



Floating Breakwater at World's Fair Marina

Queens, NY

The World's Fair Marina is located southeast of La Guardia Airport on Flushing Bay. A runway extension project for the airport required removal of an existing rubble mound breakwater that was providing wave protection to the marina. Mueser Rutledge Consulting Engineers (MRCE) was retained to design a replacement breakwater. Selection of a suitable replacement breakwater was based to meet performance criteria of the marina, site constraints and environmental issues. MRCE performed a geotechnical investigation which revealed subsurface conditions to include approximately 50 feet of soft organic silt above a glacial outwash sand. Environmental regulations prohibited filling which ruled out a replacement rubble mound breakwater. Navigable area was limited between the marina and an adjacent Federal Anchorage Area restricting breakwater location and movement.

MRCE designed a cantilevered steel pipe pile anchorage system which was capable of developing the required lateral resistance in the soft subsurface soils while maintaining the structures location within acceptable limits. Predicted wave forecasts and required wave protection within the marina lead to the selection of a precast, prestressed, post-tensioned, prismatic concrete floating wave attenuator. The total planned length of new wave attenuator is approximately 1650 linear feet. The project was phased to suit future marina development with the first stage comprising 960 linear feet which was constructed in three 320 foot sections. The Stage I structure was completed in March 1996. Stage II will include an additional 1,000 linear feet of floating breakwater and is on hold pending future marina expansion.