



HURRICANE ISAAC

IN LOUISIANA

2 Regulations, Codes, and Standards

A combination of local floodplain management regulations and building codes determine the requirements that govern construction in flood-prone regions.

The floodplain management regulations of the National Flood Insurance Program (NFIP) and the flood provisions of the family of codes developed and maintained by the International Code Council, Inc. (ICC) are related. Since 1998, FEMA has participated in the code development process for the International Code Series (I-Codes). Every 3 years, the family of codes is modified through a formal, public consensus process.

THE I-CODES AND THE NFIP

FEMA prepared excerpts of the flood provisions of the 2009 and 2012 I-Codes, a checklist that compares the requirements of the NFIP to the flood provisions of the 2009 edition of the I-Codes and ASCE 24-05 (a standard referenced by the I-Codes), and *Highlights of ASCE 24* (FEMA 2010c). These resources are accessible online at <http://www.fema.gov/building-science/building-code-resources>.

The flood provisions in the 2009 and 2012 I-Codes are consistent with NFIP requirements for buildings and structures. Consequently, communities can rely on the I-Codes to fulfill some of the requirements they must meet to participate in the NFIP.

Unless constrained by State requirements, communities that enforce building codes with NFIP-consistent provisions have two primary tools to regulate development in flood hazard areas: (1) building codes that govern the design and construction of buildings and structures, and (2) either Appendix G of the International Building Code (IBC) or local floodplain management regulations. These tools are designed to work together to result in buildings, structures, and all other development, that are resistant to flood loads and flood damage.

This chapter begins with an overview of the NFIP and a summary of the program's minimum requirements for buildings and structures in Special Flood Hazard Areas (SFHAs). It then offers an overview of the Louisiana State Uniform Construction Code Council, highlights of the statutory provisions that are, in effect, State amendments to the I-Codes, and notes on local enforcement of the code and floodplain management regulations. The flood provisions of the Louisiana State Uniform Construction Code (LSUCC) are summarized, along with requirements for manufactured home installation.

The chapter concludes with a section that summarizes community-specific elements of floodplain management regulations and building codes for Plaquemine Parish and the Cities of Mandeville and Slidell, which were among the jurisdictions visited by the FEMA MAT.

2.1 National Flood Insurance Program

The authorizing legislation for the NFIP is the National Flood Insurance Act of 1968, as amended (42 U.S. Code 4001 et seq.). In that act, the U.S. Congress expressly found that “a program of flood insurance can promote the public interest by encouraging sound land use by minimizing exposure of property to flood losses.”

The NFIP is based on the premise that the Federal government will make flood insurance available to communities that adopt and enforce floodplain management requirements that meet or exceed the minimum NFIP requirements.

The regulations of the NFIP are the basis for local floodplain management ordinances adopted to satisfy the requirements for participation in the NFIP. In addition, the NFIP minimum requirements are the basis for the flood-resistant design and construction requirements in model building codes and standards. When decisions result in development within flood hazard areas, application of NFIP criteria is intended to minimize exposure to floods and flood-related damage.

The most convincing evidence of the effectiveness of the NFIP minimum requirements is found in flood insurance claim payment statistics. Buildings that pre-date the NFIP requirements were generally not constructed to resist flood damage, while buildings that post-date the NFIP are designed to resist flood damage. The NFIP aggregate loss data indicate that buildings that meet the minimum requirements experience 80 percent less flood damage than buildings that pre-date the NFIP. Ample evidence suggests that buildings designed to higher standards that exceed the minimum requirements are even less likely to sustain damage.

At the Federal level, the NFIP is managed by FEMA and has three main elements:

- + Hazard identification and mapping, in which engineering studies are conducted and flood maps and studies are prepared to delineate areas that are estimated to be subject to flooding under certain conditions.
- + Floodplain management criteria, which establish the minimum requirements for communities to adopt and apply to development within mapped flood hazard areas; the expectation is that communities will recognize hazards throughout their entire land development process.
- + Flood insurance, which provides some financial protection for property owners to cover flood-related damage to buildings and contents.

Performance requirements of the NFIP for development in SFHAs are set forth in Federal regulations at Title 44 of the Code of Federal Regulations (CFR) Parts 59 and 60. The requirements apply to all types of development proposed in SFHAs. The NFIP broadly defines the term “development,” and the requirements apply to new development as well as existing buildings and structures in SFHAs.

The NFIP provisions guide development to lower-risk areas by requiring compliance with performance measures to minimize exposure of new buildings and buildings that undergo major renovation or expansion (called “Substantial Improvement” or repair of “Substantial Damage”). Taken together, administration of NFIP-consistent requirements helps achieve the long-term objective of building disaster-resistant communities.

2.1.1 General Performance Requirements for Buildings

The NFIP’s broad performance requirements for new buildings and the Substantial Improvement or repair of Substantial Damage of existing buildings in SFHAs specify that:

HIGHER STANDARDS

FEMA encourages States and communities to adopt “higher standards” that provide a greater degree of protection than the NFIP minimum requirements. The most common higher standard that affects buildings is freeboard, a requirement to elevate buildings above the BFE. However, some States do not permit local amendments to building codes, which prevent communities from requiring freeboard and other higher standards.

DEVELOPMENT

Development means any manmade change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials (44 CFR 59.1).

SUBSTANTIAL DAMAGE AND SUBSTANTIAL IMPROVEMENT

Substantial Damage is damage of any origin for which the cost to restore a damaged building to its pre-damage condition equals or exceeds 50 percent of the building’s market value before the damage occurred.

Substantial Improvement is any reconstruction, rehabilitation, addition, or other improvement of a building, the cost of which equals or exceeds 50 percent of the building’s pre-improvement market value. When repairs and improvements are made simultaneously, all costs are totaled and used in the determination.

- + Buildings shall be designed and adequately anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
- + Building materials shall be resistant to flood damage.
- + Buildings shall be constructed by methods and practices that minimize flood damage.
- + Buildings shall be constructed with electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components.

