

The Georgia Aquarium: More than Just Waterproofing a Fishtank

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



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| 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® superplasticiser, DCI® -S Corrosion Inhibitor, STRUX® 90/40 |

The Overview

The Project

Designed to look like a modern Noah's Ark, the new Georgia Aquarium, a commercial building in downtown Atlanta (www.georgiaaquarium.org), is destined to be the largest aquarium in the world, with 2.2 million annual visitors as of 2017. The imposing facility includes more than 505,000 square feet (46,916 square metres) of conditioned space housing more than 100,000 animals in eight million gallons (over 30 million litres) 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

The Georgia Aquarium's concrete viewing tanks are among the largest in the world—33' (10 metres) tall, with 4' (1.2 metre) 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.

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

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

Lastly, STRUX®90/40 synthetic macro fibre 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. STRUX® is safer to use, reduces the potential for damage to waterproofing materials placed under the concrete and eliminates the risk of corrosion in this commercial building compared to other types of reinforcement.

Results

The Aquarium opened as scheduled. The contractor noted that the STRUX® fibres 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® superplasticiser ensured that the pipe inset areas of the tanks would remain intact under the highest strains.

John Brett, Commercial Project Manager for Lafarge, 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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Last Updated: 2023-09-29

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