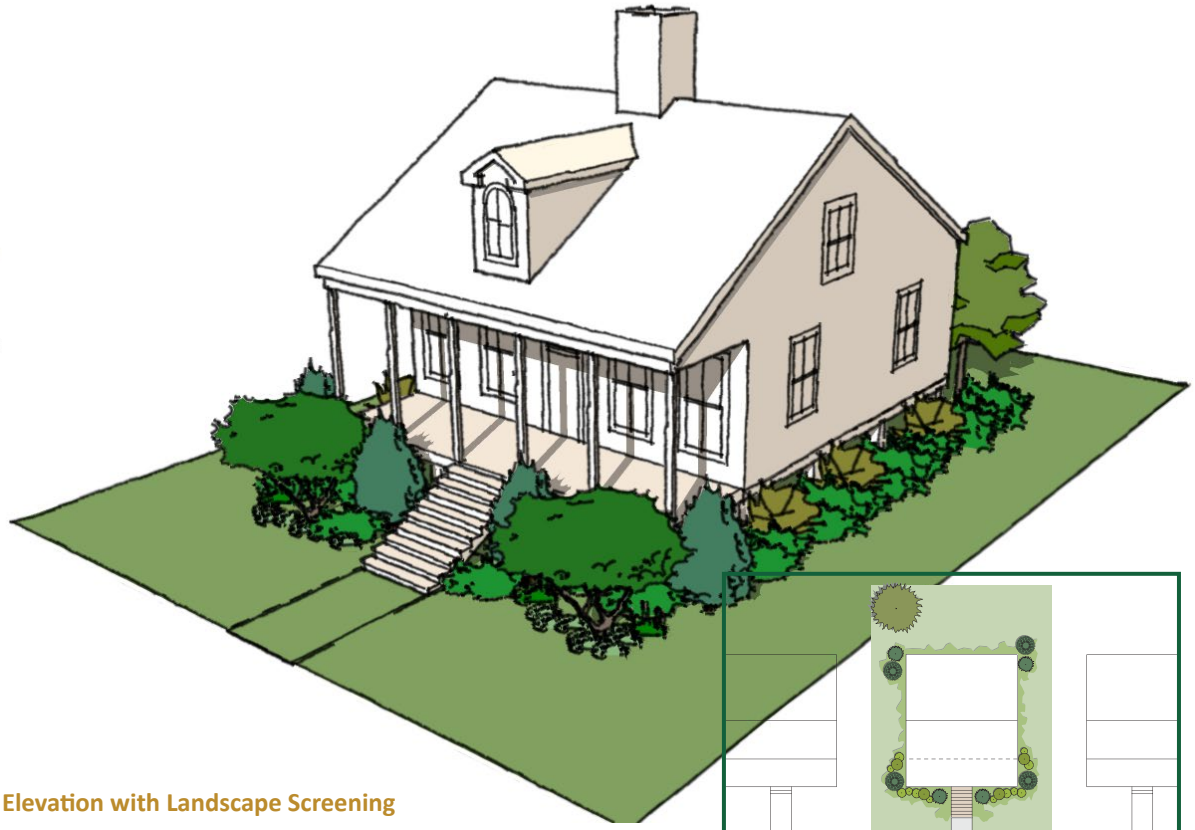
Creole Cottage



Bungalow



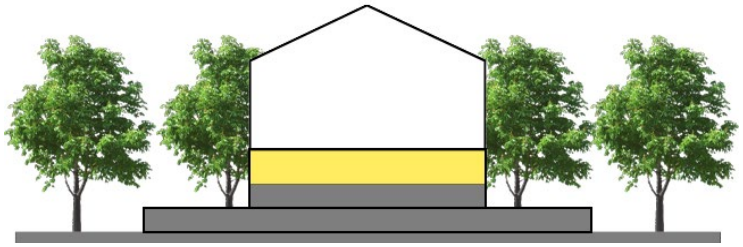
Elevation with Open Foundation



Elevation with Landscape Screening

Landscaping Screening Site Plan

Elevated grade, base, and building



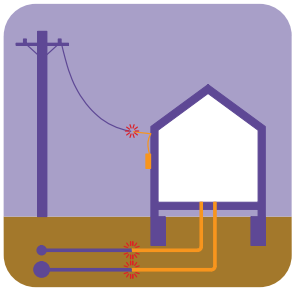
Elevated grade, base, sub-story, and building

Elevation Construction

Basic Steps in House Elevation

Though many methods vary based on materials, wall construction type, and foundation type, the following sections describe the basic steps in elevating a house following the owner or building contractor's receipt of a building permit.

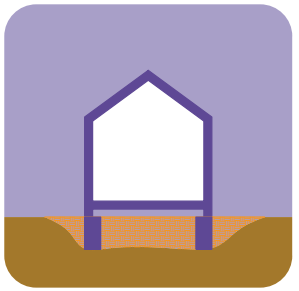
Disconnect Services and Break Connections



Prior to elevating the house, all utility lines (water, sewer, gas, electric, telephone services, etc.) need to be disconnected (below). The house-raising firm will then "break" all cement, stucco, and structural connections between the house and the foundation so that the house is free to lift off the foundation. Additionally, all wiring and pipes that could be crushed during the lifting process need to be separated or removed.

Disconnection of Pipe

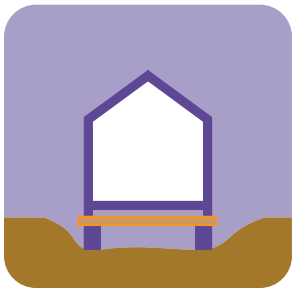
Excavate Foundation



Perimeter foundation excavation is required prior to inserting the heavy steel framework that will be used to support the house during lifting. The photo below illustrates foundation excavation at the historic Rosa Keller Public Library, which was built as a residence in 1917 on the prominent corner of South Broad Street and Napoleon Avenue in New Orleans' Broadmoor neighborhood. In response to severe flooding in the wake of Hurricane Katrina, the city renovated and expanded the library. This effort, undertaken in 2011 by Roubion Shoring + Elevation, Inc., included elevating the building and replacing its foundation. Because the library is a significant building within the National Register-listed Broadmoor Historic District, and its elevation was funded by FEMA, this project required careful historic preservation planning and coordination.

Excavation at Rosa Keller Library, Broadmoor Historic District, New Orleans (2011)

Insert Steel

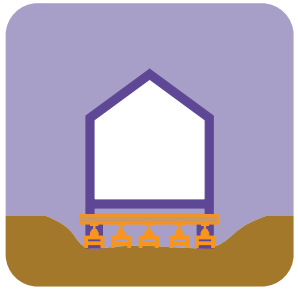


Steel beams are next inserted beneath the foundation and lined up perpendicular to the floor joists. The photo opposite depicts steel about to be lifted as part of the early-1980s elevation of a house on Rampart Street by Roubion Shoring + Elevation, Inc. The other photos show the hole punched in the house for insertion of a steel beam, and that beam after placement in the hole. For slab-on-grade construction, a trench is dug immediately underneath the concrete slab; the steel beam is then placed against the underside of the concrete slab.

Inserting steel for Rampart Street elevation project, New Orleans (ca. 1980s)

View of steel used to support a house during elevation project on Rampart Street, New Orleans (ca. 1980s)

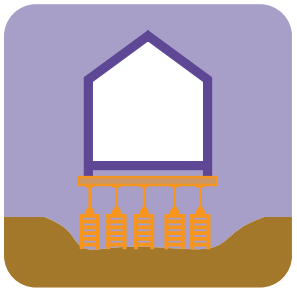
Insert Hydraulic Jacks



After the steel beams have been set, hydraulic jacks or lifts are placed at multiple points beneath the system of beams to minimize the possibility of damaging the house via twisting or differential movement. Before the invention of hydraulic jacks, various forms of manual jacks were used. As each required a human to concurrently physically manipulate the jack, these manual systems inevitably required more manpower, were less efficient, and were significantly more dangerous for the person manning the jack under the buildings being elevated. The photo at right illustrates the placement of the jacks.

Hydraulic crib jack with adjustable base (2012)

Raise House

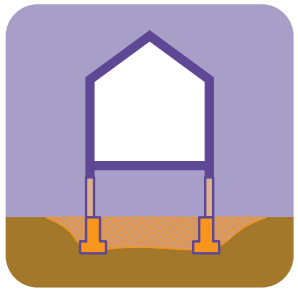


Once the steel beam and jacks are set in place, the operator deploys multiple hydraulic jacks to raise the house (above). Each jack stands atop a box cribbing tower of typically 6-inch x 6-inch timbers stacked so as to spread the load below. Because jacks are slowly raising the house only inches at a time, the jacking process can take several days, with one house raiser operating the jacks from a central control panel, while others monitor the jack points to ensure that the house is level. The operator can raise one jack at a time when needed or all jacks simultaneously. Mechanical screw jacks can also be used to assist, typically at small wings and additions. When all jacks are raised the same amount at the same time, the house will remain level as it rises and the risk of cracking due to stress is lessened. As the house continues to be raised incrementally, wooden cribbing is placed under the I-beams, typically at 12-inch stages. Construction photos illustrate the raising of the historic Rosa Keller library.

Elevation of Rosa Keller Public Library, Broadmoor Historic District, New Orleans (2011)

Elevation, Rosa Keller Public Library, Broadmoor Historic District, New Orleans (2014)

Construct New Foundation



After lifting the house, the crew typically demolishes the old foundation and constructs a new one that meets State and local building codes and other applicable regulations. The type of new foundation system selected is contingent upon multiple factors, such as cost, ease of construction, soil type and stability, and the aesthetic effect desired, particularly for historic buildings.

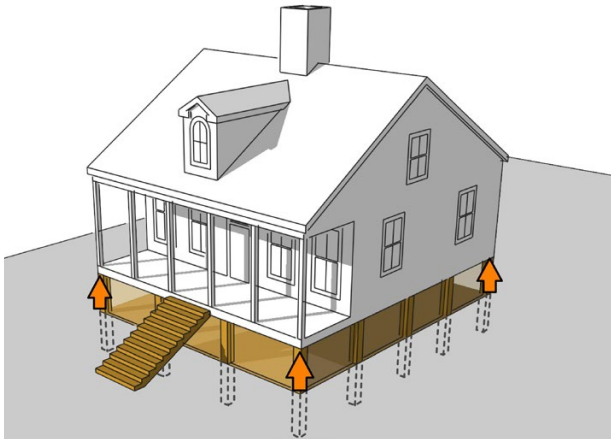
New Foundation at Rosa Keller Public Library, Broadmoor Historic District, New Orleans (2011)

New Foundation at Rosa Keller Public Library, Broadmoor Historic District, New Orleans (2011)

Common Elevation Techniques

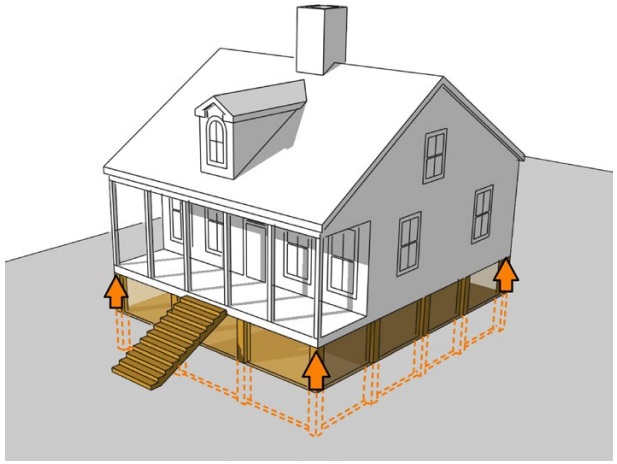
Seven common elevation techniques are used in Louisiana. The choice of technique depends on a number of factors, including the potential for flooding, regulatory requirements, the desires of the homeowner, and the type of pre-existing foundation.

Technique 1: Elevating by Extending Existing Piers or Walls



One of the most common elevation techniques in Louisiana is to extend the existing foundation to the desired new height. After the building is detached from its foundation and jacked up, the existing foundation is often saved and its walls are extended. The new portions of the walls are usually made of masonry block or cast-in-place concrete. Although in many cases this method is the easiest way to elevate a building, it may involve additional construction modifications or reinforcements. Depending on the size of the house, the amount of elevation, and the magnitude of the structural loads, the footings and foundation walls may need to be modified to ensure the structural stability of the home. Some or all of the original footings also may have to be replaced with larger footings. It may further be necessary to reinforce both the footings and the foundation walls with steel bars.

Technique 2: Whole House Elevation (Non-Slab)

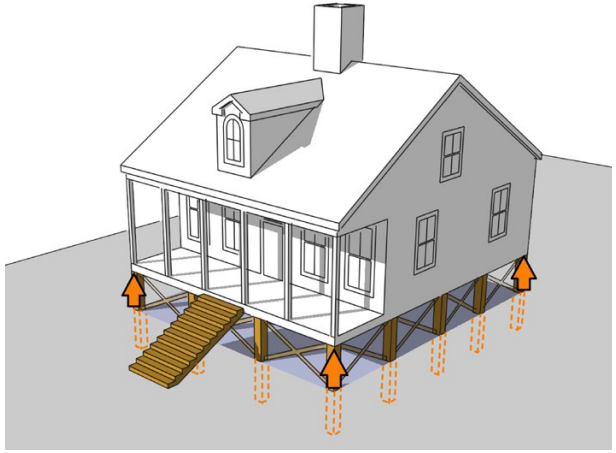


This technique involves raising the entire house, with floor attached, and building new piers or a foundation wall. First, steel beams are placed under the floor framing. Next, the house is raised in small increments with hydraulic jacks. Cribbing is placed beneath the steel beams to provide a support for the hydraulic jacks and a safety backup to prevent collapse of the house. This process is repeated until the desired height is reached.

When the required elevation is reached, the original foundation piers are removed and a trench is dug around the perimeter of the house and at other locations where a foundation system of piers will be required. Next, concrete is placed atop steel reinforcing or rebar that is laid in the trenches of the foundation system, which creates a steel-reinforced chain wall.

Finally, new piers are built below the raised house. Foundation walls can be constructed below the living space, with vents/openings to accommodate the potential for future flooding. This technique is generally considered the most cost-effective for houses that are already partially raised or restored.

Technique 3: Elevating on an Open Foundation: Piers, Posts or Columns, and Pilings



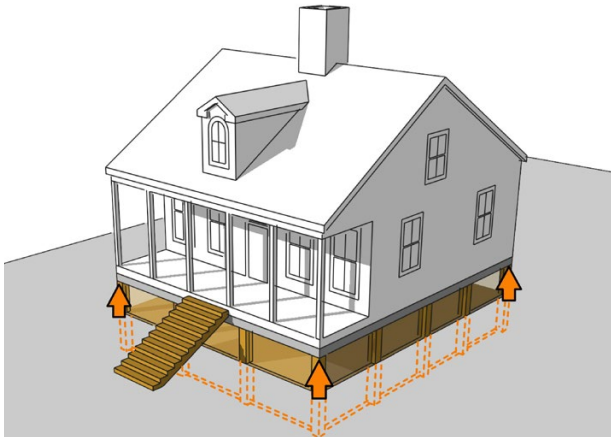
Frame, masonry veneer, and masonry houses on basement, crawlspace, and slab-on-grade foundations can also be elevated on open foundations consisting of piers, posts, columns, or pilings. Houses originally constructed on open foundations can also be elevated in this manner. Prior to the elevation process, a house on piers is separated from its existing foundations. Once the house has been raised to the desired height, new masonry piers are built on the existing foundation, if it is adequate. Because of the dynamic forces associated with flooding and wind, the piers typically are reinforced with steel.

