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CITY OF LAKE WORTH BEACH

HISTORIC PRESERVATION Educational Guidelines

A GUIDE TO *SUSTAINABILITY*, *RESILIENCY*, AND *PROJECT PLANNING* FOR HISTORIC STRUCTURES

Submittal to the State of Florida Department of State, Division of Historical Resources

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Prepared for the

Citizens of Lake Worth Beach

Acknowledgments

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City of Lake Worth Beach FLORIDA

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Florida Department of State / Division of Historical Resources

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INTRODUCTION

This document is intended to provide guidance to property owners within Lake Worth Beach's Historic Districts regarding sustainability, resiliency, and building expansions as a new project is planned. The following chapters outline concepts, terms, and programs which provide more information to individuals who are interested in enhancing the sustainability and resiliency of their home or property.

The Educational Guidelines are a companion to the Lake Worth Beach Historic Preservation Design Guidelines which outline the significant styles prevalent in Lake Worth Beach's Historic Districts and their defining characteristics. All restorations, repairs, or expansions of historic structures should consider the styles and defining characteristics outlined in the Design Guidelines. The Design Guidelines also provide an overview of best practices for restoration and repair of historic structures as well as information on the Certificate of Appropriateness approval process in Lake Worth Beach's Historic Districts.

The most sustainable home is one that has already been built. With that in mind, the Educational Guidelines review additional steps towards energy and water efficiency which can be applied to both existing homes and new construction. As a coastal community, Lake Worth Beach has a unique opportunity to understand and respond to the growing impact of sea level rise, stormwater quality, and flooding within the context of a historic district. The Educational Guidelines provide information on the context within Lake Worth Beach as well as recommendations which individuals can apply to their own property when preparing for the impact of flooding and storm events. Additions and new construction projects offer an opportunity where the lessons of sustainability, resiliency, and the Design Guidelines can be implemented.

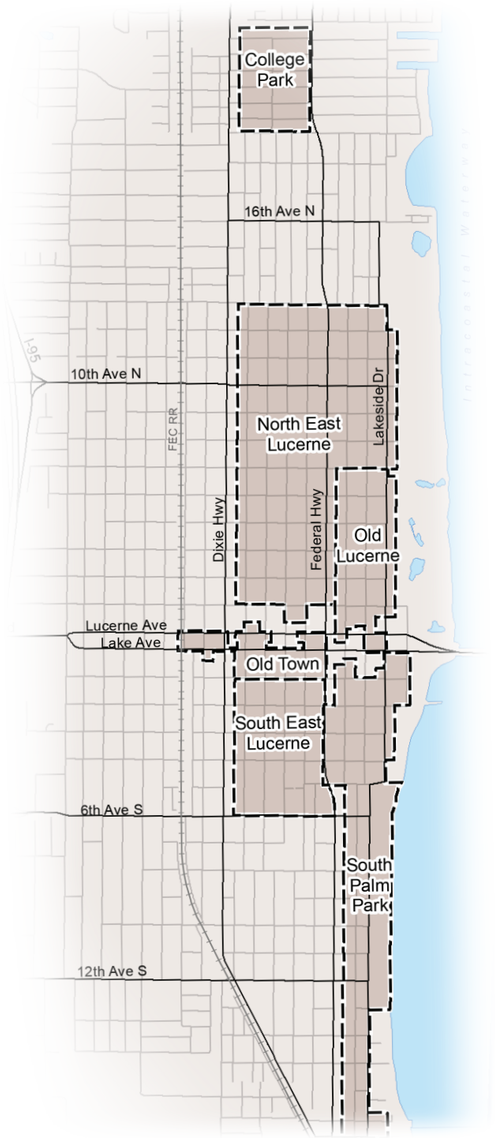


Figure 1.0 Lake Worth Beach has six historic district located within its boundaries.

Historic Preservation Educational Guidelines

SUSTAINABILITY

SUSTAINABILITY

Introduction to Sustainability

In the broadest definition, sustainability is planning for continued existence. The Environmental Protection Agency (EPA) has defined sustainability as "creating and maintaining conditions under which humans and nature can exist in a productive harmony to support present and future generations." [1] Sustainability is an important goal for Lake Worth Beach.

Buildings are an important part of the sustainability conversation. The construction and maintenance of buildings consumes an enormous amount of natural materials and energy produced in the United States. Residential and commercial buildings account for approximately 40% of the total energy consumption in the United States (2018).[2] In an effort to curb the growing energy and material consumption associated with our built environment, architects, engineers, builders and planners, have developed or often rediscovered, "green" building practices which aim to improve the sustainability of our homes, offices, and stores.

When applying the concept of sustainability to building its important to look to the past while considering the future. Historic homes often have advantages in "green" building since they were designed and built when energy and water efficiency were necessities. Historic homes responded to the South Florida climate in ways that were effective and affordable. Whenever possible, it is the best practice to use the originally designed sustainability features as intended. However, new technology, new uses, or new building codes may prompt modifications to historic structures, so it is important to balance the effective use of the building with the restoration and historic qualities.

1. *https://www.epa.gov/sustainability/learn-about-sustainability#what*
2. *https://www.eia.gov/tools/faqs/faq.php?id=86&t=1*

Terms

Embodied Energy

Energy is not just consumed in the production of electricity, energy is also used in the production of all building materials. That cost is referred to as embodied energy. The embodied energy includes the energy required to transport a material to the building site, the extraction of the raw materials, and manufacturing of the product. When considering the embodied energy cost, it is far less costly to reuse and rehabilitate historic structures than to continually demolish and build anew. Keeping materials in use and away from the landfill is in itself, an act of conservation, and the longer a product or material is in use the less embodied energy is wasted.

Operational Energy Cost

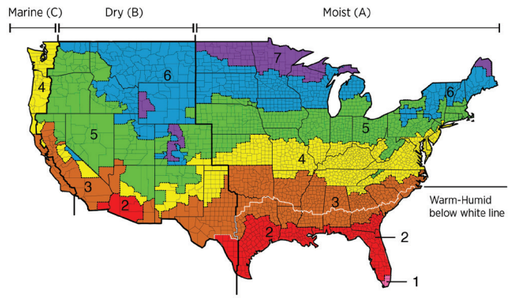
The operational energy and water cost of a structure is the efficiency of the building. This is determined by how much energy or water is required to 'run' the home including the HVAC (heating, ventilation, and air conditioning), appliances, lighting and plumbing. Much of the building technology industry is focused on improvements in the operational energy cost. In new construction, choosing efficient systems is imperative, but when considering sustainable improvement to historic homes, the embodied energy already expended should be considered in balance with operational energy cost and the historic value.

Climate Context

Climate ratings come from the International Energy Conservation Code (IECC) and are adopted as part of the Florida Building Code. In new construction and major renovations, the climate zone is a factor included in any required energy calculations.

Lake Worth Beach is located in climate zone 1A of the IECC climate zone map which identifies it as hot and humid. It is important to be familiar with your climate zone. Sustainable building is climatically responsive, meaning the same strategies may not be effective from climate zone to climate zone. The same responses in the southwest where it is warm and dry, do not necessarily work in the southeast where the climate is hot and humid.

IECC CLIMATE ZONE MAP - 2012 IECC - INTERNATIONAL ENERGY CONSERVATION CODE



The code establishes a baseline for energy efficiency by setting performance standards for the building envelope (defined as the boundary that separates heated/cooled air from unconditioned, outside air), mechanical systems, lighting systems and service water heating systems in homes and commercial businesses.

Figure 2.0 Lake Worth Beach is located within Climate Zone 1A. Source: International Code Council

Figure 3.1 Lake Worth Beach home with a 'cool' roof and finished floor elevation raised above ground level to protect from minor flooding events.

Figure 3.2 Lake Worth Beach duplex with a pervious ground-cover and water efficient landscaping. This home has operable windows and a small footprint.

Figure 3.3 Lake Worth Beach home features a well vented attic, protective porch and numerous operable windows that allow for cross ventilation.

Figure 3.4 Lake Worth Beach home on a pier foundation that is breathable with a generous, continuous overhang to protect the building face from water and heat gain.

Architectural Features

The following sustainable features can be found in many Lake Worth Beach historic homes:

- Protect windows and doors with large overhang eaves and porches which prevent harsh sun and heat gain in the home;
- Covered outdoor spaces which allow for outdoor living;
- Roof venting through attic vents allow heat and moisture to escape once in the home;
- Two or more operable windows in each habitable room allow ample cross ventilation;
- Ceiling fans to encourage air movement;
- Cool flooring like terrazzo or breathable materials like wood to allow air movement;
- Raised foundations which allow air circulation against cooler ground, and raises home above minor flood events;
- Heat producing systems located outside the main living spaces, such as locating a washer and dryer outside or in non-conditioned spaces;
- Smaller building footprints.

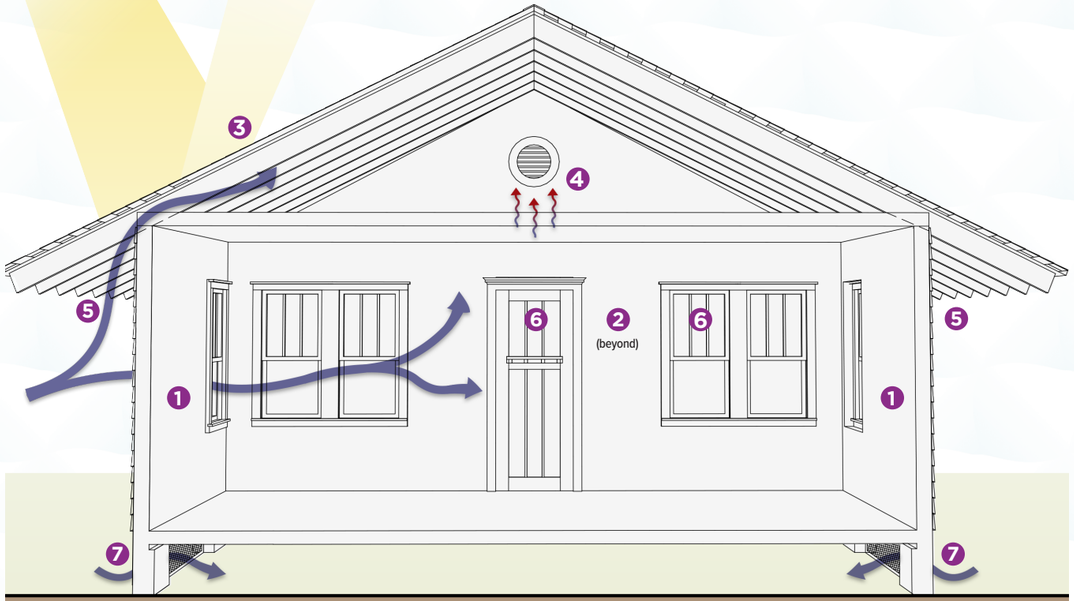


Figure 4.1 Historic home diagram with air flow and sustainable features indicated.

