



BUILDING IN
PARADISE:

*Things to know
and questions
to ask when
building and living
on Florida's coasts*



With the tropical sun, balmy breezes, sandy beaches and beautiful waters gracing Florida's coastal areas, it is no wonder that 10 million people have already chosen to live at the Florida shore — and thousands more are constructing coastal homes every year.

But precisely because of the surf, wind, and sun, building in coastal areas presents its own special set of challenges. A solid and substantial inland home — a brick home with picture windows on concrete slab foundation, for example — is one of the worst alternatives for coastal areas.

Remember, the rules are different in Florida's coastal areas! It is important to respect and work with nature in coastal areas — to protect your family, your property and Florida's rich coastal environment.

Respect and work with nature in coastal areas — to protect your family, your property, and Florida's rich coastal environment.

This brochure outlines some of the ways that coastal construction differs from inland development, along with important considerations for anyone considering building on a Florida coast.

It is important to remember that these are broad guidelines — you must contact your local planning and building inspection offices for more specific information about the requirements for your particular parcel of land.

This brochure also offers suggestions about how to be a good environmental steward. Consider the tips included here, and consult the resources listed in the references section for information on ways you can protect the environment — and protect your investment in Florida's coasts.

You may wish to also read the



Front, rear and inside cover photo, "Little Pavillion Key," has been provided courtesy of Clyde Butcher, Florida naturalist and photographer.



Florida Tourism Industry Marketing Corporation

companion brochure, *Purchasing Paradise: Things to Know and Questions to Ask When Buying Coastal Property in Florida*.

Where should your coastal home be located?

One of the most important decisions you will make is where to locate your home on your property. Here are some general guidelines.

Whether on the mainland or a barrier island, choose a site as far from the water and with as high an elevation as possible. At a minimum, your home should be built behind the first line of dunes, as these provide some protection from waves and tides, especially during storms. Avoid sites where dunes have been removed, leveled, lowered or have little or no vegetation.

Other areas to avoid include sites along inlets and channels, at the edges of

barrier islands, near notches in the dunes or along straight roads leading to the water — all of these face a higher risk of damage during a storm, as they provide natural channels for water as it washes over the land.

Don't build in areas where evidence of erosion is visible, such as where buildings have obviously been relocated, where tides run under existing structures, where roads are washed out, or where there are remnants of seawalls or other shoreline stabilization.



Choose a site as far from the water and with as high an elevation as possible.

Remember that hard stabilization structures such as seawalls, bulkheads, revetments, groins and jetties may limit erosion during moderate storms, but over the long term they can actually place your property at higher risk of damage. Don't rely on these structures to protect your home; rather build the structure so that it can withstand the forces of nature on its own terms.

If possible, select a lot above the 100-year flood level, and avoid vulnerable A-Zone (coastal flood hazard) or V-Zone (velocity or coastal high hazard zone) areas designated by the Federal Emergency Management Agency (FEMA).

Finally, keep in mind the need to evacuate during a storm. Know the available evacuation routes, how long evacuation currently takes, how population growth will impact that time, where local storm shelters are and whether existing bridges and access roads will likely flood during a storm.

What about regulations and setbacks?

Disregard for coastal dynamics not only may result in major property damage, it also endangers lives and has serious environmental consequences.

To lessen the risk of construction in the coastal zone, the state of Florida limits where new coastal construction may take place, taking into account both public safety and environmental protection.

Coastal construction control lines are established to preserve beaches and dunes and to protect adjacent coastal property. No construction is allowed seaward of these lines except by special permit.

The *coastal building zone* is the area from the seasonal high water mark to a line 1,500 feet landward of the coastal construction control line for sandy beaches. On Florida's barrier islands, the coastal building zone extends landward 5,000 feet or the entire island, whichever is less. In some areas the coastal building zone may extend farther inland due to local conditions.

Construction in the coastal building zone is subject to more stringent requirements than structures built farther inland. Structures must conform to minimum state building codes, national flood insurance regulations and local ordinances. A building's

The coastal building zone will vary depending on local conditions.





The owners of this home may one day pay an unexpected price for their view.

Federal flood insurance is not available in certain coastal areas.

design and construction must meet the wind speed standard established by the building code in effect for the area, as well as the anticipated effects from a 100-year storm event.

There are several restrictions in Florida to protect the immediate shoreline. Any construction that requires altering or removing dunes — including constructing walkways — requires a special permit.