For houses to be elevated on posts or columns, the uprights are usually set into drilled or excavated holes. Each post or column is either encased in concrete or anchored to a concrete pad. The house elevation process is identical to that described for piers, but the existing foundation must be removed so that the posts or columns and their concrete encasements or pads can be installed.

Elevating a building on pilings requires a more involved process. Pilings are usually driven into the ground or

jetted into place with a high-pressure stream of water. They are not supported by concrete footings or pads. Unlike the construction of wall, pier, or post or column foundations, the pile-driving operation, which requires bulky heavy construction machinery, cannot be carried out under a house that has been lifted on jacks. Instead, the house is usually lifted and moved aside until the pilings have been installed. Because the existing foundation is not used, it must be removed.

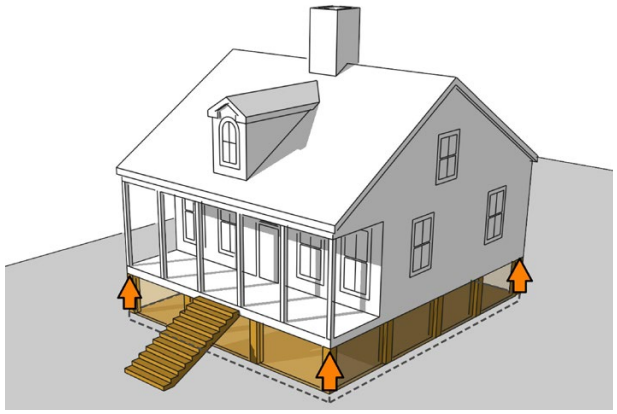
Technique 4: Slab Elevation



Slab elevation entails raising the entire house with the slab floor attached and placing it on a new foundation higher off the ground. First, trenches are dug immediately below the concrete slab. Then, tunnels are excavated under the slab to allow the insertion of steel beams. Steel beams are lowered into the trenches and moved into place beneath the slab through the tunnels. The contractor must also dig holes for the lifting jacks because they have to be placed below the beams. Once the beams and jacks are in place, the lifting process begins. If pilings are present beneath the slab, they will be detached from the slab. Next, the house is raised in small increments with hydraulic jacks. Cribbing is placed beneath the steel beams to provide support for the hydraulic jacks and a safety backup to prevent a collapse of the house. This process is repeated until the desired elevation height is reached. Next, rebar is laid in trenches around the house perimeter and other necessary areas. Concrete then is placed, creating a continuous, steel-reinforced chain wall. Finally, a new foundation wall is built below the raised slab, with vents and openings to accommodate potential future flooding.

Slab elevation generally is considered the most cost-effective solution for houses that have already undergone interior renovation. House raising companies must be very experienced before attempting a slab elevation because the concrete slab comprises most of the house's weight. Some of the earliest slab elevations in Louisiana were completed in Chalmette after flooding in the early 1980s. Slab elevation was also popularized following the flooding of the Amite River in Denham Springs, near Baton Rouge.

Technique 5: Slab Separation



Popular in suburban areas of Louisiana because of the prevalence of ranch houses, this technique lifts the house by detaching the entire structure from the slab foundation. Exterior siding must be removed, but may in some cases be reinstalled. The house is braced, and beams are placed through it to support it as it is raised. This results in the need to repair interior walls after the elevation.

Because the slab is not lifted, I-beams are inserted through openings cut into the walls of the house above the slab rather than below it. To enable the beams to lift the house, the contractor attaches horizontal wood bracing to the interior and exterior walls at the tops of the openings. When the beams are jacked up, they push against the bracing, which distributes the lifting force equally across the walls. The bracing also supports the walls, which lack the structural stability that would otherwise be provided when the walls and floor are left attached. Without bracing, the walls could twist, bend, or collapse during lifting.

Once braced, the house is raised in small increments with hydraulic jacks. Wooden cribbing is placed beneath the steel beams to provide a support for the hydraulic jacks and to serve as a safety backup to prevent collapse. This process is repeated until the desired elevation height is reached. Piers are constructed for support on top of the existing slab and foundation walls, which provide additional support, and can be constructed with vent openings to allow water to pass through in the case of flooding. An engineer must inspect the slab beforehand to ensure that it is capable of supporting the point load of the weight of the house on the new piers; elevation firms will look at the dimensions, condition, and materials of the extant slab, as well as the surrounding soils (and any subsidence), to determine if this option of elevation is feasible. The primary advantage of elevating the house without the slab is that the house is lighter and, therefore, easier to lift.

Mid-century home, slab-on-grade, prior to elevation, Harvey. Sourse: Roubion Inc. (www.roubionshoring.com)

Mid-century home, slab-on-grade, post- elevation, Harvey. Sourse: Roubion Inc. (www.roubionshoring.com)

Technique 6: Wall Extension

Known as wall extension, this technique involves extending the existing walls of the house upward and raises the lowest floor. With this method, the roof is removed and the structural framing members supporting it are extended upward less than one story. New bricks or other siding material are then added to complete the exterior renovation. As a result of this elevation technique, the lowest floor is raised above its original height. Now set at a level above the flood elevation, vents and openings are installed beneath the first floor to accommodate the possibility of future flooding.

The method for elevating masonry houses on slab-on-grade foundations involves removing the roof, extending the walls of the home upward, replacing the roof, and building a new, raised floor. The floor can be either a new slab or a new wood-framed floor. For a new slab, fill dirt is placed on top of the old slab and the new slab is built on top. If a new wood-framed floor is built, the space between it and the old slab is left open and becomes a crawlspace (and must be retrofitted with openings to allow floodwaters into that space).

Technique 7: Berm Elevation

Berm elevation is the eighth elevation technique, and typically it is used to allow a historic building to retain its existing massing and, effectively, its lower profile. To execute a berm elevation, the building is reinforced, raised, and rolled on steel supports to a temporary location, preferably nearby. Following excavation, the building's existing foundation is removed and in its place a new foundation is integrated into a raised earthen berm. Some berms in Louisiana have been built as high as 10 feet above existing grade. Once the new berm has been completed, the house is transferred back to the new location, raised onto the berm and attached to its new foundation. At the conclusion of the process, the architectural form the house appears largely as it did before, though it now rests atop the protective berm, safely above the flood elevation.

Because of the need to raise and move the house twice, the berm elevation method is costly and seldom used. The house's surrounding lot size and drainage needs will also factor into a decision to use the berm elevation technique. For properties in which the original massing and scale of the building is character-defining feature, a berm elevation eliminates the need of adding a new, visible lower level. Thus, the primary architectural integrity of the building's form and massing largely is preserved.

Feature on Berm Elevation:

Elevation of Francois Cousin House, St. Tammany Parish

Francois Cousin House, Prior to Elevation, St. Tammany Parish

The Francois Cousin House (above) on Bayou Liberty west of Slidell in St. Tammany Parish stands just across Lake Pontchartrain from New Orleans. It was originally a one-and-a-half-story Raised Creole Cottage that—like similar houses in the French Quarter and the Faubourg Marigny—rested on a basement of limited elevation. Of briquette-entre-poteaux construction (a heavy timber frame combined with an infill made of brick) it was likely erected between 1778 and 1790 by Francois Cousin, a native New Orleanian. A front gallery supported by chamfered columns runs the length of the house. Behind it are two rooms of equal size, with one larger additional room behind, all served by a single central chimney. In the late-19th or early-20th century, an additional three rooms were added to the dwelling's rear, along with side galleries.

In 2005, the dwelling was flooded with five feet of water from Hurricane Katrina, and again in 2008, to a lesser extent, by Hurricane Ike. Extensive work, partially funded by FEMA, began in December 2009 to elevate it eight–and-one-half feet on an earthen berm while preserving its historical character-defining form and features. To retain the original context of a Raised Creole Cottage of limited elevation, the house was lifted on piers substantially concealed through the incorporation of a grassy berm.

Basic Steps in the Berm Elevation of the Francois Cousin House

- Clearing the site and bracing of the exterior and interior in advance of the elevation.
- Elevating the structure with hydraulic jacks and wooden cribbing.
- Insertion of steel beams and rollers beneath the house's substructure of floor joists.
- Moving the house to a nearby temporary staging area.
- Demolition of the house's original foundation which, prior to this undertaking, was failing.
- Construction of a new concrete grid foundation on same location as the prior foundation. The openings in the concrete grid were filled with a lightweight material called Geofoam.
- Relocation of the house on steel beams and rollers to a position above the concrete grid "sub-foundation."
- Masonry and concrete piers were then constructed to connect the house's wooden floor joists to the concrete grid foundation below.

Site Preparation and Clearing

The photograph below shows the Francois Cousin House, just prior to elevation. When this photo was taken, clearing of the site was well underway in preparation for the building's move on steel beams and rollers to a temporary location on the property.

Site Preparation and Clearing Underway

Disconnect Utilities and Raise House on Cribbing

Prior to elevating the house, all utility lines were disconnected. The house-raising firm then separated all structural connections between the house and the foundation so the house was free to lift off of the original pier foundation. Wooden cribbing and hydraulic jacks were then employed to raise the house in preparation for its move.

During Construction

Cribbing and Hydraulic Jacks

Corner and side view of the house, with wooden cribbing and hydraulic jacks employed to raise house prior to its short on site move. The initial elevation and relocation to a temporary staging area spanned 2.5 days.

During Construction

Move House to Temporary Staging Area

After being raised by hydraulic jacks and wooden cribbing, the house was moved to a temporary staging area on “Hillman Rollers”. The “During Construction” photo below shows the house being supported with steel beams. These beams sit on the rollers which rest on a secondary steel “track.”

During Construction

Completed Project

Completed Project

Completed Project

Construct New Foundation

Before the house could be returned to its original position, a continuous perimeter beam with intermediate tie beam foundation was constructed out of con-crete. Each open cell within this grid design was filled with Geofoam, a lightweight fill material. Because concrete and other traditional earth materials are heavy and can cause settlement or instability due to increased lateral pressures, this non-leaching lightweight fill material was selected.

During Construction

New Foundation System

Geofoam also acted as a form work for the concrete and was used along the perimeter of the new foundation. The foundation work at the left is the lower level of a two-tier concrete and masonry foundation system.

During Construction

Move House to New Foundation

In this view, the house is being raised above the new foundation via the steel beam and track Hillman Roller system. It took one day to move the house from its temporary staging area to a position above the new foundation.

During Construction

Completed Project

New Concrete Lower-Tier Foundation

Here, the house is being rolled and positioned over the new concrete pier and tie-beam foundation, which includes the Geofoam perimeter and cell infill. Note that the worker in the center of the photos is standing on the lower tier of a two-tier foundation design.

During Construction

Upper Tier Foundation Work

This photo shows a side view of the house as it is being positioned over the lower tier of a two-tier foundation. Note that the house is located approximately two feet above its final position. This allowed the workers room to complete the upper tier pier foundation beneath the house.

During Construction

Completed Project

Lower and Upper Tier Foundations

Here, the two tiers of the new foundation are shown – a lower foundation level comprised of a concrete grid and Geofoam perimeter and cell infill; and an upper foundation comprised of masonry piers filled with concrete. The outer piers would be wrapped in a brick veneer to match the style of the old foundation.

During Construction

Completed Project

Brick Veneer Piers at Rear of House

At the rear of the house, a brick veneer covers the masonry and concrete-filled piers. This part of the house retained an open foundation, allowing for covered storage.

During Construction

Completed Project

Berming at Front of House

Berming at the front of the house covers most of the foundation, leaving only low, exposed brick piers at a level consistent with the foundation height prior to berm elevation.

During Construction

Completed Project

Completed Project

At completion, the house is elevated eight–and-one-half feet on an earthen berm while preserving its historical character-defining massing, features, and relationship to the ground as a rural Creole Cottage. Much of the foundation system is substantially concealed beneath the house that is sited on this grassy berm.

Completed Project

Commercial Buildings

Overview

While some commercial buildings are similar to residential buildings in size and construction methodology, elevating most commercial buildings, especially those in downtown areas, is usually more difficult. This is due to several factors, including:

- Multi-story construction
- Load bearing masonry construction and steel/ reinforced concrete frames
- Common walls used as supporting structure of juxtaposed buildings
- Connected, multi-unit buildings are common
- Pedestrian access to mercantile/commercial buildings
- Historic preservation guidelines
- Below-grade parking
- Negative impact on neighborhood streetscapes

The floodproofing for historic buildings is a combination of adjustments and/or additions of features to existing individual buildings that are designed to eliminate or reduce the potential for flood damage. Completion of floodproofing does not mean that damage will be completely avoided. Application of this treatment means that damage may be reduced by making the structure more flood or water-resistant.

Three types of floodproofing exist for historic buildings. They are:

- Dry floodproofing: techniques applied to keep floodwaters from entering the structure
- Wet floodproofing: techniques applied to a structure prevent or provide resistance to damage from flooding by allowing floodwaters to enter and subsequently exit the structure.
- Protective barriers: techniques used to keep floodwaters from approaching the structure.

Floodproofing techniques can be classified based on the type of protection that they provide:

- Permanent measures (always in-place, requiring no action if flooding occurs).
- Contingent measures (requiring installation prior to the occurrence of a flood).
- Emergency measures (improvised at the site when flooding is imminent or occurring).

For the purpose of these guidelines, both permanent and disaster-contingent measures are discussed.

Mitigation Consideration

Some of these mitigation techniques would require significant renovation and retrofit of both exterior and interior space, and could potentially result in a loss to retail or office space in the mitigated historic commercial building. However, there are Federal and private grant and loan programs that are intended specifically for commercial enterprises to recover from a disaster. It is imperative to identify the broad spectrum of mitigation options, which, with the assistance of an architect and/or engineer, can be customized to meet the specific needs of the individual historic building.

As with any other elevation or mitigation project discussed in the Guidelines, it is fundamentally important for all parties to be aware of the entirety of program guidelines and restrictions (including those required at the Federal, State, and local levels) before any construction, elevation, or other mitigation activity begins; review regulations in place from local historic districts; review the applicability of the Federal Historic Rehabilitation, Louisiana State Commercial, and Louisiana State Residential Tax Credit Programs or, if applicable, the Louisiana Main Street Redevelopment Incentive Grant program; as well as safety, permitting, and zoning departments.

Flood Resistant Construction Elevation (FRCE) – Building Code Requirements

Line of FRCE (shown as dashed line)

The following calculation is used in establishing a new datum line for zoning regulations, often referred to as the FRCE. It is established by:

Previous Established Flood Elevation (for example, FEMA established elevation)

+ Freeboard (additional elevation required by the Building Code for Safety) =

FRCE (Flood Resistant Construction Elevation)

First Floor Interior Access
Concept 1

When the FRCE is above the existing historic building's first floor finish elevation:

- Interior stairs and ramps may be preferable to exterior stairs and ramps, but require large amounts of floor space.
- Lobby space is wet flood-proofed.
- Interior stairs and ramps maintain street wall of building.
- New raised finished floor is at or above the FRCE.

For this scheme to be applicable there must be:

- Significant building depth from the front elevation to the rear of the building to accommodate the ramp.
- Enough existing height between the existing first floor finish elevation and the second floor structure.

First Floor Interior Access
Concept 2

When the FRCE is above the existing historic building's first floor finish elevation:

- Interior stairs and ramps may be preferable to exterior stairs and ramps, but require large amounts of floor space.
- Lobby space is wet flood proofed.
- Interior stairs and ramps maintain street wall of building.
- New raised finished floor is at or above the FRCE.

