

Building for Safety: Lightweight Block Protects Guntersville Students

As Guntersville, Alabama prepared to open its first new high school since 1969, Kirkpatrick Concrete, North Division, played a key role in ensuring the new facility was built to last and, most importantly, to protect students and staff.

Situated in an area prone to severe weather, the decision to use lightweight concrete masonry units (CMUs) was crucial for enhancing safety, durability, and sustainability.

Given the local weather risks, storm safety was a top priority in the design of the high school. Kirkpatrick Concrete, using expanded clay lightweight aggregate, produced the CMUs for the school's walls, including a reinforced storm-safe section. This critical area is specifically designed to shield students and staff during extreme weather events.



The double-height walls of the storm shelter section of the school are constructed from 12-inch lightweight block, reinforced with #7 rebar and fully grouted.

Matt Herbert, Vice President of Operations at Thrash Commercial Contractors, describes the storm shelter as the strongest one he's ever built. "The school, divided into seven different sections, features a whole section—the band room and the choir room—that serve as a storm shelter capable of housing the entire school."

"I've built a lot of schools with tornado shelters. This is the stoutest one. We joked that we better not make any mistakes because there wouldn't be any tearing it down."

These CMUs, reinforced with structural materials, are designed to resist high wind loads and debris impact, making them essential in storm-prone areas. The storm shelter design using CMUs, as detailed by the [Concrete Masonry and Hardscapes Association \(CMHA\)](#), is crucial for providing protection during violent storm events.

Additionally, a solid poured concrete beam, with a steel insert—known as a wind beam girt—runs around the walls, which feature embedded steel plates welded to the beam.

Additional Lightweight Block Benefits

Spencer Glassco, General Manager of Kirkpatrick Concrete's Northern Division, emphasizes the additional long-term benefits of using lightweight CMUs, explaining that when you look at maintenance costs and heating and cooling costs, block stands the test of time.

"It was one of the best materials they could use. You see block in a lot of institutions and schools, especially when you are looking for sustainability."

In addition to the other attributes the lightweight block brings to the project, Glassco says the fact that the block and concrete were sourced locally "helps them gain LEED points for the project and the green initiative". The school's floors are concrete, with slab-on-metal-deck used on the second story of the school. "We used some microfiber to replace welded wire mesh, that sped up construction and helps with crack control."

Construction Challenges

To avoid disruption, the new school is being built around the old school, which is still in use. When the new school is complete, the old facility will be demolished and become a courtyard for the new school.

Herbert said that has posed considerable challenges. "We have the existing school on one side of the site and a 60-foot grade change on the other. We have to shut down one end of the site twice a day when the kids are coming to school and going home. We also have to shut down for football games and other events. One section of the new school is probably 25 feet from the old one. We had to be real careful not to undermine the foundation of the existing school when we were putting in the new foundation."



Rendering courtesy: Thrash Company

As Gunter'sville High School prepares to welcome students, it will not only provide a modern learning environment but also serve as a safe haven in the event of severe weather. With the durability and efficiency of lightweight CMU, the school is built to endure the test of time while ensuring the safety of its students and staff.

Glassco summarizes the advantages of lightweight block, saying, “It’s a sustainable product that has stood the test of time. And in all of our schools now, there is some form of tornado-safe section. That’s one of the things we’re proud to be part of.”