

# Experience. Innovation.

## CASE STUDY

Palmer High School | Colorado Springs, CO

### BILCO Helps Colorado School Solve Smoke Vent Dilemma

During the height of the Great Depression, President Franklin D. Roosevelt created the Works Projects Administration to assist with public works projects throughout the country. Colorado was one of the biggest beneficiaries of the program, which began in 1935. Colorado received more per-capita federal dollars than any state except Washington.

The WPA constructed 113 schools in the state and reconstructed or improved 381 others. Palmer High School in Colorado Springs was one of the schools built with support of WPA workers. It opened in 1940.

The building's durability is a testament to the quality of construction by the WPA. Workers did find, however, an unusual positioning with regard to the smoke vents. The existing vents had been installed horizontally. "They designed other schools in the area the same way," said Don Johnson, Executive Vice President of iiCON Construction, the general contractor on the project. "I don't know how they got them to function."

The school sought solutions to replace the vents, which did not meet fire codes and did not have functionality for testing. "As codes and technologies advanced, these antiquated systems have become obsolete, and worse, there is no applicable standard for inspection, testing or maintenance," said Vernon Champlin, Senior Consultant with the fire protection engineering firm Jensen Hughes.

Architects and fire protection experts recommended an unusual alternative: leave the existing vents in place. They were sealed and insulated to improve energy efficiency and acoustics.

"This is the first time we've ever run into this particular design," said Frank Kaiser, an architect at LKA Partners. "The existing vents were all connected with a series of pulleys and ropes, and the panels did not seal very well. There was no way to replace them."

To install the new vents, workers removed nearly 4,000 pounds of cement from a cast-in-place structure on the roof. With assistance from a crane, saw cutter and intense labor, workers cut holes to match the size of the new BILCO acoustical smoke vents.

Roofers installed four acoustical smoke vents from BILCO. The 5 x 7 vents include burglar bars to prevent unauthorized entry and a manual winch. Given the high school's location downtown, acoustical smoke vents help limit noise intrusion from exterior sources.



"Even weather, such as hail, can be loud," said Kaiser, who has more than four decades of architectural expertise. "We wanted to make sure during performances we could mitigate any exterior noise that could be a potential problem. We like the BILCO products. They seem to be the one that we see on most of our projects."

Acoustical smoke vents are installed at theaters, concert halls and other applications that require controlling noise from external sources. BILCO vents have an industry-high OITC-46 and STC-50 sound ratings. The vents include a fusible link to ensure operation should a fire occur.

Kaiser said the firm's relationship with a distributor, Dalco in Denver, helped procure the vents. "The vents themselves seem to be well built," Kaiser said. "The walls are thicker than the average vent and they'll help limit noise infiltration."



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