For this scheme to be applicable there must be:

- Significant building depth from the front elevation to the rear of the building to accommodate the ramp.
- Enough existing height between the existing first floor finish elevation and the second floor structure.

First Floor Interior Access
Concept 3

When the FRCE is above the existing historic building's first floor finish elevation and storefront display space is remaining:

- Interior stairs and ramps may be preferable to exterior stairs and ramps, but require large amounts of floor space.
- Lobby space is wet flood proofed.
- Interior stairs and ramps maintain street wall of building.
- New raised finished floor is at or above the FRCE.
- Height established by the new FRCE is below display windows at existing store front.

For this scheme to be applicable there must be:

- Significant building depth from the entry/vestibule to the rear of the building to accommodate the rise and run of the accessible ramp.

Mechanical Systems – Relocation

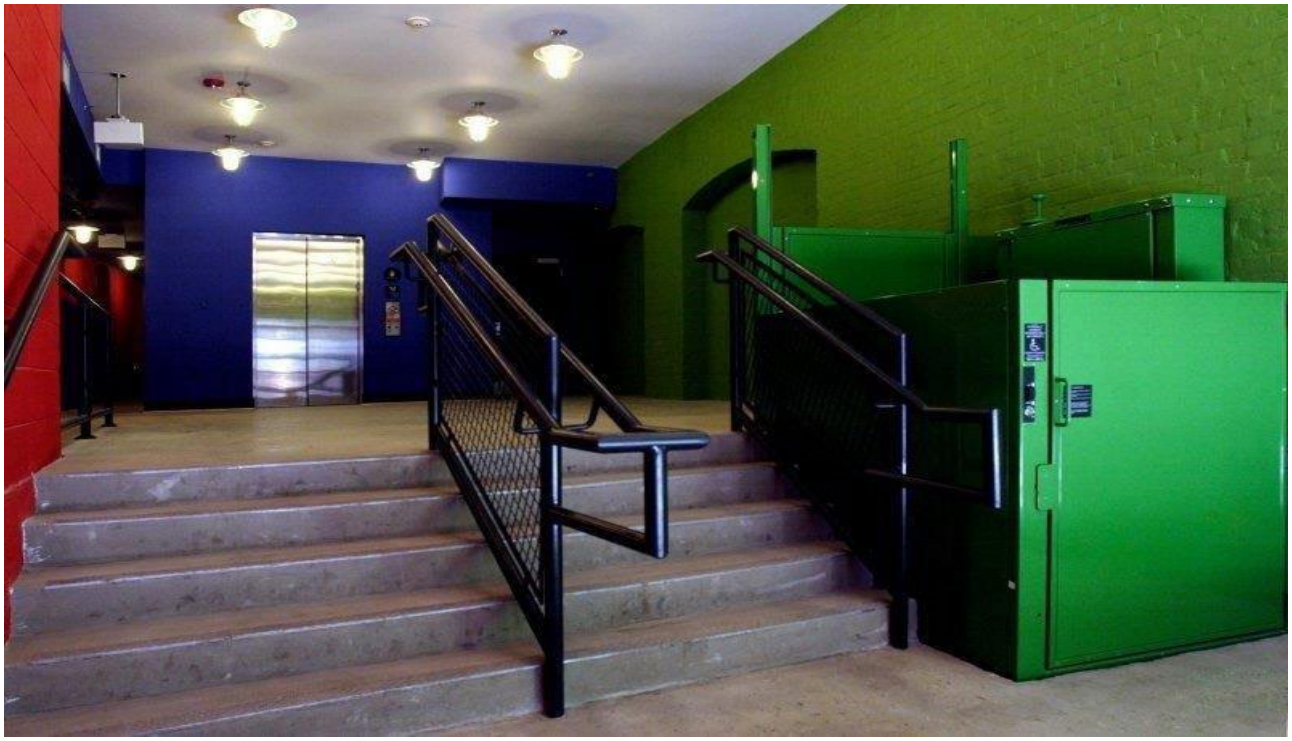
Most commercial buildings have heating and cooling mechanical systems. The equipment associated with these systems usually is located in the following locations:

Scenario 1: Basement, or partial basement with a lower finish floor elevation than the grade surrounding the building.
Scenario 2: Exterior – side or rear yards, usually screened or enclosed.
Scenario 3: Internal – often located on the first floor.

Internal conditions can be resolved by either raising the equipment above the FRCE or by relocating the equipment to floors above. The figure above shows a possible solution to locating above the FRCE and still complying with local flood-resistant building code standards. The shaded box to the right also shows the external equipment in its existing location and the relocated position above the FRCE on a new elevated support structure. If conditions do not allow raising the existing equipment externally due to side or rear yard issues, a possible solution may be to relocate the equipment on the roof.

An alternative to Ramps: Wheelchair Lifts

Platform lifts and inclined stair lifts, both of which accommodate only one person, can be used to overcome changes of elevation ranging from 3 to 10 feet in height. However, some building codes may restrict the use of wheelchair lifts, so all applicable codes should be reviewed carefully before installing one. Inclined stair lifts, which carry a wheelchair on a platform up a flight of stairs, may be employed selectively. They tend to be visually intrusive, although they are relatively reversible. Platform lifts can be used when there is inadequate space for a ramp. However, such lifts should be installed in unobtrusive locations and under cover to minimize maintenance if at all possible.



Constance Street Lofts, Upper Central Business Historic District (Arts/Warehouse District), New Orleans (2014)

Commercial Feature

Mar Villa Guest House Elevation & Commercial Upgrades, Mandeville (2009)
Lynn Mitchell, Architect

Mar Villa House Guest House, Mandeville Historic District, Prior to Elevation (Lynn Mitchell, 2008)

When planning the elevation of a historic property, limiting elevation changes should always be considered the preferred alternative. This approach will result in only a nominal visual effect on the historic character of the property. Significant elevation changes that involve raising a historic building a full story or more should only be considered when required by local building codes. High-level elevations likely will result in greater impacts to the historic character of the property and building, and may require significant screening and scale transition actions in order to address these concerns. Property owners should always work with local building permit offices and HPCs to determine an appropriate elevation for the property. Local and Federal guidelines must be considered in selection of the elevation to maintain historic character and address ABFE levels and flood hazard protection for structures.

In 2009, the Mar Villa House Guest House in Mandeville was raised 8 feet, 9 inches after taking in approximately 18 inches of water during Hurricane Katrina. The new height was a requirement of the local building codes because the area is outside of a US Army Corps of Engineers flood protection levee. The guest house was built in the 1870s with Victorian-era scroll-sawn valances, fascia, and porch railings that lends the building a charming, cottage feeling. Reflecting the residential architectural standards of the time, the house rested on a low foundation of brick piers that rose about 2 feet, 4 inches above grade.

For the elevation and expansion of the building, the structure was designed to meet local building codes as well as commercial architectural standards. Mandeville architect Lynn Mitchell sketched plans for the elevation of the building and provided specifications to ensure that the guest house would be protected from future flood events.

Control panel for unified jacking system, Mar Villa House Guest House, Mandeville (Lynn Mitchell, 2009)

In the foreground rests a control panel for a unified mechanical jacking system. Hydraulic crib jacks or hydraulic lifts are inserted beneath beams so they can raise the building off its foundation. Multiple lifts are controlled by this panel and power unit. Because the system is unified, the jacks rise at the same level, regardless of how much weight each is supporting. This allows the house to remain level. The control panel is designed such that its operator can also make individual adjustments. Prior to the elevation, the architect planned for repairs to the roof of the structure and the repainting of the entire exterior.

Wooden Cribbing

Elevated building supported by cribbing and steel beams (Lynn Mitchell, 2009)

The wooden cribbing beneath the house is a temporary wooden structure used to support the building during the process of elevation. Cribbing usually is comprised of wood blocks, often 6 inches wide by 6 inches deep and 18 inches to 24 inches long. As the house is raised by a hydraulic jack, two sets of wood members are added for every 12 inches in rise. These members are spread apart to form the open box seen in the photo above.

Hydraulic crib jacks or hydraulic lifts to the left of the workers in this photo are set beneath steel beams so they can lift a house off of its foundation. Next to the hydraulic lift is a “log cabin style” box crib, which is the simplest, most stable, and most common method of cribbing.

At Completion

View of entrance, following elevation, Mar Villa House Guest House (Lynn Mitchell, 2009)

An exterior set of weather-protected stairs is partially concealed beneath the gallery along the side wing (2014)

Disclaimer – If the house is located outside of a US Army Corps of Engineers flood protection levee, consultation regarding design elements should also be initiated at an early stage with the Division of Historic Preservation regarding the applicability of any Tax Credit Programs they administer.

While this design may not meet Secretary of the Interior Standards, it remains a good example of one owner's plan to retain their older property in some form while trying to meet strict local building code requirements. New chamfered porch supports have a different profile than the original porch columns to differentiate the old work from the new. Additionally, the new porch supports, aligning with the columns above, needed to be stouter to support the gallery above. Distinguishing the two levels, the lower level is sheathed in a vertical board-and-batten treatment whereas the upper level retains its original wood weatherboard cladding. The use of tropical colors on the exterior brings the design together. Below are some of the primary features of the elevated guest house.

Interior Features

- The lower level incorporates principles of "wet flood proofing" such as finishes that are easily dried, repaired, or affordably replaced.
- The lower level is used for storage and other "non-habitable" uses.
- To prevent damage from flooding, electrical outlets on the lower level are raised to shoulder height.

Exterior Features

- Supporting the upper porch (the gallery), chamfered wood posts are aligned with the columns above.
- Exterior set of stairs is tucked beneath the gallery on the side wing.
- The stairs were designed with a 7" rise and 11" tread (commercial standard).
- The lower porch floor is set within 30" of grade, thus view of the façade are not interrupted by a railing.
- On the upper galleries, non-obtrusive metal guardrails were added at 42" above floor finish.
- Additional stairs and freight elevator are located on the back of the building.

Site Features

- Banana plants and palms provide landscape screening to soften the effect of the elevation.
- Landscape strip is placed between the sidewalk and the entrance stairs.
- L-shaped building plan creates an informal courtyard at the front.

Foundation Features

- Building supported by a 12" x 12' square-profile concrete pier foundation.
- Continuous, spread concrete footer was placed beneath the concrete piers.
- Intermediate tie-beams were set between the perimeter foundation to add rigidity and strength.
- Used "wet flood proofing methods", including flood vents incorporated into the foundation to allow water to enter and exit the building during flooding events.

Commercial Feature Alternative to Elevation: Concrete Flood Barrier

Lake Charles Transit Center (2008)
Jeff Kudla, Architect, AIA

The Lake Charles Transit Center serves as a major public transportation hub for Southwest Louisiana. The 13,000-square-foot building is located at the corner of Ryan and Clarence streets, a prominent Lake Charles downtown location. Formerly a bank, then later used as the local office for the State of Louisiana, Department of Motor Vehicles, the building was already in a deteriorated condition before Hurricane Rita made landfall in 2005.

The renovation of the building began in 2008 and was part of a long-range goal to establish a metropolitan transit program to serve the urban areas of Calcasieu

Parish. While this building was deemed unsuitable for building elevation, the project architect incorporated several aspects of dry flood proofing that met FEMA and NFIP flood proofing certification standards. Two such flood proofing techniques were applicable for this that can be used in historic commercial buildings.

Though intentionally designed to be invisible upon completion of the renovation, the architect integrated a continuous concrete flood barrier between the existing poured in place column structure. The photo below shows the concrete barrier under construction. The new barrier was doweled into the existing concrete and used a bentonite water stop in the middle of the barrier where it met the existing columns. Below and right are views of the completed renovation, with the concrete flood barrier concealed by brick cladding on the exterior and interior of the transit center.

Concrete flood barrier integrated into the existing structure under renovation (2011)

Exterior of building following renovation (2014)

Interior of building following renovation (2014)

Stackable Flood Barriers

For the transit center, the architect specified a system of stackable flood barriers designed for temporarily sealing openings in commercial buildings prior to flood events. Various barrier heights can be achieved in 6” increments by simply adding (stacking) additional units. The system is made water resistant by means of compression seals made of a high-density, closed cell neoprene sponge between the barrier, wall jambs, and floor surface.

Stackable flood barriers deployed at entrance (2011)

Jamb Brackets

Stackable aluminum flood barriers are designed to protect both ground floor doors and windows. During flood emergencies, the stackable aluminum sections can be quickly inserted into pre installed steel jamb brackets located on the sides of each opening. With the brackets permanently embedded in the building’s walls, the system has a minimal impact on the building’s appearance.

Exterior of building following renovation (2014)

Contemporary Elevated Buildings

Among the most striking, newly designed, elevated houses are those that have followed in the wake of Hurricane Katrina. Post-Katrina designs in New Orleans draw attention to the adaptability and viability of the elevated house in the city. The traditions of architectural type, along with the constraints of geography, continue to influence the appropriateness of, and reflect the necessity for, a new generation of raised house types in Louisiana.

Make it Right Foundation

Over 4,000 homes were destroyed in the Lower 9th Ward in New Orleans after Katrina made landfall on August 29, 2005. In 2007, Actor Brad Pitt founded the Make it Right Foundation with an ambitious plan to construct 150 new, architect-designed homes for returning Lower 9th Ward residents. Construction began in June 2008, and the first six homes were completed in August 2008. According to Make It Right's website, more than 100 houses have since been completed or are under construction.

Following FEMA elevation requirements and city building codes, Make It Right's homes must be elevated above the regulatory BFE to avoid flooding in heavy rain and hurricanes. Many Make it Right houses exceed the recommended city code and FEMA's BFE. Two predominant heights typically are observed: 2' over the BFE and roughly 5' over the BFE. While building at 5' over BFE offers homeowners enough height under the house to park a car, the increased cost of building at a high elevation level was found to be substantial. At present, Make it Right houses are constructed at 2' over BFE unless the homeowner requests to elevate to 5' over BFE height at an additional cost.

Common Characteristics of Make it Right Houses:

- Elevation: the houses are built from 2' to 5' above the BFE or depending on the homeowner. Higher elevations allow for parking in the area under the elevated home.
- Storm Fabric: made from Kevlar (which is also used in bulletproof vests) that is fitted to all windows, protecting them from strong winds or debris.
- Some modernist designs appropriately favor the use of intentionally exposed foundation piers and pilings, rather than concealing the sub-structure with lattice and/or foundation plantings.
- Low-elevation height examples were observed to be built on wood pile foundations.
- High-elevation examples were found to be constructed with concrete piers, which were usually left exposed.

Make it Right House by Design Elements, Lower 9th Ward, New Orleans (2014)

Make it Right Houses, Lower 9th Ward, New Orleans (2014)

Make it Right Duplex House by Hitoshi Abe Atelier, Lower 9th Ward, New Orleans (2014)

Build Now

Build Now is a New Orleans-based nonprofit organization that designs Neo-traditional elevated homes in Southeast Louisiana. To date, 85 houses have been built or are under construction in the New Orleans neighborhoods of Gentilly, Lakeview, New Orleans East, Uptown, and the Lower Ninth Ward. Additional examples can be found in Jefferson and St. Bernard Parishes. Founded by New Orleans architectural designer William Monaghan, Build Now homes typically incorporate many of the historic architectural features of traditional New Orleans house types, such as the Creole Cottage, Shotgun, and Shotgun Double. To meet the stringent requirements of post-Katrina building codes, and to protect the house from rising water and hurricane force winds, a number of common points are incorporated into each elevated house.

