

Hammerhead™ New Jersey Warehouse



HAMMERHEAD ALUMINUM FLOOD PLANKS

The Client:

Empire Properties is based in South Hackensack, New Jersey. Recently one of their warehouses underwent a renovation, that included a significant addition to the property. With the renovation, new Department of Buildings requirements for dry floodproofing needed to be met.



The Challenge:

As a result of the renovations and extension to the building, the warehouse needed to now comply with the local codes for dry floodproofing enforced by the local department of buildings. Dry floodproofing is the combination of measures that makes a building, attendant utilities, and equipment substantially impermeable to floodwater ([FEMA](#)). Based on the location of the warehouse in South Hackensack, FEMA flood maps indicate that the building resides in a flood zone. Therefore, the warehouse needed 7.5ft of flood protection to meet the base flood elevation plus freeboard requirement.

The warehouse's 5 large bay doors are incorporated into the warehouse structure. Additionally, each bay door has a dock leveler, which added to the complexity and challenge of achieving the dry floodproofing requirements as the dock levelers have large seams and gaps that would allow water to penetrate the building. As such, an external flood wall solution was required that could enclose and protect the entire height of each leveler as well as the additional height required to satisfy the requirements of the BFE (Base Flood Elevation) plus one foot of freeboard.

CASE STUDY: Hammerhead™ | New Jersey Warehouse

Goals:

Garrison's goal was to provide a solution that satisfied the dry floodproofing height requirement and had the strength and durability to stand up against the hydrostatic pressure that deeper flood events can bring. The system needed to be economical, easy to deploy, and easy to store when not in use. Because the barrier system is positioned in front of active loading bays, the center mounting posts needed to be made removable, when not in use.

Solution:

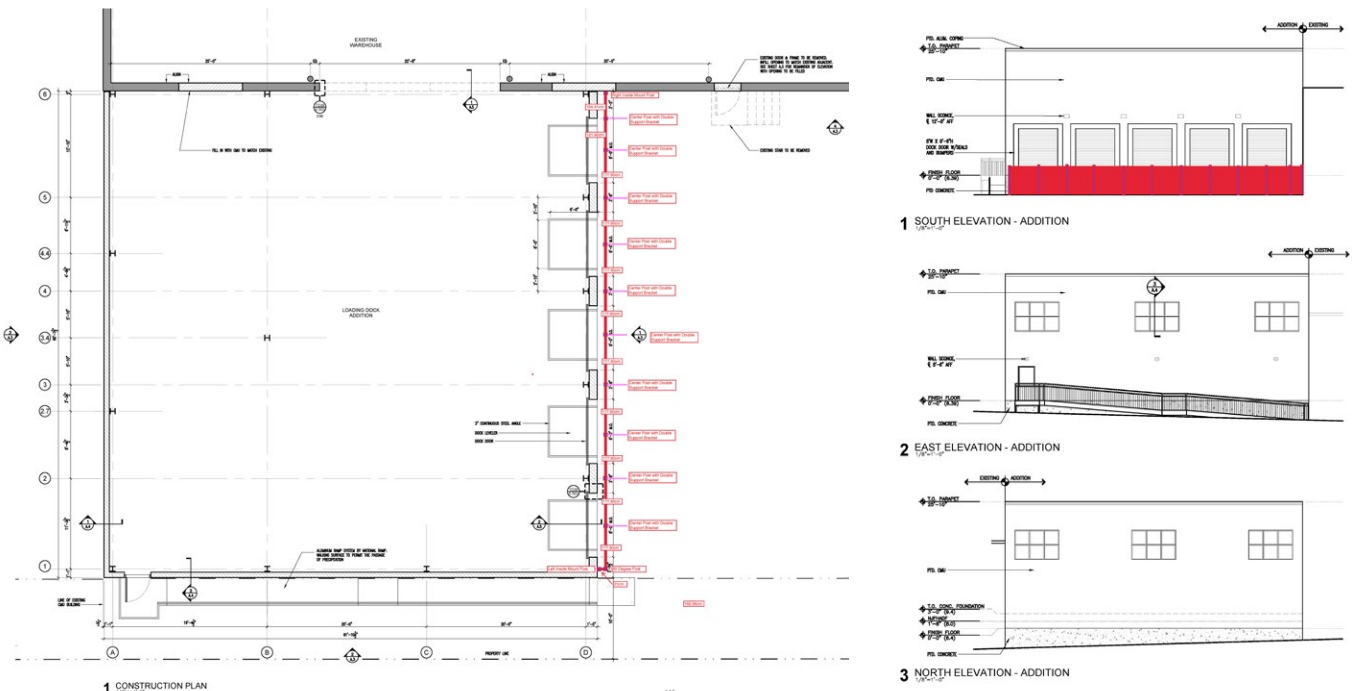
Our team at Garrison Flood Control decided the best solution for this warehouse was the Hammerhead™ Aluminum Flood Plank system. Hammerhead™ Flood Planks are made of 6063 T-5 aluminum that slide into installed U-Channel posts to help create a durable stop log flood barrier. The aluminum material used for Hammerhead™ provides a high tensile strength that is well suited for defending against hydrostatic flood pressure. Additionally, the aluminum planks are much lighter than a steel alternative without sacrificing quality of protection.

