

2019 ACEC of Maine Engineering Excellence Awards

At the ACEC of Maine Fall Forum on October 25, 2019, **Wright-Pierce** was awarded an **Honor Award for Cost-effective Solutions in Engineering Design** for its ACB's of Flood Mitigation at Corcoran's Pond Dam project.

Corcoran's Pond is a popular tourist destination in the "ski town" of Waterville Valley and a revenue-generating venue for weddings and community events. The Corcoran's Pond Dam is an earthen embankment dam which has been classified as "high hazard" by the New Hampshire Department of Environmental Services (NHDES) due to the risk of flooding during storm events. Because of this classification, modifications to the dam were required in order for it to be compliant with current flooding standards.

In order to sustain the site as a Town amenity and also maintain a safe, working dam, the Town worked with Wright-Pierce, an award-winning environmental engineering firm, to assess options that would fortify the dam while having the least visual impact on the town-center site.

After a thorough engineering analysis and extensive hydraulic modeling to determine the scouring effect of rising water on the river embankments, armoring of the existing dam embankments was selected as the best option to bring the dam into compliance with NHDES requirements. It was determined that the armoring would need to extend to a height of at least one foot above the highest water surface elevation anticipated during a flood condition. The selected method of armoring was Articulating Concrete Block mats (ACBs). Puzzle-like pieces of concrete blocks are held together with metal cables to form mats, which are fit together to serve as an armor, protecting the river embankment from erosion. Due to the irregular contours of the site, a complex geometric customization of the mats was engineered to accommodate the 253-foot long by 14-foot tall earthen embankment. Once the mats were in place, they were covered with 9 inches of topsoil making them invisible, sustaining the natural beauty of the riverbed.



L-R: Ryan Wingard and Steve Guerrette of Wright-Pierce; Carolyn Bird, ACEC-ME President

The "ACBs" of Flood Mitigation at Corcoran's Pond Dam

Corcoran's Pond is a popular tourist destination in Waterville Valley as well as a revenue-generating venue for weddings and community events. The earthen dam is classified as "high hazard" by NHDES because of the risk of flooding during storm events. Wright-Pierce presented four options to stabilize the dam and protect and sustain the town Square. Armoring the spillway embankments was the selected option.

Project Uniqueness
Armoring of the existing spillway embankments with ACB mats effectively transforms the entire dam embankment into an emergency spillway. Creative engineering design adapted the mats to accommodate the irregularly shaped 253 ft. long by 14 ft. tall earthen embankment.

Value to Engineering Profession
The embankment armoring project at Corcoran's Pond Dam can be used as a case study for other similar projects. This project proved that ACB mats can be tailored to fit even the most uniquely shaped project areas.

Social/Economic Impact
By implementing the ACB mats as scour protection, there was no need to make modifications to the dam that was constructed in 1985. This allows for the area to maintain its New England charm. Installation of ACB mats was the most cost-effective solution to the problem.

Project Complexity
The hydraulic modeling required by this project was complex due to the close proximity of buildings and structures to the dam spillway. This also created many logistical challenges during construction.

ACEC
American Council of Engineering and Computing Professionals

WRIGHT-PIERCE
Engineering a Better Environment

Title The ACBs of Flood Mitigation at Corcoran's Pond Dam
Owner Town of Waterville Valley, NH
Design Engineers Wright-Pierce - Portland, ME | Haley & Aldrich - Portland, ME
Contractor Kingsbury Companies - Middlesex, VT

The project was bid in the summer of 2018 for fall construction with a completion in July 2019. Ryan Wingard, Vice President at Wright-Pierce and Principal in charge of the project, commented "The project goals were accomplished. The ACB armor has strengthened the dam, bringing it well into compliance with DES dam hazard regulatory requirements while protecting the natural beauty of the site. Through a strong collaborative effort, the engineering team worked closely with the Town and the Contractor to minimize disruption during construction allowing the Town to continue using the site as a popular and important revenue-generating venue for community activities."
