

# **Blast Furnace Slag Aggregate Used In Bison System Components For Student Towers**

**Precast-prestressed units from Baltimore  
firm used for two high-rise apartments  
at University of Delaware**

# Strescon Supplies Bison System Components For Student Towers

Precast-prestressed units from Baltimore firm are used for two high-rise apartments at University of Delaware

Two student apartment towers at the University of Delaware have just been completed utilizing an Americanized version of the British-developed Bison structural precast system.

All of the concrete components were manufactured by Strescon Industries in Baltimore, Md.

The unusual new living center is the result of two years' research in modular building technology and student housing by the Ogden Development Corp. and its affiliate, Charles Luckman Associates—national planning, architectural and engineering firm.

The two towers are 15 and 17-story, L-shaped structures. They cover a

combined 375,000 sq. ft. and consist of 255 one-bedroom units and 197 two-bedroom units.

The Bison system's basic components are precast bearing walls and prestressed floor slabs. Charles Luckman Associates also incorporated the use of a precast stair unit, spandrel unit, aluminum and glass window wall sections and kitchen units.

There are no interior beams or columns in the two buildings. The walls and floors serve as the structure.

Ten-ton tower cranes lifted the precast sections into place. After vertical wall units were installed, they were topped with floor panels which were penetrated wherever chases and ducts

for mechanical and electrical systems were needed. The wall and floor units were tied together with various systems of interconnected dowels and loops. Joints were insulated with a strip of styrofoam and sealed with grout.

Construction of the center required no scaffolding. Small spider braces held wall units in place until the grout was hard, then were removed and used again on subsequent floors. Alignment of walls and floor was verified at every floor with a transit.

As the lower floors were completed, installation of the glass and metal window wall began. At the same time, electrical and mechanical equipment and elevator rails were installed inside the building and final interior finishing touches were completed.

The structures' external walls are a form of sandwich. The inner layer of reinforced concrete is the structural element. The outer layer is architectural concrete—white sand and cement that gives a permanent exterior finish.

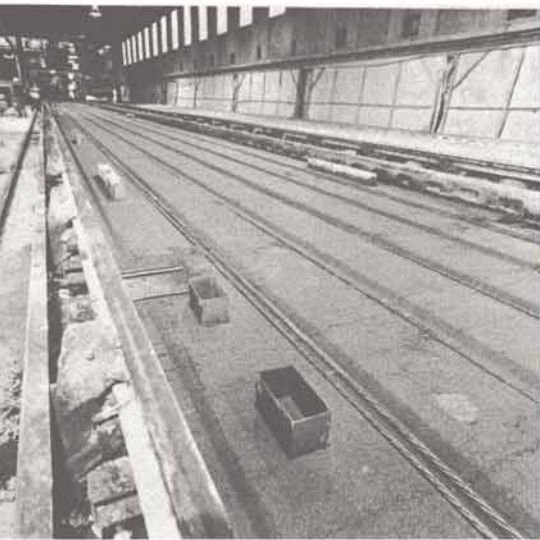
Between the two concrete layers is thermal insulation (a layer of styrofoam). The outer components of the two concrete walls are linked by stainless steel ties that pass through the insulation.

As they emerged from the Strescon factory, internal wall surfaces were ready to be treated with textured paint or paper, and once erected, floors were ready for final trim.

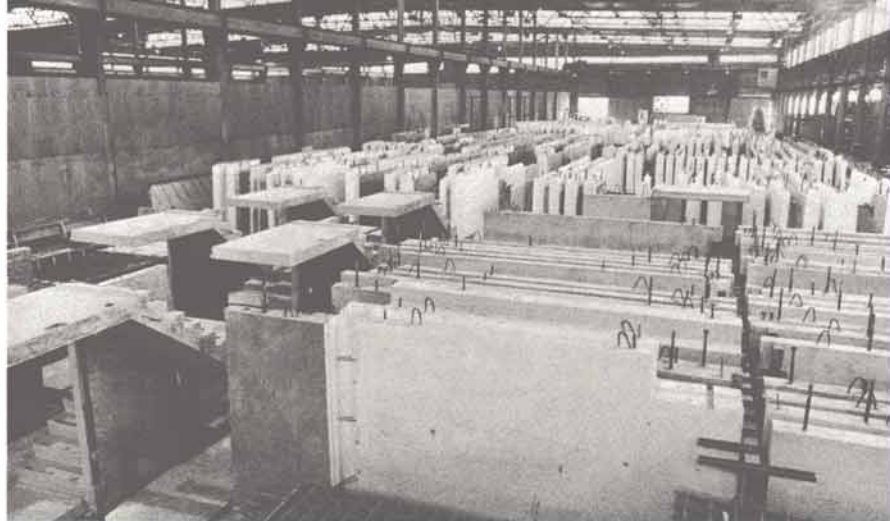
"The result is improved interior temperature control and more effective acoustic separation created by the 7 in. thick reinforced concrete walls between rooms. The cellular floor panels are 8 in. thick and include an acoustic bottom that becomes the pre-finished ceiling of the room below," says Charles Luckman, president of Ogden Development.

Workers at Strescon Industries pour finish layer of concrete in wall form.





Before hollow-core slabs are poured, tension cables and penetration forms are positioned.



Components were shipped from plant as needed and erected as they arrived at project, thus eliminating need for storage space.

Stair tower interiors were fabricated in one-story sections and installed as a single unit.



Floor-ceiling panel is guided into place.



Exterior surface of concrete wall panels has sculptured finish.

Exterior wall panel is lowered into place at one of student living towers.

Another advantage of the building system is that interior finishing of both residence towers proceeded regardless of weather conditions. As a result the construction schedule was reduced by nearly 25 percent from conventional building methods.

Approximately 40 percent of the students will be housed in one-bedroom apartments, and 60 percent in two-bedroom units, and each apartment building will be served by three elevators.

Individual apartments include a 215 sq. ft. living-dining-lounge area; 180 sq. ft. bedrooms; a kitchen area, and a bathroom including tub-shower, toilet and washbasin.

The apartments have wall-to-wall carpeting. Each room has its own heating and air conditioning unit with individual controls. A fully prefabricated kitchen unit also is installed in each suite. □



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