

Resilient & Disaster Proof Amphibious Foundation Systems

The best solution for rising sea levels, tsunamis, hurricanes, tornadoes & wildfires



OnwaterTM

Onwater Floating Foundations

For new and existing buildings on land or water, or partially on both land and water

Reliable, low maintenance, long life cycle, passive, net zero, sustainable, flexible and scalable

Example: Single Family Home in Palm Beach, FL

An existing 4,750 sq ft. home situated one house away from the Atlantic Ocean

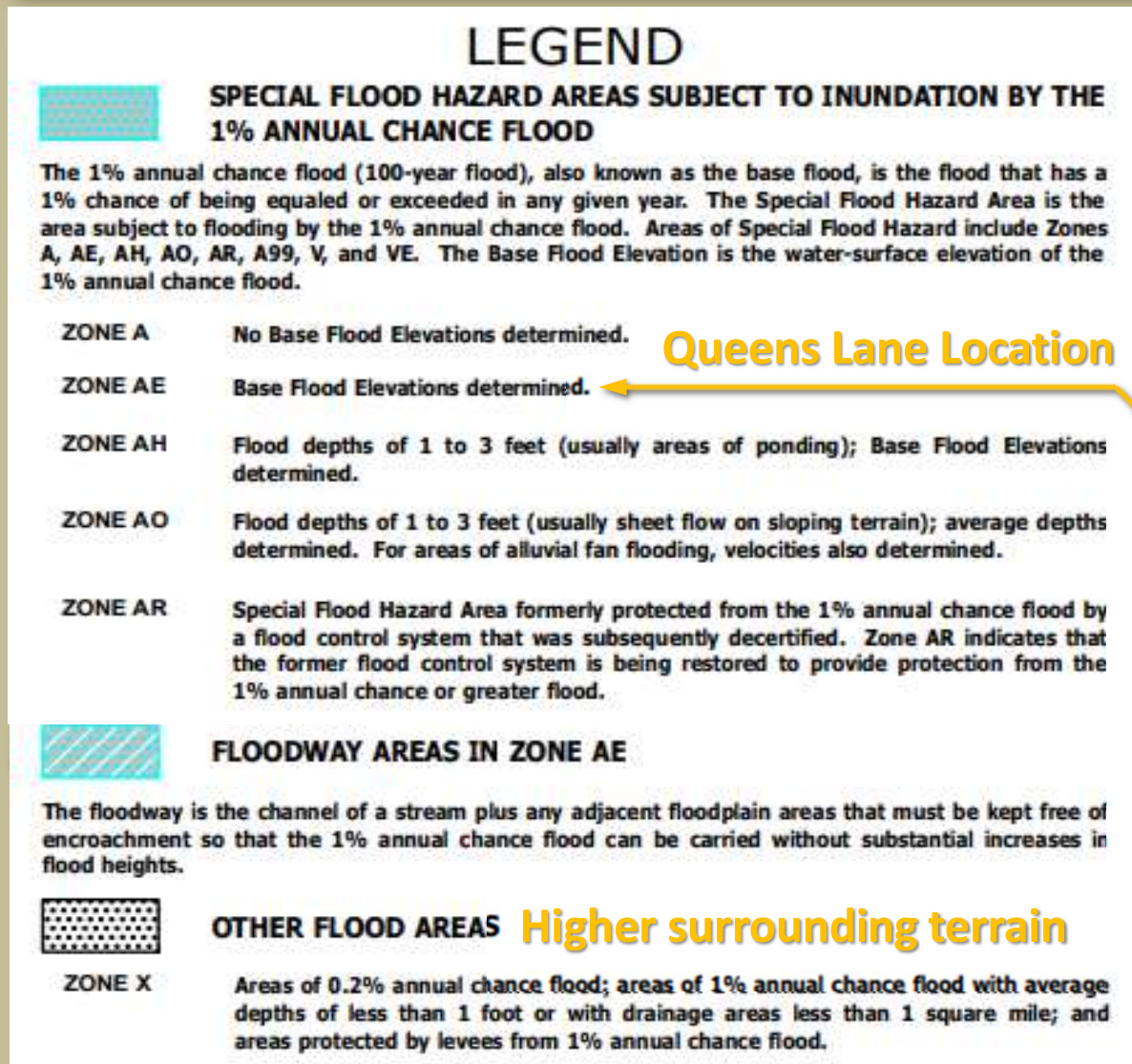


The circa 1940 concrete block 2 story, slab on grade, single family home, has changed very little on the two street facing sides in the past 75 years. The proposed design utilizes the same building footprint with the exception of a new main entry on the street corner.