Since individual bay door protection was not possible due to the water penetration of the dock levelers, Garrison created a plan to span the entire bay door side of the warehouse. We accomplished this by creating a 7.87ft high L-shaped Hammerhead™ flood barrier that included numerous middle support posts and multiple buttresses. The barrier was designed to span the entire length of the structure, from the adjacent warehouse wall, across the bay doors, and then turn 90 degrees back towards the building to connect with the other side of the warehouse.

Because of the additional height of protection, double support brackets were added to each center post and cast in place anchoring plates were provided to support the removable mounting of the center posts.

Summary:

Empire Properties needed a flood wall solution that would satisfy the requirements of the local dry floodproofing code after they recently renovated their warehouse located in a flood zone. The specific area of vulnerability is located on a side of the warehouse that includes 5 large bay doors, with dock levelers that were prone to significant leaks during flood events. This unique challenge required a unique and durable system that was designed to a higher than usual height and which would not only satisfy the dry floodproofing requirements, but also serve as a durable protective measure against future flood threats.





After consulting with our flood technical team at Garrison Flood Control, the recommended solution was the Hammerhead™ Aluminum Flood Plank system. Spanning the entire length of the bay door side of the warehouse, Garrison created a 7.87ft long flood barrier consisting of Hammerhead™ flood planks. Utilizing an L-shape design, we were able to span all the bay doors and connect to the side of the building.

Due to the height and length of the flood protection system, Garrison provided 10 removable center posts as well as a removable corner post which allowed for a continuous line of Hammerhead™ across the entire side of the warehouse. Additionally, our team provided two sets of reinforcement kickers versus the traditional one kicker, which help to provide additional strength against the water pressure association with floods.

Empire Properties' warehouse now has a durable flood wall solution that can help defend against future flood threats. As a potential flood event arises, the aluminum planks can be removed from nearby storage and easily slot into the U-channels on the posts. Whenever not in use the center posts, kicker supports and aluminum planks are easily removed and placed into storage keeping the warehouse loading docks easily accessible.

Takeaways:

- Hammerhead™ flood logs are made of durable 6063 T-5 Aluminum that provide many benefits over other solutions.
- **Strength:** 6063 T-5 aluminum has a high tensile strength, it can withstand a lot of force without breaking. This makes it ideal for use to defend against the force of common storm surges, hurricanes and king tides.
- **Lightweight:** 6063 T-5 aluminum is much lighter than steel, which makes it easier to transport and install. The aluminum flood planks take up minimal space while providing a quick and easy deployment process.
- **Corrosion Resistance:** 6063 T-5 aluminum is resistant to corrosion, because flood water can be contaminated with salt, mud, and other corrosive materials, but 6063 T-5 aluminum will not corrode in these conditions.
- The creation of one longer run flood barrier system allowed for the protection of every bay door opening while satisfying the dry floodproofing requirements.
- Center posts with reinforcement kickers allow for an added level of strength against the hydrostatic pressure of flood events.
- Hammerhead™ planks, center posts and supports are compactly stored without taking up too much space allowing for easy break down as well as deployment when needed.

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