Beyond the general requirements, specific NFIP requirements for buildings are functions of the flood zone and flood characteristics that affect specific locations. Requirements for SFHAs that are designated Zone A (including AE, A, A1–30, AO, and AH) are summarized in Section 2.1.2, and requirements for coastal high hazard areas that are designated Zone V (including VE and V1–30) are summarized in Section 2.1.3.

2.1.2 Minimum Requirements for Buildings in Zone A

In addition to the general requirements summarized in Section 2.1.1, the NFIP minimum requirements for buildings and structures located in Zone A specify the level of protection (elevation) and limitations on enclosures below elevated buildings, including crawlspaces.

Building Elevation and Foundations (Zone A)

In Zone A, where FEMA designates BFEs, the NFIP requirements specify that the lowest floors of new and substantially improved buildings, including basements, are required to be elevated to or above the BFE. There are no limitations on the type of foundation used to elevate buildings. Buildings may be elevated on perimeter walls (crawlspaces), filled stemwalls, columns, piers, pilings, or slabs on earthen fill. Nonresidential buildings may be elevated or protected by dry floodproofing that protects to or above the BFE.

Some SFHAs, referred to as “unnumbered A zones,” are shown without BFEs. In these areas, BFE data from other sources are to be used if available. If no data are available, the BFE may be estimated using established methods, and communities are required to ensure that buildings are constructed using methods and practices that minimize flood damage. Once the elevation or height of the lowest floor above grade is established, the remaining requirements for Zone A apply.

LOWEST FLOOR

Lowest Floor means 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 Section 60.3 (44 CFR 59.1).

The Zone AO designation is used where flooding is characterized by shallow depths (averaging 1 to 3 feet) and/or unpredictable flow paths. In these areas, lowest floors, including basements, are required to be at or above the highest grade adjacent to the building plus the depth number (in feet) shown on the Flood Insurance Rate Map (FIRM). For example, if the depth number is 3 feet, the top of the lowest floor must be at least 3 feet above the highest grade adjacent to the building. If no depth is shown, the minimum required height above the highest adjacent grade is 2 feet. Once the elevation or height of the lowest floor above grade is established, the remaining requirements for Zone A apply.

Enclosures Below Elevated Buildings (Zone A)

The NFIP requirements specify that areas below the lowest floors may be enclosed; however, the use of enclosures is restricted to vehicle parking, building access, or storage.

The walls of enclosures are required to have flood openings designed to allow the automatic entry and exit of floodwater so that interior and exterior hydrostatic pressures can equalize during flooding. Designs for openings must meet either a prescriptive requirement (1 square inch of net open area for every square foot of enclosed area) or a performance expectation (certified by a registered design professional). The following installation specifications apply to all flood openings: (1) a minimum of two openings for each enclosure, (2) the bottom of openings no higher than 1 foot above grade (exterior grade or interior floor/grade), and (3) screens, louvers, valves, or other coverings or devices, if any, permit the automatic entry and exit of floodwaters. See NFIP Technical Bulletin 1, *Openings in Foundation Walls and Walls of Enclosures* (FEMA 2008e).

2.1.3 Minimum Requirements for Buildings in Zone V

In addition to the general requirements summarized in Section 2.1.1, the NFIP minimum requirements for buildings and structures in Zone V specify the level of protection (elevation), type of foundation, and limitations on obstructions and enclosures below elevated buildings. Because of the greater hazard posed by breaking waves, structural designs and methods of construction are required to be developed, reviewed, and certified by a registered design professional as capable of resisting the effects of wind and flood loads acting simultaneously.

Building Elevation and Foundations (Zone V)

In Zone V, the NFIP requirements specify that the bottom of the lowest horizontal structural member (excluding vertical foundation members) of the lowest floors of new and substantially improved buildings are required to be at or above the BFE. Open foundations are required, including pilings and columns. The use of fill for structural support is not permitted. Concrete slabs, including patios, walkways, pool decks, and slabs used as the floor of enclosures, are required to be structurally independent or, if attached, building foundations are required to be designed to account for the added loads and effects of wave action.

Obstructions and Enclosures Below Elevated Buildings (Zone V)

The NFIP requirements specify that the area under elevated buildings must be free of obstructions that could interfere with the free passage of floodwater and debris underneath the buildings. The NFIP requirements specify that areas below the lowest floors may be enclosed; however, the use of enclosures is restricted to vehicle parking, building access, or storage.

Obstructions to be avoided—or minimized and constructed to meet the performance requirement—include stairs and ramps, decks and patios, equipment attached to foundation elements, foundation bracing, grade beams that extend above grade, shear walls, and slabs. Other site development that may create obstructions includes accessory structures, erosion control structures, fences and privacy walls, fill used for landscaping, septic systems, and swimming pools and spas. See NFIP Technical Bulletin 5, *Free-of-Obstruction Requirements* (FEMA 2008c).

Walls of enclosures, if any, are required to be non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and base flood or lesser conditions without causing structural collapse, displacement, or damage to the elevated building or supporting foundation. When walls collapse under specific lateral loads, floodwater can flow through column or pile foundations without obstruction. See NFIP Technical Bulletin 9, *Design and Construction Guidance for Breakaway Walls Below Elevated Coastal Buildings* (FEMA 2008a).

The NFIP regulations specify a design safe-loading resistance for breakaway walls of not less than 10 pounds per square foot and not more than 20 pounds per square foot (in almost all cases, water loads will significantly exceed the upper limit). Breakaway walls that do not meet those loading requirements may be used if a registered professional engineer or architect certifies that the walls will collapse under a water load less than that which would occur during the base flood and that the elevated portion of the building and supporting foundation system will not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components.

2.1.4 NFIP Community Rating System

The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes community floodplain management activities that exceed NFIP requirements. The CRS provides discounts on flood insurance premiums in communities that elect to undertake activities that support three goals: reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.¹

Communities apply to the CRS and are assigned a class based on the activities they undertake. Classes range from 1 to 10, with 1 representing the most active communities with the most flood hazard-resistant practices that, therefore, receive the largest possible discount. NFIP flood insurance premium rates are discounted in increments of 5 percent; i.e., a Class 1 community receives a 45 percent premium discount, while a Class 9 community receives a 5 percent discount (a Class 10 community receives no discount). The CRS classes are based on 18 creditable activities organized under four categories: (1) public information, (2) mapping and regulations, (3) flood damage reduction, and (4) flood preparedness.