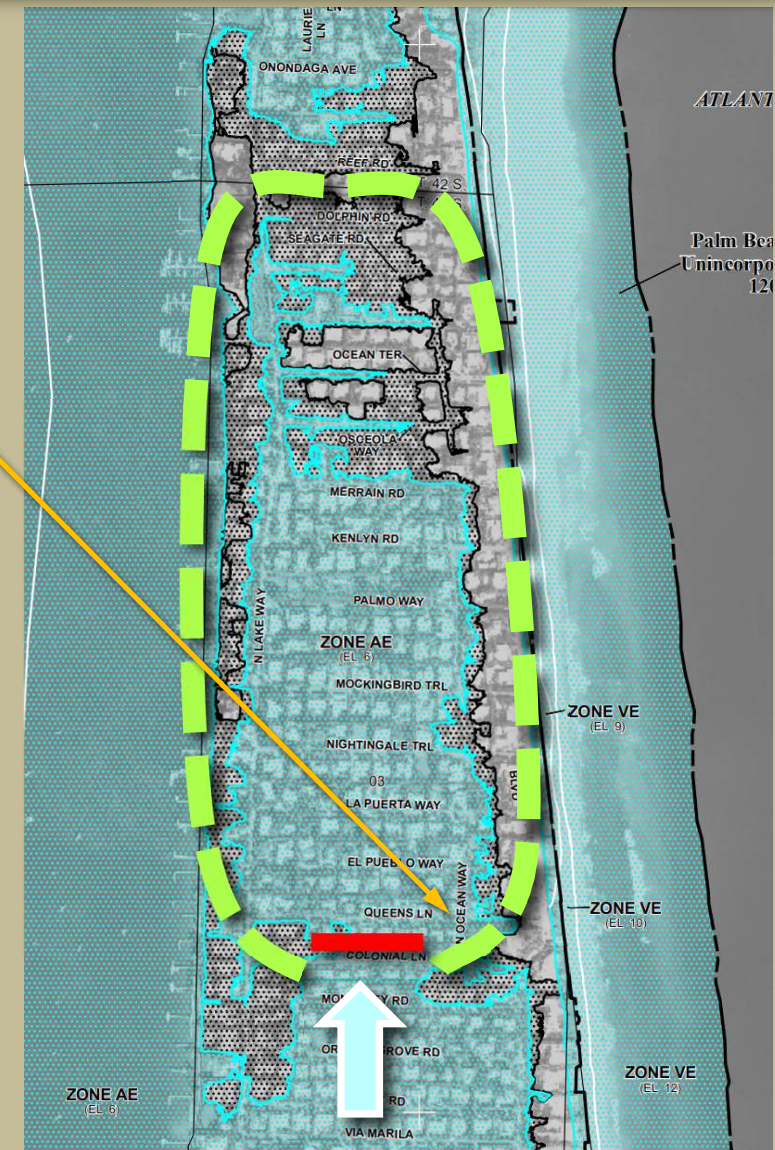


Strategically Locate Storm Sewer Stormwater Retention

Work with existing topography and position basins at the source of flooding



Queens Lane Location



Example: Single Family Home on Queens Lane Palm Beach, FL

Home can be retrofitted with a small addition added or home can be replaced



Incorporating a 45 degree angled corner entrance complements the corner lot location. No part of the Onwater foundation is visible and the system offers unlimited design flexibility to accommodate any building footprint and design esthetic.

Example: Single Family Home on Queens Lane Palm Beach, FL
Adding an Onwater foundation provides a 9+ car garage in a new basement level



The existing home has a two car garage on the first floor that can remain in the same location. To increase capacity in the basement garage, the first floor two car garage is shown moved 18' toward the street corner in the image above and images that follow.

Example: Single Family Home on Queens Lane Palm Beach, FL
PB Zoning By-Law prohibits garage doors from directly facing the street



To help disguise the garage door for the two car garage, an 18' wide "Kristine Style" garage door by Frenchporte Co. has been added which looks like sets of French doors. Low height walls and columns on both sides of the garage door also help hide the door.

Example: Single Family Home on Queens Lane Palm Beach, FL
Garage doors can be disguised as French doors to reduce the visual impact



Left click on orange color banner above, then
select the arrow button to play video

The 18' W. "Kristine Style" garage door by Frenchporte Co. looks like sets of French doors.

