

Skyway Wave Attenuation Design Build



PROJECT OVERVIEW

TranSystems served as prime designer and engineer of record to contractor Vecellio & Grogan, Inc. to **design, permit, and construct two breakwaters to provide wave attenuation to prevent erosion of the recently repaired seawall and fishing pier access road, as well as satisfy future seagrass mitigation needs to protect the Tampa Bay marine estuary.**

Subconsultants performed survey, geotechnical, permitting, utility coordination, and coastal engineering.



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INNOVATIVE TECHNIQUES

The team utilized WADs, which have **proven to be a faster, better, and cheaper method of constructing breakwaters while simultaneously creating reefs and replenishing shorelines.**

WADs were used for this project in lieu of a traditional breakwater due to the deeper waters and large footprint being too costly to construct.

Despite their roughly 20 years of being used in various locations around the country, **the design build's use of the WADs for this project marks the first time any state or federal-level agency in the U.S. has deployed them.**



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CHALLENGES

Part of FDOT's main performance requirements called for the breakwater to attenuate 70% of wave energy hitting the existing seawall. Traditional methods don't meet that bar. However, **the WAD devices generally achieve a minimum of 80% wave attenuation, and often top 90%.**

Compared to more inland sections of Tampa Bay, the project's proximity to the Gulf of Mexico makes the site a unique location where there is high exposure to wave energy. In initial assessments prior to implementation, **the WADs array would result in wave-height reduction of at least 90% under all conditions, including cases with significant storm surge.**



CHALLENGES

A main factor in determining the WAD arrays' specific positioning and length was making sure there was enough acreage to meet that criteria for the new seagrass growth behind the breakwaters.

Placing the units into their specifically patterned arrays was the next area of complexity since they had to be loaded onto a barge and set precisely into place by use of crane.

RESULTS

The implementation of WADs provided for 8.3 acres of seagrass growth and an average wave attenuation of 82%, with a max of 90%.

