CIANJ

Local Planning & Zoning Changes to Foster Resiliency

How to shield Hudson County’s Gold Coast from future storm damage.
Building in a Flood Plain & Resilient Design

Hoboken Brownstone Company

George Vallone  MBA, CRE - President
Princeton's WordNet: “resilience, resiliency”

1. an occurrence of rebounding or springing back

2. the physical property of a material that can return to its original shape or position after deformation that does not exceed its elastic limit
The Importance of Design in Flood Areas

A Changing Environment
Hurricane Sandy Created An *Island City*
FEMA ABFE Zones
The public / private sector cost from Hurricane Sandy will ultimately be in the billions of dollars.

We must act now to assure the costs will not be so high during future storms.
The clean up
Preparing Hoboken for the Next Flood

Levies, Flood Walls, & Flood Gate Technology.
Hoboken has a significant amount of natural flood barriers already in place. Natural walls like Castle Point and the high elevation of the Palisades Shelf that runs under Hudson, Washington, and Bloomfield Streets would have kept the floodwaters back.
Hoboken
The eastern boundary along the Hudson River.
The existing wall begins at 4th Street and extends to Castle Point.
Castle Point forms a natural floodwall from 5\textsuperscript{th} to 11\textsuperscript{th} Street.
Castle Point Natural Floodwall at approx. 8th to 10th Streets
Castle Point from 9th to 11th Streets.
• The floodwaters went around the natural barrier presented by the Palisades and flooded central and western Hoboken from around the low lying areas along the southern and northern borders.

• That is where the work needs to be done.
The question presented is whether if the City determined that a man-made floodwall could be built to protect the City on the north and south, could private redevelopment be used to help to fund such work.
Flood Prevention Devices such as Floodwalls were used to help Bound Brook recover when buildings or improvements were destroyed within a large area in that municipality.
Bound Brook, NJ Flood Control Project

Using US Army Corps Of Engineers
Levies along the river bank
Separate the Bound Brook from the
Essex & Morris Canal
Completed levee with access roadway.
Consider similar solutions for Hoboken

The southern border of Hoboken has a significant amount of man-made floodwall protection built by the railroads.
NJ Transit Rail embankment begins at the Cliffs and ends close to the river. Below is the existing access-way to the top of the “levee” from the south side. Completing the road would allow access in and out of Hoboken when the flood-gates are closed.
Consider similar solutions for Hoboken
From the cliffs east to Jersey Ave., the wall is approximately 20 feet tall.
Consider similar solutions for Hoboken

For example: Floodwall on south end from Jersey Ave to Grove Street.
(behind the existing elevated Light Rail Train)
Levee in distance towards Grove St. becomes 20’ tall concrete flood-wall.
View of the North side of the RR Levy-Wall between Grove & Marin Blvd.
The floodwall from Marin Blvd.- east already goes half way to the river.
An extension of the existing wall east of Marin Blvd. to the river along the south side of the rail yard would complete the southern Hoboken boundary floodwall.
In addition to the southern Hoboken boundary floodwall, four operable flood-gates would be needed to complete the southern protection system.

These gate locations are:
1. The HBLRT underpass
2. Jersey Avenue
3. Grove Street
4. Louis Munoz Marin Blvd.
South Gate # 1: The HBLRT Underpass
Gate # 3: Grove Street
Gate # 4: Louis Munoz Marin Blvd. (formerly Henderson St), note the 12’3” height to top-of-wall.
The Northern / North Eastern Hoboken Floodwall
Portions of northern boundary floodwall already exist, (here from 16th Street north along Park Ave. towards Weehawken).
Under the Park Ave. Bridge a concrete floodwall could be extended to the HBLRT embankment.
Bank enhancement or a concrete floodwall along the HBLRT right-of-way would protect north Hoboken and the Shades section of Weehawken.
• The cost of a flood protection system to save Hoboken and the Shades of Weehawken would be very high.

• Stakeholders like the Port Authority, NJ Transit, FEMA, the State of NJ, and the Federal Government Army Corps could fund it.

• Can Redevelopment Projects help?
Redevelopment Law says that Redevelopment Plan....

- shall include an outline for the planning, development, redevelopment, or rehabilitation of the project area sufficient to indicate:
  
  (1) Its relationship to definite local objectives as to ... community facilities and other public improvements.
Redevelopment Plan also...

- shall include an outline for the planning, development, redevelopment, or rehabilitation of the project area sufficient to indicate:

  (1) Its relationship to definite local objectives as to appropriate land uses, density of population....
Redevelopment Plan can also ...

