

Marine Engineering and Shore Protection Structures

Bayonne Golf Course

Hudson County, NJ

Princeton Hydro was contracted by a Brownfield redeveloper, OENJ-Bayonne, LLC to design and oversee the construction of a 3,700 linear foot breakwater and bulkheads adjacent to a dredged material disposal site. The breakwater was designed to both protect the redevelopment site and its associated wetland mitigation area. To establish design criteria for the project, several scenarios of wave and tide configurations were evaluated, including wind and storm generated waves and ship generated waves.

Local weather station data was used for a statistical analysis of worst case conditions, and the probability (return period) of such catastrophic events were used to develop the criteria for protection. Based on this developed data, the US Army Corps of Engineers (USACE) Shore Protection Manual was used to assess protection options.

To design the foundation of this breakwater, Princeton Hydro coordinated and witnessed a subsurface investigation of the harbor material to determine the most appropriate foundation type to use. It was determined for this project to over-excavate and replace the soft organic harbor sediment with rubble.

Once permitted through NJDEP and USACE, Princeton Hydro assisted the client in preparing technical specifications for competitive bidding. After a firm was chosen to complete the work, Princeton Hydro provided construction engineering services to ensure that the shore protection structures were constructed in accordance with design specifications and NJDEP and USACE permit conditions.

Once the dredged material disposal was complete, the site was closed for use as an 18-hole golf course that overlooks the Manhattan skyline.