Common Characteristics of Build Now Houses:

- New homes are designed to withstand a 130-mph windload and thus require a stronger foundation, building envelope, and roof system with roof tie-downs and exterior cladding.
- Houses are built to the regulatory BFE level or higher.
- Closed eave design helps prevent uplift from hurricane winds.
- In the traditional fashion, houses feature full-width porches on the façade.
- The roof rafters are tied to both the walls and ceiling joists. Then the ceiling joists are tied to the stud walls and floor joists. This adds substantial rigidity to the building envelope.
- Window, garage, and door protection to guard against flying debris, such as windows incorporating impact-resistant glass or being protected by shutters.
- Foundations are screened on all four sides with both piers and framed lattice on all elevations.

Build Now elevated home, Fillmore Neighborhood, New Orleans (2014)

Build Now elevated home, Fillmore Neighborhood, New Orleans (2014)

Build Now pile foundation with system of joists, girders, bolts and straps; pilings attach to girders with two three-quarter-inch galvanized steel bolts, and to the floor joists with steel hurricane ties, strengthening the connection between the house and the pilings (2014)

Global Green USA

In 2006, Global Green USA sponsored an international sustainable design competition for the development of a community infill project in New Orleans' Holy Cross Historic District. The Holy Cross Project was programmed to include five single-family homes, an 18-unit apartment building, and a community center to serve residents of the Lower 9th Ward. More than 125 competition entries were received by the nonprofit, with the jury selecting a winning design conceived by Matthew Berman and Andrew Kotchen of Workshop/ apd.

Because the project is situated within the locally-designated Holy Cross Historic district, all new construction was designed to reflect the massing, materials, scale and architectural character of the historic district. At the same time, the designers wanted the new construction to earnestly reflect the era in which it is was built. In order to seamlessly fit into the fabric of the historic district, the architects conceived the five single-family residences as "21st Century Shotgun Homes." To that end, many of the design characteristics of historic shotguns were incorporated into the houses.

Common Characteristics of Global Green Houses:

- Elevated main floor above flood levels to catch breezes. Holy Cross Project homes were observed to have a low-elevation height, as they are built on high ground next to the Mississippi River, which is, 5-6' above sea level.
- Deep eaves with gutters to protect walls and windows from rain and direct sunlight.
- Large windows and doors with transoms aligned on opposite walls for cross ventilation.
- Wood screens shade porches and add aesthetic appeal and a coherent pattern to the homes.
- Roofs are pitched to shed water.
- Horizontal slats around porches, under houses, and those used in fences add consistency to the design and allow airflow. They also serve to prevent animals from accessing the underside of the homes. The horizontal slats also provide welcome shading for the porches.
- Porches are meant for community socializing, and are open and welcoming. All of these elements are designed to relate the building to its location.

Global Green "21st Century Shotgun House" concept realized, Holy Cross Historic District, New Orleans (2014)

Horizontal wood latticework screens the porch, and its design is repeated at the foundation (2014)

Row of Global Green Houses (2014)

View from Porch of Global Green House (2014)

Resources

Architectural Types, Styles and Features

Resources
Many published resources were referenced in an effort to compile a helpful representation of national regional, and/or local architectural types and styles observed in the 37 parishes of the GO Zone. These references provided a greater understanding of both types/ styles as well as descriptions of specific architectural components:

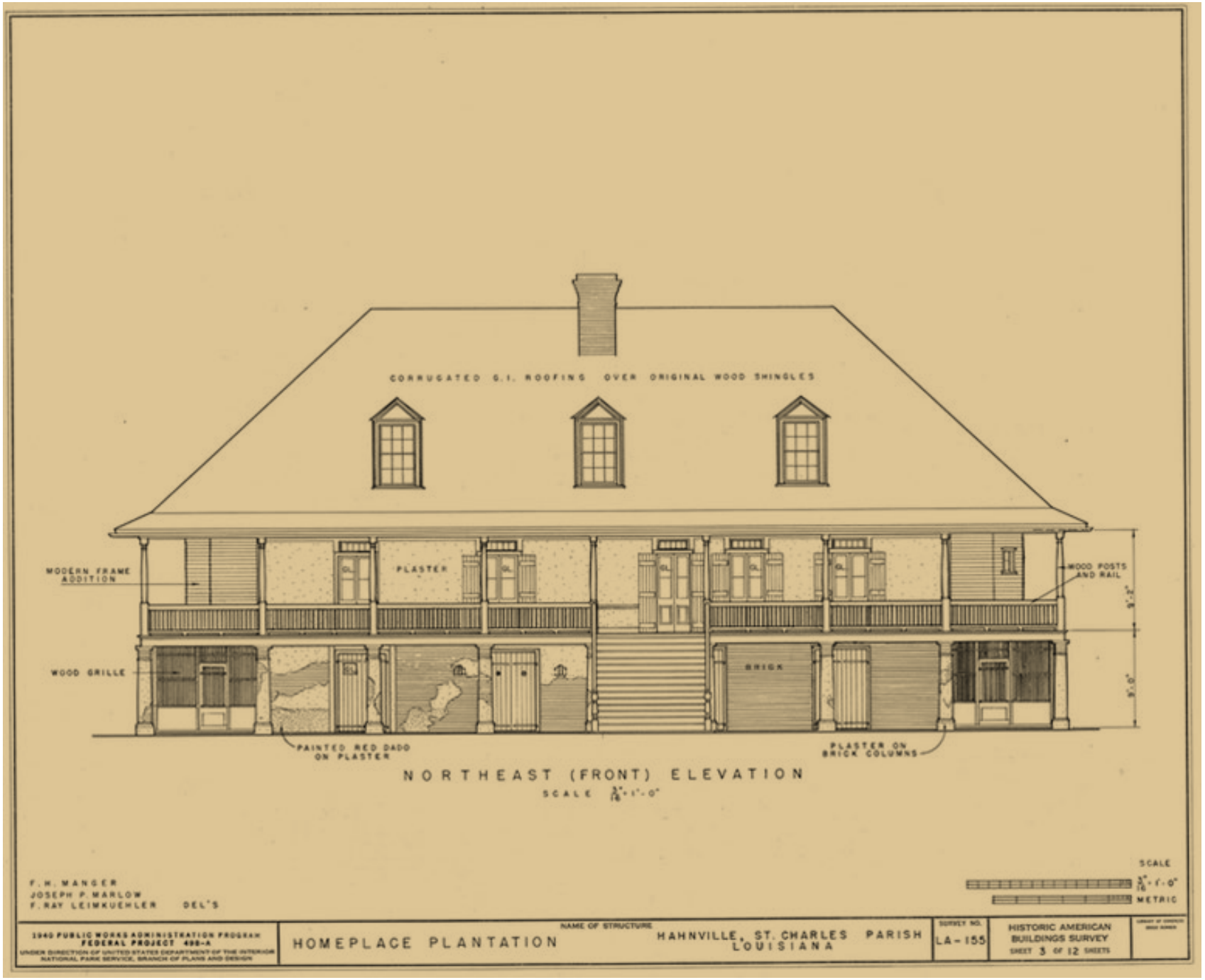
- *A Field Guide to American Houses* by Virginia & Lee McAlester (2013);
- *Louisiana Architecture: A Handbook on Styles* by Jonathan Fricker, Donna Fricker, and Patricia L. Duncan (1998);
- *New Orleans Houses: A House-Watcher's Guide* by Lloyd Vogt (1985); and,
- *Louisiana Studies in Historic Preservation,* Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Historic Preservation (2010).

Louisiana Historic House Types

From the French Creole Plantation House, the French Creole Cottage, and the Shotgun House to the prolific 20th-century Raised Basement House, Louisiana boasts some of the most recognizable and wonderfully ornamented architectural types and styles in all of American architecture. This section provides an overview of the variety of principal house types, some of which developed in Southern Louisiana over a period of three centuries. It also identifies and highlights the raised house tradition by building type. Essentially, "type" is the most basic arrangement of the building's layout, expressed in the floor plan and massing of structural components, whereas a building's "style" is determined by the architectural and ornamental details, if any, applied to the basic structural type. In the context of elevated houses, a residence's type is more critical than its style, which could be, and was, applied to various house types over time.

Creole Cottage, Mazant and N. Rampart Streets, New Orleans (2014)

Raised Center Hall Cottage Type, Franklin (2014)



Homeplace Plantation, constructed 1787-1791 in the French Creole style with a raised brick basement, Hahnville, St. Charles Parish (Historic American Buildings Survey, used with permission)

French Creole Plantation House Type

l'habitation Duparc (1804) and later renamed Laura Plantation (2014)

Constructed as plantation houses from the early 18th into the mid-19th century, the French Creole Plantation House type is among the earliest expressions of a raised house type in Louisiana. In form, it is a rectangular structure raised on an aboveground-level basement, with the main floor on the second level and storage below. A gallery on the second level is found on at least two sides and sometimes all four. The design of this house type was largely influenced by the buildings of the West Indies, and represents a blending of both French and Spanish colonial influences. The raised basement is a statement -as well as a response- to a harsh and wet environment, elevating the dwelling in grand European fashion. Perhaps most importantly, though, it is supremely functional: its advantages include providing ventilation in a hot, rainy, humid climate and lifting principal living areas above periodic flooding. Historic and present day efforts to elevate houses attest to the effectiveness of a raised basement.

Architectural Features:

- Broad front massing, one to one-and-one-half stories over a raised basement
- Medium- to high-pitched hipped roof, some double-pitched and/or with flared eaves
- Porches are recessed or inset under the house's main roof
- Deep porches or galleries running along the façade or wrapping around the house
- Small, limited number of roof dormers, to light attic or for ventilation
- Porch columns with regular spacing between 8- to 12-feet on center
- Wood porch balustrade set between porch columns
- Masonry piers below, which typically remain open without infill
- Piers below may be exposed brick or stuccoed
- Broad, centered main stairs
- Secondary stairs located beneath the porch or gallery

An Urban Adaptation of a French Creole Plantation Type House

Madame John's Legacy, 632 Dumaine Street, French Quarter, New Orleans (Library of the Congress, Prints and Photographs Division, for educational and research purposes http://www.loc.gov/rr/print/)

Madame John's Legacy, one of the first houses reconstructed in the French Quarter or Vieux Carré in the year following the Great Fire of 1788, represents an early urban adaptation of the French Creole Plantation House type. Curiously, the house appears to be a replacement-in-kind of the previous house on the site and is, thus, likely typical of the urban residences of the period.

The walls of the first level are of brick, stuccoed over, while the second level is briquette-entre-poteaux covered with wide, beaded boards placed horizontally. The first level served as the foundation for the living quarters above, and also as a store house and work area for the household. It protected the main, upper, residential level from the threat of flooding.

A deep gallery with delicate wooden balusters and slender colonnettes adorns the second level of the northeast façade, and protects it from rain and sun. A high, double-pitched, hipped roof with small dormers tops the dwelling. Madame John's Legacy clearly expresses the importance of the raised basement to early residents of Louisiana and New Orleans, even in an urban setting.

Raised Creole Cottage Type

Maison Olivier, ca. 1815, St. Martinville, St. Martin Parish (Louisiana Department of Culture, Recreation and Tourism, used with permission)

Raised Creole Cottage on Highway 405 near Nottoway Plantation House in Iberville Parish in 1975; Carl Brasseaux; (Image courtesy of the Center for Louisiana Studies, University of Louisiana at Lafayette)

Louisiana geographer and architectural historian Jay Edwards has written about what he calls third-generation Acadian houses erected of timber frame primarily between about 1790 and 1850. By the time the first Acadians arrived, a considerable variety of architectural styles existed in Louisiana. In the southern part of the state, a dominant French Creole vernacular style had been established. It consisted of a house one room deep and several rooms wide, with a full-length gallery along the front or, occasionally, completely surrounding the structure. As with Caribbean Creole houses, the early houses of Louisiana were often raised above ground level to enhance through-ventilation.

In 1901, folklorist George F. Reinecke wrote about the basic, rectangular, timber-frame, gabled-roofed cottages that could still on occasion be found in Acadiana, well outside of New Orleans: "These little huts dignified with the name of houses are built on blocks, or piers, twenty or thirty inches above the ground level." The raised Creole house, Edwards concludes, "was far better adapted to Louisiana's tropical climate than the houses of the Acadians or for that matter, the buildings designed by French engineers in New Orleans". Among the earlier surviving examples of the Raised Creole Cottage type outside of New Orleans is the refined Maison Olivier in St. Martinville in St. Martin Parish (above). An equally good, if far more deteriorated example of the form, is a house on Highway 405 near the Mississippi River and Nottoway Plantation in Iberville Parish (above).

Francois Cousin House, Creole Cottage Type in St. Tammany Parish

Francois Cousin House, St. Tammany Parish, pictured in 2014 after being raised on an elevated foundation, surrounded/ masked by an earthen berm to protect it from flooding

The Francois Cousin House on Bayou Liberty, west of Slidell in St. Tammany Parish, stands just across Lake Pontchartrain from New Orleans. It was originally a one-and-one-half-story Raised Creole Cottage that—like similar houses in the French Quarter and the Faubourg Marigny—rested on a basement of limited elevation. Of briquette-entre-poteaux construction, it was likely erected between 1778 and 1790 by Cousin, a native New Orleanian.

A front gallery supported by chamfered columns runs the length of the house. Behind it are two rooms of equal size, with one larger additional room behind, all served by a single central chimney. In the late-19th or early-20th century, an additional three rooms were added to the dwelling's rear, along with the screened side galleries (porches). A typical Creole Cottage in its original form would not feature a wrap-around porch. However, this house overlooks Bayou Liberty, and the addition of the wrap around porch offers a covered "outdoor room".

Architectural Features:

- Side gable massing – ridge line runs parallel to the façade
- One to one-and-one-half stories in height
- Low height pier foundation
- Medium- to high-pitched gable roof
- Gable and/or roof dormer window(s) and/or vents to light attic or for ventilation
- Porch columns of wood construction with regular spacing
- Window and door openings on the facade centered on porch openings
- Masonry piers between which typically remain open without infill
- Piers below may be exposed brick or stuccoed
- Centered main stairs

Raised Center Hall Cottage Type

Greek Revival-style Center Hall Cottage, Louisiana Avenue, Garden District, New Orleans (2013)

Greek Revival-style Musgrove-Wilkinson House, Bayou St. John, New Orleans (2012)

From the 1830s through the 1870s, the Raised Cottage (interchangeably called American Cottage) type became the most substantial and architecturally significant residential type erected in New Orleans, especially in the expanding Uptown and Garden District neighborhoods. This building type is defined as a raised one-and-one-half story residence characterized by a center hall plan and a roof line incorporating a front gallery. Generally, these houses are set four- to five-feet above grade level, although some do not rise quite so high. Often stylish as well as functional, in New Orleans they were commonly adorned in one of the two most popular Period Revival styles of the time: either the Greek Revival or the Italianate.

Architectural Features:

- Broad, rectangular plan, typically at least 2 rooms wide and 2 deep.
- Generally set four to five feet above grade.
- Central hallway running from the front façade to the rear.
- Side gable massing – ridge line runs parallel to the façade.
- One- to one and one-half-stories in height.
- Façade spanned by a deep front porch covered by a flat roof.
- Most frequently sheathed in wood weatherboard
- Wide, centered main stairs .
- Gable roof dormers to light attic or for ventilation.
- Porch columns generally of wood construction with regular spacing .
- Symmetrical arrangement of windows.
- Wood porch balustrade set between porch columns.

