

John Gregoire

This historic gatehouse, built from 1866 to 1870, is an integral component of the Chestnut Hill Reservoir Dam and early Boston's metropolitan water supply system. It was decommissioned as a water supply works many decades ago after being replaced by modern systems. However, through the last century, the gatehouse has remained as a historical structure in the local landscape. In fact, it is on the National Historical Register and within a local Boston historic district. Therefore, it cannot be removed or significantly altered on the exterior.

Substantial deterioration of the interior of this robustly-built brick, granite and concrete facility has occurred due to age and groundwater infiltration. Half of the structure was open to the reservoir and subject to degradation from water and ice action.

Interior stabilization was planned to preserve and maintain the integrity of this historic structure and preserve safety of the High Hazard Class dam in which it is situated. As the stabilization design was being undertaken, historic period drawings were discovered which revealed subterranean arched chambers below the subfloor area. These chambers were not evident on the surface or from the interior of the gatehouse and had not been seen for over 140 years. The chambers required assessment to confirm their presence, determine their extent, characterize the infill (if any) and develop a stabilization design. This paper describes the facility history, the subsurface and geotechnical investigations performed to confirm and understand these chambers, and the measures to support the overall design for stabilizing the structure with lightweight foamed concrete fill to meet current dam safety standards.