COMMUNITY RATING SYSTEM

As of February 2013, 42 communities in Louisiana participate in the CRS.

Nationwide, more than 21,500 communities participate in the NFIP, of which more than 1,200 also participate in the CRS.

¹ <http://www.fema.gov/national-flood-insurance-program/community-rating-system>.

2.2 Louisiana and Regulation of Construction

Shortly after Hurricane Katrina devastated much of coastal Louisiana, the State Legislature convened the 2005 First Extraordinary Session. A significant outcome was passage of Act 12, a statute to “provide for a state uniform construction code to govern new construction, reconstruction, additions to homes previously built to the International Residential Code, extensive alterations, and repair of buildings and other structures and the installation of mechanical devices and equipment therein.”²

The public policy of Louisiana is to maintain reasonable standards of construction in buildings and other structures in the State consistent with the public health, safety, and welfare of its citizens. The State uniform construction code establishes uniform performance standards that provide reasonable safeguards for health, safety, welfare, comfort, and security, balanced with affordability. The code encourages the use of construction materials of the greatest durability, lowers long-term costs, and provides greater storm resistance.

As of early 2013, the LSUCC is based on the 2009 I-Codes. The Louisiana code includes identified parts of the 2009 editions of the IBC, International Existing Building Code (IEBC), International Residential Code for One- and Two-Family Dwellings (IRC), International Mechanical Code (IMC), International Fuel Gas Code (IFGC), the Louisiana One- and Two-Family Supplement to the 2006 IMC, and 2010 the National Electrical Code (NEC). State amendments to the codes identify parts that are not adopted. The Louisiana Plumbing Code was developed by the State Department of Health and Hospitals.

2.2.1 Louisiana State Uniform Construction Code Council

Act 12 authorized the Louisiana State Uniform Construction Code Council, consisting of 19 members appointed by the Governor. Members have various professional backgrounds, including construction, engineering, architecture, insurance, and local government. The primary functions of the Council are:

- + To review and adopt the State uniform construction code, which is based on the I-Codes. The adoption process involves review committees that make recommendations and technical committees that evaluate the recommendations. The Council then acts on the recommendations and sends the resulting code and amendments to the legislature.

NEXT EDITION OF THE LSUCC

Codes based on the 2012 I-Codes are expected to be adopted after the spring 2013 legislative session and will be effective January 1, 2014.

- + To provide training and education to code officials. The Council establishes the requirements and process for the certification and continuing education of code enforcement officers, code enforcement inspectors, third-party providers, and building officials.
- + To accept all requests for amendments of the code (except the plumbing code). The Council determines whether amendments to the codes are justified. When the Council finds justification

² <http://lsuccc.dps.louisiana.gov/index.html>.

for an amendment, it may adopt it after finding that the modification improves public health, safety, and welfare.

2.2.2 Louisiana Statutory Provisions

Louisiana statutes impose some limitations and requirements that are, in effect, State amendments to the I-Codes. The more significant provisions are described here.

Powers of parish governing authorities (Revised Statute [R.S.] 33:1236). Parishes are permitted to pass zoning ordinances, subdivision regulations, building codes, health regulations, and other applications and extensions of the normal police power to provide standards and effective enforcement provisions for the prudent use and occupancy of flood-prone and mudslide areas. Specifically, parishes may use such authorities to qualify for the NFIP.

Public contracts, works and improvements (R.S. 38:84). Parishes and municipalities are authorized to comply with the Federal flood insurance act by adoption of ordinances, rules, and regulations, including zoning and land use regulations, as necessary. NFIP participation is mandated “before construction of any project for local flood protection, or any project for hurricane or storm damage reduction which involves or receives federal assistance.”

State buildings (R.S. 40:1722 and 40:1724). New construction, alteration, addition, or renovation of all State buildings must comply with the building code. Plans and specifications shall be approved by State authorities. The provision explicitly states that State-owned buildings shall not be subject to local permitting, review, or oversight, but shall be required to comply with the flood zone requirements of the NFIP.

LOUISIANA COMMUNITIES THAT PARTICIPATE IN THE NFIP

The Community Status Book for Louisiana, maintained by FEMA, indicates 312 communities participate in the NFIP, while 23 towns and villages that are identified as flood-prone elect not to participate (www.fema.gov/cis/LA.html, accessed February 26, 2013).

State Uniform Construction Code; “Act 12” enacted by the 2005 First Extraordinary Session (R.S. 40:1730.21–40).

- + Requires all municipalities and parishes to enforce only the construction codes provided in the statute (no local amendments).
- + Specifies enforcement of the code shall not conflict with R.S. 51:912.21 et seq. for the installation of manufactured homes.
- + Requires homeowners of “new residential construction” to provide lenders with copies of certificates of occupancy, and requires lenders to file such copies in parish conveyance records.
- + Requires parishes and municipalities to appoint certified building officials or, by agreement, contract with other governmental entities or private, certified third parties to issue permits and enforce the code.

- +Adopts codes from the I-Codes (IBC, IEBC, IRC, IMC, IFGC); specifically, the code “shall be updated prior to the second regular legislative session after the release of the latest edition of the appropriate code.”
- +Does not adopt Chapter 1 of any codes but permits adoption of IBC appendices.
- +For the IRC, limits enforcement “only for new construction, reconstruction, additions to homes previously built to the IRC, and extensive alterations” and defines those terms. Permits local enforcement of IRC Appendix J, Existing Buildings.
- +Explicitly states that the code shall not apply to the construction or improvement of specifically listed industrial facilities that are “inside the restricted access area.” The LSUCC and the fire code apply to any buildings, even if inside restricted access areas, if the buildings are accessible by the public.
- +Defines “farm structure” and “residential accessory structure,” and describes “private outdoor recreational structures” (such as hunting or fishing camps). The effect is that those structures are excluded from the code, except “for residential construction, the standards published by the Federal Emergency Management Agency for the National Flood Insurance Program shall apply.”