Example: Single Family Home on Queens Lane Palm Beach, FL

Building raises and lowers between pre-set heights late at night before a flood



At 3:00 AM the morning flooding is anticipated to arrive, the Onwater foundation system will raise the building approximately 15' to align the front steps and garage entrance with the existing grade. This sets the basement floor level 4.5' above the existing street height.

Example: Single Family Home on Queens Lane Palm Beach, FL
Building can raise 15' to position the basement level garage floor 4' above street



During and after the Onwater foundation raises the building, the foundation system remains completely hidden from view. An alternate lower level main entry to the home and garage entrance are given prominence and shade by having porticos. A vehicular ramp is partially outside and partially inside the building to reduce the visual impact of it.

Example: Single Family Home on Queens Lane Palm Beach, FL

At the base building height, there are no visible clues that the building raises



View from street corner with the building positioned in the "base" lowered position. Onwater foundation systems are completely hidden from view. There are no visible clues that the building raises or is any different from other homes in the neighborhood.

Example: Single Family Home on Queens Lane Palm Beach, FL
When raised 15', the garage level looks like typical residential living space



View from street corner with the building positioned in the FEMA Flood Required Height. An automated gate/balustrade housed below the first floor level balcony, at the two car garage, raises up to protect occupants from falling when the building is lifted up 15'.

Example: Single Family Home on Queens Lane Palm Beach, FL
The basement level residential entry porch retracts below grade with the home



View from side street/left side of the residence with the home positioned in the "base" lowered position. The automated gates/balustrades in front of the two car garage and main entry automatically open after the building is fully retracted.

