

Safway Innovation Key to Monumental New Air Force Academy Building



The vertically-oriented scaffolding had to be interlaced with the building's diagonally-oriented steel structure.

When an architect's foremost goal is to create a work of art, things can get weird.

Take the spectacular new Center for Character and Leadership Development (CCLD) at the Air Force Academy. The shape of the structure's tower is so dramatic that it couldn't support its own weight until it was nearly completed.

Knowing this, general contractors ECC and GH Phipps were in need of an access partner to provide scaffolding and shoring – a partner with a great deal of engineering expertise, nimble production, and ironclad execution. They found it with Safway.

“Safway helped us adapt to the challenge of the unique structure we were building. They did a great job,” said Luke Tourville, GH Phipps's project manager and the assistant site superintendent.

The most dynamic feature of the academy's gleaming new building is a 105-foot-tall tower, made up of 460 tons of steel and glass. The tower leans 39 degrees north, so when you enter and look up, the North Star is perfectly framed in the glass panels of the roof. Polaris is there as a symbol of unwavering direction – a reminder of the center's purpose – and a nod to early aviators for whom the celestial marker was a vital tool for night navigation.

The tower, designed by Skidmore, Owings & Merrill LLP, is a butt-glass system with a smooth glass skin covering an intricate steel plate structure, resembling a spider web. Work started in May of 2014 and ended in July of 2015.

Project Manager Gaer Sandager, of Safway's Denver branch office, explained that the tower's unique shape made scaffolding access a new and complex challenge for engineers. For one thing, each level needed to be 5 feet 10 inches above the previous level. Other access companies that had bid on the project thought the best approach was to add and subtract at various levels to try to keep things lined up.

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Solution found outside the box

Safway, which specializes in new challenges, took a smarter, outside-the-box approach; they simply went out and manufactured scaffolding with five-foot-eight-inch legs. “It made the whole project just go perfectly,” Sandager said.

Another challenge caused by the building's lean was that vertically-oriented scaffolding had to be interlaced

(continued)



(ABOVE) Safway provided shoring in addition to scaffolding for the Air Force Academy project.

with the building's diagonally-oriented steel structure. One side of a scaffolding platform level would be outside the building, while the other side of the same platform was inside.

“There was lots of coordination with the contractors. Good communication was key.”

“Our bars went through their structure, and every level was a little different. It was like trying to thread a needle,” Sandager said.

In addition to the difficulty this created during the erection of the scaffolding, it made removal complex as well: After the steel frame was completed, glass was placed on the structure working from the top down. This meant the interlaced scaffolding had to be constantly removed as the work progressed.

Added Tourville, “There was lots of coordination with the contractors. Good communication was key.”

Beyond scaffolding, Safway provided shoring to keep the entire structure from tipping over during construction. “Until the last piece of steel was in place, the building wanted to fold in on itself,” Sandager explained.

(BELOW) The finished tower leans 39 degrees, so building visitors can look up and see the North Star framed in the glass panels of the roof.



The site itself presented challenges, too, with high plains weather a major factor. The building is engineered to withstand winds up to 110 mph, and the team saw plenty of wind and cold during construction.

Whatever it took

Sandager said the skill and flexibility of the Safway team was critical to the project's incident-free completion.

“Our team was on site full time from day one,” he said. “We had to constantly fine-tune our schedule so we were in line with the steel workers,” he noted, explaining that Safway normally had eight, and sometimes as many as 12, workers on the job site every day.

“When schedules shifted, Safway was part of the solution,” Tourville said, adding, “They were willing to work Saturdays, overtime, whatever it took.”

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