Inherent Features of Historic Homes

1 Walls
- Often historic wood frame homes did not have insulation, but they did allow for air movement and the quick dissipation of moisture that has entered walls.
- Cement Block construction has been long popular in south Florida because it does have thermal insulation properties in addition to other advantages.

2 Porches
- Porches provide protection for openings from harsh sun and allow cool air to flow through.

3 Roof Materials
- Historic pitched roof materials often reflected great amounts of heat, such as metal roofs. Other historic roofing materials are good insulators to heat gain such as white concrete tiles or barrel clay tiles.

4 Roof & Attic Vent
- Since hot air rises, roof and attic vents as well as soffit ventilation allow for passive movement of hot air up and out of the home.

5 Overhangs
- Overhangs protect openings from significant heat gain by shading the building's walls and openings.

6 Doors & Windows
- Original wood door and window assemblies have inherent thermal properties and can perform as well as new windows.

7 Foundation
- Stem wall or pier foundations allow for air to flow under the home and passively cool the structure.

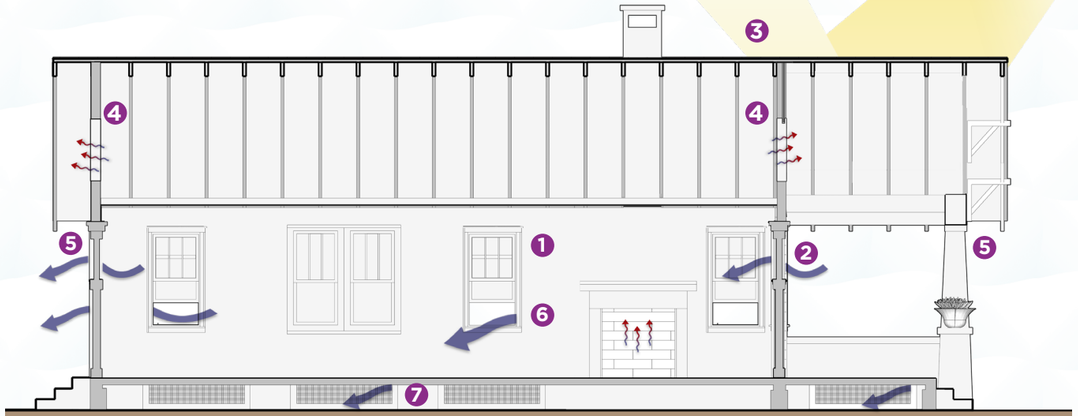


Figure 4.2 Cross section of a historic home with air flow and sustainable features indicated.

Refer to the *Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings* from the Secretary of the Interior in addition to the *Lake Worth Beach Educational Guidelines* and *Design Guidelines*.

Recommendations for Historic Homes

1 Walls
- Adding air conditioning or an HVAC system to a historic home will often prompt a homeowner to add insulation. Consider which type of insulation is best for the construction of the wall. Several types of wall insulation are outlined further in this document.
- When adding wall insulation, utilize licensed professionals who can guide or ensure installation is done with best practices in mind.

2 Porches
- Maintain porches: they are an asset to the historic character as well as the performance of the building. Porches reduce the amount of heat that is gained on the exterior of the building by keeping it shaded.

3 Roof Materials
- The roof is the first defense for the protection of historic structures. Its important to keep the original roof in its best working order. A deteriorating roof can result in loss of materials and the embodied energy that goes along with them. When re-roofing consider 'cool roof' options, strapping for hurricane protection, and adding insulation. These topics are outlined further in this document.

4 Roof & Attic Vent
- Audit a historic home and determine what opportunities exist for hot air to escape the home. When adding insulation, consider the historic air movement and consider the options discussed in the Educational Guidelines.

5 Overhangs
- Maintain overhangs, soffits, fascia boards, and roofing in proper condition. Overhangs reduce the amount of heat that is gained on the exterior of the building by keeping it shaded.

6 Doors & Windows
- Properly maintain, caulk, and weather strip doors and windows against weather intrusion to keep in good working order. Materials in good working order perform better and reduce the embodied energy cost.

7 Foundation
- Maintain airflow and protect openings from pests with tamper resistant screens.

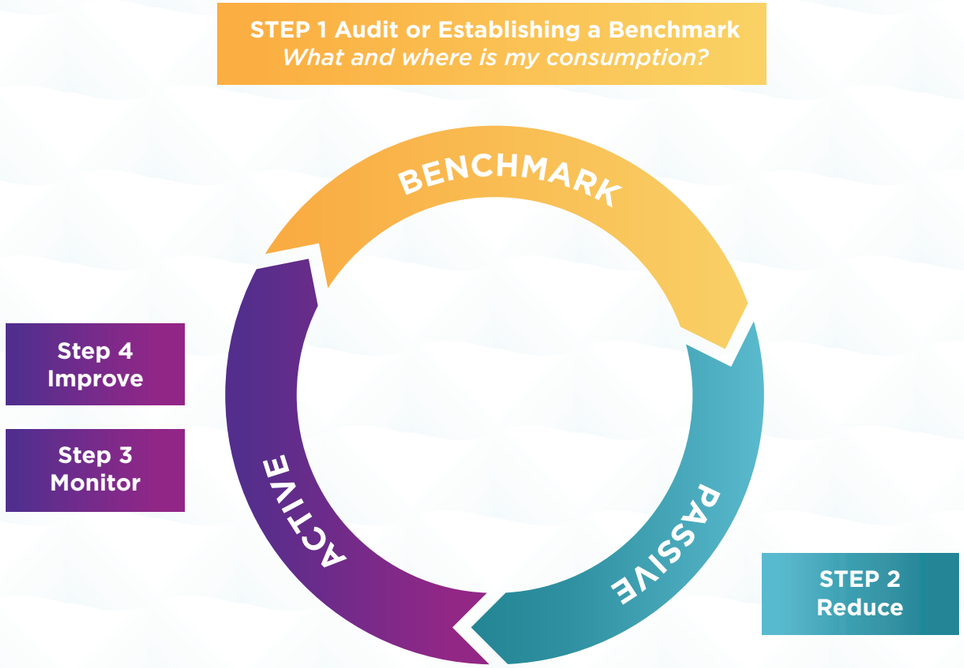


Figure 5.0 Cycle of sustainable interventions.

Guide to Sustainable Interventions

Establishing a Benchmark

Before making alterations or improvements to a historic structure, its advised to first understand the 'benchmark,' which is how the home performs today without new interventions. An energy audit will determine the operational energy cost of the home and study the energy use trends to determine overall energy consumption. An audit can often identify small improvements or where the biggest impact can be made. When baselines are established it is important to determine a goal that is reasonable for the structure. There are professionals who can conduct an energy audit for your home or structure with tools like a blower door test and infrared imaging. Please contact the City of Lake Worth Beach Public Utilites Customer Service to schedule an energy audit (561.533.7300).

Passive Efficiency Improvements

Improving a home's efficiency starts with reduction, therefore the first approach is to identify what passive systems and reductions can be added to the home. Passive strategies are those interventions which do not include the addition of mechanical systems.

Active Efficiency Improvements

Active interventions are those that include mechanical systems and energy production. The best value is often found first in passive improvements.

Windows & Doors

Windows and doors are defining architectural features of historic homes that should be given special consideration for character and continued operational use. Consult with historic preservation staff to determine the most appropriate means of achieving the greatest energy efficiency that is consistent with the structure's historic architectural style.

- Maintain proper weatherstripping and caulking in original historic windows, and replacement windows to prevent air leakage.
- Maintain, or where appropriate, add overhangs, awnings, and porches that protect openings.
- Use window treatments, such as curtains with white backing, shades, and blinds, which can reduce the heat gain into a room.
- 'Low-E' is a non-reflective, non-tinted window film that greatly reduces heat gain through windows. It's available as a film applied to existing windows or in replacement windows.
- Tints and mirrored glass are typically not appropriate for historic structures and are not as effective as a 'Low-E' treatment.
- When a window needs to be replaced, look for options that are Energy Star or those with low U-factors and SHGC ratings (Solar Heat Gain Coefficient). U-factor is the measure of heat loss or the insulating property of a window, while the SHGC measures the amount of radiant heat that is admitted through the window.

