

Project Profile

RheoTEC™ Z-60 Workability-Retaining Admixture for Precast Architectural Wall Panels

East Campus Housing, Phase Two, Binghamton University



The Chemical Company

Project:

East Campus
Housing, Phase Two,
Binghamton University

Location:

Binghamton, New York

Owner:

Dormitory Authority,
State of New York,
Albany

Concrete Producer:

High Concrete Group
LLC

Construction Manager:

LeChase Construction

Architect:

Burt Hill, Philadelphia

Requirements:

- 6000 psi compressive strength

Products:

- RheoTEC Z-60 workability-retaining admixture
- Glenium® 7710 high-range water-reducing admixture



Background

In August 2009, Binghamton University embarked on a project to replace its aging dormitories with new, up-to-date facilities. One of the objectives for rebuilding rather than retrofitting was to modernize the campus dormitories and boost curb appeal, an important factor for colleges in their efforts to recruit prospective students. Construction Manager LeChase Construction enlisted High Concrete Group LLC of Denver, Pa. as their supplier of precast architectural wall panels for the three, five-story, steel-frame buildings.



Challenge

To achieve the desired aesthetic qualities, the performance of the concrete mixture had to be highly consistent. Due to the required mixture proportions and the time required for placement, slump loss during casting was a concern. Slump loss is an undesirable property for architectural concrete as it can alter concrete's response to consolidation and cause irregularities like pour lines, color mottling and bug holes in the final appearance of the wall panels. If experienced, these irregularities may require on-site patching and repairing or recasting of the concrete panels.

In order to meet the extremely high surface finish quality standards set by the Dormitory Authority for the State of New York and avoid additional costs or delays, High Concrete needed to ensure that the fresh properties of the concrete remained consistent from the beginning to the end of the load.

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Solution

To achieve this objective without compromising early compressive strength development or rate of hardening, High Concrete utilized RheoTEC Z-60, a first-of-its-kind workability-retaining admixture from BASF's Construction Chemicals division. The resulting concrete mixture maintained its properties consistently from start to finish, allowing the production and placement team to efficiently consolidate the concrete without issues. In addition, the flexible dosage range of RheoTEC Z-60 workability-retaining admixture helped High Concrete effectively respond to changing temperatures through the spring, summer and fall. Strengths were consistent, and the finished product was well-received by the owners.

Project Facts:

- Total volume of concrete: 2,500 yd³ (1,900 m³)
- Average dosage of RheoTEC Z-60: 2 fl oz/cwt (130 mL/100 kg)
- Target slump: 8 in. (200 mm)
- Average measured slump (356 measurements): 8 in. (200 mm)
- Average measured air content: 6.6%
- Slump retention: 90 minutes
- Target 28-day compressive strength: 7,000 psi (48 MPa)
- Actual 28-day compressive strength: 8,700 psi (60 MPa)

BASF Corporation Admixture Systems

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Benefits:

- Excellent slump retention resulted in no redosing of admixtures
- RheoTEC Z-60 helped eliminate pour lines, mottling and bug holes
- Consistency in placement reduced labor costs
- Minimal rework resulted in additional savings. It was not necessary to remake any of the panels
- Finished surfaces were aesthetically pleasing, with uniform color

Additional Information

For additional information, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is a leading provider of innovative admixtures for specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets throughout the North American region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.



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