

**Category: 11 - Best Building Project – General Contractor (\$10 - \$40 Million)**

**Contractor: Adolfson & Peterson Construction**

**Project Name: Adams 12 STEM Lab School Renovation**

The year was 2016, and despite continuous efforts a bond had not passed for Colorado’s Adams 12 Five Star School District in 12 years. Aging schools were in disrepair, suffered overcrowding and were limited in program growth. Ahead of election season, the school board approved a \$350 million bond on the ballot at no tax rate increase to residents. For the first time since 2004, the community voted to pass the bond that would afford significant upgrades to schools in the district. Among substantial improvements was the renovation of and addition to Adams 12’s STEM Lab School, a K-8 school focused on “problem-based learning.”

Adolfson & Peterson Construction (AP) was awarded this multi-phased and occupied project. The summer before the bond was passed, AP completed a preliminary mechanical phase that included boiler/HVAC renovations, exterior water line replacement, minor classroom renovations and HVAC controls. The first official phase began in May 2017 and included the construction of a new 25,000 sf classroom wing, renovations to the gymnasium and cafeteria, and the addition of a new playground. In May 2018, a second, year-long phase of work began that involved the demolition of much of the west side of the building, and the addition of a new library, science rooms, art rooms, administrative offices and classrooms. The project followed the Collaborative for High Performance Schools (CHPS) guidelines and included unique design and sustainability features.

The school remained open as nearly 500 staff members and students continued to work and learn, shifting between old and new parts of the building while work was completed. Weekly meetings were held throughout the design phase, where AP collaborated closely with district representatives, key school staff members and local law enforcement to prepare for each sequence of work and all levels of impact.

AP worked closely with the district and with school staff to minimize interruptions while maintaining high safety standards and quality construction and coordinated with CM and local AHJ to maintain safety. Every site utility, mechanical, electrical, plumbing, low voltage and fire alarm system was replaced on the project while school was in session. Shutdowns were heavily

coordinated and did not impact the school's operations. Throughout the project, considerations were also made to prevent interruptions from construction noise, dust transmission, and traffic issues.

This was no ordinary construction project. Not only did it involve a meticulous, phased two-year process to transform a then 46-year-old building into a 21st-century STEM facility, but the team overcame multiple obstacles along the way.

To gain understanding of the design and functionality of the existing mechanical, electrical, and air conditioning systems, crews conducted intensive investigations. To avoid interruption of service and mitigate error, teams documented each of their findings in detail before beginning construction. The facility contained high amounts of toxic asbestos, which was carefully abated and planned around. AP kept close watch on all contractors' activity as it related to the interference of asbestos and kept the safety and peace-of-mind of students, faculty and crew at the forefront.

Perhaps the most challenging obstacle entailed the delicate, nearly surgical separation of the existing building's second story so that it could be safely demolished without compromising the structural integrity of the first story. This involved multiple lines of coordination and meticulous preparation to install temporary shoring, then using specialized equipment to carefully cut precast joists in strategic locations to keep engineering and safety intact. The skilled and experienced tradesmen on this project worked in partnership and successfully executed this unusual, high stakes task, among others, with precision and artistry.

AP relied on trusted partners for the success of this project. Before beginning, the team recognized challenges that would require critical thinking and high levels of coordination to properly overcome. AP collaborated with the district and strategically chosen subcontractor teams to carry out carefully detailed site investigations to gain a full understanding of the design and functionality of each system and documented each of their findings in detail before beginning construction. This ensured smooth processes, educated approaches and helped the team avoid errors and interruptions of service.

Innovation was key in improving this learning environment. If something was outside of the knowledge base of the core team, experts were brought in to ensure the highest quality of design

and outcomes. From bringing in the highest quality, most esteemed carpenter available, who reimagined and brought new life to the existing bleacher wood in the form of wall cladding, sills, and benches, to an acoustic engineer who evaluated the reuse of high-bay spaces to convert the old auxiliary gym into music rooms that would accommodate new programming for the school, to MEP contractors who were not only committed to excellence but willing to go great lengths to assess the existing systems, the team itself was the most important tool for success.

The entire team was effective in managing scope and budget for this project, which resulted in unused contingency funds, which were returned to the school district.

Among the unique design features of the renovated school, each classroom pod features flexible learning areas and LEGO®/ Maker Spaces for students to construct and test projects. The building includes a new library, science rooms, art rooms, gymnasium, cafeteria and music rooms for shared student use, as well as a new secured main entrance and a centralized administrative area.

Sustainability features included recycling existing boilers, installing a new roof system with increased insulation, enhancing daylighting features, installing new high-efficiency boilers where recycling wasn't an option, and installing LED lighting and polished concrete floors to enhance durability and reduce maintenance costs. Reclaimed bleacher wood from the existing school gym was also utilized as wall covering and student benches throughout the building.

Operating above standard safety measures, the AP team was proactive in maintaining the highest degree of protection for the students, faculty and the crews throughout the project. From active shooter drills to fire safety protocols and the surgical detachment and demolition of the second story, AP kept safety at the forefront.

An unfortunate obstacle related to school projects is the threat of an active shooter. Although the likelihood of a shooting is rare, student safety is always paramount in school construction. Working in close collaboration with the school administration and the Northglenn Police Department, AP conducted active shooter drills and trained all crew members in detailed procedures to implement in a shooter scenario. A muster zone and communication plan were established for all subcontractors and workers in the event of such an emergency.

The fire riser for the school was located in the portion of the building that was to be demolished. The team coordinated the replacement of all equipment ahead of demolition and had everything in place to avoid a lapse in protection. This involved rerouting and installing temporary fire alarm devices and sprinkler heads in occupied areas and coordinating with local fire officials to maintain codes in the existing building.

The team constructed barriers of separation and site logistics plans that clearly identified for the school, parents and students which areas were off limits. The team produced wayfinding signage and kept air quality and noise top-of-mind to reduce impacts to students. Approaches were revisited and recommunicated during each phase of construction to ensure students and faculty were aware of any changes. Site maps and plans were distributed to the community, town hall meetings were held, and the team coordinated with the school/district to send notices and memos as needed.

3890 Design, the architectural group on the project, created as many sustainability features as possible while incorporating learning opportunities throughout. In support of the problem-based approach of STEM learning, labs were designed for students to draft and plan in one room and construct in another. Playful and interesting features were also incorporated into the design of collaborative learning spaces. For example, the soffits in the library are shaped like gears, and STEM is spelled out in braille on the CMUs through a central hallway.

Throughout the project, AP got involved in the STEM Lab learning community and participated in several problem-based learning events, lending expertise and presenting on construction and related careers. Additionally, AP hosted several Q&A sessions with the school district, where members of the community were invited to ask questions or voice concerns.

The design concept and function of the new and improved STEM Lab were all based on learning, with a particular focus on the idea of “Building as a Teaching Tool,” which can be seen throughout the school, and features exposed building structural systems as well as cross bracing, visible mechanical ductwork, labeled plumbing systems and a plexiglass viewing area to allow students to see and study information technology and mechanical/electrical systems.

The completed \$28 million renovation and reconstruction added 50,000 sf of learning space and transformed the remaining portion of the nearly 50-year-old building, expanding enrollment from

475 students to nearly 700. “The end result of their hard work is a beautiful new and renovated building that will serve generations of students to come,” said Adams 12 Chief Operations Officer Pat Hamilton.