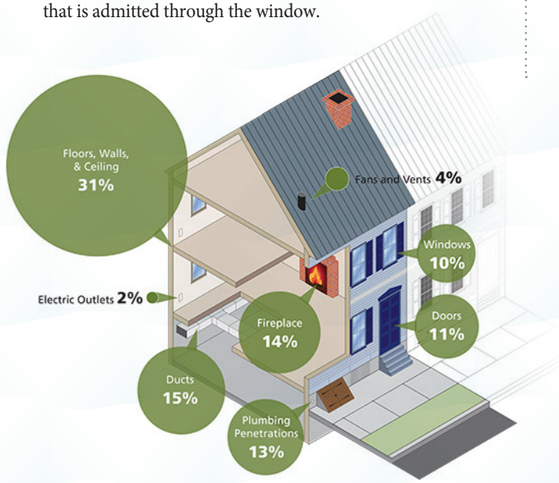


Figure 5.1 Where Air Escapes From a House by percentage. Image based on data from Energy Savers, U.S. Department of Energy. Illustration: Blank Space LLC. Image Source: *Preservation Brief 3: Improving Energy Efficiency in Historic Buildings*

Energy Efficiency: *Passive Strategies*

Roofing

The greatest heat gain for homes in south Florida is from the roof. Selecting a "cool" roof will reduce the heat transfer to the building and reduce the cooling required. A "cool" roof will be one that is designed to reflect the sunlight away from the buiding, and will not pass the heat from the sun into the building. This is measured in Solar Reflectance (SRI or SR) and rated on a scale of 0 to 1. The higher the number the better performance.

- When judging a roof replacement in a historic home it's important to always value what would be the most appropriate replacement for the style of the home.
- Look for products that have an Energy Star rating. There are numerous Energy Star Rated options available. Roofing assemblies are rated depending on the climate zone, the slope of the roof, the initial SRI or SRI over time.
- Generally, light colors perform the best since dark roofing materials will absorb heat and retain the heat passing it on to the building. There are other factors that impact a roof's ability to shield the building from heat gain. For example, some historic materials, like clay and concrete tiles, provide a level of insulation which metal and asphalt do not.
- The composition or installation of the materials also affects its performance. For example, vented clay tiles perform well in hot and humid climates because they provide air spaces which insulate and allow movement of hot air.
- When re-roofing, consider attic and roof insulation and hurricane bracing at the same time, since it provides greater access to the roof assembly.

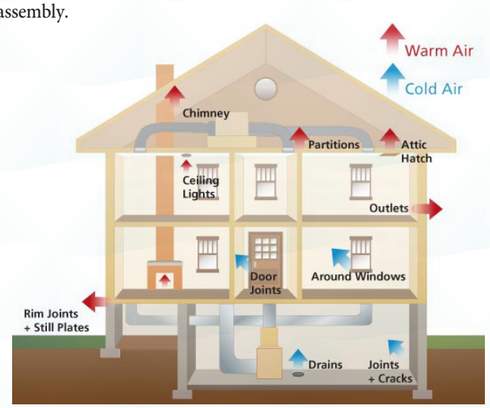


Figure 5.2 Air infiltration and ex-filtration. Illustration: Blank Space LLC. Image Source: *Preservation Brief 3: Improving Energy Efficiency in Historic Buildings*

Energy Efficiency: *Passive Strategies*

Insulation

In south Florida, roof and wall insulation prevents heat from entering and aims to keep our cool conditioned air inside. Historic homes often did not have insulation since they were not conditioned, or the insulation has deteriorated over time. For this reason, insulation can have a measurable impact on energy efficiency when added. The capacity for materials to insulate is measured in R-Value. The higher the R-value the better insulating capacity.

- Use 'blower-door' tests to determine where conditioned air leaks are occurring and determine remedies prior to investing. Insulate and weather-strip where losses occur.
- Add insulation to walls and roof. When adding insulation, use types that can be reversible or do not alter historic materials. For example, 'spray-in' is not best suited for historic homes since it is an adhesive that cannot easily be removed. A ridged or batt insulation is more appropriate. They can be removed and replaced and do not adhere to historic materials.

Figure 6.0 "Blow-In" Insulation.

Figure 6.1 Three common ridged foam insulation. Image Source: Green Building Advisor

Figure 6.2 "Spray-in" Insulation is not advised in a historic home.

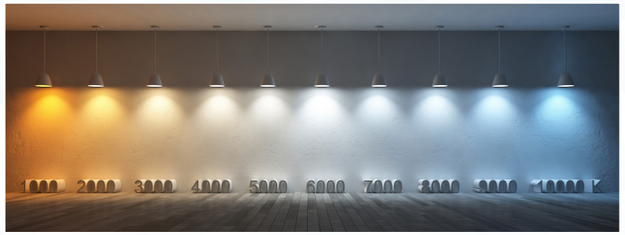


Figure 6.3 Image of LED lighting with range of color temperatures available.

Figure 6.4 Energy Star Logo.

The Energy Star label can be found on many building products and systems including roof assemblies, windows, doors, electronics, appliances, water heaters, heating and cooling systems, and equipment. The label is earned through independent certification and is administered through the Environmental Protection Agency (EPA). There are additional tips and information at their website: *energystar.gov.*

Appliances

- When replacing appliances, purchase ones with greater energy efficiency. Look for Energy Star certified appliances.
- Use clothes lines when weather permits, and clean the lint trap with every load. Clothes dryers account for approximately 6% of residential electrical use.

Lighting

- Use daylight when possible.
- Replace incandescent lighting with LED lighting which requires much less energy to run and produces less heat.
- When replacing with LED lighting become familiar with color temperatures. A lower number indicates a warmer light. A standard incandescent light bulb has a color temperature of 2400K. LED fixtures are available in a wide range of color temperatures, pictured to the left.
- Consider occupancy sensors for seldom used rooms and dusk to dawn sensors for outdoor lighting.

Water Efficiency: *Passive Strategies*

- Water is a one of our most precious resources. In Florida the per capita water use ranges from 124 to 150 gallons per day with more than 50% of residential water used outside.[1] Homeowners can reduce their demand through the following means:
- Using water efficient plumbing. When new plumbing is required, look for WaterSense approved products or low-flow products. Kits are available to convert existing fixtures to improve their water efficiency.
- Utilize rainwater collection through rain-barrels and cisterns for use in irrigation or toilets to reduce potable water consumption.
- Landscape with Florida native vegetation and drought tolerant plants which do not require as much irrigation and thrive in our climate.
- Limit impervious hardscape to reduce stormwater runoff by using permeable walkways and driveways. Retaining water on site limits the impact to the community.

1. https://abe.ufl.edu/faculty/mdukes/ 2. https://ffl.ifas.ufl.edu/plants

Figure 7.1 Rain barrel pictured. Image source: *Courtney Schoen*

Figure 7.2 Archbold Biological Station located in Venus, Florida. Image source: *Florida Native Plant Society*

Figure 7.3 Florida native plants, located in The Villages. Image source: *Florida Native Plant Society*

Florida-Friendly Landscaping™ PROGRAM

Figure 7.4 The Florida-Friendly Landscaping Program outlines nine principals for efficient watering and sustainable landscapes and yards. The program was developed by the UF IFAS Extension. Visit floridyards.org.

Figure 7.5 The WaterSense label identifies water-efficient products, new homes, and programs that meet EPA's criteria for efficiency and performance. WaterSense labeled products and services are certified to use at least 20 percent less water, save energy, and perform as well as or better than conventional models.

Energy Efficiency: *Passive Strategies*

Site Features

Landscaping can play a role in reducing energy demands.

- Planting shade trees can greatly reduce sun exposure and heat gain, especially when planted along the south side of buildings. Shade trees cool the air around them and provide pleasant shade.
- Landscaping can reduce the heat island effect. Heat island is caused by dark impervious surfaces, like asphalt parking, which raise the local air temperature. Plan driveways and hardscape with pervious and light colored materials whenever possible.
- It's important to not plant too close to the house and to trim shrubbery near the house, otherwise landscaping can trap moisture and deteriorate exterior finishes.

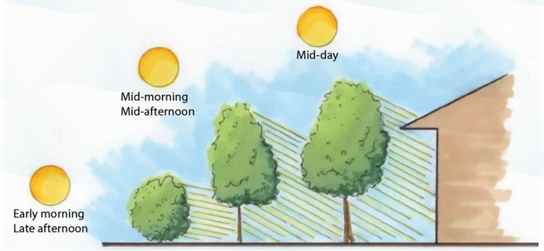


Figure 7.6 The shading effect of landscaping through out the day.
Image source: *Landscape Network*

Plant trees and other landscaping that will thrive in Lake Worth Beach for the best results.

Native plants are best suited to the soil, sun and water. Lake Worth Beach is located in zone 10B. Some examples are:

- Gumbo Limbo
- Pigeonplum
- Live Oak
- Wild Tamarind
- Buttonwood

Energy Efficiency: *Active Strategies*

TECHNOLOGIES

There are moments when altering or using new technologies in a historic home can improve efficiency while still maintaining the character of the home. When adding any technologies to a historic home it is important to consider the protection of the property's materials and features and include a holistic approach to sustainability and preservation. It would not be appropriate for energy generating technologies to be mounted to historic structures where they could not be reversed, or when facing the public right of way or roadways. Other technologies, like programmable thermostats and lights, do not negatively impact the historical value of the structure.

Solar in LWB Historic Districts

The Lake Worth Beach Land Development Regulations include specific provisions for Solar Energy Systems. In Historic Districts, solar energy systems should be placed to avoid obscuring significant features or adversely affecting the overall character of the property.

- Minimize visual impacts by locating solar energy systems back from the front façade.
- Consider installing solar energy systems on an addition or secondary structure where applicable.
- Use the least invasive method feasible to attach the solar energy system to a historic roof such that it avoids damage to significant features and historic materials and can be removed and the original character easily restored.
- All solar energy systems within the historic districts require a certificate of appropriateness. Consult with staff for guidance on certificate of appropriateness application procedures.

Consult with city Historic Preservation staff when considering technologies that might have visual impacts, like solar panels.

Figure 8.1 Roof mounted solar panels

Figure 8.3 Roof mounted water heater.