LSUCC AND WIND SPEEDS

The Louisiana State Uniform Construction Code Council adopted an emergency rule to require the use of wind speeds in the 2012 IRC for any permit issued on or after January 1, 2013. Since adoption in 2005 of the first State code based on the I-Codes, the statute has required use of the 2003 IRC wind speeds for dwellings.

2.2.3 Local Enforcement of the LSUCC and Floodplain Management Regulations

All local jurisdictions are required to enforce the LSUCC, and local amendments are not permitted.

The statutes are explicit that parishes and municipalities may adopt regulations to qualify for the NFIP, and the statute that establishes the building code explicitly references “standards” published by FEMA for the NFIP. Therefore, the Council does not oppose communities that adopt, as part of the local floodplain management regulations, “higher standards” that affect the design and construction of buildings in SFHAs, especially when those higher standards are adopted by communities that participate in the NFIP CRS.

To date, the Council is unaware of situations where conflicts between the code requirements and local regulations have created problems. Should a problem arise, it would first be addressed by the local appeals board. Decisions of local appeals boards may be brought before the Council.

HIGHER STANDARDS ADOPTED BY CRS COMMUNITIES

As of May 2012, 42 of Louisiana’s more than 300 NFIP communities also participate in the CRS, reducing NFIP flood insurance premiums by 5 to 20 percent. Communities receive credit for higher standards that affect buildings:

- 17 receive credit for freeboard
- 5 receive credit for foundation limits
- 7 receive credit for cumulative substantial improvement
- 2 receive credit for lower substantial improvement threshold
- 1 receives credit for enclosure limits

2.2.4 Post-Katrina Mitigation Grant to Build Code Enforcement Capacity

In 2005, very few local officials were certified as building professionals. With FEMA's encouragement, in early 2007, the Governor's Office of Homeland Security and Emergency Preparedness obtained a \$10.5 million Federal hazard mitigation grant to help build State and local capacity to enforce building codes. The program, jointly administered by the Department of Public Safety and the Louisiana State Uniform Construction Code Council, supports training, education, the purchase of hardware and software for code implementation, and direct salary for regional code offices that work across a number of parishes.³

2.2.5 Flood Provisions of the Louisiana State Uniform Construction Code

The LSUCC that was in effect when Hurricane Isaac came onshore is based on the 2009 edition of the I-Codes. The flood provisions of the LSUCC are the same as the flood provisions of the I-Codes. According to FEMA, the flood provisions of the 2009 and 2012 I-Codes are consistent with the NFIP requirements for buildings and structures, and communities can rely on the I-Codes to fulfill some of the requirements for participation in the NFIP.⁴

The IBC achieves consistency with NFIP regulations in large measure through reference to American Society of Civil Engineers (ASCE) 24, *Flood Resistant Design and Construction*, while the IRC's consistency is based on the code's prescriptive provisions.

LSUCC, Building Code. The scope of the building code includes all buildings and structures except one- and two-family homes (covered by the residential code) and other buildings that are explicitly identified in the statute as not subject to the code (see Section 2.2.2). The code does not include any administrative provisions (Chapter 1 of the IBC).

The LSUCC references ASCE 7, *Minimum Design Loads for Buildings and Other Structures*, for loads that must be accounted for in building design, including wind loads, snow loads, seismic loads, and flood loads. Flood loads include hydrostatic loads, hydrodynamic loads, wave loads, and debris impact loads.

The LSUCC includes flood provisions in several chapters, but most are in Section IBC 1612, Flood Loads, in Chapter 16, Structural Design, which references ASCE 24 for specific design and other requirements applicable in flood hazard areas:

- + Section 1612.1 – General requirement that buildings, including buildings that are undergoing Substantial Improvement or repair of Substantial Damage, be designed and constructed to resist the effects of flood hazards and flood loads.
- + Section 1612.2 – Definitions of terms used in the flood provisions of the code.
- + Section 1612.3 – Flood hazard areas established by the adoption of flood hazard maps, which are, at a minimum, maps prepared by FEMA; requirements that apply if design flood elevations (DFEs)/BFEs are not included in the adopted map; and requirements for determining impacts in riverine flood hazard areas if DFEs/BFEs are specified but floodways are not delineated.

³ <http://lsuccc.dps.louisiana.gov/grant.html>.

⁴ FEMA prepared excerpts of the flood provisions of the I-Codes: <http://www.fema.gov/building-science/building-code-resources>.

- +Section 1612.4 – Requirement to design and construct buildings and structures in flood hazard areas in accordance with ASCE 7 (loads) and ASCE 24 (all other requirements). Technical flood requirements are part of the IBC by reference to ASCE 24.
- +Section 1612.5 – Documentation that must be prepared and sealed by registered design professionals.

Chapter 34 of the LSUCC includes requirements that apply to work on existing buildings. The NFIP requires local jurisdictions to evaluate work proposed for existing buildings, especially buildings that predate a community's participation in the NFIP. If the work on an existing building is determined to constitute Substantial Improvement or repair of Substantial Damage, the building must be brought into compliance with the requirements for new buildings in flood hazard areas. Chapter 34 includes provisions applicable to existing buildings in flood hazard areas. Separate sections contain flood requirements for additions, alterations, repairs, change of occupancy, and improvement of historic structures.

ASCE 24, *Flood Resistant Design and Construction*. ASCE 24 addresses topics pertinent to designing buildings in all flood hazard areas, including floodways, coastal high hazard areas, and other high-risk flood hazard areas such as alluvial fans, flash flood areas, mudslide areas, erosion-prone areas, and high-velocity areas. It covers the following topics: (1) scope, definitions, structure classification, basic requirements applicable in all flood hazard areas; (2) requirements for Zone A areas not identified as high-risk areas; (3) requirements for high-risk areas; (4) requirements for Zone V and Coastal A Zones; (5) materials; (6) dry floodproofing and wet floodproofing; (7) utilities; (8) building access; and (9) miscellaneous construction.

