

Project:

East Campus Housing, Phase Two,
Binghamton University

Location:

Binghamton, New York

Owner/s:

Dormitory Authority, State of New York,
Albany

Concrete Producer:

High Concrete Group LLC

Construction Manager:

LeChase Construction

Architect:

Burt Hill, Philadelphia

Requirements:

6,000 psi compressive strength

Products Used*:

MasterSure[®] Z 60 workability-retaining
admixture

MasterGlenium[®] 7710 high-range
water-reducing admixture

Market Sector:

Precast concrete

Project Profile

Workability-Retention of Concrete

Binghamton University East Campus Housing, Phase Two



The 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.

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The 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.

Solution

To achieve this objective without compromising early compressive strength development or rate of hardening, High Concrete utilized MasterSure 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 MasterSure 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 MasterSure Z 60: 2 fl oz/cwt (130 mL/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)

Benefits:

- Excellent slump retention resulted in no redosing of admixtures
- MasterSure 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

More Information

The Master Builders Solutions brand brings all of BASF's expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of BASF construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global BASF technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring solutions.



*Effective January 1, 2014, the names of BASF's Master Builders Solutions brand products have changed:
RheoTEC Z-60 became MasterSure Z 60
Glenium 7710 became MasterGlenium 7710

Contact

United States
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5544
Tel: 800 628-9990 ■ Fax: 216 839-8821

Canada
1800 Clark Boulevard
Brampton, Ontario L6T 4M7
Tel: 800 387-5862 ■ Fax: 905 792-0651