Further, it is against Florida law to remove sea oats and grasses from the dunes. Coastal property may also be affected by the right of the public to have access to the beach, or by special sea turtle protection plans.

In certain areas on barrier islands, the federal Coastal Barrier Resources Act prohibits the use of federal funds for new structures, erosion control projects, roads, bridges, or sewer systems. This means that federal flood insurance coverage is not available for structures in the designated areas.

What can you do to strengthen your coastal home?

Although nothing guarantees that any structure will survive a major storm, there are steps you can take to help your home withstand the stress of a major storm or hurricane.

As a starting point, be sure to check all federal, state and local permitting requirements before beginning any coastal construction. If you are purchasing an older home at the coast, have it evaluated by a structural engineer. Building codes have been strengthened since the mid-1980s, and older homes were probably constructed to lesser standards.

Remember that “minimum” building codes are just that: minimums. A few dollars spent to increase the structural integrity of your home above that required by the minimum codes may have a big payoff in a coastal storm.

When designing your coastal house, avoid highly angular designs — nooks and crannies are more susceptible to

These homes may have withstood the force of the hurricane had they been built above the minimum standards.





This home's design reduces the amount of wind pressure exerted on it.

The simpler the shape of the house, the more resistant it is to the forces of wind and waves.

wind damage. Also remember, the simpler the shape of the house, the more resistant it is to the forces of wind and waves. For example, a round house only receives about sixty percent of the wind pressure exerted on a rectangular house.

Consider roof design — a hip roof sloping in four directions is better than a gable roof sloping in two, because the hip roof offers smaller areas for the wind to attack. Whatever shape roof you decide on, avoid having too many overhangs, which are subject to heavy uplift forces.

While masonry homes (brick, concrete block, etc.) are generally regarded as stronger than wood-frame houses in inland areas, they may actually be more susceptible to storm damage in coastal locations. Your best bet is a wood-frame home, elevated on pilings.

Elevating your home helps protect it from flooding and storm surge, and may even be required in some areas. The pilings must be embedded to a depth sufficient to enable them to withstand the impact of wind and water. For maximum strength, pilings should

extend up to the roof of the structure, making them an integral part of the structure of the house.

The open area under an elevated house helps allow for natural overwash during a storm. It should not be enclosed, as this increases the risk of structural damage to your building.

If the area must be enclosed, install louvers, screens or breakaway walls. (Check with local building officials about flood insurance requirements in your area.) Be careful when storing items underneath your home. Everything that can be moved by flood waters and storm surge is capable of damaging your property or your neighbor's property.

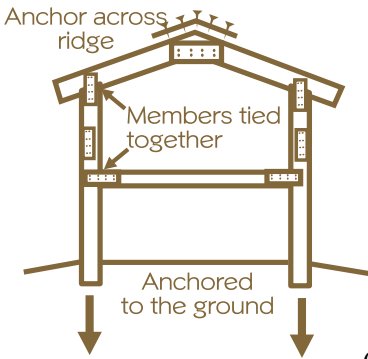
Your home's various components — the roof, walls, floors and posts — should be securely fastened together from the ground through to the top of the roof to provide the most protection from wind damage.

Stainless steel connectors are stronger and more durable than ones made of common, or even galvanized steel, making them the much better choice.

Before enclosing the space beneath your home, check local ordinances and flood insurance regulations.



Vivian Young



Securely connecting a home's components creates an integral unit better able to withstand the forces of major storms.

Closely follow the manufacturer's specifications on the sizes and number of fasteners. And remember that although local building codes may specify such elements as the size and quality of the piles and their spacing, fastening and bracing, these are only minimum standards.

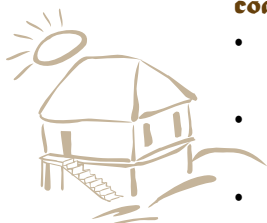
Discuss, either with your contractor or building inspector, ways you can better secure your home.

Carefully consider all exterior coverings — roof, siding, doors and windows. Often referred to as the envelope, once the exterior of your house has been breached it leaves your home more vulnerable to damage from wind and water. Invest in good siding and roofing materials, solid doors and wind-resistant glass.

Although it may be tempting to include large, ocean-facing windows, remember that glass does not offer the structural strength of other building materials. It is also likely to explode inward during major storms.

No matter how large or small your windows, invest in good quality storm shutters or keep an adequate supply of plywood on hand to board the windows during a storm.

