



Project Summary

The new Boston University Data Sciences building at 655 Commonwealth Avenue, downtown Boston, is a 19-story, 305 foot-tall high rise utilizing center core construction. Center core construction is a load-bearing support technique that places all of the building's critical elements inside the perimeter of the building. This technique increases the security of mechanical, electrical, utility rooms, telecommunications, and the building's command center, as well as stairways and elevators, in addition to reducing noise. Center core construction also allows for more natural light because it leaves all windows available for office space.

When general contractor Suffolk Construction, architect KPMB and project manager Compass Project Management found that the reinforcement in the core walls would be heavily congested, Ready Mix supplier Aggregate Industries recommended use of their Agilia® technology, a self-compacting concrete (SCC), which has the ability to flow under its own weight to fill spaces completely. Concrete can be placed faster and without the need for vibrating compaction. However, because of the dense paste makeup of SCC, it is more prone to drying shrinkage than conventional concrete.

Finding the Right Mix

Aggregate Industries developed two optimized SCC mixes. The first was an 8,000 psi mix with 3/8" aggregate, a 22" to 28" spread, a maximum shrinkage of 0.033%, and a modulus of elasticity (MOE) requirement of 5,100 KSI. The second was a 10,000 psi mix also with 3/8" aggregate and a 22" to 28" spread, maximum shrinkage of 0.033%, but an MOE of 5,700 KSI.

The mixes alleviated many of the challenges but needed more shrinkage mitigation in order to meet the stringent requirements. Aggregate Industries had previously achieved success with PREVent-C® technology on several projects with challenging shrinkage requirements, and suggested it as a solution.



The quality control team ran trial designs with PREVent-C to validate performance and received approval for use on the high strength center core component.

Shrinkage Mitigation

The entire core was completed with no issues. The use of the High Strength Low Shrinkage Agilia mix allowed for ease of placement and the team to achieve the stringent requirements. Aggregate Industries supplied approximately 800 cubic yards of the 8,000 psi Agilia Low Shrinkage SCC mix and approximately 1,900 cubic yards of the 10,000 psi Agilia Low Shrinkage SCC mix.

Owner: Boston University

General Contractor: Suffolk Construction Company

Concrete Contractor: S&F Concrete Contractors, Inc.

Architect: KPMB Architects

Product Manager: Compass Project Management

Ready Mix Supplier: Aggregate Industries, Northeast Region

Specialty Admixture Supplier: Premier Magnesia Construction Products Group