

The Georgia Aquarium: More than Just Waterproofing a Fish Tank

A crowd-pleasing job at one of the world's largest aquariums



Owner	Georgia Aquarium, Inc., Atlanta, GA
Concrete Supplier	Lafarge North America, Atlanta, GA
Contractor	Brasfield & Gorrie, Atlanta, GA
Concrete Admixtures	GCP Applied Technologies
Structural Engineer	Uzun and Case Engineers, Atlanta, GA
Architect	Thompson, Ventulett, Stainback & Associates, Inc. (TVS), Atlanta, GA
Owner Representative	Heery International, Atlanta, GA
GCP Solution	ADVA® superplasticizer, DCI® S Corrosion Inhibitor, STRUX® 90/40

Project

Supporting a unique commercial building

The Georgia Aquarium is the largest aquarium in the Western Hemisphere, with 10 million gallons of fresh and marine water and tens of thousands of animals. Designed to look like a modern Noah's Ark, the new Georgia Aquarium draws 2.2 million visitors a year. The imposing facility includes more than 505,000 square feet of space, housing more than 100,000 animals in eight million gallons of fresh and saltwater.

"The aquarium was one of our more demanding projects, because of its scope and

unusual features and structural elements... timing and communication were crucial, and we did a very good job of both."

Kirk Deadrick, Director of Quality Assurance
Lafarge North America

Finding highly resistant concrete solutions

The Georgia Aquarium's concrete viewing tanks are among the largest in the world—33' tall, with 4' thick walls at the base. These walls have many pipe insets, and the tanks themselves contain saltwater.

The concrete supplier, Lafarge North America, therefore had to deal with congested forms that required long-term corrosion resistance. Lafarge developed a close working relationship with a team from GCP Applied Technologies in order to meet these challenges head on.

Creating high-strength concrete

To deliver high-strength concrete in highly congested forms, Lafarge added GCP's ADVA®superplasticizer to its proprietary self-consolidating concrete mixture, Agilia®. The self-consolidating concrete moved easily through the congested forms, while the AVDA®superplasticizer delivered strengths above 8000 psi—33% over design specifications.

GCP's DCI®-S corrosion inhibitor was also incorporated into the mixture to prevent corrosion from saltwater, and extends the lifecycle of concrete exposed to marine environments.

In addition, STRUX®90/40 synthetic macro fiber reinforcement was used for secondary reinforcement in slab-on-ground concrete throughout the structure, including concrete walkways, areas near the tanks, and other high traffic locations. Compared to other types of reinforcement, STRUX is safer to use, reduces the potential for damage to waterproofing materials placed under the concrete, and eliminates the risk for corrosion.

The contractor noted that the STRUX fibers' ease of handling helped his company maintain their schedule, allowing the aquarium to open on time.

The use of STRUX for high-traffic walkways and DCI®-S for the tanks extended the lifecycle of the concrete in these areas, allowing the museum to save on maintenance in the long term. Similarly, the use of ADVA®superplasticizer ensured that the pipe inset areas of the tanks would remain intact under the highest strains.

John Brett, Commercial Project Manager for Lafarge Commercial Project manager John Brett says "The mixes have performed very well, and we have been able to adapt quickly to the fast-changing demands of this project."

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"STRUX is safer to use, reduces the potential for damage to waterproofing materials placed under the concrete, and eliminates the risk for corrosion. "



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