Shotgun House Type

Shotgun House – Façade, New Orleans (2014)

Shotgun House – New Orleans (2014)

Shotguns are long, narrow houses whose roof ridges run perpendicular to the street. The name “Shotgun” may originate from the colorful legend that if one stood at the front door and fired a shotgun through the house, the projectiles would pass through the doors, all placed in a line, and exit at the rear. However, the origin of the Shotgun is still much debated.

The main roof of a typical Shotgun is hipped or gabled, and almost all Shotguns feature a front porch which may be engaged or recessed (a “cutaway” under the main roof) or attached, with a distinct, separate roof that abuts the main body of the house. Because the Shotgun plan is simple and economically built, it became wildly popular in urban settings such as New Orleans where lots are long and narrow. The Shotgun House could be built as several buildings types all of which are found throughout Louisiana and in particular abundance in New Orleans.

Architectural Features:

- A long narrow structure 1-room wide and 3 to 5 rooms deep.
- Rooms aligned one behind the other.
- Sits on simple brick, block or concrete pier foundation.
- Interior chimneys.
- Generally a full-width front porch.
- Situated on lot close to street.
- Wood frame structural system.
- Typically sheathed with wood siding.

Variations of the Shotgun House Type:

Shotgun Double

Shotgun Double, New Orleans (2014)

The most commonly observed variation of a Shotgun is the Shotgun Double (or Double Shotgun), which consists of a pair of Shotguns side-by-side, under a continuous roof, but divided into separate residences by a continuous party wall.

The fronts of these Shotgun Doubles have two doors (one for each residence), set at opposite ends of the facade, usually with a single window opening into the first room of each side.

Camelback Shotgun

Camelback Shotgun, New Orleans (2014)

Another common version of the Shotgun is known as the “Camelback”, which can be found on both singles and doubles. The Camelback Shotgun derives its name from the fact that the rear of the house has a second story which takes on the appearance of a camel’s hump. Generally, the camelback section provides extra bedroom space. It is interesting to note that “Camelback” second stories are also found on other dwelling types in Louisiana. The Camelback Shotgun remains the iconic version associated with the shotgun type, long associated with residential architecture in New Orleans.

Three-Bay Shotgun

Three-Bay Shotgun, New Orleans (2014)

This common variation of the traditional shotgun form, often called a side hall shotgun, takes its name from the façade which is three bays wide. A single front door is oriented to the side of the house. Two windows, typically equal in height to the front entry door, create a balanced composition. The shotgun below features a gable-on-pent roof carried by scrolled wood brackets.

The advantage of a three-bay shotgun over a narrow two- or one-bay shotgun is the width needed to create a side-hallway to provide more private access to the rooms in the back of the house. Many three-bay shotguns feature a double-parlor for the front two rooms and are four-to-five rooms in depth.

Raised Shotgun House Type

Raised Shotgun Single House, New Orleans (2012)

Raised Shotgun Double House, New Orleans (2012)

In the traditional fashion of Louisiana architecture, common building types are given a new form by the simple act of raising them (either as part of the original design or in a secondary building campaign). Thus, adding to the variety of Shotgun building types in Louisiana is the Raised Shotgun, which typically is raised a full story above grade.

The common term for the lower level, which is completely above grade, is a raised (or false) basement that over time, came to serve as a lower habitable floor that is enclosed. The house (left, upper) located in New Orleans is a good example of a Raised Shotgun Single. A Raised Shotgun Double (left, lower) may be similar to a Raised Basement House building type; however, appearances aside, Raised Basement Houses typically are single-family dwellings. The house (right, lower) in New Orleans stands as a good example of the Raised Basement Shotgun Double type.

Raised Basement House Type

1929 Photographs of Raised Basement House Types, New Orleans Louisiana Division/City Archives, New Orleans Public Library, used with permission

Indigenous to New Orleans and the region, the Raised Basement House type is one of the more recognizable building types present in New Orleans. Essentially, a Raised Basement House is typically a one-story (or one- and one half-story) dwelling built up on a “false” basement that either originally or over time came to serve as a lower habitable floor. As this building type took hold in New Orleans, many houses were designed to include a “basement” level, which is really a first floor, typically an enclosed, poured concrete slab-on-grade and not an excavated basement in the classic sense. It is one of the many architectural adaptations that came about as a result of the city’s problematic low-lying geography. Houses that originally were one story in height subsequently were raised, perhaps due to flooding or possibly just the threat of flooding. Many Raised Basement Houses are adorned with elaborate exterior stairs adorned with curved wing walls laid up in brick or covered in stucco and capped with cast concrete.

Queen Anne Style

Queen Anne Style, New Orleans (2014)

The Queen Anne style was first created and promoted by Richard Norman Shaw and other English architects in the late 19th century. The name refers to the Renaissance style architecture popular during the reign of England's Queen Anne (1702-1714). The style became popular in the United States through the use of pattern books and the publishing of the first architectural magazine, "The American Architect and Building News."

The Queen Anne style evolved from those early English designs to become a distinctly American style with numerous, sometimes regional variations. The use of three dimensional wood trim called spindlework was an American innovation made possible by the technological advances in the mass production of wood trim and the ease of improved railroad transport. While the Queen Anne style can take a variety of forms, certain key elements are commonly found. Queen Anne buildings almost always have a steep roof with cross gables or large dormers, an asymmetrical front façade, and an expansive porch with decorative wood trim. A round or polygonal front corner tower with a conical roof is a distinctive Queen Anne feature on many buildings of this style. Wall surfaces are usually highly decorative and often exhibit a variety of textures.

Architectural Features:

- Abundance of decorative elements.
- Steeply pitched roof with irregular shape.
- Cross gables.
- Asymmetrical façade.
- Large partial or full width porch.
- Round or polygonal corner tower.
- Decorative spindlework on porches and gable trim.
- Projecting bay windows.
- Patterned masonry or textured wall surfaces including half timbering.
- Columns or turned post porch supports.
- Patterned shingles.
- Single pane windows, some with small decorative panes or stained glass.

Craftsman Style

Craftsman Style House, Spanish Town Historic District, Baton Rouge (2014)

Influenced by the British Arts and Crafts Movement, and Oriental and Indian architecture, the Craftsman Style was popularized by the architectural work of two brothers, Charles S. and Henry M. Greene. The Greenes designed a number of large, elaborate prototypes of the style. Their innovative designs received a significant amount of publicity in national magazines.

Throughout the United States, large residences, lake cottages and even institutional buildings (such as schools and churches) were rendered in the style. However, by the turn of the twentieth century, the Craftsman style had been adapted to smaller one- and two-story houses. In fact, many modest homes from the 1900s to the 1920s (like shotgun singles and doubles, for example) include some of the Craftsman style's design elements. These motifs include low-pitched roofs with overhanging eaves, decorative rafters, masonry pedestals surmounted by battered or tapered box columns, and masonry chimneys.

Architectural Features:

- Mixed construction materials throughout exterior and interior.
- Exhibit "look" of hand-crafted construction.
- Full or partial front porch extends beneath extension of main house.
- Roof highlighted by exposed rafters or decorated brackets.
- Deeply overhanging eaves.
- Tapered, square, or pyramidal columns supporting roof.
- Multi-paned windows and heavy doors.

Bungalow Style

Bungalow Style House, Florida Street, Baton Rouge (2014)

The term “bungalow” comes from the Bengal region of India, where small, seasonal homes for British citizens were common in the 19th century. However, in the United States they were built as free-standing, one-story, permanent, single family homes. Because of their easy adaption to grassy suburban lots springing up outside of major American cities, Bungalows became a ubiquitous feature of the early suburban landscape.

Most commonly dating from the 1910s and 1920s, Bungalows could be architect-designed, mass-produced as prefabricated homes, or constructed in groups by speculative builders/developers. Over time, designers and builders began mixing Bungalow style motifs with elements from the period revival styles also popular at the time. For this reason, one finds Craftsman, Colonial Revival, Spanish Colonial, Mediterranean Revival, and Tudor Revival style Bungalows, as well as Bungalows that mix elements from two or more of these secondary styles.

Architectural Features:

- Deeply recessed or attached porch (sometimes accompanied by a pergola).
- Low-pitched roofs supported by half- or full-height tapered box columns.
- Porch columns resting on piers or pedestals of wood, brick or stucco.
- Exterior masonry chimneys (in Louisiana, usually of brick or stuccoed finish).
- Wide and open overhanging eaves.
- Elements expressive of structure (though ironically many are decorative).
- Knee-brace brackets and visible rafter tails (sometimes shaped by scroll-saws).
- Architectural elements commonly embellished or oversized to provide visual interest .

Colonial Revival Style

Colonial Revival Style House, New Orleans (2014)

The Colonial Revival style embodies the massing and details of houses built in the United States during the seventeenth and eighteenth centuries. Although based primarily on the eighteenth-century classical Georgian and Federal styles, Colonial Revival houses generally are an eclectic mixture of several periods. That trend reflects the richness and regional variation of the original Colonial-era houses themselves. Colonial architecture in America developed over two centuries; therefore, there are multiple expressions of American colonial styles.

In middle-class residential architecture, the Colonial Revival style became popular in the United States from the 1910s through the 1930s, with resurgence during the post-World War II years. Typical features include side-gabled roofs, symmetrical plans, and front doors with pilasters, pediments, transoms, fanlights and sidelights, and small entrance porches with classically inspired columns. Facades are generally symmetrical, and cornices are mostly boxed or closed with small overhangs. Windows are rectangular, double-hung with divided lights and materials include brick veneer or wood weatherboards.

Architectural Features:

- Simple rectangular massing and plan.
- One or two stories in height.
- Side-gabled roofs predominate.
- Symmetrical and balanced fenestration.
- Classical colonial detailing (columns, engaged pilasters, cornices, entablatures, and shuttered windows).
- Horizontal wood siding (clapboards or lapped siding).
- Wood shutters are typical.
- Stately and homelike, but not monumental in appearance.
- Southern Colonial Revival variants have chimneys on the gable ends.

Neoclassical or Classical Revival Style

Classical Revival Style House, New Orleans (2014)

The Neoclassical or Classical Revival style was most popular in Louisiana from 1895 to 1950. This was a result of the architectural influence at the 1893 World's Columbian Exposition and America's newfound interest in a classicism following decades of heavily-ornamented Late Victorian architectural styles. While not representative of the earlier purist Classical Revival style, the architectural elements of the Neoclassical Revival Style derive from the lexicon of this new classicism.

The style features broad expanses of plain wall surface. Classical orders are often used, and in keeping with these, windows and doorways have lintels rather than arches. Pedimented porticoes (and sometimes full-width, flat-roofed columned porticos) are frequent features. Façades are generally symmetrical and usually have full-height wood or stone classical columns, often having Corinthian, Doric, or Ionic capitals. Roofs of Neoclassical Revival style houses or buildings tend to follow simple geometries rather than being complex in form. Windows typically are double-hung, symmetrically arranged with lintels above, sometimes occurring in pairs, or in groups of three.

Architectural Features:

- Front porch or portico which may vary in size.
- Monumental columns and pilasters on the façade.
- Clean lines, symmetry, balance, and basic geometric forms.
- Monumental appearance, even in residential examples.
- Simplified porch detail and monumental cornices.
- Exterior typically clad in brick or weatherboard.

Spanish/Mediterranean Revival Style

Spanish/Mediterranean Style House, New Orleans (2014)

The Mediterranean Revival style was popular in suburban development from the 1920s up to World War II. The style reflects the architectural influences of the Mediterranean coast: Italian, Byzantine, Moorish themes from southern Spain, and Spanish Colonial themes.

Applied Spanish Colonial decoration is generously used around openings, balconies, and cornices. Parapets, twisted columns (evoking the Solomonic Order), clustered columns, pediments, and other classical details also are frequently used. Arches are often featured. The most common materials are stucco walls, red tile roofs, wrought iron grilles and railings, wood brackets and balconies, ceramic tile, and terra cotta for ornament. Casement-type windows are often used, and these are most frequently seen on the facades whereas the side elevations generally revert to the traditional double-hung window type.

Architectural Features:

- Roofs are typically covered with ceramic tiles.
- Upper-story windows are usually less elaborate than first-floor windows.
- Window and door openings are typically arched.
- Irregular massing to provide an exotic appearance
- Shaped or curved parapets.
- Recessed porches and arches at main entrance.
- Wide use of stucco for walls.

Tudor & English Cottage Revival Style

Tudor/English Cottage Revival Style, Baton Rouge (2014)

The Tudor and English Cottage Revival style is notable for its cross-gabled roofs with steeply pitched front-facing gables. Some gables are "offset", with one pitch projecting further than the other (commonly known as a "catslide" roof that features a distinctive curve at its base).

One of the most charming and inviting features of the Tudor & English Cottage Revival is the use of an archway at the porch or covered entryway that leads to a rounded headed door. These emblematic features of the style add both depth and charm to these often

diminutive residences. Half timbering is common in the gables. Windows are relatively tall and slender with multi-pane glazing separated by either wood or lead muntins. Chimneys are very large and commonly decorated with ornate chimney pots. Chimneys also often are located on the façade.

Several different siding treatments are common, including brick, stucco, stone, and wood shingle or clapboard. Brick veneer was particularly popular and various siding combinations are commonly seen. Windows are often casement types opening out, as well as the more common double-hung window. Multiple windows are sometimes arranged in banks across the facade. Most commonly seen are multi-paned sashes with wood muntins.

Architectural Features:

- Roofs usually have a steep pitch and side gables.
- Front façades usually have one or more steeply-pitched cross gables.
- Decorative half-timbering is sometimes present.
- Windows are usually tall and narrow, and found in groups.
- Chimneys are likely to be massive and are sometimes topped by decorative chimney pots.

Minimal Traditional Style

1940s Minimal Traditional Style House, Emulating a "Cape Cod" Form (2014)

The Minimal Traditional is a domestic style of architecture that developed as a simplification of historic styles. The style emerged in the late 1930s to become a popular architectural style for modestly-built dwellings in the 1940s and 1950s. Generally, architectural detail in this style is kept at a minimum. The restrained use of ornament and space in a traditional form characterize the style and give it its name. This style of house was built in great numbers in the years immediately before and after World War II – especially in large Post WWII tract-housing developments such as the well-documented Levittown developments in New Jersey, New York, and Pennsylvania.

Architectural Features:

- Compact, rectangular massing.
- Low-to-moderately pitched roof lines which are generally side gabled.
- Double-hung, multi-pane windows.
- Roof eaves usually with little or no overhang.
- One-story or one-and-one half stories in height.
- Small porches over the entrance or no porch (stoop only).
- Exhibit minimal amounts of added architectural detail.
- Faux shutters and dormers are generally the most expressive detail.

Ranch Style

Ranch Style house, Jefferson Highway, Baton Rouge (2014)

The typical Ranch style home is a one-story building with either a simple hipped or gabled roof. On larger suburban lots, Ranch houses ranged from the unadorned box to various L- or U-shaped configurations, with an orientation generally parallel to the street. Where preceding styles were more cubic, the Ranch was long and horizontal with an asymmetrical facade. Many feature attached garages or carports, sliding glass doors, and expansive picture windows. The Ranch is typically two rooms deep and at least four rooms wide, unlike many earlier styles that were just two rooms wide and presented a much smaller facade.

Architectural Features:

- Ranch houses are oriented with the long elevation facing the street.
- Low-pitched roof lines – usually hipped roofs.
- Use of picture windows on the facade.
- Roof eaves usually with a broad overhang.
- One-story in height.
- Emphasis of horizontal form over stylized architectural detail.
- Prominent chimneys on the front of the house.
- Garages attached and inset within the house's main room.