Example: Single Family Home on Queens Lane Palm Beach, FL

From Queens Lane, the garage integrates with the residential character above

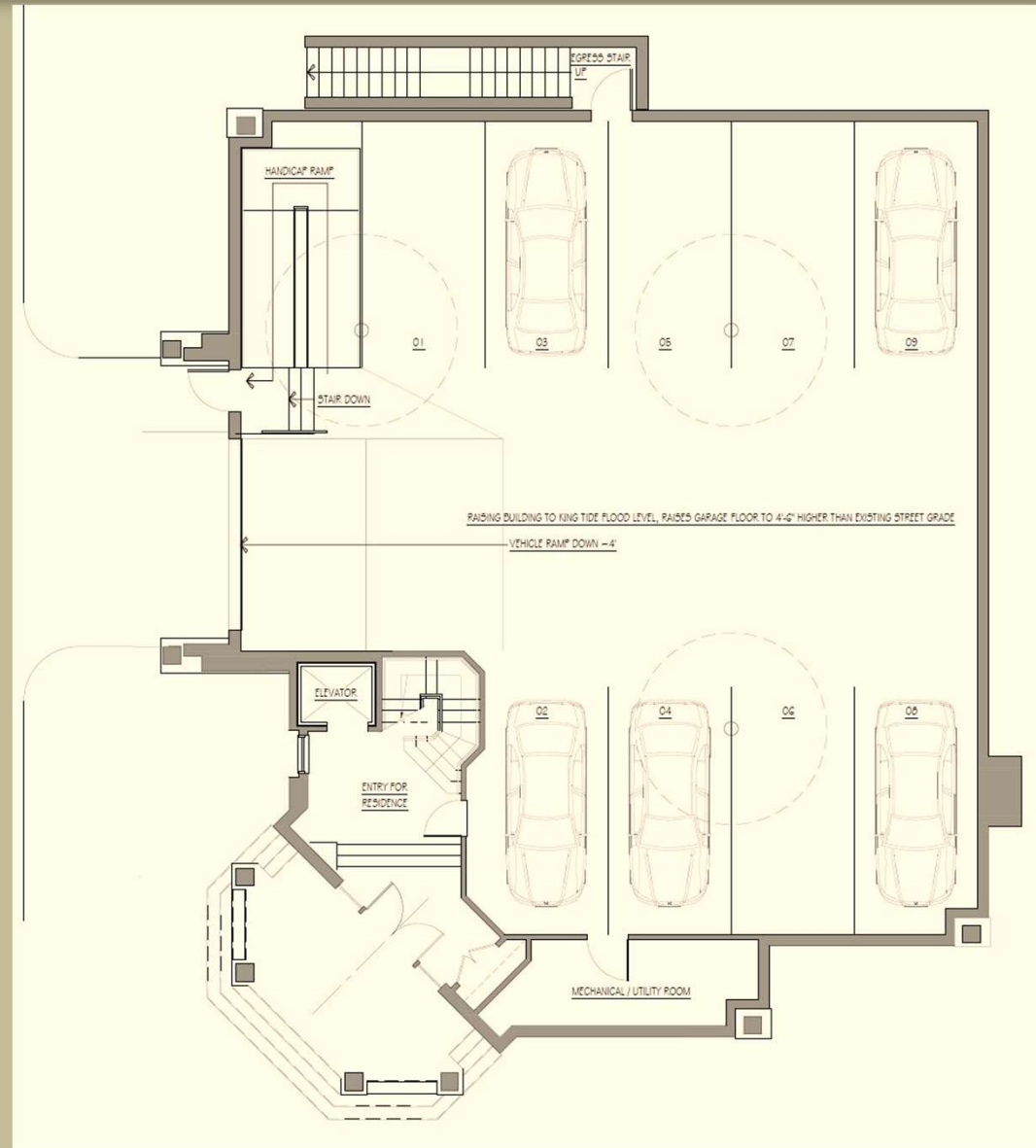


View from street corner with the building positioned at the "FEMA Flood Required Height" Automated gates hinge closed at the first floor entry before the building lifts, to protect building occupants from falling when it is raised 15' above grade.

Example: Single Family Home on Queens Lane Palm Beach, FL

Replacing the existing 4,750 sq ft. home with one of a similar footprint and scale

The existing 2 story, slab on grade, single family home can be modified or replaced with a home that fits the same footprint. An Onwater foundation can create a basement level parking garage with 9+ parking spaces for the property and abutters. The 3,850 sq ft. basement level requires a 19' deep foundation that when the building raises to the FEMA flood position, creates a 500,000 gallon stormwater retention basin. The basin, paid for by the town, would be connected to the storm sewer under the street to retain enough stormwater to reduce or eliminate king tide flooding in the entire 12 block neighborhood to the North of the property.