Elements for a carefully constructed coastal home



- A site well back from the ocean or Gulf, at least behind frontal dunes.
- Elevation above 100-year storm level plus allowance for waves.
- Smooth, simple shape to resist winds.
- Hip roof with minimal overhangs.
- Wood frame construction elevated on pilings.
- Well-braced pilings sunk to an adequate depth.
- Area under house left open or fitted with louvers, screens, or breakaway walls.
- All components (roof, walls, floor, pilings) securely fastened to each other.
- Sufficient size and number of connectors and fasteners, preferably of stainless steel.
- Good quality siding, roofing, doors and windows.
- Minimal ocean-facing expanses of glass.
- Built to standards exceeding the minimum code.

Proper maintenance helps you avoid more costly repairs in the future.

Once you have built your home, have it inspected regularly. Coastal homes are subject to accelerated wear-and-tear from the elements — metal connectors corrode, wooden pilings rot, shingles blow loose. Proper maintenance helps you avoid more costly repairs in the future, and helps ensure that you will enjoy your coastal home for years to come.

What should you ask before you build?



Responsible coastal property owners understand that restrictions and guidelines are necessary to promote human safety and environmental protection. Before building on coastal property, look at the property carefully, look at adjoining properties and check with local building officials for any information they might have about the property and the surrounding areas.

As you consider your construction project, ask local government agencies, real estate and insurance agents and contractors the following questions:

- What land use and zoning restrictions apply to my property?
- Is the site located in a relatively safe area in which to build?
- Is my proposed house suitable to a coastal location?
- Have I done everything I can to make sure that my proposed home has structural integrity?
- If waterfront property, are there obvious signs of erosion?
- Are there groins, jetties or seawalls in the immediate vicinity?
- Do I need to consider the impacts of flooding?
- Is my property in an area where I can get proper wind and flood insurance?
- Does the local or state government have standards that would prohibit me from rebuilding if my home is destroyed by a storm?
- Does the area need to evacuate for storms? Are the evacuation routes adequate?

How can you be an environmentally responsible coastal homeowner?

There's more to safe and responsible coastal living than building a sound structure. Once you have built your coastal home, you should understand that what you do in and around your home can have a profound impact on the environment — especially the fragile coastal environment.

Learn to be a good environmental steward, and in so doing create a more healthful life for yourself, your neighbors and the environment.

Protect Florida's fresh water, conserving both its quantity and its quality.

Pay attention to water use

The relationship between ocean waters and freshwater in the coastal zone is very delicate, and in these areas freshwater resources are easily depleted or degraded by overuse or pollution.

Groundwater is the major supplier of freshwater in most coastal areas. Pumped from porous limestone formations called aquifers, groundwater is extremely vulnerable to pollution — from leaking underground storage tanks, surface materials, septic tanks, or from saltwater intrusion caused by overuse. Protect Florida's fresh water, conserving both its quantity and its quality.

Conserve water quantity

Even though Florida receives abundant rainfall and possesses some of the nation's most productive aquifers, parts of the state still suffer from periodic water shortages. These shortages are caused by a number of things, but a





Typical home landscaping can be expensive in Florida, where lawns are always thirsty.

leading contributor is household water use by an increasing population.

A typical Florida home uses 170-175 gallons of water every day for drinking, cooking, bathing, washing clothes, dishes and cars, maintaining swimming pools and — a major use — watering lawns. When compared with the national average of 100 gallons a day, it is easy to see the real need to reduce domestic water use.

There are many easy steps you can employ to become a wise water user. Learn how to practice water conservation and reduce the amount of water you use in your home.

Additionally, consider the time-honored tradition of collecting rainwater in cisterns. Prior to the development of central water systems, many

Floridians collected rainwater from their roofs for household use.

Today, in some areas where water is scarce, people have once again started to use cisterns to collect rainwater for watering gardens or doing laundry. Some people even treat the collected rainwater and use it for all household purposes.



Tips:

- Repair leaking faucets and toilets (a leaking toilet can waste 500 gallons of water a day).
- Invest in water-efficient shower heads and toilet-flushing devices.
- Avoid running water continuously when shaving, brushing teeth, or washing dishes.
- Find ways to re-use water (catch water in the shower and use it to water plants).
- Wash cars on the lawn (use hoses with shut-off nozzles and a bucket).
- Investigate collecting and using rainwater run off for landscape irrigation and laundry.

