

Carnegie Lake Dam, Princeton University

PRINCETON, NJ

SUBMITTED BY JOSEPH B. CALLAGHAN, INC.

Princeton University's Carnegie Lake is iconic. Not only does it give home to competitive rowing at Princeton, it provides a haven for wildlife to flourish and serves as a retreat for the University's community. It is said that Albert Einstein was frequently seen boating and fishing on the lake. It is, without a doubt, one of Princeton's most treasured natural spaces.



The lake would not be possible without an incredible feat of concrete—the Carnegie Lake Dam. Located at the intersection of the Stony Brook and Millstone River, Carnegie Lake Dam was constructed in 1907 with funds donated by Andrew Carnegie.

The dam is a steel-reinforced concrete buttress structure spanning 724 ft (221 m). Documented repairs to the dam date back to 1918 and surface spalling documentation as far back as 1922 when it



was deemed in poor shape by the Division of Waters. In 1966, the dam was covered in a layer of gunite. Unfortunately, the dam continued to deteriorate over decades resulting in multiple areas of concrete spalling and cracking.

The repair of the Carnegie Lake Dam was challenging due to the active nature of the structure. Managing the water while not impacting the level of the lake or activities on the lake was a challenge. The biggest challenge was overcoming the removal of a century of incompatible repairs and hidden faults under the gunite layer.

A cofferdam was designed to dewater and expose the concrete for deeper assessment, repair and restoration. Once the concrete was exposed and the gunite layer removed, additional (more significant) damage was discovered, adding to the scale and scope of the project. Phase I and II of the project totaled \$6.8 million in construction costs and were completed in November 2016.

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