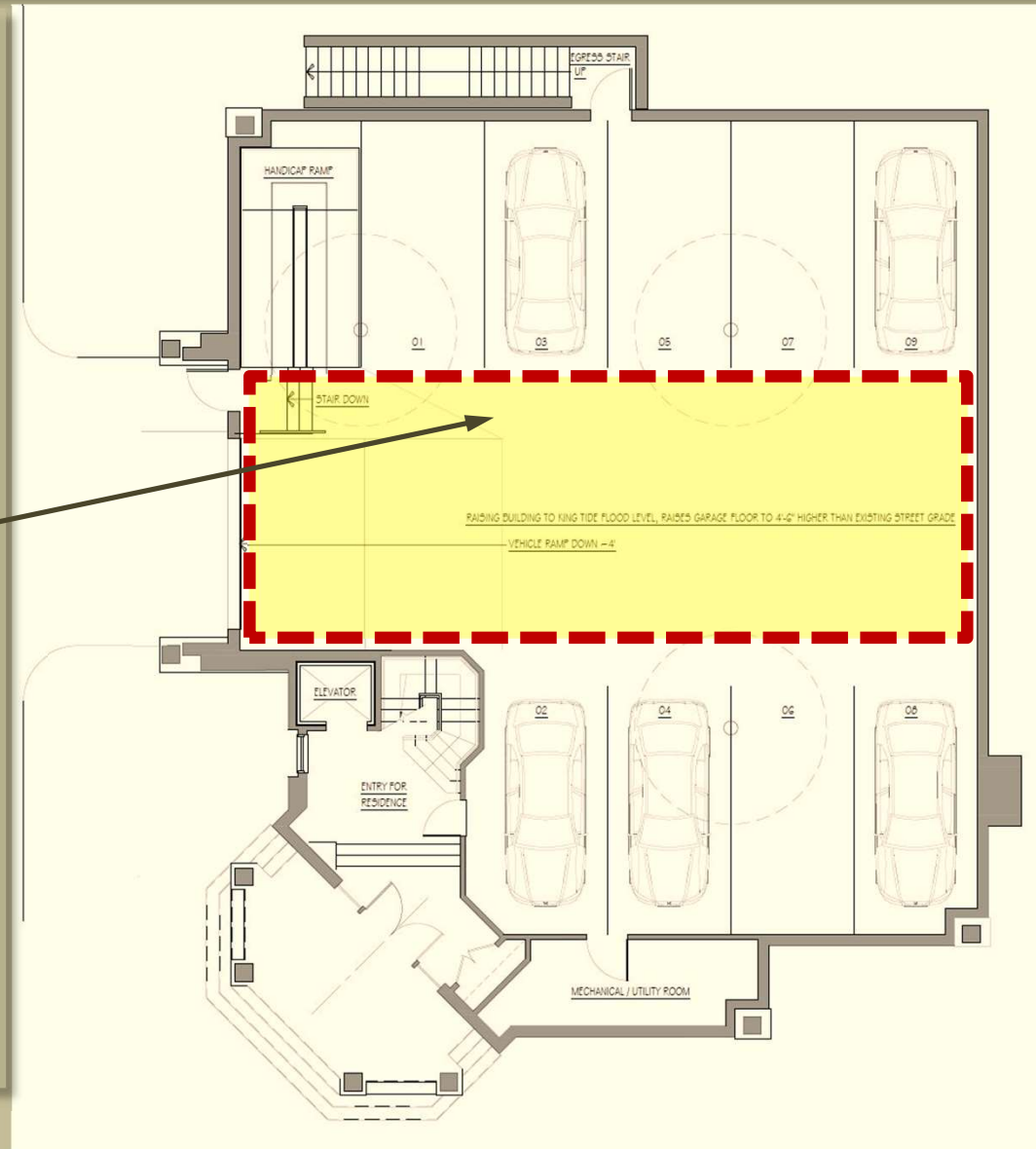


Below Grade Parking Garage Raises 4'-6" Above Street Level

Provides 9 spaces during king tide flooding and 20 during larger/deeper floods

Not only would the basin protect as much as a 12 block area of the adjacent neighborhood from king tide flooding, it could provide safe storage for 20 cars or SUVs during larger storms.

- Most homeowners in the area have 2 or more cars. When significant rain storms or Hurricanes are forecasted, the internal drive isles of the garage could store 9 additional cars.
- Including 2 of the homeowner's vehicles in their dedicated 1st floor level garage, this would raise the total car storage/ shelter capacity on the property to 20 cars, SUVs or pickup trucks, 18 of which would belong to neighbors who could leave them behind when they evacuate the area.



Example: Single Family Home on Queens Lane Palm Beach, FL

Numerous manufacturers' vehicle lifts allow cars to move between floor levels



Vehicle lifts can be added to the main level 2-car garage to create access to the basement level garage when the garage is lowered below grade. The lifts also access the 2 car main level garage when the building is raised. Lifts can be added at each parking space to double the parking capacity



Required Egress Stairs Function During Building Movement

Stairs remain fully functional while transforming into deck as the building lowers



Select the image above, then left-click the arrow button to play video

Example: Single Family Home on Queens Lane Palm Beach, FL

Public-private partnership via condominium or long term lease agreement

Appraisals

| Tax Year | 2020 | 2019 | 2018 | 2017 |
|--------------------|-------------|-------------|-------------|-------------|
| Improvement Value | \$107,161 | \$294,373 | \$325,160 | \$324,962 |
| Land Value | \$1,902,929 | \$1,729,935 | \$1,729,935 | \$1,708,009 |
| Total Market Value | \$2,010,090 | \$2,024,308 | \$2,055,095 | \$2,032,971 |

<https://www.pbcgov.org/papa/Asps/PropertyDetail/PropertyDetail.aspx?parcel=50434303120000031>

- As shown above, the Town of Palm Beach values the home at 5% of the total appraised/assessed value and the land as 95% of the total appraised value.
- One approach would be to condo the property. The land and garage structure would be deeded to the Town and the air rights over the garage to the homeowner.
- In this scenario, the Town would reimburse the homeowner for the majority of the recent purchase price of the property and pay to design, engineer, construct and maintain the Onwater foundation system and basement level garage. The construction bidding and management could be managed by the Onwater team, if a company like tetra Tech is involved, that has construction management capabilities. The project could be bid as prevailing wage project to reduce the Town's construction cost and management responsibility and allow the most qualified bidders to be hired.
- The Town could fund the project with municipal bonds that are reimbursed by parking fees and property taxes the homeowner pays on the assessed value of the new home.

