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Newer high-rises built to stand up to sea, experts say

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Despite encroaching erosion along the South Florida coast, owners of newer high-rise condos built on the beach need not inflate life rafts in their living rooms. Not yet anyway.

Those buildings probably are not going anywhere, even if the Atlantic swallows the sand right out from under the lobby. That is according to engineers who have overseen the construction of those edifices since 1992's Hurricane Andrew.

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Unfortunately, residents of older buildings are on less solid ground.

Over the past few days, the sea has left its teeth marks up and down the coast, as Tropical Storm Noel has roiled the waters and increased erosion. Residents of some older, smaller buildings have been advised to evacuate.

But taller condo and apartment complexes built since 1992 should be so well-anchored - with thick pilings sunk into bedrock beneath the sand - that the waves will not present a danger. The building rules were enhanced after Andrew clobbered Miami-Dade County and exposed not just shoddy construction standards but lax government oversight.

"Waves washing away the sand around your building isn't weakening the foundation at all," said Jeff Schattinger, a

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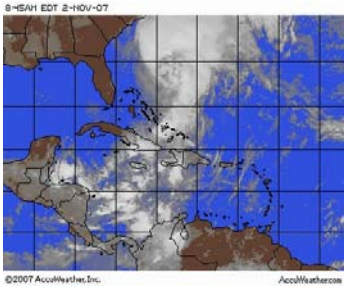

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senior manager for Toll Brothers Construction, which is responsible for two large post-1992 condo projects on Singer Island.

He and other construction experts described a multitiered process of studies, reviews and inspections, which they say has made coastal construction more trustworthy.

It begins with a determination: Is the project to be built within the Coastal Construction Control Line, a demarcation running 1,500 feet west of the high-tide line along the coast?

"If it is seaward of the CCCL, then special safety and environmental concerns apply," said Mike Jenkins, chief of the coastal engineering unit of Applied Technology and Management of West Palm Beach.

Geo-technician tests rock

On seaside projects, Jenkins said, a coastal engineer must gather information on the history of water levels, storm surge, wind and wave forces and erosion in the area. That information is used to set the construction standards for the complex.

A developer also must hire a geo-technician, or soil engineer, such as Wendell Rodgers of Allterra Engineering and Testing of West Palm Beach, who has worked on coastal building projects.

"The first step is to perform borings and samples," Rodgers said.

He has seen places along the coast where sand was 90 feet deep before bedrock was hit and others where the limestone rock was right on the surface, he said. The bedrock must be sampled to assure it has the consistency to withstand the weight of the complex planned and will not give way to wind or water.

"In New York, it's all granite, which is why

you get all those big buildings up there," Rodgers said.

The Florida coast is not Manhattan.

"But the situation in Florida is actually pretty good for coastal construction" because bedrock is accessible, Rodgers said.

In some parts of the world, bedrock is much farther down and buildings cannot be anchored in rock.

Like Jenkins, Rodgers delivers his soil and rock findings, which will determine, in part, how far down pilings for the complex must be driven and how thick they must be. Pilings get as thick as 3 to 4 feet in some instances.

The Florida Department of Environmental Protection reviews the results of the engineering studies and is responsible for issuing the permits to build within the CCCL.

Partitions can give way

Toll Brothers, a Pennsylvania-based firm, has built Beachfront (59 units on 19 floors) and is completing Ocean's Edge (40 units on 18 floors), both on badly eroded Singer Island.

Schattinger said the Ocean's Edge complex, which has a footprint of about 25,000 square feet, will have about 600 supports, or "piles," which have been drilled about 35 feet into the ground. The first 30 feet is mostly sand, and the last 5 feet is sunk into bedrock.

Each pile is 18 inches wide, made of special concrete that can sustain 6,000 pounds per square inch, and is reinforced withsteel rods.In some areas - under elevators and stairwells - the piles are clustered in greater proximity to increase support.

Post-1992 regulations stipulate that coastal buildings be constructed at certain heights above sea level, Schattinger said. Contractors now truck in sand to elevate their buildings, which makes it harder for erosion to reach them.

He said the first floor of Ocean's Edge and many other modern coastal structures also features partitions designed to give way if water enters the building.

"They are designed to allow water to flow through" so the waves don't destabilize the structures, he said.

Rodgers, the soil engineer, said even if construction employing piles driven into bedrock were to be executed faultily, the building "would never fail all of a sudden. It would be gradual, and there would be ways to address the problems."

Schattinger agreed.

"The perception that a building will suddenly fall in the water is kind of comical," he said. "It doesn't work that way."

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