

Fares Abdo

The Jefferson Lakeside Dam in Richmond, built in about 1895, was a masonry and rubble run of the river dam, built to provide a lake for Lakeside Park. When the Jefferson Lakeside Country Club was created in 1913, the reservoir provided a water source to irrigate the golf course. After years of neglect, repairs were performed in 2003 to stabilize the crumbling dam, which is subjected to frequent high flow events from the 16 square mile highly developed drainage basin. The 2003 repairs were not very successful and the owner decided to abandon the original dam and build a new dam immediately downstream; an RCC gravity dam was selected. Given the constant overflows and the potential for frequent freeze thaw cycles for this area of Virginia, air entrainment of the RCC or conventional concrete facing was considered to be necessary. Given limited funding, an air entrained RCC mix was considered the most appropriate approach to achieve a cost effective design. A very limited number of RCC projects have tried air entrainment so achieving an effective air entrained RCC mixture was going to be critical to the long term performance of the dam. An RCC mixture proportioning study demonstrated that achieving a freeze thaw resistant RCC mix was possible.

Other issues related to design and construction included a 36 inch main trunk sewer line located under the left end of the dam that had to be protected, few stream diversion options during construction, and limited site staging areas, precluding the use of an onsite RCC plant. The Contractor selected an offsite ready mix wet batch plant to mix the RCC and used dump trucks to bring mix to the site. Conveyor system delivered the RCC to the placement area. A breakdown at the plant resulted in a change to a dry batch plant with the mixing occurring in ready mix trucks. Success was achieved through collaboration between the design team and contractor to identify quick solutions overcome obstacles during construction and being able to successfully develop an air entrained RCC mixture even with the different types of ready mix plants utilized.