Example: Single Family Home on Queens Lane Palm Beach, FL

Benefits for neighbors, the community and the environment:

- Salt water intrusion into the subterranean fresh water lens from king tides/sunny day flooding will be eliminated. Most indigenous plants, shrubs and trees are not saltwater tolerant and will die as sunny day flooding occurs more frequently in the future. The Town requires elaborate and expensive landscape planting schemes that homeowners will not appreciate having to pay to replace.
- Eliminating sunny day flooding and providing flood safe parking for neighbors cars and golf carts in an Onwater garage structure protect neighbors property and help ease the burden of relocating vehicles when emergency evacuations are ordered.
- Onwater systems ease the need for homeowners to flood-safe their properties including eliminating the need to raise first floor heights, site grading and off-street parking.
- The need for the Town to raise the elevations of all the streets in the neighborhood could also be reduced, allowing the neighborhood to retain the existing streetscape, property landscape and architectural character of the existing buildings.
- The Town can avoid building stormwater management infrastructure that typically is paid for by raising sewer rates and local, state or federal taxes.
- Onwater foundations significantly reduce the amount of disruption that other sea level rise protection measures require by limiting the area where construction takes place.

Example: Single Family Home on Queens Lane Palm Beach, FL

Homeowner Benefits:

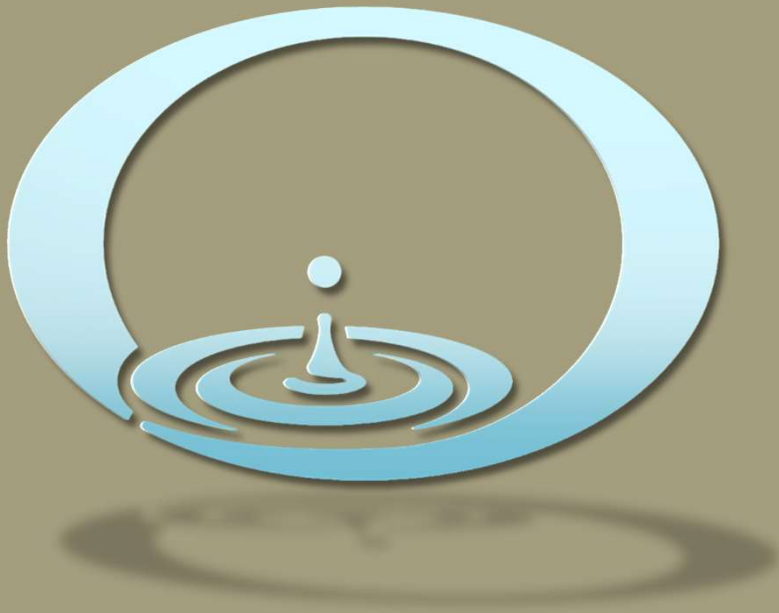
- Onwater foundation provides the peace of mind that the property and all belongings are safe in virtually any flood event including 100 and 500 year hurricane storm surges.
- After storm surge events, the home will not require repairs in a post storm environment when building materials and contractors are very scarce and expensive.
- The need for the Town to raise the elevations of all the streets in the neighborhood could also be reduced, allowing the neighborhood to retain the existing streetscape, property landscape and architectural character of its buildings. If streets are raised the base building height can be raised accordingly with a simple software adjustment.
- Sunny day flooding typically only occurs between September and November, and the Hurricane season runs between early June and early November. It is very likely the garage will be empty during the entire prime vacation season from Mid-November to June. The homeowner could have exclusive use of the garage during peak season for parking guests cars and golf carts and for use as a sport court and golf simulator.
- Like most emergency systems (such as emergency electrical generators) the foundation system could be tested by being lifted once every month for a 48 hour min. period. These “tests” could be scheduled to coincide with the homeowner’s schedule of having guests stay over to allow enjoyment of a direct ocean view when the building is raised 15’.
- Real estate taxes will be reduced to a fraction of the cost and flood insurance can be eliminated. This could save \$1M for every 10 years of home ownership.

Redefining Resilient & Disaster / Catastrophe Proof Design

Provide unmatched protection against rising sea levels major storms & tsunamis

Thank you for your interest in this presentation.

- Onwater encourages sharing content from this presentation as we want to inform the industry and the public about the systems we offer. If you distribute this presentation or information within it to parties outside your organization, please email Mr. Neprud with a list of individuals and their organizations that you distribute it to.



Contact:
OnwaterTM

34 Pilgrim Path
Wayland, MA
01778 USA

Kevin Neprud, Onwater Founder & CEO
Email: kneprud@onwaterf.com
Website: www.onwaterf.com