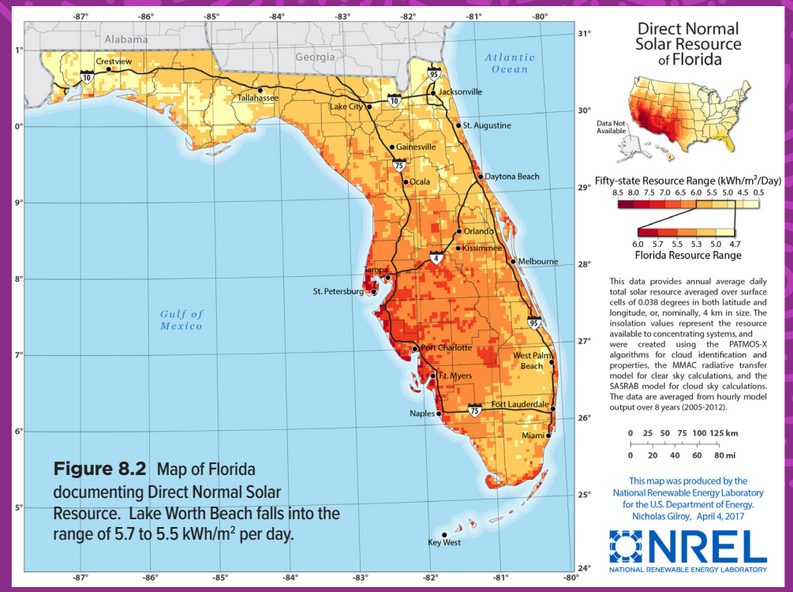


Figure 8.2 Map of Florida documenting Direct Normal Solar Resource. Lake Worth Beach falls into the range of 5.7 to 5.5 kWh/m² per day.

Solar

Solar photovoltaics, or PV, can add an opportunity for on-site energy production to a residential home, particularly in South Florida which averages high quantities of sunshine annually. Careful consideration should be put into placement for maximum sun exposure and to be respectful of the historic character of the home and neighborhood. Typically PV perform best when south facing with a slope between 15-40 degrees. Solar panels can be mounted to a roof or placed at the ground. Consult City Public Utilities staff to discuss additional requirements for PV Systems.

Solar Hot Water Heater

Similar to solar, installation of a solar hot water heater needs to be sensitive to the holistic treatment of the home and its historic value. There are two types of solar collectors commonly used for residential applications:

- **Flat-plate collector.** Glazed flat-plate collectors are insulated boxes that contain a dark absorber plate under one or more glass or plastic covers. Unglazed flat-plate collectors, typically used for solar pool heating, have a dark absorber plate, made of metal or polymer without a cover.
- **Integral collector-storage systems.** Also known as ICS or batch systems, they feature one or more black tanks or tubes in an insulated, glazed box.

Home Energy Management

Home Energy Management systems monitor the energy and water used in the home and provide a continuous feedback loop to manage energy demand and use. There are advanced whole house systems which integrate into smart phones and tablets with applications which can manage all of the systems in your home including lighting, fans, HVAC, and automatic shades. Whole house systems are effective when power generation and storage (batteries) are occurring on site. They are often necessary to achieve net zero energy consumption. There are also simple monitors which can be applied to single outlets.

Sense Energy Monitor

Figure 8.4 Sample of home energy management system.

TECHNOLOGIES

SUSTAINABILITY

Lake Worth Beach Efforts

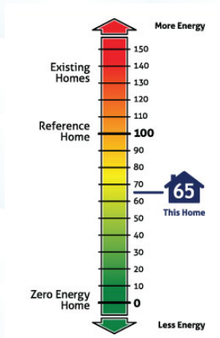
FLORIDA Ocean current energy
City of Lake Worth Beach

Lake Worth Beach is in the unique situation of owning a municipal electric power system with optimum proximity to the Gulf Stream Current. The Atlantic Ocean Gulf Stream provides an exciting new opportunity for Lake Worth Beach to diversify its electric sources and become a leader in Ocean Current Energy (OCE) generation. The U. S. Department of Energy studied the potential of the Gulf Stream, which provided an estimate of the energy available assuming efficiencies of 30%. It was determined that off the shores of Lake Worth Beach, up to 45TWh/y could be produced. This capacity could power 4.14 million homes or 35% of the entire state of Florida's annual electricity demand. The OCE project is long-term, and starts with vision and commitment. As with any worthwhile endeavor, each small step brings the City closer to its goals of generating power from the Gulf Stream, becoming carbon neutral, and placing clean energy on our power grids. Contact the City Economic Development Department for more information on this iniciative.

Energy Efficiency: *Active Strategies*

"Green" Building Programs For Homeowners

There are numerous green building programs for homeowners who would like the guidance of a program, or recognition of certification for their home. In addition to the Energy Star and WaterSense programs from the EPA, below are some programs on the market.



RESNET HERS® INDEX

Figure 9.1 The Residential Energy Services Network (RESNET) was founded in 1995 as an independent, non-profit organization providing home energy audits and performance ratings.

Better Buildings® CHALLENGE
U.S. DEPARTMENT OF ENERGY

Figure 9.2 Home Energy Score from the US Department of Energy is another energy audit rating system available to homeowners.

Figure 9.3 The LEED for Homes certification is a rigorous process which looks at nine credit categories where homes achieve a different levels of certification based on performance. It is an approach that looks at a building and its context holistically. The Living Building Challenge pushes the built environment to be more regenerative and restorative.

LEED FOR HOMES

LIVING BUILDING CHALLENGE™

Historic Preservation Educational Guidelines

RESILIENCY

Introduction to Resiliency

Resiliency is the ability to adapt and respond to change overtime, as well as the ability to respond to excessive stresses or events. It is a proactive response rather than a reactive response. Resiliency is a growing goal when planning for the built environment. Our communities, workplaces and homes need to be able to adapt and respond in the face of a changing environment or large events. In Lake Worth Beach, we are exposed to stresses from sea level rise and hurricanes, both of which can result in flooding. The management of water, including stormwater, becomes a critical concern. Being proactive in the event of a hurricane, by securing our buildings from wind and flooding can help prevent a loss of structure and a more resilient community.

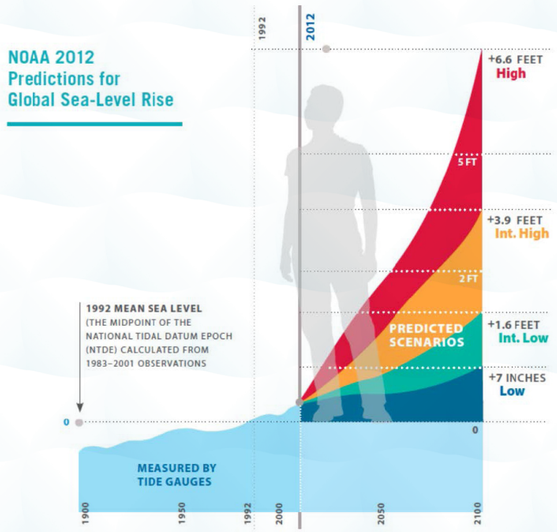


Figure 11.1 Predictions for Global Sea-Level Rise. Image Source: *Marine Extension UGA & Sea Grant*

Sea-Level Rise

Sea Level Rise is a concern throughout the globe and South Florida does have a critical place in the story of sea level rise. Global sea level has been rising over the past century, and the rate has increased in recent decades. In 2014, global sea level was 2.6 inches above the 1993 average—the highest annual average in the satellite record (1992-present). Sea level continues to rise at a rate of about one-eighth of an inch per year3. Florida is expected to see a rise of sea level between 6”-12” by 20204 (as measured since the 1992 benchmark). Because water levels have increased, south Florida has seen a rise in the incidents of nuance flooding.

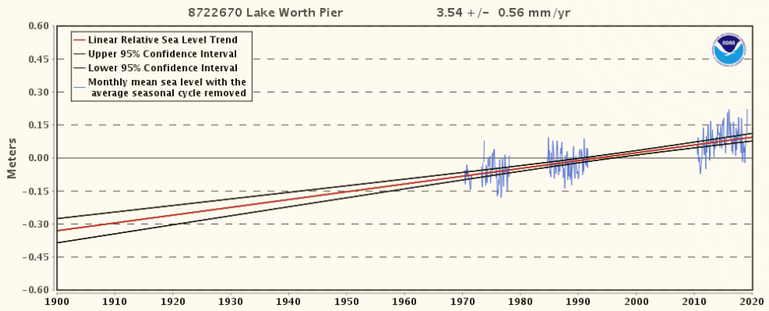


Figure 11.2 NOAA Data from Lake Worth pier reflecting a relative sea level trend is 3.54 millimeters/year with a 95% confidence interval of +/- 0.56 mm/yr based on monthly mean sea level data from 1970 to 2018 which is equivalent to a change of 1.16 feet in 100 years.

Stormwater

As much as possible, its recommend to control stormwater on your own property by allowing water to drain naturally into the ground. Controlling stormwater reduces polluted run-off into the Lake Worth Lagoon, but also reduces the stormwater load taken on by the roads and can allow floodwaters to dissipate more quickly. Keep stormwater on site by allowing open space, creating bio-swales, and reducing hardscape. Use pervious hardscape whenever possible. Pervious hardscapes are those that allow water to percolate through them and back into the ground. There are pervious pavers, pervious asphalt and pervious concrete. For less trafficked areas a shell-rock, pea rock, or river rock could be a suitable alternative for paths and driveways when allowable by the City’s Land Developmemt Regulations.

Flooding

Lake Worth Beach’s Historic Districts: Northeast Lucerne, Old Lucerne, South Palm Park, and a portion of Old Town are particularly vulnerable and have properties that are located within the Coastal High Hazard Areas Zone: VE and Low Risk Areas Zone: X500. It is best to confirm your flood zone and work with staff to consider proper risk mitigation within your zone.

Base Flood Elevation (BFE) is determined by Flood Insurance Rate Maps or FIRMs. The BFE is a regulatory requirement and is referenced in the Florida Building Code for new construction and substantial improvements. Historic homes can be exempted from complying with the BFE when making substantial improvements under certain criteria. Although the code may not prompt a homeowner to comply with the BFE, its important to be familiar with a property’s floodzone and the flood risk. Insurance rates and the requirement for flood insurance are impacted by a property’s zone.

