

Delivering a Clear Message with Acoustical Insulation

A church in Colorado works with Johns Manville and Sonus N.A. to improve the acoustics of its sanctuary and provide its congregants with a clearer, more intelligible Sunday morning service.

CHALLENGE

Bethany Evangelical Free Church in Littleton, CO wanted to improve the acoustic experience in its sanctuary. The space, which seats approximately 300 people, has high vaulted ceilings and multiple alcoves that resulted in acoustic feedback and echoes. The poor acoustics made it difficult for congregants to properly understand the preacher. Plus, when a single vocalist performed, the echo was distracting.

Although the church wanted to provide an improved acoustic experience for its congregants, it feared that the project would be too costly. Associate Pastor of Worship Reid Gordon considered a DIY solution, although such a solution would not have a professional appearance and would not significantly improve the acoustics of the church sanctuary.

UNDERSTANDING ACOUSTICS

Sound consists of waves. After a sound is made, these waves bounce around a room for various amounts of time depending on the size of the room and the surfaces in the room. Softer surfaces, such as carpet and chair cushions, help absorb sound. Harder surfaces, such as wood floors and ceilings, reflect sound. The term reverberation describes the collection of all those reflected sounds.

“To reduce reverberation, you need to shorten the amount of time for sounds to decay,” says Kevin Simons, the President of Sonus, a Colorado-based company that worked with Johns Manville on the Bethany Church project. “You want that time to decay to be around 0.8 to 1.0 seconds. If it’s two or more seconds before sound decays, that’s going to be too much reverberation.”

PRODUCT

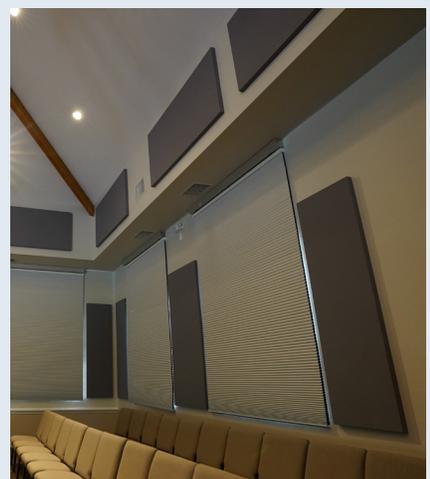
Whispertone® Wallboard

LOCATION

Bethany Evangelical Free Church
Littleton, Colorado

FABRICATOR

Sonus N.A.



SOLUTION

Chris Hoying, Acoustic Engineer at Johns Manville, kicked off the project by performing acoustic tests to determine the best solution for improving the acoustics of the space.

"I performed initial reverberation measurements of the space," says Hoying. Using CAD software, he approximated the volume of the sanctuary space along with the sound absorption of the various surfaces it contains. Hoying then modeled different scenarios for improving the acoustics with the addition of various amounts of sound absorbing panels made with Johns Manville [Whispertone® Wallboard](#).

Manufactured from fine, rotary-process, borosilicate glass fibers bonded with a special thermosetting resin, Whispertone Wallboard is a rigid board-type insulation with a smooth surface. It contains countless air spaces that deliver effective sound absorption as well as thermal benefits.

Once Hoying determined the necessary square footage of acoustic panels, Sonus N.A. managed fabrication. Sonus chose two-inch thick Whispertone Wallboard from JM for the panels it created for the church. "Because the church plays music, we chose a thicker panel. The thicker the panel, the broader the range of frequency that it addresses," says Simons. "A two-inch panel goes lower on the Hertz spectrum, which helps with absorbing lower sounds like bass tones."

"It was such a huge benefit that JM sent their acoustic engineer out to take measurements," says Gordon. "To have someone come out and do exactly what was needed was incredible and reaffirmed our decision to go forward with the project and investment."

Gordon anticipates that the new panels will make the sound clearer for everyone, particularly older congregants. "By adding these acoustic panels, we are exhibiting thought and care for the space, and really showing up for Sunday mornings with excellence," says Gordon.

To learn more about Johns Manville Whispertone Wallboard, click [here](#).

To learn more about Sonus, click [here](#).

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