



Photo Credit: <http://www.barnard-inc.com/>

The New York City Department of Environmental Protection (DEP), along with consulting engineers from Gannett Fleming and Hazen and Sawyer, were honoured for the Gilboa Dam rehabilitation project with the Grand Award at the American Council of Engineering Companies' (ACEC) annual Engineering Excellence Awards.

The \$138 million reconstruction of Gilboa Dam was completed in 2014, two years ahead of schedule. The project included the addition of approximately 234 million pounds of concrete, molded and dyed to resemble the original bluestone face of the dam, along with more than 500 massive spillway slabs and upgrades to the abutment walls that support the dam.

"New York City is proud to receive this recognition from the American Council of Engineering Companies, DEP Acting Commissioner Steven Lawitts said. "The rehabilitation of Gilboa Dam was a complex and important project for the city's water supply and the thousands of people who live downstream of Schoharie Reservoir. This award underscores the skill and dedication of the engineers, planners, construction workers and others who collaborated to make this project a success."

Gilboa Dam was built from 1919 to 1927 and impounds Schoharie Reservoir, the northernmost reservoir in the city's water supply system. Schoharie Reservoir can store as much as 19.6 billion gallons of water, and it accounts for approximately 15 percent of the drinking water delivered to New York City each day. Schoharie Reservoir gathers water from a 314-square-mile watershed. It diverts that water through the 18-mile Shandaken Tunnel, which releases into the Esopus Creek where it travels another 5 miles before entering Ashokan Reservoir. From Ashokan Reservoir, the water flows south through the Catskill Aqueduct to New York City. The original Gilboa Dam cost \$7.8 million to build by the time it was put into service in 1927.



Photo Credit: <http://www.gannettfleming.com/>

Gilboa Dam is 2,024 feet long, 182 feet high, and more than 150 feet wide at its base. Several new features were added to the dam during its rehabilitation, including an inspection gallery inside the dam that runs its entire length. The gallery — which also includes instruments to constantly measure stress on the dam — will allow engineers to visually inspect the inside and outside of the dam on a regular basis.

The dam was also designed with 3-, 6- and 12-foot steps that dissipate the energy of water as it spills from the reservoir. The east and west abutment walls that support Gilboa Dam were also reinforced through installation of 40 post-tensioned anchors.

The rehabilitation was completed ahead of schedule despite a nine-month setback in the wake of Hurricane Irene, which inflicted historic damage on the Catskills. The powerful storm sent roughly 8 feet of water over the dam's spillway and destroyed much of the staging area for construction, along with access roads and work platforms.

DEP began a thorough investigation of the integrity of Gilboa Dam after the flood of 1996, which overtopped the spillway by 6.7 feet, a record at the time. An initial investigation, completed in 2003, found that Gilboa Dam would require a comprehensive rehabilitation and upgrade because it likely did not meet modern standards for dam safety. Additional engineering work in 2005 found that Gilboa Dam had a marginal factor of safety for flood conditions similar to the record flood of 1996.



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Following that report, DEP moved immediately to make emergency repairs. In 2006, a 220-foot-long by 5.5-foot-deep notch was cut from the top of the westernmost portion of the dam to control water spilling from Schoharie Reservoir and allow for installation of 80 anchoring cables into the top and outer face of the dam. These post-tensioned anchors significantly improved the safety of the dam by pulling it tighter to the bedrock below.

While work on Gilboa Dam is complete, construction at the site will continue until approximately 2020. The rehabilitation of Gilboa Dam is part of a \$400 million program to build and improve other facilities near the dam. This includes a permanent release tunnel that will replace the temporary siphons, giving DEP the ability to release water from Schoharie Reservoir around the dam and into Schoharie Creek below. Work on the release works began this year. Remaining projects include site restoration, rehabilitation work on the Shandaken Tunnel Intake Chamber, and construction of a public information kiosk.

Source:

<http://cenews.com/article/10414/gilboa-dam-rehabilitation-receives-acec-grand-award>