National Reference Information and Publications

Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation (Department of the Interior Regulations, Title 36 Code of Federal Regulations [CFR] Part 67) are used by Federal agencies in carrying out their historic preservation responsibilities for properties in Federal ownership or control, and State and local officials in reviewing both Federal and non-Federal rehabilitation projects. They have also been adopted by numerous local HPCs for use in evaluating renovation and new construction within locally designated historic districts. The intent of the Standards for Rehabilitation is to assist in the long-term preservation of a property's significance through the retention of historic materials and features. The Standards for Rehabilitation pertain to historic buildings of many construction types, materials, sizes, and occupancies. They also address related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction.

"Rehabilitation" of an historic building involves at least some repair to allow efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features, or finishes that are important in defining the building's historic character. For example, certain treatments, if improperly applied, may cause or accelerate physical deterioration of the historic building. This can include using improper repointing or exterior masonry cleaning techniques, or introducing insulation that damages the historic fabric. In most of these situations, use of these materials and treatments will result in a project that does not meet the Standards for Rehabilitation. Similarly, exterior additions that slavishly replicate the form, material, and detailing of the building to the extent that they compromise the historic character of the building will also fail to meet the Standards for Rehabilitation.

When working with a design professional to design an elevation project that will be successfully approved by a local historic preservation commission and the State Historic Preservation Office (Louisiana DHP), the Standards for Rehabilitation should be carefully integrated into the pro-posed design. They are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility. The Standards for Rehabilitation are as follows:

Standard 1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building, site, and environment.

Standard 2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

Standard 3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

Standard 4. Most properties change over time; those changes that have acquired significance in their own right shall be retained and preserved.

Standard 5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

Standard 6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

Standard 7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials, shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

Standard 8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

Standard 9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

Standard 10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

To review the Standards for Rehabilitation and their associated guidelines, along with more detailed visual information on the treatment of historic building materials using the Standards, please visit www.nps.gov/history/hps/tps/standguide/index.htm.

Federal Emergency Management Agency Publications

The Federal Emergency Management Agency (FEMA) makes available numerous publications of interest to the public and professional engineers, floodplain managers, building officials, and local historic preservation commissions. In particular, the following publications may be of use to owners of historic buildings who wish to learn more about the design of foundation systems in high- hazard coastal areas.

FEMA 15. Design Guidelines for Flood Damage Reduction (December 1981)

FEMA 54. Elevated Residential Structures (March 1984)

FEMA 55. Coastal Construction Manual, Third Edition (June 2000) (foundations, but not pilings) three- volume set

FEMA 102. Floodproofing Non-Residential Structures (May 1986)

FEMA 114. Design Manual for Retrofitting Floodprone Residential Structures (December 1986. Presents floodproofing techniques that can be used for existing residential structures.)

FEMA 259. Engineering Principles and Practices for Retrofitting Floodprone Residential Buildings (January 1995. Provides engineering design and economic guidance to engineers, architects, and local code officials about what constitutes technically feasible and cost-effective retrofitting measures for floodprone residential structures.)

FEMA 265. Managing Floodplain Development in Approximate Zone A Areas, A Guide for Obtaining and Developing Base (100-Year) Flood Elevations with Quick-2, Version 1.0, Computation of Water Surface Elevations (July 1995)

FEMA 311. Guidance on Estimating Substantial Damage. Using the National Flood Insurance Program (NFIP) Residential Substantial Damage Estimator, Guidance: Software and Manual Computation Worksheet, Software Version 1.1 (December 1998)

FEMA 346VT (Video Tape). Above the Flood: Elevating Your Floodprone House. (June 2000. Narrated version of FEMA 347 including animations, live footage, and interviews)

FEMA 347. Above the Flood: Elevating Your Floodprone House (May 2000)

FEMA 348. Protecting Building Utilities from Flood Damage (November 1999)

FEMA 386-1. Getting Started, Building Support for Mitigation Planning, State and Local Mitigation How- To Guide (September 2002)

FEMA 386-6. Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning, State and Local Mitigation How-To Guide (May 2005)

FEMA 480. National Flood Insurance Program Floodplain Management Requirements, A Study Guide and Desk Reference for Local Officials (February 2005)

FEMA 496. Joining the National Flood Insurance Program (May 2005)

FEMA 499. Home Builder's Guide to Coastal Construction Technical Fact Sheet Series (August 2005. Contains recommendations for residential buildings subject to flood and wind forces in coastal environments. Addresses siting of coastal buildings and recommended building design and construction practices including structural connections, the building envelope, and utilities.)

FEMA 550. Recommended Residential Construction for the Gulf Coast; Building on Strong and Safe Foundations (July 2006. This design manual provides recommended designs and guidance for rebuilding homes destroyed by hurricanes in the Gulf Coast. The manual also provides guidance in designing and building less vulnerable new homes that reduce the risk to life and property

Fact Sheet No. 1. Coastal Building Successes and Failures.

Fact Sheet No. 2. Summary of Coastal Construction Requirements and Recommendations

Fact Sheet No. 3. Using a Flood Insurance Rate Map (FIRM)

Fact Sheet No. 4. Lowest Floor Elevation

Fact Sheet No. 5. V Zone Design and Construction Certification

Fact Sheet No. 6. How Do Siting and Design Decisions Affect the Owner's Costs?

Fact Sheet No. 7. Selecting a Lot and Siting the Building

Fact Sheet No. 8. Coastal Building Materials

Fact Sheet No. 9. Moisture Barrier Systems

Fact Sheet No. 10. Load Paths

Fact Sheet No. 11. Foundations in Coastal Areas

Fact Sheet No. 12. Pile Installation

Fact Sheet No. 13. Wood-Pile-to-Beam Connections

Fact Sheet No. 14. Reinforced Masonry Pier Construction

Fact Sheet No. 15. Foundation Walls

Fact Sheet No. 16. Masonry Details

Fact Sheet No. 17. Use of Connectors and Brackets

Fact Sheet No. 18. Roof Sheathing Installation

Fact Sheet No. 19. Roof Underlayment for Asphalt Shingle Roofs

Fact Sheet No. 20. Asphalt Shingle Roofing for High-Wind Areas

Fact Sheet No. 21. Tile Roofing for High-Wind Areas

Fact Sheet No. 22. Window and Door Insulation

Fact Sheet No. 23. Housewrap

Fact Sheet No. 24. Roof-to-Wall and Deck-to-Wall Flashing

Fact Sheet No. 25. Siding Installation and Connectors

Fact Sheet No. 26. Shutter Alternatives

Fact Sheet No. 27. Enclosures and Breakaway Walls

Fact Sheet No. 28. Decks, Pools, and Accessory Structures

Fact Sheet No. 29. Protecting Utilities

Fact Sheet No. 30. Repairs, Remodeling, Additions, and Retrofitting

Fact Sheet No. 31. References

FEMA. Answers to Questions About the National Flood Insurance Program, May 2006

FEMA. Reducing Flood Losses Through the International Codes, Meeting the Requirements of the National Flood Insurance Program, 2nd Edition, 2005

Title 44. Code of Federal Regulations, Parts 59-78, National Flood Insurance (NFIP) Regulations (Revised October 2002)

Individuals may view electronic copies of these documents by visiting to the FEMA Library, an electronic collection of research and publication materials maintained by this agency. To search for files in the library, please visit www. fema.gov/library.

In addition, many of these publications are available, free of charge, by requesting them from FEMA's Publications Warehouse. Have the publication reference number available and contact the warehouse at:
Telephone: 1-800-480-2520
(8:00 a.m. – 5:00 p.m. Eastern Time)
Address: P.O. Box 2012, Jessup, MD 20794-2012
Fax: 301-362-5335

State Reference Information and Publications

State of Louisiana
Office of Cultural Development
Division of Historic Preservation

Under the National Historic Preservation Act, State governments act in partnership with the Federal government to carry out a series of broad historic preservation programs to preserve and protect historic properties across the United States. In Louisiana, the Division of Historic Preservation undertakes surveys of historic properties and archaeological sites, evaluates resources for listing in the National Register of Historic Places, works with Federal agencies on protection of historic properties through regulatory review, assists local governments with historic preservation activities, provides direct grants to property owners for repair and improvements to significant resources, and administers tax incentive programs to encourage the re-use of income-producing historic buildings.

For more information:

Physical Address

Office of Historic Preservation
Capitol Annex Building
1051 North Third Street
Baton Rouge, Louisiana 70802

Mailing Address P.O. Box 44247
Baton Rouge LA 70804

Phone: (225) 342-8160
Fax: (225) 219-9772

For general information on historic preservation programs and techniques via the Internet, visit http://www.crt.state.la.us/cultural-development/historic-preservation/index

Foundation for Historical Louisiana, Inc.
Preservation Headquarters - Old Governor's Mansion
502 North Boulevard
Baton Rouge, LA 70802
Phone: 225-3872464
Mailing Address:
PO Box 908
Baton Rouge LA 70821
http://fhl.org/

Louisiana Historical Society
5801 Saint Charles Ave
Sally K. Reeves, President
New Orleans LA 70115
Phone: 504-866-3049
http://www.louisianahistoricalsociety.org/

Louisiana Landmarks Society
1440 Moss St
New Orleans LA 70119
Phone: 504-482-0312
http://www.louisianalandmarks.org/

Louisiana State Archives
PO Box 94125
Baton Rouge LA 70804
http://www.sos.la.gov/Pages/default.aspx

Louisiana Trust for Historic Preservation
PO Box 1587
Baton Rouge LA 70821
http://www.lthp.org/

National Center for Preservation Technology and Training
645 University Parkway
Natchitoches LA 71457
Phone: 318-356-7444
http://www.ncptt.nps.gov/

Daspit, Fred. *Louisiana Architecture 1820-1840*. The Center for Louisiana Studies, University of Louisiana (2005).

Edwards, Jay D. *Louisiana's Remarkable French Vernacular Architecture*. Fred B. Kniffen Cultural Resources Laboratory Monograph Series No. 1., Department of Geography and Anthropology, Louisiana State University (1988).

Federal Emergency Management Agency. *The History of Building Elevation in New Orleans*. FEMA, Department of Homeland Security (2012).

Fricker, Jonathan. *Louisiana Architecture: A Handbook of Styles.* University of Southwest Louisiana (1998).
Meck, An. and Suzanne Turner. The Gardens of Louisiana: Places of Work and Wonder. Louisiana State University Press (1997).

McAlester, Virginia Savage. *A Field Guide to American Houses: The Definitive Guide to Identifying and Understanding America's Domestic Architecture*. Alfred A. Knopf (2013).

Oldenwald, Neil and James Turner. *Southern Plants for Landscape Design*. Claitor's Publishing Division (2000).

Poesch, Jessie and Barbara SoRelle Bacot, eds. *Louisiana Buildings 1720-1940*. Louisiana State University Press (1997).

Urban Design Associates. *Louisiana Speaks: Pattern Book* (2007).

Local Reference Information and Publications

AIA New Orleans
1000 Saint Charles Avenue
New Orleans LA 70130
Phone: 504-525-8320
http://www.aianeworleans.org/

Preservation Resource Center of New Orleans
923 Tchoupitoulas Street
New Orleans LA 70130
Phone: 504-581-7032
http://www.prcno.org/

Southeastern Architectural Archive
6801 Freret Street
Jones Hall, Room 300
New Orleans LA 70118
Phone: 504-865-5699
http://seaa.tulane.edu/

Hankins, Jonn, ed. *Raised to the Trade: Creole Building Arts of New Orleans*. New Orleans Museum of Art (2002).

Seidenberg, Charlotte. *The New Orleans Garden: Gardening in the Gulf South*. University Press of Mississippi (1993).

Vogt, Lloyd. *New Orleans Houses: A House-Watcher's Guide*. Pelican Publishing Company (1992).

Vogt, Lloyd. *Historic Buildings of the French Quarter*. Pelican Publishing Company (2002).

Raised French Creole House, St. James Parish (Louisiana Division of Historic Preservation, used with permission)

Appendix

Glossary of Terms

Architectural Terminology

Alterations - Generally, any construction or renovation to an existing building or structure other than repair or repainting.

Architectural Character - The basic detailing, architectural rhythm, architectural style, appearance, and historic period of a building or a group of buildings or structures, including the site and landscape improvements.

Architectural Detailing - The exterior placement and/or construction of different architectural features, including all horizontal and vertical surfaces.

Architectural Feature - A prominent or significant part or element of a building, structure, or site. Architectural features may include special lines, massing, projections, recesses, and texture.

Architectural Style - The characteristic form and detail of a building or structure dating to a particular time period.

Basement - Under the National Flood Insurance Program (NFIP), any area of a building having its floor subgrade on all sides. (Note: What is typically referred to as a "walkout basement," which has a floor that is at or above grade on at least one side, is not considered a basement under the NFIP.) Basements below the Base Flood Elevation are only allowed in communities that have obtained a basement exception from FEMA.

Bay - A regularly repeated spatial element, defined by beams or ribs and their supports, within a building or structure.

Breakaway Wall - A wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or supporting foundation system. Breakaway walls are required by the NFIP regulations for any enclosures constructed below the BFE beneath elevated buildings in coastal high hazard areas (also referred to as Zone V). In addition, breakaway walls are recommended in areas where floodwater flows at high velocities or contains ice or other debris.

Building Code - Regulations adopted by local governments that establish standards for construction, modification, and repair of buildings and other structures.

Building Typology - A systematic classification or study of types of buildings or structures. As this pertains to historic districts, this means the study of general groupings of buildings or structures, organized by such features as overall form, style, and characteristic features.

Bulkhead - Wall or other structure, often of wood, steel, stone, or concrete, designed to retain or prevent sliding or erosion of the land. Occasionally, bulkheads are used to protect against wave action.

Closed Foundation - A foundation that does not allow water to pass easily through the foundation elements below an elevated building. Examples of closed foundations include crawlspace and stem wall foundations, which are usually filled with compacted soil, slab-on-grade foundations, and continuous perimeter foundation walls.

Composition - The assemblage of architectural features and details of a specific architectural style, or the use of materials that are based upon specific examples found in the area or time period.

Façade - The portion of any exterior elevation on the building extending from grade to the parapet, wall, or eaves, and the entire width of the building elevation that faces a public street, excluding alleys.

Grade Beam - Section of a concrete slab that is thicker than the slab and acts as a footing to provide stability, often under load-bearing or critical structural walls. Grade beams are occasionally installed as lateral support for vertical foundation members where they enter the ground.

Lines - Visual elements of a building, either within the façade or on the building edge, linear in form, either horizontally or vertically, and may be composed of masonry, glass, or other related materials.

Massing - Pertains to the volume or bulk of a building or structure.

Open Foundation - A foundation that allows water to pass through the foundation of an elevated building, reducing the lateral flood loads the foundation must resist. Examples of open foundations are pile, pier, and column foundations.

Projections - Items that stand out from the main massing of the building, such as sills, eaves, cornices, canopies, porches, and chimneys.

Recesses - Portions of a building both in a horizontal and vertical plane that are set back from the building wall either for pedestrian articulation, to provide space for windows and/ or doors, or to create special architectural detailing.

Rhythm - The recurrence at regular or uniform intervals of features, especially windows, masonry, textures, etc., within a building.

Scale - A proportional relationship among the size of parts to one another, and to the human figure.

Texture - The quality of a surface, ranging from mirror finish, smooth, etc., to coarse or unfinished.