To the right is a diagram from Federal Emergency Management Agency (FEMA) illustrating the important terms such as BFE, 100-year stillwater elevation, flood zone V, flood zone A Coastal, flood zone A and food zone X and their relationship with each other.

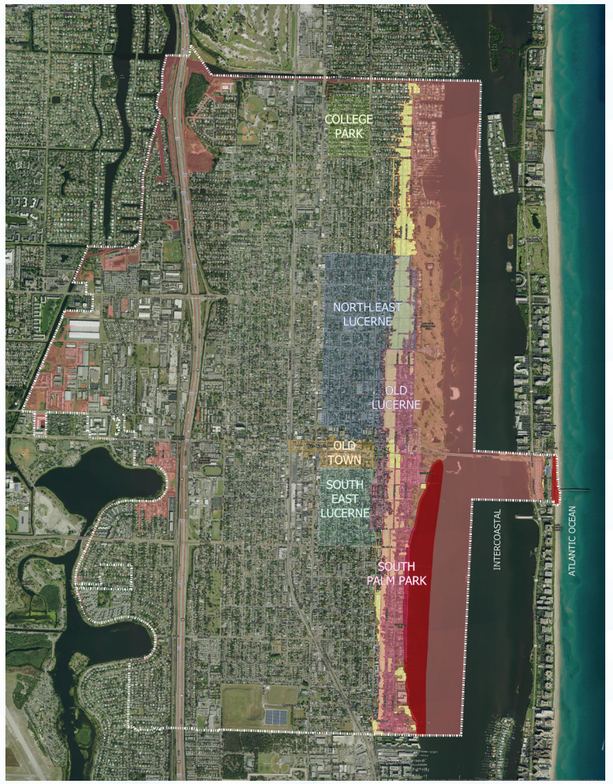


Figure 12.1 FIRM Flood Map of Lake Worth Beach map potential effect of storm event with flood prone areas depicted in red. Map captured in May 2019.

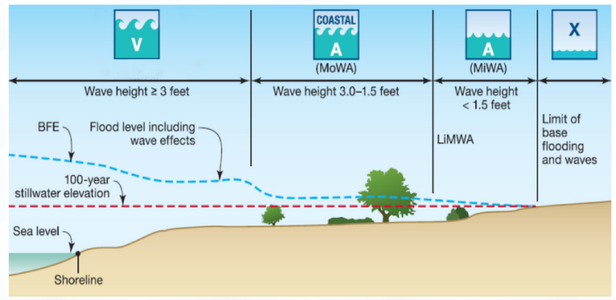


Figure 12.2 BFE as it changes over Coastal Flood Zones. Image source: *FEMA*

Flooding, Stormwater, & Sea-Level Rise

Foundations

The resiliency conversation is not just about individual responsibility and impacts, but that of the community. The built environment affects an entire neighborhood, and not just those who use and occupy a building. In residential building, this is clearly felt in the way we build foundations, and considering historic examples often provides the best solution. A stem wall foundation seen in many wood frame and early masonry vernacular buildings minimizes the effects of flooding in a neighborhood while also providing a level of protection from minor flooding events. See the illustration and descriptions to evaluate options (below).

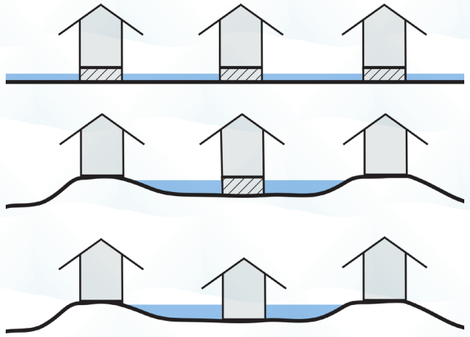


Figure 13.1 Building composition can have an impact on the resiliency of an entire neighborhood. Lake Worth Beach's Historic Districts are fortunate to have a neighborhood fabric without many homes built on mounded foundations.

Preferred foundation types

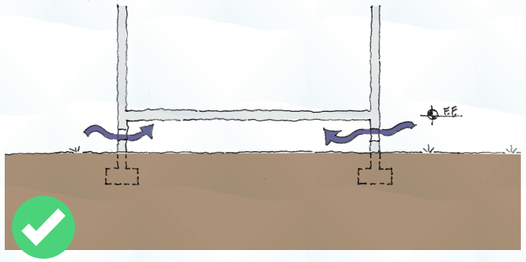


Figure 13.2 Historical stem wall footing and hung joist raises finished floor above ground level and allows for passive cooling of home.

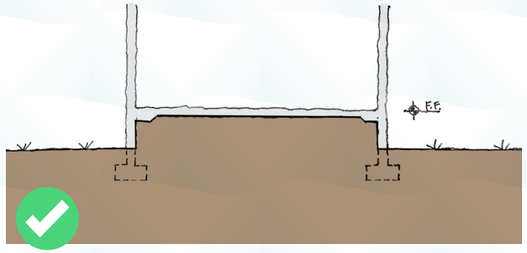


Figure 13.3 Stem wall footing, or an enlarged monolithic footing, which raises finished floor above ground level without mounding is preferred.

Foundation types with negative impact

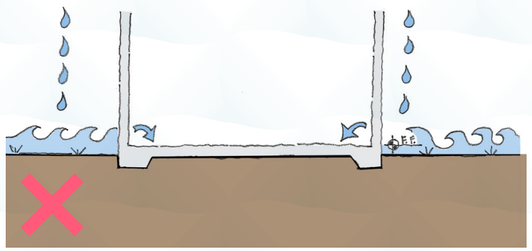


Figure 13.4 Slab on grade foundations are vulnerable to water intrusion from ground water and from minor flooding.

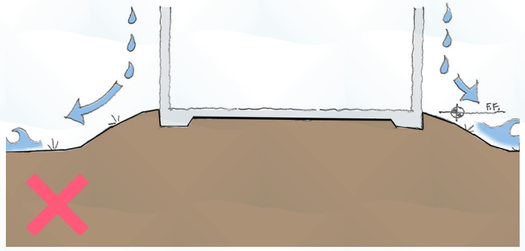


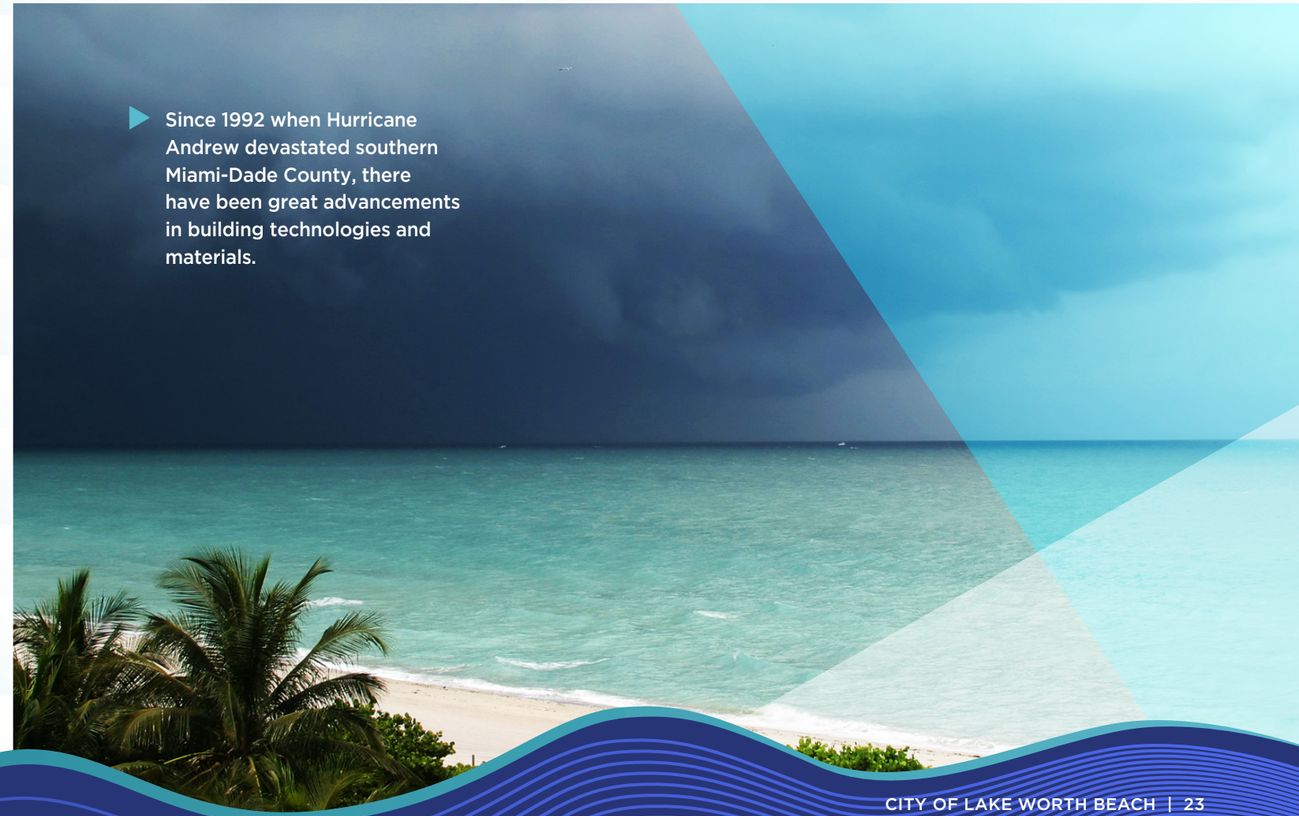
Figure 13.5 Slab on grade foundations built on a mound mitigate the effects of minor flooding, but relocates water onto neighboring properties and streets compounding the impacts of flooding.

