

COMANCHE HIGH SCHOOL BAND/SAFE ROOM

BuildBlock ICFs played a central role in enabling both the architectural vision and the high-performance requirements of Comanche High School's Multipurpose Band Room addition and renovation. The design introduces innovative elements—most notably the “learning stairs”—which transform a conventional circulation path into a multi-functional space for collaboration, informal instruction, and assemblies. Integrating these tiered structural elements within the existing building required precise coordination at the interface of new and existing construction. The versatility and strength of the ICFs allowed the design team to seamlessly connect new foundation and wall components to the original stage and floor structures while maintaining structural continuity.

About

Location: Comanche, OK
Owner: Comanche Public Schools
Date: Drafted October 2023

Quick Facts:

- 10 Inch Concrete Core is used for exterior walls
- 6 Inch Super Floor Concrete Deck for Roof
- Built to FEMA and ICC-500
- Designed to be a functional multipurpose room: a band room and safe room.



Built for Learning

The new band room further demonstrates the capabilities of ICF construction in delivering a dual-purpose facility that serves as both a modern music suite and a fully certified FEMA and ICC-500 rated storm shelter. This application demanded a building envelope capable of balancing daily usability with critical life-safety performance. To achieve that standard, BuildBlock ICFs enabled the creation of a continuous hardened envelope designed to protect occupants from extreme wind events and debris impact. The wall was mechanically tied into both the reinforced concrete slab and roof structure, establishing a complete load path to resist uplift. To build the roof to ICC-500 standards, a pan and joist suspended concrete decking system, Super Floor, was selected. In addition, all components of the building envelope—including rated doors and impact-resistant glazing—were selected to meet stringent testing criteria. Special attention was given to penetrations through the envelope, with vents, conduits, and piping protected by steel baffles or shrouds to maintain the integrity of the shelter.

The ICF walls provide a reinforced concrete core combined with continuous insulation, delivering exceptional impact resistance alongside enhanced acoustic control. This inherent mass of the ICF wall's concrete core helps contain sound within the space, creating an optimal environment for musical instruction, while also ensuring resilience against extreme weather events. To preserve the integrity of the hardened envelope, all wall and roof penetrations were carefully detailed with protective assemblies, including custom steel shrouds where required.

Maintaining aesthetic continuity with the existing campus was also a key priority. The ICFs supported a layered exterior wall assembly that integrates a structural concrete core with insulation and finishes consistent with the original building, including brick veneer and EIFS. This approach allowed the project to meet stringent structural and energy performance goals without compromising visual cohesion. Internally, the solidity of the concrete is complemented by acoustic panels and specialized millwork, which refine sound quality and support the functional needs of the band program.



In addition to new construction, the project addressed accessibility challenges within the existing facility through targeted interventions. Rather than replacing the stage entirely, the design incorporates strategic modifications such as a wheelchair lift and widened egress points to meet current accessibility standards. The adaptability of ICFs enabled these improvements to be integrated efficiently alongside the new construction, supporting a cohesive and compliant final design.

This project required a highly coordinated construction approach, driven by the complexities of working within an active campus environment.



Site and civil considerations were equally critical, particularly given the need to maintain daily school operations throughout construction. The project required selective demolition of existing paving and sidewalks, with a focus on salvaging and relocating site features such as flagpoles and benches. A comprehensive stormwater pollution prevention strategy was implemented to manage erosion and runoff during grading, utilizing measures such as silt fencing and inlet protection. At the same time, precise grading ensured that drainage flows away from the new addition while aligning with existing elevations, allowing for seamless accessibility between the band room and the high school commons.

The addition also required careful coordination with existing utilities and site features. All underground services were identified and protected to ensure uninterrupted operation of the school, and construction sequencing was planned to avoid disruptions. Existing elements such as the school's monument sign and adjacent trees were preserved and protected throughout the construction process, reinforcing the project's sensitivity to the established campus environment.



In tandem with the new construction, the project included targeted upgrades to life safety and accessibility within the existing facility, in addition to the safe room. A new fire detection and voice evacuation system was installed and integrated across both the renovated and new spaces to provide consistent emergency communication. Accessibility improvements, including the installation of a wheelchair lift at the stage, were incorporated through selective structural modifications, allowing the facility to meet modern standards while preserving key elements of the original building.

Project Summary

The Comanche High School Band Room and Safe Room stands as a powerful example of how resilient design and everyday functionality can work hand in hand. By leveraging the strength, efficiency, and versatility of BuildBlock ICFs, the project delivers a space that not only enhances music education and student collaboration but also provides critical protection during severe weather events. Seamlessly integrated into the existing campus and constructed with careful attention to safety, performance, and aesthetics, this multipurpose facility reflects a forward-thinking approach to school design—one that prioritizes both community enrichment and life safety for years to come.