Historic Preservation Regulatory Terminology

Adverse Effect - A finding under the National Historic Preservation Act Section 106 consultation process that an undertaking may alter, directly or indirectly, any of the characteristics of an historic property that qualify the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property's location, design setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably fore-seeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative. Examples of adverse effects include:

1. Physical destruction of or damage to all or part of a property;
2. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous materials remediation, and provision of handicapped access, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines;
3. Removal of a property from its historic location;
4. Change of the character of a property's use or of physical features within the property's setting that contribute to its historic significance;
5. Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
6. Neglect of a property that causes its deterioration, except where such neglect or deterioration are recognized qualities of a property of religious or cultural significance to an Indian Tribe or Native Hawaiian organization; and/or
7. Transfer, lease, or sale of a property out of Federal ownership without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Area of Potential Effects - The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Best Practice - Technique that exceeds the minimum requirements of model building codes and/or design and construction standards for Federal, State, and local regulations.

Certificate of Appropriateness (COA) - A decision document issued by a local Historic Preservation Commission through which approval for certain actions involving individual historically significant landmark buildings or structures, or buildings within locally designated historic districts, is granted. An application for a Certificate of Appropriateness must be made prior to applying for a building permit or a demolition permit, or altering the exterior architectural appearance of any landmark building or any building or structure within a locally designated historic district. The following actions trigger a request for a Certificate of Appropriateness:

1. Any construction, alteration, or removal requiring a building permit/zoning approval;
2. Any alteration affecting a significant architectural feature or appearance as specified in the ordinance designating the landmark or historic district; and/or,
3. Any demolition in whole or in part requiring a demolition permit.

Conditional No Adverse Effect - A determination rendered under the National Historic Preservation Act Section 106 consultation process, through which the State Historic Preservation Office may suggest changes in a project or impose conditions so that adverse effects can be avoided and thus result in a No Adverse Effect

determination. Generally, if an historic property is restored, rehabilitated, repaired, maintained, stabilized, remediated, or otherwise changed in accordance with the Standards for Rehabilitation, then it will not be considered as having an Adverse Effect.

Consultation - The process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising from the National Historic Preservation Act Section 106 review process. See also National Historic Preservation Act, Section 106 Consultation.

Effect - Alteration to the characteristics of an historic property qualifying it for inclusion in the National Register of Historic Places.

Eligibility for Inclusion in the National Register of Historic Places includes both properties formally determined as such in accordance with the regulations of the Secretary of the Interior and all other properties that meet the National Register criteria.

Historic Building - Any building that is: listed individually in the National Register of Historic Places (National Register; a list maintained by the U.S. Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; or 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 of the Interior to qualify as a registered historic district; or individually listed in a State inventory of historic places in States with preservation programs that have been approved by the Secretary of the Interior; or Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either: By an approved State program as determined by the Secretary of the Interior; or directly by the Secretary of the Interior in States without approved programs.

Historic Property - Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places, maintained by the Secretary of the Interior. The term also includes properties of traditional religious or cultural importance to an Indian Tribe or Native Hawaiian organization that meet the National Register criteria.

Integrity - The ability of an historic property to convey its significance. To be significant, a property will possess several, and usually most, of seven aspects of integrity:

1. Location - The place where an historic property was constructed or the place where an historic event occurred;
2. Design - The combination of elements that create the form, plan, space, structure, and style of a property;
3. Setting - The physical environment of an historic property;
4. Materials - The physical elements that were combined during a particular period of time and in a particular pattern or configuration to form an historic property;
5. Workmanship - The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
6. Feeling - A property's expression of the artistic or historic sense of a particular period of time; and/or
7. Association - The direct link between an important historic event or person and an historic property.

Memorandum of Agreement - The document that records the terms and conditions agreed upon to resolve the adverse effects of an undertaking upon an historic property.

National Historic Preservation Act, Section 106 Consultation -The Nation's most important historic preservation law, through which Federal agencies must "take into account" (e.g., consider the effects of their undertakings on historic properties), and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. This law is implemented through regulations codified at 36 CFR Part 800, called "Protection of Historic Properties." This process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the Federal agencies and other parties with an interest in the effects of the undertaking on historic properties. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess the effects, and seek ways to minimize or mitigate (offset) any adverse effects on historic properties.

National Historic Landmark - An historic property that the Secretary of the Interior has designated a National Historic Landmark.

National Register of Historic Places - The Federal government's official list of historic buildings, structures, historic districts, archaeological sites, and object deemed worthy of preservation. It is maintained by the Secretary of the Interior.

National Register Criteria - The criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR Part 60).

Programmatic Agreement - A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency pro-gram, complex undertaking, or other situations in accordance with 36 CFR Section 800.14 (Section 106 regulations).

State Historic Preservation Officer (SHPO) - The official appointed or designated pursuant to section 101(b)(1) of the National Historic Preservation Act to administer the State historic preservation program or a representative designated to act for the State Historic Preservation Officer. In Louisiana, this individual is the head of the Louisiana Division of Historic Preservation.

This agency's historic preservation division carries out historic preservation programs within the State.

Tribal Historic Preservation Officer (THPO) - The Tribal official appointed by the Tribe's chief governing authority or designated by a Tribal ordinance or preservation program who has assumed the responsibilities of the SHPO for purposes of Section 106 compliance on Tribal lands in accordance with section 101(d)(2) of the National Historic Preservation Act.

Undertaking - A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval.

Building Elevation and Related FEMA Terminology

100-year flood - See **One-Hundred Year Flood** and **Base Flood.**

500-year flood - See **Five-Hundred Year Flood**.

ABFE – See **Advisory Base Flood Elevation**

Advisory Base Flood Elevation – Updated Base Flood Elevations that identify the estimated 1-percent-annual-chance (100-year) stillwater flood elevations plus estimated wave effects. ABFEs are shown on a preliminary FIRM. ABFEs were developed to more accurately predict the true risk of flooding, and incorporate updated storm data from Hurricanes Katrina and Rita. ABFEs are recommended as the standard for rebuilding efforts. Elevations identified as ABFEs are not used for insurance rating purposes until the maps become effective.

Advisory Base Flood Elevation (ABFE) Maps - Where adopted, a community's Floodplain Management Map, for which FEMA has delineated the updated estimated 1-percent-annual-chance (100-year) stillwater elevations plus estimated wave effects, known as the ABFEs.

Advisory Flood Hazard Area (AFHE) - Portion of land subject to inundation as shown on the ABFE maps to the ABFE inland limit.

AFHE – See **Advisory Flood Hazard Area**

Area of Special Flood Hazard - Land in the floodplain within a community subject to a 1-percent or greater chance of flooding in any given year.

Base Flood - Flood that has a 1-percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.

Base Flood Elevation (BFE) - The water surface elevation resulting from a flood that has a 1-percent chance of equaling or exceeding that level in any given year. The BFE is measured in relation to a specified datum, such as the National Geodetic Vertical Datum (NGVD) or the North American Vertical Datum (NAVD). The BFE shown on the effective Flood Insurance Rate Map (FIRM) is the basis of the insurance and floodplain management requirements of the National Flood Insurance Program (NFIP). Elevations are shown on the FIRM for Special Flood Hazard Areas, including Zones AE, AH, A1-30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30, and VE.

BFE – See **Base Flood Elevation**

Breakaway Wall - A wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or the supporting foundation system.

CBRS – See **Coastal Barrier Resources System**

CFHA – See **Community Flood Hazard Area**

CLOMR – See **Conditional Letter of Map Revision**

Coastal Barrier Resources System (CBRS) - In undeveloped communities, coastal barriers and other protected areas that are subject to certain flood coverage restrictions. These areas were designated by the Coastal Barrier Resources Act of 1982 (CBRA) and the Coastal Barrier Improvement Act of 1990, and are shown on appropriate FIRM panels.

Coastal High Hazard Area - The 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. The area is designated on the FIRM as Zone V1 – V30, VE, or V.

Coastal A Zone - An area within a Special Flood Hazard Area (SFHA), landward of a Zone V, or landward of an open coast without a mapped Zone V. During base flood conditions, breaking wave heights in a Coastal A Zone are potentially greater than or equal to 1.5 feet. The inland limit of the Coastal A Zone is either (a) the Limit of Moderate Wave Action (LiMWA) if delineated on a Flood Insurance Rate Map (FIRM) or (b) designated by the authority having jurisdiction.

Coastal Special Flood Hazard Area - The portion of the SFHA where the source of flooding is coastal surge or inundation. It includes Zone VE and Coastal A Zone.

Community Rating System (CRS) - The program developed by the Federal Insurance Administration to provide incentives for those communities in the National Flood Insurance Program (NFIP) that have gone beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.

Community Flood Hazard Area (CFHA) - The area determined by the Floodplain Administrator (or other delegated, designated, or qualified community official) from available technical studies, historical information, and other available and reliable sources, that may be subject to periodic inundation by floodwaters that can adversely affect the public health, safety, and general welfare. This includes areas downstream from dams.

Community Floodplain Management Map - Any map produced by the community utilizing any base flood elevation and floodway data available from a Federal, State, or other source.

Conditional Letter of Map Revision (CLOMR) - A formal review and comment by FEMA as to whether a proposed project complies with the minimum NFIP floodplain management criteria. A CLOMR does not amend or revise effective FIRMs, Flood Boundary and Floodway Maps, or Flood Insurance Studies.

CRS – See **Community Rating System**

DFE – See **Design Flood Elevation**

Design Flood Elevation (DFE) -The DFE is the locally adopted regulatory flood elevation, including wave effects, and is measured relative to the National Geodetic Vertical Datum, North American Vertical Datum, or other datum. If a community regulates to minimum NFIP requirements, the DFE is identical to the BFE. If a community chooses to exceed minimum NFIP requirements, the DFE exceeds the BFE for floodplain management purposes.

Elevated Building - A non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, columns (posts and piers), shear walls, or breakaway walls.

Elevation Certificate - A certified statement that verifies a building's elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and to support a request for a Letter of Map Amendment (LOMA) or Letter of Map Revision based on fill (LOMR-F). An Elevation Certificate is required in order to properly rate post-FIRM buildings, which are buildings constructed after publication of the FIRM, located in flood insurance Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. The Elevation Certificate is not required for pre-FIRM buildings unless the building is being rated under the optional post-FIRM flood insurance rules.

Erosion - Under the NFIP, the process of gradual wearing away of land masses.

Executive Order 11988 (Floodplain Management) - Issued by President Carter in 1977, it requires that no federally assisted activities be conducted in or have the potential to affect identified SFHAs, unless there is no practicable alternative.

Extratropical Storm - A storm system that is larger than usual, with established fronts, a cold core, and a shape resembling a comma instead of the roughly circular shape of tropical cyclones.

Federal Emergency Management Agency (FEMA) - Agency created in 1979 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response, and recovery.

Federal Insurance and Mitigation Administration (FIMA) - A component of FEMA that manages the NFIP and other programs designed to reduce future losses from natural disasters to homes, businesses, schools, public buildings, and critical facilities.

FEMA – See **Federal Emergency Management Agency**

FHBM –See **Flood Hazard Boundary Map**

FIMA – See Federal Insurance and Mitigation Administration

FIRM – See **Flood Insurance Rate Map**

FIS – See **Flood Insurance Study**

Five-Hundred-Year Flood (500-Year Flood) - Flood with a 0.2-percent chance of being equaled or exceeded in any year. Areas subject to the 500-year flood have a moderate to low risk of flooding. Mandatory insurance purchase requirements do not apply, but coverage is available in participating communities.

Flood or Flooding - General and temporary condition of partial or complete inundation of normally dry land areas from: 1) the overflow of inland or tidal waters, or 2) the unusual and rapid accumulation or runoff of surface waters from any source.

Flood Hazard Boundary Map (FHBM) - An older type of flood map produced by FEMA, based on approximate data. These have been superseded by Flood Insurance Rate Maps (FIRMs). Most communities now have FIRMs.

Flood Insurance Rate Map (FIRM) - Under the NFIP, an official map of a community, on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. (Note: The latest FIRM issued for a community is referred to as the "Effective FIRM" for that community.) The FIRM may be in either digital or paper format.

Flood Insurance Study (FIS) - Under the NFIP, an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation, and determination of mudslide (i.e., mudflow) and flood-related erosion hazards in a community or

communities. (Note: The NFIP regulations refer to FISs as "flood elevation studies.")

Floodplain - Any land area susceptible to being inundated by flood waters from any source.

Floodplain Management - The operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.

Floodplain Administrator - The individual appointed to administer and enforce the floodplain management regulations.

Floodplain Management Regulations - Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances, and other applications of police power that control development in floodprone areas. This term describes Federal, State, or local regulations in any combination thereof, which provide standards for preventing and reducing flood loss and damage.

Floodproofing Certificate - Documentation of certification by a registered professional engineer or architect that the design and methods of construction of a nonresidential building are in accordance with accepted practices for meeting the floodproofing requirements in a community's floodplain management ordinance. This documentation is required for both floodplain management requirements and insurance rating purposes.

Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 1 foot. The floodway is delineated within Zone AE on the FIRM. Communities must regulate development in floodways to ensure that there are no increases in upstream flood elevations. The floodway is the area of fastest flow velocity during a flood.

Floodway Fringe - Area of the floodplain on either side of the regulatory floodway where encroachment may be permitted without additional hydraulic and/or hydrologic analysis.

Freeboard - Under the NFIP, a factor of safety usually expressed in feet above a flood level for the purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

Highest Adjacent Grade - Highest natural elevation of the ground surface, prior to construction, next to the proposed walls of a building.

Hurricane - Tropical cyclone, formed in the atmosphere over warm ocean areas, in which sustained wind speeds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricane circulation is counterclockwise in the northern hemisphere and clockwise in the southern hemisphere.

Hydrologic and Hydraulic Engineering Analysis - Analysis performed by a professional engineer, registered in the State of Louisiana, in accordance with standard engineering practices as accepted by FEMA, used to determine flood elevations and/or floodway boundaries.

ICC – See **Increased Cost of Compliance**

Increased Cost of Compliance (ICC) - The cost to repair a substantially damaged building that exceeds the minimal repair cost and that is required to bring a substantially damaged building into compliance with the local flood damage prevention ordinance. Acceptable mitigation measures are elevation, relocation, demolition, or any combination thereof. All renewal and new business policies with effective dates on or after June 1, 1997, include ICC coverage.

Inundation - The total water level that occurs on normally dry ground as a result of a storm tide (expressed in terms of height above ground level).

Letter of Map Change (LOMC) - An official FEMA determination, by letter, to amend or revise effective FIRMs, Flood Boundary and Floodway Maps, and FISs. LOMCs are broken down into the following categories:

Letter of Map Amendment (LOMA) - A revision based on technical data showing that a property was incorrectly included in a designated SFHA. A LOMA amends the current effective FIRM and establishes that a specific property is not located in an SFHA. The LOMA is issued by letter and should be kept on file in the community's records.

Letter of Map Revision (LOMR) - A revision to the FIRM based on technical data that, usually due to manmade changes, shows changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. One common type of LOMR, a LOMR-F, is a determination concerning whether a structure or parcel has been elevated by fill above the BFE and is, therefore, excluded from the SFHA. The LOMR is generally accompanied by an annotated copy of the affected portions of the FIRM or FIS report.

LiMWA – See **Limit of Moderate Wave Action**

Limit of Moderate Wave Action (LiMWA) - Line shown on FIRMs to indicate the inland limit of the 1.5-foot breaking wave height during the base flood. FEMA requires new flood studies in coastal areas to delineate the LiMWA.

