

# Statue of Liberty Upgrades to plastic



## AT A GLANCE

Due to the salty corrosive environment of Liberty Island, all of the galvanized metal HVAC equipment had to be removed. C&S Building Services and its five-member team of HVAC technicians contacted Delta Cooling Towers, Inc. to install non-corroding, high-density polyethylene cooling equipment in its place.

The Statue of Liberty received a 250-ton Premier tower to cool the museum and a 70-ton Paragon tower to cool the statue's interior space. HVAC service technicians performed a controls upgrade to the HVAC system including replacing pumps, disconnect switches, and all steel piping on the outside of the statue.

The new cooling towers' direct-drive Premium Efficiency fans and the 15-year casing warranty allow for fewer support materials. The seamless, one-piece shell eliminates panels, rivets or hundreds of fasteners that can weaken and deteriorate the internal structure of the tower. In a harsh, damp environment like Liberty Island, the seamless plastic towers keep water and moisture away from the vital parts of the tower.

In May 2008, renovation began on the Liberty Island to remove all galvanized metal HVAC equipment and other corroding materials. John Culkin, president of C&S Building Services, Farmingdale, NY, led a team of five HVAC technicians to install two plastic cooling towers in place of the steel-clad towers, which had begun to rust and rot. The Statue of Liberty rests on a granite pedestal inside the courtyard of the star-shaped walls of Fort Wood, built on Liberty Island for the War of 1812. The wet, salty environment of Liberty Island, which is roughly ½ mile south of Ellis Island, contributed to the steel towers' accelerated rate of rust and decay.

"We needed a corrosion-proof cooling tower. Even the stainless steel towers they had out there could not survive the elements. All the fittings and nuts and bolts had rotted out. We wanted a maintenance-free solution for a wet, salty environment," said Culkin.

Initially, the project ran into several challenges, such as how to ferry the heavy equipment from the mainland to Liberty Island. If the replacement towers were too heavy, the rigging fees would dramatically increase because a larger, more powerful crane would be necessary. Culkin and the rest of the C&S team managed to avoid the major costs of rigging heavy equipment and provide a corrosion-proof solution to Lady Liberty's problem by contacting Delta Cooling Towers, Inc. Delta manufacturers assembled non-corroding, high-density polyethylene cooling equipment that is easily maintained and impervious to harsh chemicals, bitter environments, and pH deviations.

Over the span of six weeks, Culkin and the five-member C&S team installed a 250-ton Premier tower to cool the museum at Liberty Island, while a smaller 70-ton Paragon tower was installed to cool the interior space of the Statue of Liberty. HVAC service technicians performed a controls upgrade to the HVAC system including replacing pumps, disconnect switches, and all steel piping on the outside of the statue.



*The 250-ton Premier tower chosen to cool the museum area of Lady Liberty*

The installation of the plastic towers allows for fewer support materials because the plastic towers are built directly into the steel frame. Along with a reduced number of support materials, the plastic cooling towers' direct-drive Premium Efficiency fans and a 15-year casing warranty provide several design advantages over conventional models. The seamless, one-piece shell eliminates panels, rivets, or hundreds of fasteners that can weaken and deteriorate the internal structure of the tower. In particular, in such a harsh, damp environment, the seamless plastic towers keep water and moisture away from the vital parts of the tower.

In a high-profile location like Liberty Island, accessibility and minimized downtime were mitigating factors in the decision to choose plastic over steel. The plastic towers reduce downtime because any required maintenance can be performed quickly, unlike a stainless steel tower where a whole side could be lost due to rotting. The only emergency outage would be a fan or a fan motor, and the units are easily replaced by removing four bolts and replacing the motor.

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