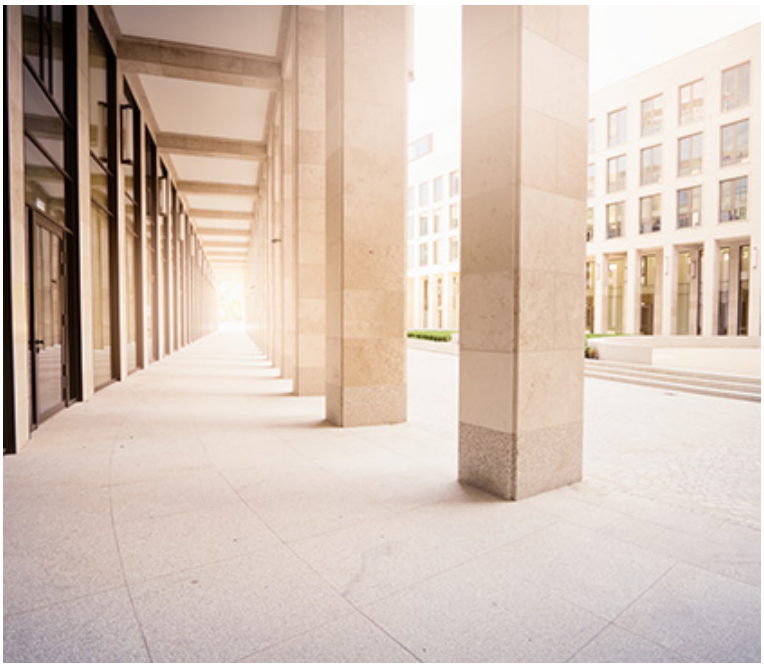
Western University of Health Sciences Builds Earthquake Safe Center

Building an earthquake-resistant building required concrete to consolidate around steel reinforcement.

Project	Western University of Health Sciences Health Education Center, Ponoma, CA
Concrete Supplier	Robertson's Ready Mix Concrete, Inc., Corona, CA
General Contractor	DPR Construction, Inc., Pasadena, CA
Structural Engineer/Design	Perkins + Will, Los Angeles, CA
GCP Solutions	ADVA® 405 high-range water-reducing admixture



Project

Ensuring security in earthquake-prone region

The Western University of Health Sciences had an interesting problem. The institution planned a new four-story, 175,000 square foot education center, but was located in a seismically-active area of Southern California. Thus, the challenge was not just to create a center of learning for the arts and sciences, but also to provide maximum safety for the faculty and staff.

As part of the 400 Admixture Series for Ready-Mix SCC, ADVA®405 offers a range of valuable advantages including greater concrete stability, sustained flow retention, and with its greater consistency, reduced demand for on-site quality control.

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Finding the right mix for maximum strength

The university specified structural walls with steel reinforcement and concrete strengths greater than 6,000 psi.

The challenge was consolidating 2,000 cubic yards of concrete within the formwork while still meeting the impressive strength requirements.

The team at Robertson's, the leading producer of ready mixed concrete in the Southern California area, tested a number of different alternatives.

After first becoming dissatisfied with a multi-component admixture design — consisting of a conventional high-range water reducer, a viscosity modifying admixture, and a retarder admixture — they began to work with GCP Applied Technologies.

Starting with a mock wall, Roberton's tested their own Self-Consolidating Concrete (SCC) mix with ADVA®405 high-range water-reducing admixture. They found that it met the specific slump flow, VSI, J-ring and stability project requirements. It also met their approval in terms of flowability, consolidation, and surface finish. As a result, Robertson's was awarded the responsibility of delivering SCC for the entire project.

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ADVA® 405 helps achieve impressive compression strength

ADVA®405 high-range water-reducing admixture enabled Robertson's SCC mix to consolidate easily around extensive steel reinforcement within the formwork, while still achieving the specified 6,000 psi compressive strength. In addition, the use of SCC eliminated the need for vibration and manual compaction, reduced equipment requirements, and improved job productivity with less labor required and faster, easier placement.

Lastly, ADVA®405 demonstrated an impressive ability to weather changes in job site conditions. Although Southern California temperatures and humidity vary widely, ADVA®405 remained consistent and highly flowable from batch to batch. In the end, of the 2,000 cubic yards of concrete produced, not a single load was rejected due to inconsistent SCC.

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