In some respects, ASCE 24 and the codes that reference ASCE 24 exceed or are more specific than the NFIP minimum requirements. ASCE 24-05 requirements are summarized in *Highlights of ASCE 24, Flood Resistant Design and Construction* (FEMA 2010c).⁵

LSUCC, Residential Code. The residential code of the LSUCC is applicable to one- and two-family dwellings and most townhomes. The code does not include any administrative provisions (Chapter 1 of the IBC). Flood provisions are included throughout the code, but most are in Section R322, which is specific to flood hazards.

- +R322.1 includes requirements that apply in all flood hazard areas. The section includes the general performance statement that all buildings are designed, connected, and anchored to resist flotation, collapse, or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood. This section also establishes the DFE, defines the lowest floor, specifies protection of equipment, specifies requirements for water supply and sanitary sewage systems, requires use of flood damage-resistant materials, and requires submission of as-built elevation documentation.
- +R322.2 includes requirements for flood hazard areas other than coastal high hazard areas (Zone A). The section specifies that if the area subject to waves between 1½ and 3 feet is delineated, the area shall be designated a Coastal A Zone. Elevation requirements are specified, requiring the lowest floor to be at or above the DFE. If a Coastal A Zone is designated, the lowest floor

⁵ <http://www.fema.gov/library/viewRecord.do?id=3515>.

is required to be at least 1 foot above the BFE. Limitations on enclosures below the DFE are specified and, unless designed in accordance with the code requirements for foundations, masonry wall height limits are specified as a function of wall reinforcement and wall thickness.

- + R322.3 includes requirements for coastal high hazard areas (Zone V). The section requires buildings to be landward of the reach of mean high tide and specifies that alteration of sand dunes and mangrove stands are not permitted unless engineering analyses demonstrate no increase in the potential for flood damage. Elevation requirements specify that the bottom of the lowest horizontal structural member, as a function of orientation with respect to the direction of wave approach, must be at or above the DFE. Limitations on enclosures and walls below the DFE are also specified, and scour and erosion must be considered in the design of foundations. The section also specifies that documentation of the design and methods of construction are to be prepared and sealed by a registered design professional.

The LSUCC Residential Code and ASCE 24. The residential code requires homes proposed to be located in floodways (where floodwaters tend to be deeper and flow faster) to be designed in accordance with ASCE 24. This requirement is intended to account for flood loads associated with flood depth and velocity in the foundation design instead of relying on the prescriptive requirements of the residential code. In addition, ASCE 24 is permitted as an alternative to the requirements in coastal high hazard areas (Zone V).

LSUCC, Existing Building Code. The scope of the existing building code includes repairs, alterations, additions, changes in occupancy, and relocated buildings. The code does not include any administrative provisions (Chapter 1 of the IBC). For work covered by this code, if the work constitutes Substantial Improvement (including repair of Substantial Damage), the proposed work and the existing building are to be brought into compliance with the flood-resistant design requirements for new construction. Certain historic buildings in flood hazard areas are not required to be brought into compliance if they retain their historic designation.

2.2.6 Manufactured Homes

Requirements for installation of new and used manufactured homes are specified in R.S. 51:912.21 through 31. Manufactured home installers are required to be licensed, and educational requirements are specified. The installation standards require compliance with manufacturer's installation instructions (or the State standards, if the original instructions are not available). Specific requirements are listed for steel piers, manufactured load-bearing supports, and concrete products. The following provisions are pertinent for installation in flood hazard areas:

- + Compliance with "*Manufactured Home Installation in Flood Hazard Areas*, published by the Federal Emergency Management Agency"⁶ is explicitly required for installation in flood-prone areas.
- + Piers over 36 inches tall and corner supports over 24 inches in height are specified in detail, with concrete blocks used for the piers (without specifically saying they are permitted in SFHAs).
- + All piers over 52 inches in height must be designed by an architect or engineer.

⁶ Although not explicit in the statutory citation, this refers to FEMA 85, which was published in 1985 and superseded by FEMA P-85, *Protecting Manufactured Homes from Floods and Other Hazards* (2009c).

The statute for the LSUCC specifically states that the building code does not apply to the installation of manufactured homes (R.S. 33:4775).

2.3 Local Floodplain Management Regulations and Building Codes

The MAT reviewed the floodplain management regulations and local regulations that pertain to enforcement of the building code adopted by Plaquemines Parish and the Cities of Mandeville and Slidell. This section shows the more significant observations based on the reviews.

Each community has adopted floodplain management regulations that contain provisions required for participation in the NFIP, including provisions that apply to buildings and structures within the scope of the LSUCC. Because the statute explicitly states that the LSUCC does not apply to several types of buildings, the State deems it important that communities retain complete floodplain management regulations that include all requirements, including those for buildings and structures. Any conflicts between the building code and local regulations are resolved by the building official and local floodplain administrator, typically with the more restrictive provision prevailing (e.g., locally adopted freeboard). This is considered appropriate because of the explicit statutory provision that references the standards of the NFIP (R.S. 40:1730.30). Appeals of those decisions may be made to local appeals boards; subsequent appeals can be made to the Council. Table 2-1 summarizes NFIP and CRS data for communities that the MAT visited.

Table 2-1: NFIP/CRS Data for Communities Visited by the MAT

| Community Name (CID) | NFIP Entry Date | Current Effective FIRM | CRS Entry Date | Effective Date of Current CRS Class | Current CRS Class |
|---|-----------------|------------------------|----------------|-------------------------------------|-------------------|
| Jefferson Parish (225199) | 10/1/1971 | 3/23/1995 | 10/1/1992 | 5/1/2010 | 6 |
| LaPlace (part of St. John the Baptist Parish, 220164) | 7/16/1980 | 11/4/2010 | 10/1/1994 | 5/1/2010 | 8 |
| Madisonville (220201) | 12/2/1980 | 3/16/1983 | Not in CRS | Not in CRS | Not in CRS |
| Mandeville (220202) | 9/28/1979 | 5/16/2012 | 10/1/1992 | 10/1/2008 | 7 |
| Plaquemines Parish (220139) | 5/1/1985 | 9/30/1993 | Not in CRS | Not in CRS | Not in CRS |
| Slidell (220204) | 12/16/1980 | 4/21/1999 | 10/1/1992 | 10/1/2008 | 8 |

