

History Speaks Up

Landmark Chapel Improves Audio

by Joy Zaccaria

For the Smith Chapel in downtown Columbia, SC, the sound system is deliberately invisible to the ear and the eye. Without calling attention to itself, the system preserves the 200-year-old chapel's aesthetics and remains powered on at all times, making the spoken word intelligible.

With subtlety in mind, Frank Ward of Acoustical Design Associates in Irmo, SC was the engineer/project manager and chose the TOA H-1s for the cozy chapel. The predominantly older parishioners were having trouble hearing in the structure until a donor provided funds for sound system improvement.

Working within the existing structure and maintaining its historic look and feel was a primary concern for Ward, next to achieving more sound with less echo and reverberation.

"The architect would not accept anything that bugged up the way the thing looked," said Ward. "I also had a construction manager who had to be satisfied at the same time." As part of the renovation, the chapel also spent \$50,000 on a marble-esque paint job for the plaster walls.

Surrounded by pure plaster, there was a good amount of echo in the chapel. "Acousti-

cally, there wasn't a lot of background noise," said Ward. "We put speakers physically close to the people so we wouldn't get the reverberant field up really loud."

In the speaker selection process, plan A was a big speaker hung from the ceiling in the middle of the room. Plan B was similar but more hidden in the ceiling. Both were too unsightly. Plan C entailed small column-speakers that are prevalent in Europe.

"TOA has a product that we can mount and aim," said Ward. "They were physically pretty close to the people so it didn't need to be really loud." Six of the TOA H-1s were used along with an existing TOA DSP to do the routing, mixing and alignment delays and equalization.

A 6-channel Crown CP660 amp with 8 ohm output was installed to handle the required volume level. Acoustical Design Associates modeled the room in EASE to calculate the level needed with another 15 dB of headroom.

At the front end, four lectern microphones and TOA wireless go into a stereo mixer. "Conceptually, it's a mix-minus system," Ward explained. "The loudspeaker close to the person speaking is not on, but the other speakers are on."

Depending on whether the person is speaking into the lectern mic (left) or podium mic (right)—the sound gets steered more



▲ The Smith Chapel in downtown Columbia, SC required a sound upgrade for its spoken word Sunday School service that was consistent with its historic landmark look and feel.

heavily to the opposite front speaker. It gets steered to the middle and back speakers equally with delay. The front left and right are getting a separate signal.

"We're doing this with a conventional mixer," said Ward. "All the mics are on all the time. There is no automatic mixer to do any gain sharing. So there again, steering the sound away from the microphone that was producing it helped us correct our gain before feedback problem." A Marantz 502 provides the capability to record the service straight out of the Whirlwind Mix 6F stereo mixer.

In the interest of building preservation, the company could not penetrate the walls

to run wire. "We had to use some flat wire—basically printed circuitboard traces," Ward recalled. "We ran that underneath the floor tiles before they were put down. Then we ran that up the wall and the painter came back and painted over top of it."

With such a configuration there is no need for a volunteer to take care of the sound. "You just walk in there and talk," said Ward. "Nobody even knows it's on. I don't even know if they realize they can turn it off."

► Acoustical Design Associates
www.acousticaldesign.com

► TOA
www.toaelectronics.com



▲ Frank Ward of Acoustical Design Associates chose the TOA H-1 loudspeakers to be unobtrusively mounted and aimed physically close to the seating in this historic 200-year-old landmark chapel.



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