CertainTeed

A Better Educational Environment
A growing body of research has linked student learning and the built environment. In well-designed educational spaces, students and teachers communicate more effectively, student scores trend higher and there is better retention of quality teachers and staff. Moreover, well-designed schools have a positive impact on the communities they serve.

Slatington Elementary School

Located in the Northern Lehigh District in Slatington, Pennsylvania, Slatington Elementary School is the home school to 550 students. Built in 1971, Slatington had an open education classroom style, which was free of walls and was appropriate for the classroom design of the 60’s and 70’s. After almost four decades Slatington Elementary underwent a major renovation and expansion. This included transforming the open classroom style into individual state-of-the-art classrooms, a new classroom wing, and a complete renovation of the cafeteria, kitchen, gymnasium and other spaces. Slatington Elementary presented CertainTeed with the opportunity to apply their building science expertise into a real-life application. CertainTeed completed an analysis of the overall indoor air quality and acoustical comfort for the construction of the remodeled new classroom wing.
Enhancing Classroom Experience Through High Performance Gypsum Walls

Figure 2 below shows the formaldehyde concentration levels in parts per million (ppm) for the classrooms with CertainTeed Gypsum’s AirRenew M2Tech installed on all walls. The vertical axis reflects the formaldehyde levels and the horizontal axis shows the week in which the measurement was captured. The data shown is through the life of the project. In both rooms that had AirRenew®, the formaldehyde levels decreased down to essentially zero ppm and remained at that level.

The installation of AirRenew on this project along with good indoor air quality design and good building operation practices provided an effective strategy to reduce the exposure to formaldehyde.
Both teachers and students have a high stake in good classroom acoustics. Noise disturbances can greatly impede the learning process. Beyond regulatory and code requirements, “modernizing” school buildings includes good acoustical design.

CertainTeed conducted acoustical tests, including Speech Intelligibility Index, to determine sound absorption, interior partition sound transmission levels, as well as major sound flanking paths. The results of the study showed that Speech intelligibility can be negatively affected by:

- Background noise
- Hallway noise intrusion
- Noise disturbance

The study also showed that specifying a comprehensive acoustical system that includes high-performance gypsum board and ceiling products along with air tight door assemblies is the most effective way to improve classroom acoustics.

Designing an education building that is conducive to learning should include high performance building materials and systems that yield superior acoustical performance, minimize the risk of poor indoor air quality, and take into account the safety and overall comfort of students.

The enhancement of a classroom experience can be quantified through teacher surveys that validate measured performance.

**How it Works**

- Captures VOCs, specifically formaldehyde, and converts it into inert compounds
- Provides up to 75 years effective absorption based on tests and analysis
- M2Tech® technology provides enhanced moisture- and mold-resistance
- Highest possible score of 10 for mold resistance per ASTM D3273
- Easily recycled

**How it Works**

- Features a sound dampening viscoelastic polymer and is specifically designed for systems requiring high STC ratings
- Builds effective noise reducing walls with less material saving construction time and material costs
- Features M2Tech® for enhanced moisture- and mold-resistance
- High-density core and is enclosed in up to 100% recycled moisture and mold-resistant front and back papers
After completing the renovations in Slatington Elementary, a faculty comfort survey showed that 74% of survey respondents reported an improvement in indoor air quality and 68% of respondents noticed an improvement in the noise/acoustics of a classroom. A separate survey of observed student behavior, post building renovation, showed that the noise complaints were down by 88%.

“We've gotten very favorable results from the new classrooms—sound is contained, the spaces are very comfortable, indoor air quality has improved and allergy complaints have dropped,” says Greg Derr, director of support services for Northern Lehigh School District in Slatington. “CertainTeed’s acoustic ceiling panels and drywall were crucial to us achieving these results, and their design assistance has helped create a top-notch learning environment for our students in the new classrooms.”

The final report of this study “Impact of Innovative Building Materials on Classroom Acoustics and Indoor Air Quality”, dated December 2013 can be obtained from CertainTeed Gypsum.
CertainTeed Gypsum builds better educational environments.

AirRenew® M2Tech® formaldehyde-absorbing indoor air quality gypsum board with M2Tech® for added moisture- and mold-resistance.

AirRenew® Extreme Abuse and AirRenew® Extreme Impact provide added durability, with M2Tech® for added moisture- and mold-resistance.

SilentFx® noise-reducing acoustical gypsum board with M2Tech® for added moisture- and mold-resistance.

M2Tech® gypsum board is made with technology specially formulated for enhanced moisture- and mold-resistance.

The GlasRoc® reinforced glass mat family of products include Diamondback® Tile Backer for use in moisture prone spaces.

GlasRoc® Sheathing, Shaftliner and Roof Board provide added moisture and mold resistance, fire resistance and durability. CertainTeed Type X and Type C gypsum boards provide added fire resistance to paper-faced products.

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