NFIP = National Flood Insurance Program

FIRM = Flood Insurance Rate Map

CRS = Community Rating System

SOURCE: NFIP COMMUNITY STATUS BOOK, [HTTP://WWW.FEMA.GOV/CIS/LA.HTML](http://www.fema.gov/cis/LA.html); COMMUNITY RATING SYSTEM (CRS) COMMUNITIES AND THEIR CLASSES, [HTTP://WWW.FEMA.GOV/LIBRARY/VIEWRECORD.DO?ID=3629](http://www.fema.gov/library/viewrecord.do?id=3629)

2.3.1 Jefferson Parish, LA

Jefferson Parish enforces both the LSUCC and floodplain management regulations (Zone A and Zone V) in the unincorporated areas of the parish. The floodplain management regulations contain the minimum requirements to conform to the NFIP requirements in 44 CFR Parts 59 and 60, but may have incomplete specifications for certain higher standards:

1) Floodplain Management Regulations:

- a. Require minimum NFIP elevation (see Table 2-2).
- b. Define but does not use “area of future conditions flood hazard” and “freeboard.”
- c. Define “cumulative Substantial Damage” to be flood-related damage on two separate occasions, rolling 10-year period, for which the cost of repairing equals, on average, 25 percent of the market value of the structure before damage occurred. Specific provision at Sec. 14-5.5 simply “recognizes and accepts” the definition. There is no change to the definition “Substantial Damage,” and thus no requirement to treat buildings that sustain “cumulative Substantial Damage” as Substantially Damaged.
- d. In definition of “lowest floor,” references the “nonelevation design requirement of Section 60.3” rather than of the parish’s regulation (i.e., enclosures).
- e. Use “first floor elevation” (not defined) where NFIP regulations use “lowest floor”; uses “livable areas.”
- f. Define “repetitive loss” but does not include such structures in the definition for “Substantial Damage”; does not clearly require repetitive loss structures to comply with any requirement other than elevation (see Sec. 14-5.1 General standards).
- g. Define “severe repetitive loss,” but uses the term only under the parish’s responsibility to review construction to ensure compliance with “first floor elevation” requirements; does not clearly require compliance (see Sec. 14-4.3(e) and Sec. 14-5.1 General standards).
- h. Define “residential structure” to exclude “trailers, hotels, motels, and motor lodges,” thus permitting buildings with those occupancies to be dry floodproofed.
- i. Require expansion of any existing use in coastal high hazard areas to be in accordance with the requirements.
- j. Limit placement of new manufactured homes in floodways and coastal high hazard areas to existing parks or subdivisions.
- k. Use but does not define “floodproofed” (it is described in certification requirements in Sec. 14-5.1(8)(c)).
- l. Adopt the “Preliminary Flood Insurance Study for Jefferson Parish” and the “Preliminary DFIRMs [digital Flood Insurance Rate Maps] for the East Bank of the Mississippi and ABFEs dated April 12, 2006, and revisions thereto,” in addition to the “previous March 23, 1995 Official Flood Maps.” Several other paragraphs describe maps; also see Sec. 14-5.6, Higher regulatory standards for specific designated areas.

2) Building Code:

- a. Adopts provisions for administration and enforcement of the LSUCC; specifically adopts the LSUCC, as amended (but identifies the 2006 editions of the I-Codes); and specifically adopts Part I-Administrative of the 2006 editions of the I-Codes.
- b. Does not adopt IBC Appendix G.
- c. Sec. 8-2-101.5.1 clearly establishes that every existing building must comply with the requirements for new construction “in its entirety” when repair, renovation, addition, or

other improvement equals or exceeds 50 percent of market value. Specifies that “When a building is substantially damaged due to any origin, other than flooding, the building or structure shall meet the technical codes and requirements of this chapter for new construction.” When damage is due to flooding, an exception requires “only the base flood elevation requirements for new construction shall be fully met.” Omits compliance with all other flood requirements (e.g., foundation type, utilities, flood damage-resistant materials) and appears to not require full compliance with the rest of the code. Sec. 8-2.101.5.1.1 provides that except for regulations pertaining to floodplain management, the code official shall determine the extent of compliance.

- d. Sec. 8-2-101.6 specifies that the code shall not be mandatory for existing buildings identified and classified as historic buildings, which may have the effect of superseding the requirements of IEBC.
- e. Does not retain the IBC inspections in flood hazard areas.
- f. Sec. 8-3-111.1.4, Slab foundation: (a) for residential use, requires the top of slab to be at or above BFE shown on the FIRM; (b) for nonresidential use, requires the same or, if below the BFE, permits floodproofing; and (c) in Zone V, requires construction to “conform to the FEMA regulations” and to be certified that “the structure is securely attached to adequately anchored pilings or columns.”
- g. Sec. 8-3-111.1.5, Piers or chain wall foundations, requires the “lowest portion of the structural members of the lowest floor (excluding the pilings, columns, or piers)” to be at or above the BFE established by FEMA and requires certification (without zone specified and without reference to same basis for establishing SFHAs as specified in the floodplain management regulations), that “the structure is securely attached to adequately anchored pilings, columns or piers.”
- h. Has parish-specific requirements related to soils, requirements for footings and foundation walls, and detailed specifications for piles.

Table 2-2: Jefferson Parish Elevation Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/Floodproofing: Zone A, Nonresidential | Bottom of LHSM of the Lowest Floor: Zone V |
|--|---|--|---|
| Floodplain Management Regulations | At or above the BFE | At or above the BFE | At or above the BFE |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: BFE + 1 foot for lowest floor/dry floodproofing (Categories II and III) IBC: BFE + 2 feet for lowest floor/dry floodproofing (Category IV) | IRC: • At/above BFE if LHSM is parallel • At/above BFE + 1 foot if LHSM is perpendicular IBC: same as IRC, except additional freeboard for Categories III and IV |

LHSM = lowest horizontal structural member
 BFE = base flood elevation
 LSUCC = Louisiana State Uniform Construction Code
 IRC = International Residential Code
 IBC = International Building Code

2.3.2 LaPlace, LA (unincorporated St. John the Baptist Parish)

LaPlace is part of the unincorporated St. John the Baptist Parish, and development in LaPlace is subject to the requirements of the parish. The parish enforces both the LSUCC and floodplain management regulations (Zone A and Zone V) in the unincorporated areas of the parish. The floodplain management regulations appear to conform to the NFIP requirements in 44 CFR Parts 59 and 60:

- 1) Floodplain Management Regulations:
 - a. Require minimum NFIP elevation (see Table 2-3).
 - b. Have nonstandard definition of “elevated building”; the term is not used.
 - c. Reference NFIP regulations rather than restating requirements (see definition “Lowest Floor,” appointment of Floodplain Administrator, and provisions for floodway encroachments).