Hurricane Protection

Lake Worth Beach has often been referred to as the City "Where the Tropics Begin." The city is perfectly situated to reap all of the benefits that a coastal South Florida town has to offer. With that comes the periodic threat of tropical storms and hurricanes. While it is true that most of Lake Worth's historic structures have survived more hurricanes than the majority of residents have experienced, they are still susceptible to the powerful forces of these storm events. Storm protection is a vital part of maintaining the valuable, and non-renewable, historic resources within the city. As with all of the other elements outlined in these Educational Guidelines, there are appropriate and inappropriate ways to shelter a historic structure from an approaching storm.

Since 1992 when Hurricane Andrew devastated southern Miami-Dade County, there have been great advancements in building technologies and materials. Unfortunately not all of those advancements are compatible with the details and treatments of historic structures. Perhaps the most common technological advancement, and most popular, has been the advent of the impact window.

While these windows are engineered and built to withstand great forces and impact from flying debris, they do break. A common misconception is that replacing historic windows (which have endured decades of hurricanes) with impact windows will eliminate the need to apply shutters as the windows are "hurricane proof." Even if the windows do stand up to impacts from debris, they can be compromised by hours of driving wind and rain. Shuttering or applying storm panels to any opening, impact product or not, is the best way to protect a structure. It is always preferred that original windows in a historic structure be restored and maintained, especially considering that shuttering is always the best method to protect any window or door.



Since 1992 when Hurricane Andrew devastated southern Miami-Dade County, there have been great advancements in building technologies and materials.

Hurricane Protection

Hurricane Shutter types include:

- **Metal Corrugated Storm Panels** – Metal panels are steel or aluminum. They look and function the same.
- **Clear polycarbonate Storm Panels** – Lightweight plastic panels that are see-through.
- **Accordion Shutters** – Not appropriate when visible from the a public right of way.
- **Hurricane Fabric Screens** – Lightweight and easily stored.
- **Impact Colonial Shutters** – Easy to operate, remains permanently in place, when architecturally appropriate.
- **Impact Bahama Shutters** – Easy to operate, remains permanently in place, when architecturally appropriate.

Attachment methods include:

- **Recessed flush bolts** – bolts that are installed to be recessed into the wall, and are used for installations with masonry structures. The attachment bolts can be painted the same color as the house to help obscure visibility.
- **Panelmates** – long double-threaded screws partially inset into the wood studs of wood structures, and a wingnut is used to attach the panel. One can put caps over the screws when not in use to help obscure visibility.
- **Tracks** – typically installed on the header and under the sill of the window. Can be permanent or removable. Permanent tracks are not appropriate when visible from the street as they visually detract from the appearance of the openings.

Recommendations:

- It is always recommend that the bolts or panelmates be installed to run in the same direction on the same façade (ie. All vertical or all horizontal on each opening)
- Take into account any window and door trim or sills that might prevent shutters from being properly installed, and plan the protection type accordingly.
- Consult with Historic Preservation Staff to determine suitable and appropriate methods of shuttering your historic building.

SHUTTER TYPES

Figure 14.1 Corrugated Metal Storm Panels

Figure 14.2 Clear Polycarbonate Storm Panels

Figure 14.3 Hurricane Fabric Screens

Figure 14.4 Impact Bahama Shutters

Historic Preservation Educational Guidelines

PROJECT PLANNING

PROJECT PLANNING

Introduction to Project Planning

It is important that all aspects of a building and its site layout be considered when constructing an addition or a new building within the Historic Districts. A successful project incorporates sustainability and resilience in its design and utilizes compatible materials, scale, and massing. As discussed in previous chapters, the features of homes (roofing, walls, foundations, windows and doors, etc.) characterize the visual appearance of a property, but also contribute to its overall energy efficiency and ability to adapt. The street elevation below provides examples of how these elements can work together successfully or unsuccessfully.

Figure 16.0 Street elevation with examples of successful and unsuccessful project planning and massing.

Mediterranean Revival

- Home is raised from ground without using a filled mound.
- Massing is broken by tower and proportional entry.
- Windows are proportional to the facade, and are the appropriate style for the architectural style.

Mediterranean Revival

- Slab on grade is not recommend.
- Columns are disproportionate to the size of the covered entry. While the size of the entry is oversized and does little to break up the large massing of the building.
- Windows are disproportionate to facade size and shape, and are not the appropriate for the architectural style.

Ranch

- Overhead garage door remains a minimal feature along the front facade.
- Windows and front door are appropriate for the style of the building.

Bungalow

- Home is raised from ground without using a filled mound.
- Windows and front door are appropriate for the style of the building.

Ranch

- Home is built on a filled elevated mound which does not fit the context of the neighborhood and is not recommend.
- The overhead garage door is oversized for the building and consumes most of the facade.

Wood Frame Vernacular

- Home is raised from the ground without using a filled mound.
- Windows and front door are appropriate for the style of the building.

PROJECT PLANNING

Four Approaches to Project Planning

When talking about repairing historic buildings, there are four separate and distinct approaches on how to treat historic buildings:

- **Preservation**
- **Rehabilitation**
- **Restoration**
- **Reconstruction**

There are separate Secretary of the Interior Standards created by the U.S. Department of the Interior. These standards serve as the recognized guidance on preserving, rehabilitating, restoring, or reconstructing historic structures for all four of these treatments.

This page will describe the differences between these approaches. The Educational Guidelines, however, focus on project planning for rehabilitation, since it is the treatment that the majority of homeowners utilize to repair and make changes to their property.

Preservation

This is the purest approach, doing the least amount of change to the structure. Preservation focuses on the maintenance and repair of existing historic materials, including retaining those parts of the building that have evolved or changed over time.

Rehabilitation

This is probably the most common type of treatment for historic properties, it takes place when changes and alterations are made to modernize a property, or to turn it into a different use, but still retains the historic character of the property.

Restoration

True restorations occur when a property is returned to how it was in a particular time or era, which can include the removal of many additions that are not from that time. It can also include the reconstruction of those portions that had been previously removed.

Reconstruction

The least common treatment, because it involves the actual recreation of a historic property that is no longer there. Reconstruction utilizes historic photographs and architectural drawings to rebuild, to educate the public, or replace what had been a valuable resource to a community.

Figure 17.0. Example of a rehabilitation project in Lake Worth Beach's Old Town Historic District.

ADDITIONS

Scale, Height, and Massing

Additions should follow the same guidelines considered in new construction or alternations to historic structures. When making an addition, the form should be contextual to the existing structure and complement the historical style. It's important that the addition not destroy character defining features or important spacial relationships in the existing structure. The following pages describe examples of appropriate massing which can be applied to different building forms.

Materials and Details

Additions are most successful when details and materials are continued from the existing historic structure. Assemblies like the roof, windows, doors, and brackets should be kept consistent or reflect the existing structure's composition. When deviations from the primary structure occur, they should be thoughtfully executed. Refer to the Lake Worth Beach Design Guidelines for additional information.

Figure 18.0 The addition to this home is appropriately scaled to the original and adopts key defining features and detailing.

GABLE-END

- One- to two-story massing.
- Gable or hip roof with 4:12 to 8:12 roof pitch.
- The roof runs perpendicular to the front entry.

SIDE GABLE

- One to one-and-one-half story massing
- Gable or hip roof with 4:12 to 8:12 roof pitch.
- The roof runs parallel to front entry.
- Two story massing at times.

MASSING COMBINATIONS

- Additions to the main massing can occur by connecting side and/or rear wings to create more square footage.
- Gabled, hipped, or shed dormers may be added to bring natural light into the space.
- Any additional architectural elements should match the main character of the structure.

GABLE-END MASSING

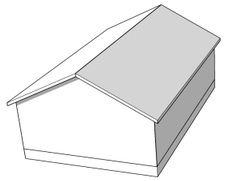


Figure 19.1 1 - Story front gable

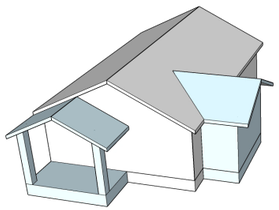


Figure 19.2 1 - Story Front gable with Side Gable Addition

Figure 19.3 Lake Worth Beach home with front gable projection.

GABLE-END MASSING

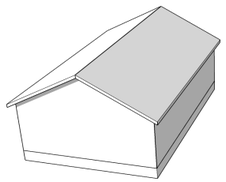


Figure 20.1 1 - Story front gable

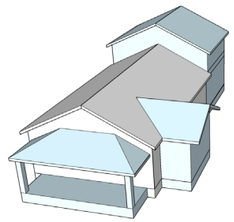


Figure 20.2 1 - Story Front gable with 2-Story Rear Addition

Figure 20.3 Lake Worth Beach home with side gable.

SIDE GABLE MASSING

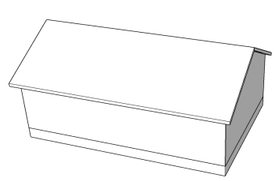


Figure 21.1 1 - Story side gable

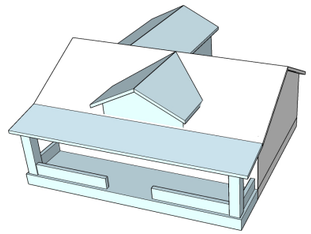


Figure 21.2 1 - Story side gable with cross Gable additions

Figure 21.3 Lake Worth Beach home with front porch and dormer.

SINGLE STORY MASSING

- Parapet walls rise above low sloped roof.
- Front massing extends creating a porch with an entryway.

MASSING COMBINATIONS

- Any additional architectural elements should match the main character of the structure.
- Porches are often found on the front facade.

MISSION ONE STORY MASSING

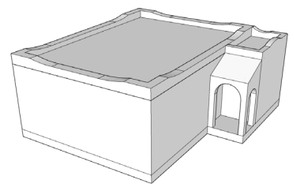


Figure 22.1 1 - Story

Figure 22.2 Lake Worth Beach Mission home.