LOMC –See **Letter of Map Change**

Lowest Adjacent Grade - Elevation of the sidewalk, patio, deck support, or basement entryway immediately next to the structure and after the completion of construction. It does not include earth that is emplaced for aesthetic or landscape reasons around a foundation wall. It does include natural ground or properly compacted fill that comprises a component of a building's foundation system.

Lowest Floor - Under the NFIP, the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Sec. 60.3.

Map Panel Number - The four-digit number followed by a letter suffix assigned by FEMA on a flood map. The first four digits represent the map panel, and the letter suffix represents the number of times the map panel has been revised.

Map Amendment - A change to an effective FIRM that results in the exclusion from the SFHA of an individual structure or a legally described parcel of land that has been inadvertently included in the SFHA (i.e., no alterations of topography have occurred since the date of the first NFIP map that showed the structure or parcel to be within the SFHA). See Letter of Map Amendment.

Market Value - Building value, excluding the land (as agreed between a willing buyer and seller), as established by what the local real estate market will bear. Market value can be established by independent certified appraisal, replacement cost depreciated by age of building (Actual Cash Value), or adjusted assessed values.

Mean Sea Level - The average height of the sea for all stages of the tide. It is used as a reference for establishing various elevations within the floodplain. For purposes of this ordinance, the term is synonymous with National Geodetic Vertical Datum (NGVD).

Mitigation - Any action taken to reduce or permanently eliminate the long-term risk to life and property from natural and manmade hazards.

National Flood Insurance Program (NFIP) - Federal program that makes flood insurance available to owners of property in participating communities nationwide through the cooperative efforts of the Federal Government and the private insurance industry.

National Geodetic Vertical Datum of 1929 (NGVD) - As corrected in 1929, a vertical control used as a reference for establishing varying elevations within the floodplain based on 26 tidal gages.

North American Vertical Datum of 1988 (NAVD 88)- As corrected in 1988, a vertical control used as a reference for establishing varying elevations within the floodplain based on satellite data readings.

NAVD – See **North American Vertical Datum**

NGVD – See **National Geodetic Vertical Datum**

One-Hundred Year Flood (100-Year Flood) - Flood with a 1-percent chance of being equaled or exceeded in any given year. Any flood zone that begins with the letter A or V is subject to the 100-year flood and areas within the ABFE limits. Over the life of a 30-year loan, there is a 26-percent chance of experiencing such a flood with the SFHA. Mandatory insurance purchase requirements and floodplain management standards apply.

Overwash - Occurs when low-lying coastal lands are overtopped and eroded by storm surge and waves such that the eroded sediments are carried landward by floodwater, burying uplands, roads, and at-grade structures.

Participating Community - Any community that voluntarily elects to participate in the NFIP by adopting and enforcing floodplain management regulations that are consistent with the standards of the NFIP.

Post-FIRM Construction - Construction or substantial improvement that started after December 31, 1974.

Pre-FIRM building - A building for which construction or Substantial Improvement occurred on or before December 31, 1974, or before the effective date of an initial FIRM, whichever is later.

Post-Tropical Storm - A type of extratropical storm that was once tropical.

Regular Program - The phase of the community's participation in the NFIP where more comprehensive floodplain management requirements are imposed and higher amounts of insurance are available based upon risk zones and elevations determined in an FIS.

Regulatory Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 1 foot. Communities must regulate development in the floodway to ensure that there are no increases in upstream flood elevations. The floodway is the area of fastest flow velocity during a flood.

Repair - Reconstruction or renewal of any part of an existing building.

Repetitive Loss - Under the NFIP, repetitive loss pertains to any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period since 1978. A repetitive loss property may or may not be currently insured by the

NFIP. There are over 122,000 repetitive loss properties nationwide.

Resilience - The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions.

Saffir-Simpson Hurricane Wind Scale - Measures a hurricane's intensity on a 1–5 scale to give an estimate of the potential property damage and flooding expected. Wind speed is the determining factor in the scale. A Category 1 hurricane is the weakest, with winds from 74–95 mph (maximum, 1-minute sustained speeds), and a Category 5 hurricane is the strongest, with winds over 155 mph.

Scour - The localized loss of soil, often around a foundation element due to flood flow obstruction or interaction.

Seawall - Solid barricade built at the water's edge to protect the shore and prevent inland flooding.

Section 1316 - Section of the National Flood Insurance Act of 1968, as amended, which states that no new flood insurance coverage shall be provided for any property that the Administrator finds has been declared by a duly constituted State or local zoning authority or other authorized public body to be in violation of State or local laws, regulations, or ordinances that are intended to discourage or otherwise restrict land development or occupancy in floodprone areas.

SFHA –See **Special Flood Hazard Area Shearwall -** Load bearing wall or non-load-bearing wall that transfers in-plane lateral forces from lateral loads acting on a structure to its foundation.

Special Flood Hazard Area (SFHA) - Under the NFIP, the land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. The area may be designated as Zone A on the Flood Hazard Boundary Map. After detailed ratemaking has been completed in preparation for publication of the FIRM, Zone A usually is refined into Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, or V1-30, VE, or V. Areas within an SFHA are subject to the mandatory insurance purchase requirement and floodplain management regulations.

Start of Construction - For other than new construction or substantial improvements under the CBRA P. L. 97-348, includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, or improvement was within 180 days of the permit date. The actual start means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of slabs or footings, installation of piles, construction of columns, or any work beyond the stage of excavation or placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, foundations, or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main building. For substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Storm Surge - An abnormal rise of water over and above the astronomical tide caused by a severe storm such as a tropical cyclone or nor'easter. Storm surge is one of the main causes of coastal inundation. Large waves also raise coastal water levels and ride on top of the storm surge to cause extreme damage.

Storm Tide - The combined effect of storm surge, existing astronomical tide conditions, and breaking wave setup.

Structure - All walled and roofed buildings, including gas or liquid storage tanks and manufactured homes that are principally above ground.

Subrogation - Action brought by FEMA when flood damages have occurred, flood insurance has been paid, and all or part of the damage can be attributed to acts or omissions by a community or other third party.

Substantial Damage -Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. The term includes Repetitive Loss buildings (see definition). Increased Cost of Compliance (ICC) coverage does not apply to substantial improvements unless a structure is substantially damaged due to flooding.

For the purposes of this definition, "repair" is considered to occur when the first repair or reconstruction of any wall, ceiling, floor, or other structural part of the building commences. The term does not apply to:

1. Any project for improvement of a building required to comply with existing health, sanitary, or safety code specifications that have been identified by the Building Official and that are solely necessary to ensure safe living conditions;

2. Any alteration of an historic structure provided that the alteration will not preclude the structure's continued designation as an historic structure; and,

Substantial Improvement - Under the NFIP, 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. However, the term does not include either: Any project for improvement of a structure to correct existing violations of State or local health, sanitary, or safety code specifications that have been identified by the local code enforcement official and that are the minimum necessary to ensure safe living conditions, or any alteration of a "historic structure," provided that the alteration does not preclude the structure's continued designation as a "historic structure."

Sustained Wind Speed - Wind speed determined by averaging observed values over a 1-minute period used for the Saffir-Simpson Wind Scale.

Tropical cyclone - A storm with a concentric circulation, tropical convection near the center, and a core of warm air near the center.

Tropical Wave - A roughly linear-shaped feature of lower pressure, clouds, and showers embedded within the flow of the tropical trade winds moving from east to west.

Undermining - Process whereby the vertical component of erosion or scour exceeds the depth of the base of a building foundation or the level below which the bearing strength of the foundation is compromised.

Uplift: - Hydrostatic pressure caused by water under a building. It can be strong enough to lift a building off its foundation, especially when the building is not properly anchored to its foundation.

Variance - A grant of relief from the requirements of this ordinance, which permits construction in a manner otherwise prohibited by this ordinance where specific enforcement would result in unnecessary hardship.

Water Surface Elevation - Height, in relation to the NGVD of 1929, (or other datum, where specified) of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

Wind shear - The change in wind speed and/or wind direction with increasing height in the atmosphere. Excessive wind shear disrupts tropical cyclone formation and can also destroy well-developed hurricanes.

Zone A - Under the NFIP, the area subject to inundation by the 100-year flood, where wave action does not occur or where waves are less than 3 feet high. Areas within Zone A are subject to the mandatory insurance purchase requirement and floodplain management regulations.

Zone AE and A1-A30 and - A Special Flood Hazard Area (SFHA) subject to inundation by the 100-year flood, for which base flood elevations are determined. Zone AE is used on new and revised maps in place of Zones A1–A30. See also Special Flood Hazard Area

Zone V - Under the NFIP, Special Flood Hazard Area (SFHA) 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. This area is subject to inundation by the base flood, where wave heights or wave run-up depths are 3 feet or higher. Because detailed coastal analyses have not been performed, no BFEs or flood depths are shown. Areas within Zone V are subject to the mandatory insurance purchase requirement and floodplain management regulations.

Zone VE and Zone V1 – V30 – Portion of the SFHA subject to inundation by the 100-year flood or coastal floods with velocity hazards (wave action). BFEs derived from detailed hydraulic coastal analyses are shown within these zones. Areas within Zone A are subject to the mandatory insurance purchase requirement and floodplain management regulations. (Zone VE is used on new and revised maps in place of Zones V1–V30.)

Zone X - Under the NFIP, areas where the flood hazard is lower than that in the SFHAs. This zone identifies minimal risk areas outside the 1-percent and .2-percent-annual-chance floodplains. No BFEs or base flood depths are shown within these zones. Mandatory insurance purchase requirements do not apply, but coverage is available in participating communities.

Participants

City of Lake Charles
Lori Marinovich
P.O. Box 900
Lake Charles, LA 70602
lmarinovich@cityoflc.us
337-491-1429

City of New Iberia
Jane Braud
457 East Main St, Suite 300
New Iberia, LA 70560
jbraud@cityofnewiberia.com
337-369-2330

City of New Orleans
C. Elliott Perkins
Historic District Landmarks Commission
1300 Perdido Street, 7th Floor
New Orleans, LA 70112
ceperkins@nola.gov
504-658-7040

City of Franklin
Arlana Shields
P.O. Box 567
Franklin, LA 70538
ashields@franklin-la.com
337-828-6345

City of Covington
Nahketah Bagby
P.O. Box 778
Covington, LA 70434
nbagby@covla.com
985-867-1214

City of Slidell
Eric Lundin
250 Bouscaren St, Suite 203
Slidell, LA 70458
elundin@cityofslidell.org
985-646-4321

Louisette L. Kidd
City of Mandeville
3101 East Causeway Approach
Mandeville, LA 70448
lkidd@cityofmandeville.com
985-624-3103

Consulting Team

URS Corporation

URS-Baton Rouge, Louisiana
Cultural Resources Group
7389 Florida Boulevard, Suite 300
Baton Rouge, LA 70806-4657

URS-Germantown, Maryland
Cultural Resources Management Group
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876

URS-Washington, DC
URS Planning Architecture Engineering
2020 K Street NW, Suite 300
Washington, DC 20006

Acknowledgements

URS expresses its sincere appreciation to the many institutions and individuals who contributed to this publication. The gathering of data and compilation of historical research materials from GO Zone parishes required the cooperation and efforts of many organizations and individuals. In Baton Rouge, the staff of the Louisiana Division of Historic Preservation (DHP) is acknowledged for its leadership and guidance. In particular, Nicole Hobson-Morris, Executive Director of the DHP, provided aid in many aspects of this project, including conceptual development, programming, planning, and public outreach. She also made crucial historical data and resources available to the consulting team. In addition to Nicole, Mike Varnado, Alison Saunders, Jessica Richardson, Cynthia Steward, Leon Steele, and Ray Scriber provided data and offered comments. With their many years of dedicated service to Louisiana, the management and staff at the DHP hold an unequaled institutional memory of the architectural resources in our state and how they have evolved over time. This document would not have been made possible without the sponsorship, guidance, and close involvement of the DHP and its dedicated staff.

We extend our thanks to the following communities and their participants who offered tours of their historic districts, and provided us insight into both historic and contemporary building elevation practices and challenges. This document was greatly enhanced by the contributions of the following participants: Louisette Kidd, City of Mandeville; Eric Lundin, City of Slidell; Lori Marinovich, City of Lake Charles; Nahketah Bagby, City of Covington; Jan Braud, City of New Iberia; C. Elliott Perkins, City of New Orleans; Brad Case, City of New Orleans; and, Arlana Shields, City of Franklin.
We would also like to convey special thanks to Michelle Kimball of the Preservation Resource Center of New Orleans, whose insights are greatly appreciated. We especially would like to thank the Lowry Family, owners of the Francois Cousin House in St. Tammany Parish, for making their family's house and grounds available to us. Charlotte Lowry Collins shared her story of the house's complex berm elevation, many construction photographs, and insights that would not have been available otherwise. We appreciate her contributions and those of her family.

Finally, this work would not have been made possible without two previous publications of high merit. Mark Edwards' *Elevation Design Guidelines for Historic Homes in the Mississippi Gulf Coast Region* was produced by the URS Cultural Resources Management Group, Germantown, Maryland in 2008 for the Mississippi Development Authority. We would like to thank Mr. Edwards for sharing his experience regarding the production of the Mississippi "sister" publication as well as for his role in the development of this publication for Louisiana. The second predecessor document, to which this publication is indebted, in many aspects, is *The History of Building Elevation in New Orleans*, produced by URS Germantown, Maryland and published by the Federal Emergency Management Agency (FEMA) in 2012. We are grateful to John Ketchum, Katherine Zeringue, Jerame Cramer, and Gail Lazarus, historic preservation professionals with FEMA, for sponsoring and pioneering the research on the topic of building elevation in Louisiana.

Richard Silverman (M.A., M.Arch.) of URS Baton Rouge, directed the EDG program and was the principal investigator in charge of community outreach, team coordination and the report's preparation. Others from URS that assisted Richard and contributed to this effort included:

URS Baton Rouge, Louisiana

Hil Dafoe
Martin Handly
Patricia Hutchins
Rob Lackowicz
Becky McKnight
Susan Naquin
Lauren Poche
Shane Poche
Steven Schuldt
Jason Sooter
Thomas Ryan
Haoyu Zhao
Kristen Kennedy
Donald Pitre
Michael Duryea
Brandon Ross

URS Germantown, Maryland

Mark Edwards
Lee-Ann Lyons
Michael Verderosa

URS Washington, DC

Gerald Briggs
Erin Holdenried
Rod Mercer

These guidelines were prepared by URS Group, Inc. for the Louisiana Division of Historic Preservation to provide design guidance to property owners located within the Gulf Opportunity Zone (GO-Zone) Parishes contemplating elevation of a historic property located within a historic district or individually listed in the National Register of Historic Places or new construction within a historic district. This document has been funded by the State Office of Community Development Disaster Recovery Unit to establish mitigation measures to address the potential adverse effect of the Road Home Program on historic properties, in compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended).

This public document is published at a total cost of $135,080.00. This document is available in digital format only. Zero copies were printed. This document was published by URS Group, Inc., 7389 Florida Boulevard, Suite 300, Baton Rouge, LA 70806 to provide education and information to the citizens and leaders of Louisiana under the authority of LA R.S. 25:802(22)

LOUISIANA
OFFICE OF CULTURAL DEVELOPMENT

DIVISION OF HISTORIC PRESERVATION
DEVELOPING OUR CULTURAL ASSETS

Elevation Design Guidelines

For Historic Buildings in the Louisiana GO Zone

URS