



## The Restoration of Lincoln Park Fountain

By Armando Ramos

Lincoln Park is a 270 acre (109 ha) park that borders the Hackensack River on the western edge of Jersey City, NJ. The entrance to the 180 acre (73 ha) eastern section of the park leads to a fountain that opened in 1911. It was billed as the largest fountain in the nation at the time of its construction. The fountain consists of a 53 ft (16 m) tall center sculpture with a 155 ft (47 m) diameter basin around it. Over the years, the structure deteriorated significantly, and the Hudson County, NJ, administration, decided to restore the structure. The restoration of the Lincoln Park

Fountain required complete demolition and removal of the original water-containing basin and replacement with a shotcreted concrete basin.

Superior Gunite reconstructed the basin in two phases. The first phase included the slab, and the second phase was placement of the walls. Both phases employed the wet-mix shotcrete process. The basin's slab was 17,500 ft<sup>2</sup> (1600 m<sup>2</sup>) in plan area with a minimum thickness of 10 in. (254 mm) of concrete. The outer perimeter wall of the basin was 2 ft 1 in. (0.64 m) thick with the height stepping from 2 ft 4 in. to 3 ft 7 in. to 4 ft 7 in. (0.71 to 1.1 to 1.4 m). In addition, there were 24 square pilasters spaced uniformly around the wall that increased the wall thickness to 2 ft 6 in. (0.76 m). The slab work included shooting 12 pedestals for the frog-shaped sculptures housing the fountain nozzles, plus 11 pedestals for light fixtures. Superior Gunite also shotcreted the inner wall of the basin, which was a 17 in. (0.43 m) tall, 1 ft (0.3 m) thick circular wall with a diameter of 29 ft (9 m) centered on the fountain's main sculpture.

The extremely detailed design of the blockouts for the pre-cast architectural concrete on the inner face of the perimeter wall presented a major challenge for Superior Gunite. There were several stages of stepping in and out on the face of the wall, and the design changed for each of the three heights of wall. There were rectangular indentations on the face of all the columns centered on light fixtures. There was a slight slope on the top of the wall to direct rainwater towards the outside of



Fig. 1: Setting pencil rod for grade control



Fig. 2: Overview before concrete placement

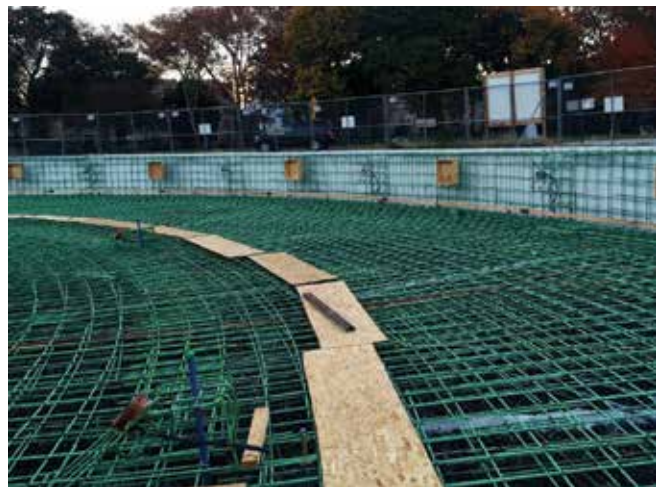


Fig. 3: East quadrant reinforcing showing box outs in wall



Fig. 4: Shotcrete placement in outer basin wall

## PROJECT DETAILS

*Project Location*

Jersey City, NJ

*Shotcrete Contractor*

Superior Gunite

*General Contractor*

Nicholson & Galloway

*Architect and Engineer*

Helena Ruman Architects

*Material Suppliers/Manufacturers*  
Ferrara West/Eastern Concrete Materials

*Owner*

Hudson County, NJ



Fig. 5: East quadrant completed

the fountain. All this required extensive and painstaking prep work to set the ground wires for the face of shotcrete.

The shotcrete team used 690 yd<sup>3</sup> (535 m<sup>3</sup>) to shoot the slab including overbreak volume on the subgrade, and 190 yd<sup>3</sup> (145 m<sup>3</sup>) to shoot the walls and pedestals. Superior

Gunite used a 4000 psi (28 MPa) macro-synthetic fiber concrete mixture supplied by Ferrara West/Eastern Concrete Materials. The structural fibers used were manufactured by Euclid. The shotcrete project ran from October to December 2015. Another major challenge the general and shotcrete contractors faced was completing the construction of the basin before freezing winter weather arrived in the Tri-State area. Superior Gunite met this challenge by accelerating production of the walls on days with acceptable temperatures in early December. The walls were completed just in time before the consistently below freezing temperatures of the season settled in.



Fig. 6: Completed fountain in operation



**Armando Ramos** is a Project Engineer and Estimator for Superior Gunite. Ramos has been with the company since 2012. He received his BS in civil engineering from Rensselaer Polytechnic Institute, Troy, NY. He has been working for the New York branch for 5 years, while also spending 1 year in Superior's San Leandro office.