FRONT PROJECTION MASSING

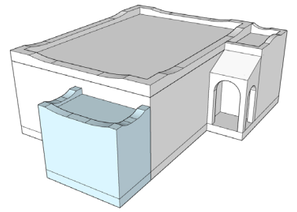


Figure 23.1 1 - Story with Front Projection

Figure 23.2 Lake Worth Beach Mission home with front projection.

FRONT PROJECTION & SECOND STORY MASSING

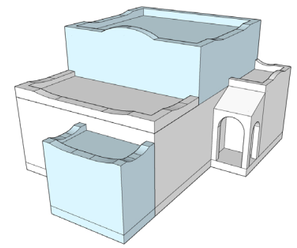


Figure 24.1 2 - Story With Front Projection and 2-Story Addition

Figure 24.2 2-Story West Palm Beach Mission home with front projection.

PROJECT PLANNING

MASSING COMBINATIONS

- An appropriate addition may be an accessory structure at the property's rear yard. Accessory buildings add more living space or useful square footage while maintaining the existing structure. Accessory buildings should be designed to compliment the existing structure in form and material.

MASSING COMBINATIONS

- Additions to the main massing an occur by connecting at the rear of the building.
- Commercial or multifamily buildings may require an additional stair or elevator to meet the Florida Building Code. When adding a stair or elevator locate along the rear of the build to avoid disrupting any facades that face the street.

ACCESSORY BUILDING MASSING

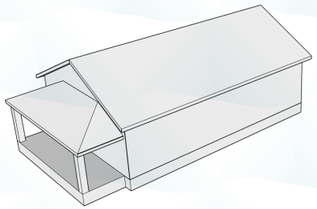


Figure 25.1 1 - Story Home

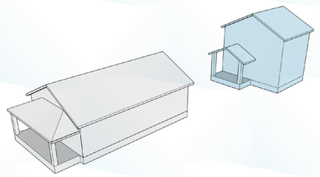


Figure 25.2 2 - Story Accessory Building Addition in Rear Yard

Figure 25.3 Lake Worth Beach home with accessory building

REAR & EXPOSED STAIR MASSING

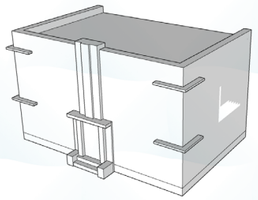


Figure 26.1 2 - Story Building

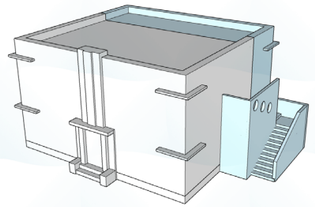
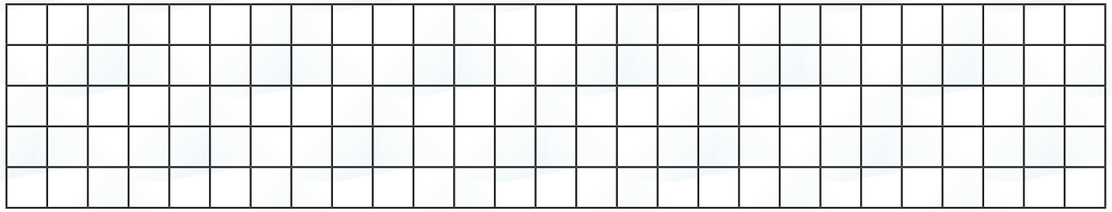


Figure 26.2 2 - Story Addition at Rear Yard

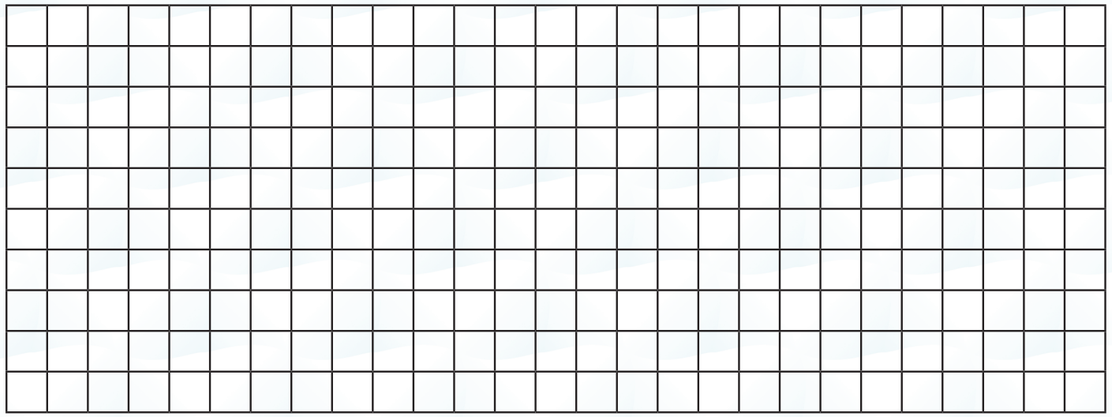
Figure 26.3 Lake Worth Beach apartment with exterior stair.

In order to assist with project planning, two mock-up residential lots are provided. They represent a 25'x135' lot and a 50'x135' lot, both common in the historic districts of Lake Worth Beach.

Use these gridded lots to help plan your project. Each square in the grid represents a 5'x5' dimension so design sketches can be made to scale.



25' x 135' Lot (each square represents a 5' square)



50' x 135' Lot (each square represents a 5' square)

ADDITIONAL INFORMATION

There are many resources available to assist in understanding the City of Lake Worth Beach Historic Resource Preservation approval process, the city's Land Development Regulations, benefits to restoring a historic structure including the Ad Valorem Tax Exemption Program, and other historic preservation resources that can educate and enrich the preservation process. Below please find a list of some of the most requested resources as well as their web site information.

City of Lake Worth Beach Historic Preservation Division:
website: https://www.lakeworthbeachfl.gov/community-sustainability/historic-preservation

City of Lake Worth Beach Land Development Regulations - Historic Preservation Section 23.5-4:
website: https://library.municode.com/fl/lake_worth_beach/codes/code_of_ordinances?nodeId=PTIICOOR_CH23LADERE_ART5SURE_S23.5-4HIPR

State of Florida, Department of State, Division of Historical Resources:
website: www.dos.myflorida.com/historical/

Florida Trust for Historic Preservation
website: www.floridatrust.org/

National Trust for Historic Preservation
website: www.viget.com/work/savingplaces-com/

National Park Service – Historic Preservation:
website: www.nps.gov/subjects/historicpreservation/index.htm

National Park Service – Technical Preservation Services: Preservation Briefs
website: www.nps.gov/tps/how-to-preserve/briefs.htm

National Park Service – Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings
website: https://www.nps.gov/tps/standards/rehabilitation/guidelines/index.htm

United States Department of Energy – Energy Saver
website: https://www.energy.gov/energysaver/energy-saver

Glossary

Adaptive Use: The reuse of a building or structure, usually for purposes different from the original use such as residence converted into offices.

Addition: New construction added to an existing building or structure.

Alignment: The arrangement of objects along a straight line.

Alteration: Work that affects the exterior appearance of a property.

Arch: A construction which spans an opening and supports the weight above it. (see flat arch, jack arch, segmental arch and semi-circular arch).

Balcony: A platform projecting from the wall of an upper story, enclosed by a railing or balustrade, with an entrance from the building and supported by brackets, columns, or cantilevered out.

Baluster: One of a series of short, vertical, often vase-shaped members, used to support a stair or porch handrail, forming a balustrade.

Balustrade: An entire rail system with top rail and balusters.

Bargeboard: A board which hangs from the projecting end of a gable roof, covering the end rafters, and often sawn into a decorative pattern.

Bay: The portion of a facade between columns or piers providing regular divisions and usually marked by windows.

Bay window: A projecting window that forms an extension to the floor space of the internal rooms; usually extends to the ground level.

Board and batten: Siding fashioned of boards set vertically and covered where their edges join by narrow strips called battens.

Bond: A term used to describe the various patterns in which brick (or stone) is laid, such as "common bond" or "Flemish bond."

Bracket: A projecting element of wood, stone or metal which spans between horizontal and vertical surfaces (eaves, shelves, overhangs) as decorative support.

Building: A structure with a roof, intended for shelter or enclosure such as a dwelling or garage.

Canopy: A roofed structure constructed of fabric or other material placed so as to extend outward from a building providing a protective shield for doors, windows and other openings, supported by the building and supports extended to the ground directly under the canopy or cantilevered from the building.

Casement window: A window with one or two sashes which are hinged at the sides and usually open outward.

Clapboards: Horizontal wooden boards, thinner at the top edge, which are overlapped to provide a weather-proof exterior wall surface.

Coastal flooding: Flooding which occurs when water is driven onto land from an adjacent body of water. This generally occurs when there are significant tropical storm events, such as hurricanes

Column: A cylindrical or square vertical structural or ornamental member.

Common bond: A brickwork pattern where most courses are laid flat, with the long "stretcher" edge exposed, but every fifth to eighth course is laid perpendicularly with the small "header" end exposed, to structurally tie the wall together.

Corbel: In masonry, a projection, or one of a seriesof projections, each stepped progressively fartherf orward with height and articulating a cornice or supporting an overhanging member.

Character: The qualities and attributes of a building, structure, site, street or district. Character may include individual structures or the relationship between structures.

Configuration: The arrangement of elements and details on a building , structure or site which help to define its character.

Glossary

Compatible: In harmony with surroundings.

Context: The setting in which a historic element, site, building, structure, street, or district exists.

Cornice: The uppermost, projecting part of an entablature, or feature resembling it. Any projecting ornamental molding along the top of a wall, building, etc.

Cresting: A decorated ornamental finish along the top of a wall or roof, often made of ornamental metal.

Cross-gable: A secondary gable roof which meets the primary roof at right angles.