- “...constitute an overlay zoning district within the redevelopment area.”

- Consider offering higher density in an overlay zone, available only if the project can contribute to cost of the construction of this flood prevention public improvement?
• The cost to Hoboken from Hurricane Sandy will ultimately be in the hundreds of millions of dollars.

• Can we afford not to act now to prevent that from happening again?
Hidden Parking Below and Above Grade

Bath Tub Construction with entry above flood plain
2013 Building set at Elevation 14’

On-grade structured garage

green-landscaped roof

surrounded by buildings

Storm Retention Basin
The cost from Hurricane Sandy will ultimately be in the billions of dollars and personal losses.

We must act now to assure the costs will not be so high during future storms.
Autoclaved Aerated Concrete

A holistic single trade wall system that has exceptional qualities for coastal and flood prone construction

www.AerconAAC.com
Advanced Green Buildings

The most cost-effective **energy reduction** in buildings occurs during holistic design of building enclosure and HVAC systems; costly onsite **energy production** is often *necessarily* seen as secondary. Therefore the first step of net zero energy design should always be focused on materials and systems that will reduce energy consumption.

Energy Demand – (Energy Reduction + Energy Production) = Net Zero Energy

\[ e_d - (e_r + e_p) = 0 \]
AAC is a lightweight manufactured stone strong enough to withstand hurricanes and earthquakes when reinforced with steel that is widely used in other countries.

At present, more than 300 plants worldwide produce AAC, which consists of finely ground sand, cement, quick lime, gypsum, aluminum and water. There is one manufacturer in the U.S., in Florida, and a New Jersey plant is in the planning stage.

NJIT’s CIM program addresses the growing need for professionals in the concrete industry. Part of a special curriculum in the Department of Engineering Technology, the program prepares students with a broad range of knowledge and skills in concrete technology and construction management.

http://engineeringtech.njit.edu/academics/cim
AAC Features and Benefits

Water, and Sulfate Resistant
Mold and Mildew Resistant

- Cost-effective
- Fire Resistant
- Low Embodied Energy
- Low Carbon Footprint & Recyclable
- Sound Attenuating
- Air Tight
- Vermin Resistant
- Frost Resistant
- Windproof
- Easily Cut
- Nail-able
- Carve-able
- Bullet Resistant
- Lightweight
- Earthquake Resistant
- Mass Wall & Insulative

Structural up to 6 Stories of Bearing Wall...
AAC and Advanced Green Buildings

‘V’ Zone Coastal Construction

‘V’ Zone = coastal - high velocity zone
AAC and ‘A’ Zone Construction
Ground Floors with Breakaway Walls or Large Flood Vents

‘A’ Zone = coastal - low velocity zone
AAC Block Installation

AAC is 75% lighter than conventional concrete
AAC Construction Types

Load Bearing Wall System
With AAC block or plank

Non-Load Bearing Wall System
(with load bearing concrete or steel structures)
Typical AAC Products

- **U-Block**
- **Cored Block**

**Jumbo Blocks**
(Custom Features Available)

- **Value Blocks**
  (Wide Variety of Sizes)

- **Reinforced Structural Panel**
  (Wall & Roof Panels)

Contact Information:

201-792-3814
www.AerconAAC.com
AAC Mass Walls and LEED

Mass Walls can account for LEED credits, commonly:

**Energy and Atmosphere**
- **Energy Credit 1** – Optimize Energy Performance

**Materials and Resources**
- **Materials Credit 1** – Building Reuse
- **Materials Credit 2** – Construction Waste Management
- **Material Credit 5** – Local/Regional Materials

**Indoor Environment and Air Quality**
- **Environment and Air Quality Credit 4**

**Innovation and Design Process**
- **ID 1**: Innovation and Design
Additional AAC Facts

AAC has been produced for more than 70 years, 350 factories exist worldwide and it offers advantages over other cementitious construction materials, one of the most important being its lower environmental impact.

• AAC’s improved thermal efficiency reduces the heating and cooling load in buildings.
• AAC’s workability allows accurate cutting, which minimizes the generation of solid waste during use.
• AAC’s resource efficiency gives it lower environmental impact in all phases of its life cycle, from processing of raw materials to the disposal of AAC waste.
• AAC’s light weight also saves cost & energy in transportation.
• AAC's light weight saves labor

And it is an ideal material for floodplain construction.
Autoclaved Aerated Concrete

A holistic single trade wall system that has exceptional qualities for coastal and flood prone construction

www.AerconUS.com
Building in a Flood Plain & Resilient Design

Hoboken Brownstone Company

George Vallone  MBA, CRE - President