ARCOSA LIGHTWEIGHT

LIGHTWEIGHT CONCRETE MASONRY

Courtesy: JCI General Contractors Inc

CASE STUDY:

CLINCH COUNTY K-12 SCHOOL

Students and staff at the new Clinch County K-12 School in Homerville, Georgia, may never notice the concrete block in the walls of their new school. Yet these blocks—specifically the lightweight units made with Arcosa's lightweight aggregate—play a quiet but crucial role across all three campus buildings: ensuring structural integrity, optimizing thermal performance, and, most importantly, enhancing fire resistance.

"The fire rating is particularly important in school construction," says Kevin Cavanaugh, Technical Sales & Marketing – Midwest/Great Lakes Region at Arcosa Lightweight. "It provides an added layer of protection for students and staff, ensuring the building meets strict safety standards."

Block manufactured with Arcosa's lightweight aggregate automatically provide a two-hour fire rating for standard eight-inch units, a significantly higher fire rating than normal weight block. This built-in fire resistance is crucial in ensuring school buildings meet stringent safety requirements and provide a safe environment for students and faculty.

Given the critical importance of fire resistance in educational facilities, designers quickly turned to lightweight block for the new campus, a choice well-supported by the material's proven track record in schools.

Project Scope and Material Selection

The Clinch County K-12 School was designed by Altman + Barrett Architects, an award-winning full-service architecture firm known for designing quality schools across Georgia, including Valdosta High School which extensively used lightweight block.

Construction was expertly managed by JCI General Contractors Inc., a firm from Moultrie, Georgia, recognized for building high-quality educational facilities throughout the state.

CASE STUDY: LIGHTWEIGHT CONCRETE MASONRY

CLINCH COUNTY K-12 SCHOOL

ARCOSA LIGHTWEIGHT

Layton Dees, Sales Representative with Scruggs, points out school interior's painted walls surfaces.

The design of the new campus required a significant number of concrete masonry units, over 300,000 lightweight gray CMUs in various sizes—4-inch, 6-inch, 8-inch, and 12-inch dimensions—as well as additional architectural CMUs used as wainscoting.

The lightweight CMUs, produced at Scruggs Concrete Brick & Block's Valdosta, GA Plant, were crucial in meeting the project's demands for high-quality, durable materials.

Role of Block Fines in Surface Quality

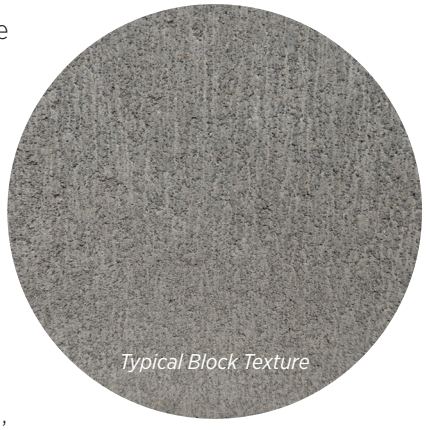
The specific gradation used in the units are referred to as 'block fines', the fine particles produced during the crushing and screening of lightweight aggregate.

"Because Arcosa Lightweight is a manufactured aggregate, it can be crushed and screened to meet the precise grading requirements outlined in ASTM C33/C33M-18," says Cavanaugh. "These fines are essential in creating a smooth, dense surface texture which significantly enhances their finish and make them particularly well-suited for interior painted surfaces."

"The use of lightweight aggregate in the mix design results in a beautiful finish in our gray block."

–Layton Dees, longtime sales representative for Scruggs

"It's really tight. It takes the paint well. Very little extra work needs to go into prepping these walls for the paint. So that's a big selling point for us," Dees explains.



Typical Block Texture

Durability and Aesthetics

As the school's August 2024 opening approached, Dees walked the halls, observing the final touches being applied by construction crews. The freshly painted walls, the reinforced corners, and the secure door frames all stood as a testament to the meticulous planning and quality materials used throughout the project.

Dees also pointed out the bullnose blocks used on the corners and the specially designed cubby holes integrated into the walls for students' belongings. "These cubby holes are designed to withstand heavy use and reduce wear and tear over time,' Dees explains. 'The bullnose blocks on the corners also help prevent chipping and maintain the school's aesthetic over the years.'"

Masonry Productivity

Rusty Ingram, who has overseen Scruggs' block operation since 1974, has been a long-time proponent of utilizing lightweight aggregate in the company's products. "We've

CLINCH COUNTY K-12 SCHOOL

ARCOSA LIGHTWEIGHT

Lightweight aggregate storage, Scruggs Concrete Brick & Block, Valdosta, GA.

Scruggs operates a Columbia CPM 40 which produces four units per cycle.

used the lightweight aggregate made in Livingston, Alabama from the very start," Ingram adds. He says the labor friendliness of lightweight block, combined with its thermal efficiency and other qualities, have led the company to produce lightweight almost exclusively.

"The lightweight is much friendlier to the mason contractor. If a mason is picking up 150 to 200 blocks a day, and the one we're producing weighs 28 pounds as opposed to a 32 pounds – that's a big difference," he says.

Layton Dees echoes these comments, adding, "Using a lightweight block, you're going to get more production and a faster job. Say you have a mason laying block that weighs 27 or 28 pounds each, as opposed to one laying a block that's 35 pounds. Who do you think is going to lay more block?"

Long-Term Durability

Leaving the campus, Dees makes one final observation. "The workmanship of the masonry was excellent and the walls are definitely built to take a pounding," Dees notes, highlighting the built-in durability of the lightweight block construction. "With lightweight block construction, the walls will stand the test of time and the punishment that these kids are going to put on them through."

He further explains that the walls are reinforced both horizontally and vertically, with additional reinforcement around corners and doors, ensuring a very safe environment for students.

The school also features advanced safety systems, including high-definition security cameras, metal detectors, and state-of-the-art visitor management, making it one of the safest educational facilities in the region.

Model for Safe School Construction

In addition to its functional benefits, the new Clinch County K-12 School stands as a model for sustainable and cost-effective school construction. By incorporating Arcosa's lightweight aggregate, the project achieved efficiencies in material usage, improved energy performance, and created a safe and welcoming environment for students and staff.

"It's always rewarding to see schools constructed with strong, mason-friendly, budget-friendly, fire-resistant, and thermally efficient lightweight concrete blocks," says Cavanaugh. "We're proud to have our aggregate featured in this school and appreciate Scruggs and everyone involved in bringing this project to fruition."

Altman + Barrett Architects