Demolition: Any act which destroys a structure, either partially or entirely

Demolition by Neglect: The destruction of a building or structure through abandonment or lack of maintenance.

Dentils: A row of small tooth-like blocks in a classical cornice.

Design Guidelines: Criteria which provide direction to projects regarding design and help ensure that rehabilitation projects and new construction respect the character of designated buildings and districts.

Dormer window: A window that projects from a roof.

Double-hung window: A window with two sashes, one sliding vertically over the other.

Eave: The edge of a roof that projects beyond the face of a wall.

Element: A material part or detail of a site, building, structure, street, landscape or district.

Elevation: Any one of the external vertical planes of a building. (or) An external vertical plane of a structure.

Fabric: The physical material of a building, structure, site, or community conveying an interweaving of component parts.

Facade: Any of the exterior faces of a building.
Fascia: A projecting flat horizontal member or molding; forms the trim of a flat roof or a pitched roof; also a part of a classical entablature.

Fenestration: The arrangement of windows and other exterior openings on a building.

Finial: A projecting decorative element at the top of a roof turret or gable.

Fishscale shingles: A decorative pattern of wall shingles composed of staggered horizontal rows of wooden shingles with half-round ends.

Flashing: thin metal sheets used to prevent moisture infiltration at joints of roof planes and between the roof and vertical surfaces.

Flat arch: An arch whose wedge-shaped stones or bricks are set in a straight line; also called a jack arch.

Flemish bond: A brick-work pattern where the long "stretcher" edge of the brick is alternated with the small "header" end for decorative as well as structural effectiveness.

Flood: An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Flooding is a longer-term event than flash flooding – it may last days or weeks

Floor Area Ratio: The relationship of the total floor area of a building to the land area of its site, as defined as a ratio in which the numerator is the floor area, and the denominator is the site area.

Foundation: The lowest exposed portion of the building wall, which supports the structure above.

Frieze: The middle portion of a classical cornice; also applied decorative elements on an entablature or parapet wall.

Gable: The triangular section of a wall to carry a pitched roof.

Gable roof: A pitched roof with one downward slope on either side of a central, horizontal ridge.

Hipped roof: A roof with uniform slopes on all sides.

Historic District: A geographically definable area with a significant concentration of buildings, structures, sites, spaces, or objects unified by past events, physical development, design, setting, materials, workmanship, sense of cohesiveness or related historical and aesthetic associations. The significance of a district may be recognized through listing in a local, state, or national landmarks register and may be protected legally through enactment of a local historic district ordinance administered by a historic district board or commission.

Historic Imitation: New construction or rehabilitation where elements or components mimic an architectural style but are not of the same historic period as the existing buildings (historic replica).

Infill: New construction in historic districts on vacant lots or to replace existing buildings.

Jack arch (see Flat arch)

Jalousie: A type of window comprised of a series of horizontal glass slats connected to a mechanical device operated by a crank.

Joist: One of the horizontal wood beams that support the floors or ceilings of a house. They are set parallel to one another—usually from 1'0" to 2'0" apart—and span between supporting walls or larger wood beams

King tide: The highest predicted high tide of the year at a coastal location.

Landmark Site: A site that is of exceptional importance to the City, State, region or nation and imparts high artistic, historic and/or cultural values.

Landscape: The totality of the natural, built or human-influenced habitat experienced at any one place. Dominant features may be topography, plant cover, buildings, or other structures and their patterns.

Mean sea level: The height of the sea surface averaged over all stages of the tide over a period of time, typically computed over a 19-year period.

Maintain: To keep in an existing state of preservation or repair.

Masonry: Work using brick, stone, concrete block, tile, adobe or similar materials.

Metal standing seam roof: A roof composed of overlapping sections of metal such as copperbearing steel or iron coated with a terne alloy of lead and tin. These roofs were attached or crimped together in various raised seams for which the roof type is named.

Modillion: A horizontal bracket, often in the form of a plain block, ornamenting, or sometimes supporting, the underside of a cornice.

Molding: A decorative band or strip of material with a constant profile or section designed to cast interesting shadows. It is generally used in cornices and as trim around window and door openings.

Mortar: A mixture of sand, lime, (and in more modern structures, cement), and water used as a binding agent in masonry construction.

Mothballing Implementing temporary measures to stabilize and protect a building from deterioration and vandalism.

Mullion A heavy vertical divider between windows or doors.

Multi-light window A window sash composed of more than one pane of glass.

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Muntin A secondary framing member to divide and hold the panes of glass in multi-light window or glazed door.

New construction Construction which is characterized by the introduction of new elements, sites, buildings, structures or additions to existing buildings and structures in historic areas and districts.

Paired columns Two columns supported by one pier, as on a porch.

Palladian window A window with three openings, the central one arched and wider than the flanking ones.

Paneled door A door composed of solid panels (either raised or recessed) held within a framework of rails and stiles.

Parapet A solid protective or decorative wall located along the outside edge of a roof.

Pier: A column designed to support concentrated load; a member, usually in the form of a thickened section, which forms an integral part of a wall, usually placed at intervals along the wall to provide lateral support or take concentrated vertical loads.

Pilaster: A rectangular pillar attached, but projecting from a wall, resembling a classical column.

Pitch: The degree of the slope of a roof.

Portico: A roofed space, open or partly enclosed, forming the entrance and centerpiece of the facade of a building, often with columns and a pediment.

Post: A piece of wood, metal, etc., usually long and square or cylindrical, set upright to support a building, sign, gate, etc.; pillar; pole.

Preservation: Generally, saving from destruction or deterioration old and historic buildings, sites, structures, and objects and providing for their continued use by means of restoration, rehabilitation, or adaptive use.

Pressed tin: Decorative and functional metalwork made of molded tin used to sheath roofs, bays, and cornices.

Proportion: Harmonious relation of parts to one another or to the whole.

Protection: The act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss or attack, or to cover or shield the property from danger of injury. In the case of buildings and structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archaeological sites, the protective measure may be temporary or permanent.

Rafter: Any of the beams that slope from the ridge of a roof to the eaves and serve to support the roof.

Ridge: The top horizontal member of a roof where the sloping surfaces meet.

Roof: The top covering of a building. Following are some types:

- Gable roof has a pitched roof with ridge and vertical ends.
- Hip roof has sloped ends instead of vertical ends.
- Shed roof (lean-to) has one slope only and is built against a higher wall.
- Clipped gable or hipped gable is similar to gable but with the end clipped back.
- Gambrel roof is a variation of a gable roof, each side of which has a shallower slope above a steeper one.
- Mansard roof is a roof with a double slope; the lower slope is steeper than the upper.

Reconstruction: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as is appeared at a specific period of time.

Rehabilitation: The act or process of returning a property or building to usable condition through repair, alteration, and/or preservation of its features which are significant to its historical, architectural, and cultural values.

Renovation: The act or process of returning a property to a state of utility through repair or alteration which makes possible a contemporary use.

Restoration: The act or process of returning a building's appearance to a specific period of time by removing later work and by replacing missing earlier features to match the original.

Retain: To keep secure and intact. In the guidelines, "retain" and "maintain" describe the act of keeping an element, detail, or structure and continuing the same level of repair to aid in the preservation of elements, sites and structures.

Re-use: To use again. An element, detail, or structure might be reused in historic districts.

Rusticated: Roughening of stonework or concrete blocks to give greater articulation to each block.

Sash: The moveable framework containing the glass in a window.

Scale: Proportional elements that demonstrate the size, materials, and style of buildings.

Sea level rise: An observed increase in the average local sea level or global sea level trend. The two major causes of global sea level rise are thermal expansion caused by the warming of the oceans (since water expands as it warms) and the loss of land-based ice (such as glaciers and polar ice caps) due to melting.

Setting: The sum of attributes of a locality, neighborhood, or property that defines its character.

Sheathing: An exterior covering of boards or other surface applied to the frame of the structure. (see Siding)

Shingle: A roofing unit of wood, asphaltic material, slate, tile, concrete, asbestos cement, metal, or other material cut to stock lengths, widths, and thickness, used as an exterior covering on sloping roofs and side walls; applied in an overlapping fashion.

Shed roof: A gently-pitched, almost flat roof with only one slope.

Sidelight: A vertical area of fixed glass on either side of a door or window.

Siding: The exterior wall covering or sheathing of a structure.

Significant: Having particularly important associations within the contexts of architecture, history, and culture.

Sill: The bottom crosspiece of a window frame.

Solar heat gain coefficient (SHGC): SHGC is the fraction of solar radiation admitted through a window, door, or skylight — either transmitted directly and/or absorbed, and subsequently released as heat inside a home.

Soffit: The underside of a structural part, as of a beam, arch, etc.

Spindles: Slender, elaborately turned wood dowels or rods often used in screens and porch trim.

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Stabilization: The act or process of applying measures to reestablish a weather resistant enclosure and the structural stability of a deteriorated property while maintaining its present form.

Streetscape: The distinguishing character of a particular street as created by its width, degree of curvature, paving materials, design of the street furniture, and forms of surrounding buildings.

Storm surge: An abnormal rise of water generated by a storm over and above the predicted astronomical tides. Storm surge should not be confused with storm tide, which is defined as the water level rise due to the combination of storm surge and the astronomical tide.

Stormwater runoff: Is generated when precipitation flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates pollutants that could adversely affect water quality if the runoff is discharged untreated.

Stucco: An exterior wall covering that consists of lime, cement and sand, applied directly or over a wood or metal lath. It is usually applied in three coats.

Style: A type of architecture distinguished by special characteristics of structure and ornament and often related in time; also a general quality of a distinctive character.

Transom: A horizontal opening (or bar) over a door or window.

Trim: The decorative framing of openings and other features on a facade.

Veranda: A covered porch or balcony on a building's exterior.

Vernacular: A regional form or adaptation of an architectural style.

Visual Continuity: A sense of unity or belonging together that elements of the built environment exhibit because of similarities among them.

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