Protect water quality

Many common household products can have substantial effects on the quality of Florida's freshwater resources. Used

motor oil and antifreeze from

vehicles, chemicals from house-

hold cleaners, pesticides,

fertilizers, pool care

chemicals, paints,

varnishes and thinners —

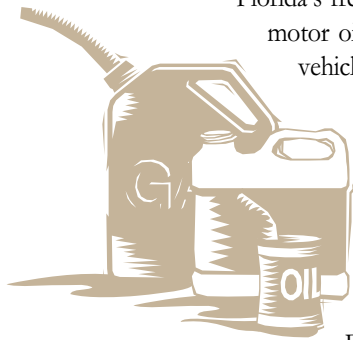
all of these can leave your

home as wastewater or run

off and can pollute

Florida's water. Try to limit the amount of these materials

you use around your home, and when you do use them, dispose of them properly. Call your local government for information on disposing of or recycling these products.



Florida's groundwaters are easily contaminated by products we use in our homes.

Tips:

- Always take motor oil to recycling locations.
- Do not dispose of chemicals by pouring them down drains, in storm sewers, or on the ground.
- Always read the label carefully and follow directions regarding use, storage and disposal of any household chemical.
- Buy multi-use products that can clean a variety of surfaces.
- Consider using nontoxic alternatives to strong commercial household cleaners.
- Avoid pesticides and fertilizers wherever possible, and do not use them near surface water or wells, or on bare or eroded ground.

Maintain septic tanks

Approximately 1.6 million Florida homes use on-site sewage treatment and disposal systems (OSTDS), commonly referred to as septic tanks. These underground systems receive and treat bathroom, kitchen and laundry wastes and release them into the soil.

They provide on-site wastewater treatment when public sewers are not available, and are usually made up of a series of pipes connecting a septic tank, a distribution box and a drain field. Microorganisms and insects live in the septic tank drain field and decontaminate the waste, thereby protecting groundwater from contamination.

Nevertheless, one of the most frequently reported sources of groundwater and surface water contamination is from malfunctioning septic tank

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systems. When an OSTDS malfunctions, it loses its ability to remove pollutants from the wastewater.

Septic system failure is a serious problem, leading not only to expensive repair costs for homeowners, but also posing serious human health threats from toxins, bacteria and viruses that the wastewater may contain.

If you must use an OSTDS, learn how to properly use and maintain it to prevent system failures that could threaten water resources and also your family's health.

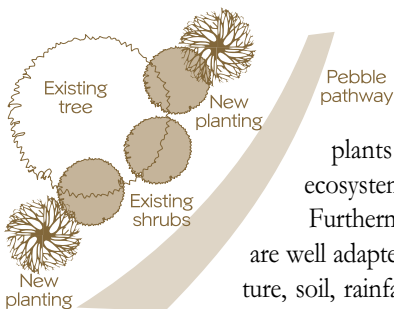
Tips:

- Do not use a septic tank system if a sewer system is available.
- If you must use an OSTDS, check it annually and pump it every three years.
- Never use a garbage disposal with an OSTDS.
- Do not use septic tank additives or cleaning compounds.
- Do not pour household chemicals down the drain or toilet.
- Do not flush items that do not decompose, such as diapers, cat litter, cigarettes, plastic, rubber or nylon.



Landscaping with nature

Instead of elaborate landscaping with broad expanses of lawn, large amounts of impermeable pavement and plantings of non-native species, consider using natural materials and native plants. Landscaping with native trees, shrubs and groundcovers is more ecologically responsible because non-



native species can be noxious and invasive, crowding out native plants and threatening ecosystems and wildlife.

Furthermore, because these plants are well adapted to a region's temperature, soil, rainfall and pests, they require fewer chemicals, less water and less care. Reducing lawn areas also cuts down on water and chemical use, while reducing the amount of pavement decreases run off and erosion.

Tips:

- Limit the amount of lawn in your landscape design.
- Preserve existing native vegetation.
- Remove invasive non-native plants.
- Consider using native species when designing a landscape.
- Limit the amount of paved surfaces around your home and consider permeable alternatives to slab concrete for walks and driveways.
- Learn about gardening methods that advocate plant care without the use of fertilizer or pesticides.
- Water only as needed.