- 2) Building Code: Adopts the Louisiana State Uniform Construction Code
 - a. Has no technical amendments to the building codes.
 - b. Does not adopt IBC Appendix G.
 - c. Adopts IBC provision that authorizes the code official to grant modifications if “special circumstance makes the strict letter of this article impractical and the modification does not lessen health, accessibility, life and fire safety requirements.”
 - d. Specifies content of applications and plans, including specific information for construction in flood hazard areas.
 - e. Includes “floodplain inspection” upon placement of the lowest floor and prior to further vertical construction, and submission of elevation documentation.
 - f. Requires businesses engaged in moving buildings to obtain a license from the parish engineer.

Table 2-3: St. John the Baptist Parish Elevation Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/ Floodproofing: Zone A, Nonresidential | Bottom of LHSM of the Lowest Floor: Zone V |
|--|---|--|--|
| Floodplain Management Regulations | At or above the BFE | At or above the BFE | At or above the BFE |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: BFE + 1 foot for lowest floor/dry floodproofing (Categories II and III) IBC: BFE + 2 feet for lowest floor/dry floodproofing (Category IV) | IRC: <ul style="list-style-type: none"> • At/above BFE if LHSM is parallel • At/above BFE + 1 foot if LHSM is perpendicular IBC: same as IRC, except additional freeboard for Categories III and IV |

LHSM = lowest horizontal structural member
 BFE = base flood elevation
 LSUCC = Louisiana State Uniform Construction Code
 IRC = International Residential Code
 IBC = International Building Code

2.3.3 Madisonville, LA

The Town of Madisonville enforces both the LSUCC and floodplain management regulations (Zone A and Zone V). The Town’s Web page makes available only the floodplain management regulations, and no other regulations. The floodplain management regulations do not fully conform to the NFIP requirements in 44 CFR Parts 59 and 60. The following are the most significant differences:

- 1) Floodplain Management Regulations:
 - a. Require minimum NFIP elevation (see Table 2-4).
 - b. Define but do not use “habitable floor” with a qualification that “a floor used for storage purposes only is not a ‘habitable floor.’”
 - c. Do not define “historic structure”; the Substantial Improvement exception does not use the term.
 - d. Do not define or use “Substantial Damage.”
 - e. Do not include additions in the definition of Substantial Improvement.
 - f. Specify the Floodplain Administrator by name.
 - g. Have no provisions for manufactured homes in Zone V.
- 2) Building Code: not available online.

Table 2-4: Madisonville Elevation Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/ Floodproofing: Zone A, Nonresidential | Bottom of LHSM of the Lowest Floor: Zone V |
|--|---|--|--|
| Floodplain Management Regulations | At or above the BFE | At or above the BFE | At or above the BFE |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: BFE + 1 foot for lowest floor/ dry floodproofing (Categories II and III) IBC: BFE + 2 feet for lowest floor/ dry floodproofing (Category IV) | IRC: <ul style="list-style-type: none"> • At/above BFE if LHSM is parallel • At/above BFE + 1 foot if LHSM is perpendicular IBC: same as IRC, except additional freeboard for Categories III and IV |

LHSM = lowest horizontal structural member
 BFE = base flood elevation
 LSUCC = Louisiana State Uniform Construction Code
 IRC = International Residential Code
 IBC = International Building Code

2.3.4 Mandeville, LA

The City of Mandeville enforces both the LSUCC and floodplain management regulations (Zone A and Zone V). The floodplain management regulations do not fully conform to the NFIP requirements in 44 CFR Parts 59 and 60. The following are the most significant differences:

- 1) Floodplain Management Regulations:
 - a. Do not define or use “Substantial Damage”
 - b. Do not include additions in the definition of Substantial Improvement ; specify costs “shall be cumulative, beginning from the date that the first alteration commenced”)
 - c. Have no provisions for manufactured homes in Zone V
 - d. Specify elevation requirements:
 - i. Freeboard of +12 inches in Zone A, residential only
 - ii. No freeboard for nonresidential structures
 - iii. No freeboard for Zone V
 - iv. No freeboard for Zones AO/AH
 - e. Prohibit manufactured homes in Zone A and Zone V but specify elevation and other requirements for manufactured homes in Zone A (and apparently the requirements apply to new installations, replacements, and Substantial Improvements). Require certain manufactured homes to meet full elevation requirements.
- 2) Building Code:
 - a. Adopts the code mandated by the Louisiana State Uniform Construction Code Council, without specifying which codes or editions (and retains references to Southern Building Code Congress International [SBCCI]).
 - b. Does not adopt IBC Appendix G.
 - c. Specifies content of applications and plans, and requires submission of flood elevation certificate in flood hazard areas; also requires certificates “before authorization for the provision of permanent electrical service will be issued.”
 - d. Adopts a “grading supplement” (references SBCCI Standard Excavation and Grading Code), which specifies the finished floor elevation of attached and detached garages and accessory structures when fill is placed, and requires, among other things:
 - i. The finished floor elevation of the living area of all habitable dwelling units shall not be less than 12 inches above the crown of a paved street, where the crown or center line of the street is elevation plus 11 feet or higher.
 - ii. Where the crown of the street is below elevation 11 feet (above datum), the top of the finished floor of the living area of all habitable dwelling units shall be not less than elevation plus 12 feet or current applicable FEMA requirements.
 - e. Makes no technical amendments to the building codes.

- 3) The State accepts higher standards adopted in local floodplain management regulations as prevailing over the LSUCC. The parish adopts a freeboard requirement for residential buildings that exceeds the elevation requirements of the LSUCC (Table 2-5).

Table 2-5: Mandeville Freeboard Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/ Floodproofing: Zone A, Nonresidential | Bottom of LHSM of the Lowest Floor: Zone V |
|-----------------------------------|---|--|--|
| Floodplain Management Regulations | BFE + 12 inches | To the BFE | To the BFE |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: BFE + 1 foot for lowest floor/dry floodproofing (Categories II and III) IBC: BFE + 2 feet for lowest floor/dry floodproofing (Category IV) | IRC: <ul style="list-style-type: none"> At/above BFE if LHSM is parallel At/above BFE + 1 foot if LHSM is perpendicular IBC: same as IRC, except additional freeboard for Categories III and IV |

LHSM = lowest horizontal structural member
 BFE = base flood elevation
 LSUCC = Louisiana State Uniform Construction Code
 IRC = International Residential Code
 IBC = International Building Code

2.3.5 Plaquemines Parish, LA

Plaquemines Parish enforces both the LSUCC and floodplain management regulations (Zone A and Zone V) in the unincorporated areas of the parish. The floodplain management regulations do not fully conform to the NFIP requirements in 44 CFR Parts 59 and 60. The following are the most significant differences:

- 1) Floodplain Management Regulations:
 - a. Permit detached “accessory structures not used or designed for human habitation” below the BFE, provided they are “limited to accessory uses permitted in conjunction with residences by the zoning ordinances.”
 - b. Requirements for manufactured homes in Zone V point to the requirements for Zone A (thus not specifying elevation of the bottom of the lowest horizontal structural member).
 - c. Essentially require elevation of residential structures on fill by stating that the use of other methods will be approved if the use of fill is demonstrated to be impractical based on lot size and similar factors, while also requiring permit applications to include information “necessary to determine the extent to which any proposed fill or other landscape alteration will result in displacement of flood waters.”
 - d. Do not permit placement of manufactured homes and recreational vehicles in floodways except in existing parks and subdivisions. Manufactured home units used for offices,

storage, or other nonresidential purpose are required to meet the same requirements as those used for residences.

- e. Require subdivisions for residential use to either (1) provide building sites with an average elevation at or above the BFE, or (2) be subject to deed restrictions requiring elevation of structures to or above the BFE. Proposals for nonresidential structures are treated the same, except the deed restriction requires elevation or floodproofing.

2) Building Code:

- a. Adopts the Louisiana State Uniform Construction Code as it may from time to time be amended and promulgated by the State and all applicable standards and appendices referenced in that code, including Appendix J (Existing Buildings) to the residential building code. Also adopts the administrative chapters “of the various building codes.” The parish does not adopt IBC Appendix G.
- b. No technical amendments to the building codes.
- c. Does not adopt freeboard requirements that exceed the elevation requirements of the LSUCC (Table 2-6).

Table 2-6: Plaquemines Parish Freeboard Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/ Floodproofing: Zone A, Nonresidential | Bottom of LHSM of the Lowest Floor: Zone V |
|--|---|--|---|
| Floodplain Management Regulations | To or above the BFE | To or above the BFE | To or above the BFE |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: BFE + 1 foot for lowest floor/dry floodproofing (Categories II and III) IBC: BFE + 2 feet for lowest floor/dry floodproofing (Category IV) | IRC: • At/above BFE if LHSM is parallel • At/above BFE + 1 foot if LHSM is perpendicular IBC: same as IRC, except additional freeboard for Categories III and IV |

LHSM = lowest horizontal structural member

BFE = base flood elevation

LSUCC = Louisiana State Uniform Construction Code

IRC = International Residential Code

IBC = International Building Code

2.3.6 Slidell, LA

The City of Slidell enforces both the LSUCC and floodplain management regulations (Zone A only). The floodplain management regulations do not fully conform to the NFIP requirements in 44 CFR Parts 59 and 60. The following are the more significant differences:

- 1) Floodplain Management Regulations:
 - a. Use but do not define “lowest floor.”
 - b. Do not define “Substantial Damage.”

- c. Require survey of the “bottom of the lowest structural member of the lowest floor” (even though only Zone A).
 - d. “Adopt” 1 foot of freeboard “in the adoption of ABFEs,” but freeboard is not addressed in the requirements that specify elevations for buildings. How this requirement is administered and whether it results in buildings having their lowest floors elevated (or floodproofed, for nonresidential buildings) to the ABFE plus 1 foot is unclear.
 - e. Include specifications and limitations for fill; specifically identifies use of “enclosed retaining wall or other method not requiring the use of fill (such as pilings or pier construction)” if necessary.
- 2) Building Code:
- a. Adopts the 2000 editions of IBC, IRC, IMC, and IFGC “and any subsequent amendments and revisions.” Does not adopt IBC Appendix G.
 - b. When private drainage facilities are proposed, the plans shall show the areas subject to inundation at flood stage and the “recommended floor elevation of residences to ensure safety in flood conditions and conformance with federal flood insurance regulations.”
 - c. No technical amendments to the building codes.
- 3) The State accepts higher standards adopted in local floodplain management regulations as prevailing over the LSUCC. The city’s regulations refer to the ABFE and require an additional foot of elevation, which may exceed the elevation requirements of the LSUCC (Table 2-7).

Table 2-7: Slidell Freeboard Comparison: Floodplain Management Regulations vs. LSUCC

| | Lowest Floor: Zone A, Residential | Lowest Floor/Floodproofing: Zone A, Nonresidential |
|--|---|---|
| Floodplain Management Regulations | ABFE + 1 foot | ABFE + 1 foot |
| LSUCC | IRC: to or above the BFE (BFE + 1 foot where Coastal A Zone is delineated) IBC: BFE + 1 foot (Category II) | IBC: <ul style="list-style-type: none"> • BFE + 1 foot for lowest floor/dry floodproofing (Categories II and III) • BFE + 2 feet for lowest floor/dry floodproofing (Category IV) |

ABFE = Advisory Base Flood Elevation
 LSUCC = Louisiana State Uniform Construction Code
 BFE = base flood elevation
 IRC = International Residential Code
 IBC = International Building Code