Be energy efficient

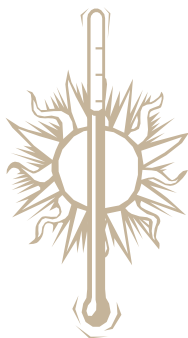
Florida, with its rapid population growth, is a huge consumer of energy. This energy consumption has serious environmental consequences, and Floridians must recognize the need to reduce energy use.

Floridians burn more than 6.1 billion gallons of gasoline a year, and lead the nation in electricity use, pri-

marily because of air conditioning. This energy use is hard on the environment.

Air pollution caused by vehicle emissions, leaking underground petroleum storage tanks, oil spills from oil drilling and tanker operations, acid rain caused by electric generating plants — these are a few of the many ways the generation of energy can pollute the environment.

Burning fossil fuels contributes to global warming, which may change climate patterns significantly and result in sea level rise — with profound effects for coastal Florida.



Tips:

- Ask your electric utility company for advice about energy efficiency. Many will perform energy audits on your home that will tell where you can save energy and money.
- Use compact fluorescent bulbs instead of high-wattage incandescent bulbs.
- Weatherproof and insulate your house.
- Use passive energy design — fewer windows on the south side of your house can reduce the amount of energy needed to cool it.
- Consider alternative sources of energy such as solar power.
- Ensure that your water heater and hot water pipes are sufficiently insulated.
- Look for energy efficient models when buying appliances.
- Walk, bicycle, or use public transit whenever possible.



Conclusion

A few small lifestyle changes can make a big difference to Florida's environmental well-being.

If you decide to join the millions of people who already live at the Florida shore, remember that the rules are different. Take time to learn how to build in a manner that is safe — not only for your family and your investment, but also for Florida's ecological health. And once you are living in your coastal home, be a good environmental steward — a few small lifestyle changes can make a big difference to Florida's environmental well-being.

For more information:

Building codes, flood insurance requirements and local planning and zoning:

Contact the local city or county government office in the area where you are considering building your home.

Emergency planning and evacuation:

Florida Department of Community Affairs, Division of Emergency Management: (850) 413-9969, and your local city or county emergency management offices.

Compliance with the federal Coastal Barrier Resources Act and consistency with state laws and policies:

Florida Coastal Management Program: (850) 922-5438.

Submerged lands management and environmental resource permitting, including coastal construction control line:

*Florida Department of Environmental Protection:
(850) 487-4471, and your local water management district offices.*

Information for an environmentally responsible homeowner:

Florida Department of Environmental Protection, Office of Environmental Education: (850) 488-9334.

*Cooperative Extension Service, Florida Energy Extension Service:
(352) 392-5684.*

*Florida Department of Community Affairs, Energy Office:
(850) 488-2475.*

Florida Solar Energy Center: (407) 638-1000.

Reference Books:

Coastal Design: A Guide for Builders, Planners and Home Owners, Orrin H. Pilkey, Sr., *et al.* (Van Nostrand Reinhold, 1983)

Ecosystems of Florida, R. L. Myers and J. J. Ewel (University Presses of Florida, Orlando, 1990)

Environmental Quality in the Gulf of Mexico: A Citizen's Guide (Center for Marine Conservation, 2d ed., 1992)

50 Simple Things You Can Do to Save the Earth, The Earthworks Group (Earthworks Press, 1989)

Guide to Florida Environmental Issues and Information (Florida Conservation Foundation, 1993)

An Introduction to Coastal Zone Management, T. Beatley, *et al.* (Island Press, Washington, D.C., 1994)

Living with the East Florida Shore, O.H. Pilkey, Jr., et al. (Duke University Press, Durham, NC, 1984)

Living with the West Florida Shore, Larry J. Doyle, et al. (Duke University Press, Durham, NC, 1983)

Protecting Paradise: 300 Ways to Protect Florida's Environment, P. Cavanaugh and M. Spontak (Phoenix Publishing, 1992)

Sand in My Shoes: A Guide to Living with Florida's Coast (Florida Department of Community Affairs, Florida Coastal Management Program and 1000 Friends of Florida, 1995)

Some of these publications may be purchased from the Environmental Media Corporation at 1-800-ENV-EDUC.

Reference Videos:

A House Built on Sand: Common Sense Rules for Buying and Building in Florida's Coastal High-Hazard Area (Florida Department of Community Affairs, Florida Coastal Management Program, 1997)

Against the Tide: When Permanent Structures Encounter a Moving Shoreline (Florida Department of Community Affairs, Florida Coastal Management Program, 1997)



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