

# Time Out Of Mind

## Project Closeout Shouldn't Be Taken Lightly



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Why does the last 20 percent of the project seem to take 80 percent of the time? Our challenge in the last few months has been dealing

with or trying to deal with closeout submittals—one of those nasty little things that consultants require.

It's not that consultants want to make busy work for contractors, it's just that our clients ask us to design and engineer a system that will meet their needs and that can be maintained over time. Part of that process is to make sure that the systems are adjusted to optimize performance and that the adjustments and commissioning results are documented.

This documentation is not an afterthought by the consultant. It should be clearly called out in the contract documents, the very documents the contractor used to determine their price. In our design documents at Thorburn Associates, we ask for five things: acceptance test results; as-built drawings; manuals (operation and maintenance); software (executable and source code for all devices that have software adjustments); rack keys and key schedule for really big jobs.

We ask for this information in a specific order and format, and we ask for both paper and electronic formats. The paper format typically goes to the facilities department and to the equipment rack. The electronic copies are maintained by our office and usually on the client's AV "technician" network. We know these documents get used because about once every eight months, someone calls our office to get a copy of their documentation, which has been lost or misplaced.

The format requirements are outlined in such detail that they span six pages of our specification section. Therefore, what we are looking for should not come as a shock; and when we are forced to reject the submittal, it is because it did not conform to what was contracted.

So why do consultants feel closeout submittals are so important?

1. It was part of the scope of work.
2. The project is not complete until the paperwork is done.
3. The warranty does not begin until the project is complete. (This means that the client will be using

the system prior to the warranty period beginning, essentially extending the warranty period.)

4. Contractors do not get paid until the work is done.

5. In many cases, the consultant doesn't get paid until the project is done.

As with all the things in life, it seems that challenges come in threes. Let's look at the three projects we have been dealing with and see how the process could have worked.

The first project was a rework of an existing system. The owner admitted that for the existing system they pushed value engineering too far. The room is a flat-floor meeting room, seating approximately 1,000 people theater-style. Speech audio is run through the left-center-right/surround program loudspeakers and was supplemented by a small cluster about halfway between the back of the stage and a pendant mounted digital projector.

Step 1 attempted to "fix the problem electronically." When that failed, acoustic treatment with a distributed loudspeaker system was installed. The owner could hear a substantial improvement, but still wasn't happy. We went on-site to assist in the commissioning of the system. We were at the point where we needed to connect to the DSP, and we found out the critical cable was at the contractor's shop, a 4-hour round trip.

Given time limitations, we explained how we expected the DSP settings to be programmed. We had worked with the contractor's project manager before and felt he could handle it. So we left, assured that they would take care of all of the programming. Then, after two months of telephone calls, we finally received the closeout submittal, which showed that all of the delays were set to zero, the EQ was a third-octave "smiley face." The measured room response they sent to us was a RT60 graph. Yes, they measured the reverberation time of the room, not the equalized room response. The final icing on the cake was that we found out the project manager we trusted was not sent back to the site, instead a new junior staff member was expected to handle the job.

The next project was a simple sound masking system, which was part of a large remodel of an existing office space. It was during the contractor's initial commissioning of the system that we received a strange

phone call from the owner. The contractor was reporting that there was not enough power to the loudspeakers for them to be able to adjust the masking system to match the spectrum at the low frequencies. In the high frequencies, the mechanical system totally overwhelmed the spectrum. When we requested their initial commissioning report, we found that they had been equalizing the room with the analyzer's A-weighted filter turned on.

The third project was a simple background-music and paging system for a fitness center. This time, it took us three months to get the closeout submittals. In reviewing the submittals we found that one of the 70-volt distributed lines had an impedance of 0.01 ohms. We had also received complaints from the owner that pages in the poolroom were being mixed with background music, as opposed to ducking the music. Prior to our final checkout visit, we were assured that these items had been fixed. However, when we got to the site, there were still issues. The contractor's salesman was there, the project's supervisor who had "taken care of the items" was not.

In all cases, the preparation and review of the project closeout submittal indicated that the systems were not fully functional.

None of us are perfect, but having a third set of eyes reviewing documentation and the system installation provides for a better and more consistent experience for the system's end-users. Getting the paperwork in as early as possible allows these reviews to be completed and gives everyone a chance to put their best foot forward—and get the next job. As for the manufacturers, if your magical black box requires a proprietary cable instead of a standard cable that can be found at the local RadioShack, send an extra cable to the consultants who specify your product. That way, when faced with a 4-hour round-trip drive for someone to get that cable, we can have the backup with us. To the first manufacturer that gets one of their custom cables to me, the next round is on me!

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## Community Theater

In rural Grant, MI, where the nearest movie theater is a half-hour commute, a new performing arts center graces the public school campus. Fully equipped with a cutting-edge sound system, the center offers assistive listening units from Listen Technologies Corporation.

Until recently, all music, theater and community events took place in the school's gymnasium, a less-than-ideal option acoustically. So much so that several folks simply stopped attending performances. "Our older audience members and those with hearing difficulties just gave up," said Valerie Sweers, performing arts director. Once the new system and its 22 assistive listening units were in place, they returned, "ecstatic" over the crisp, clear sound and the prospect of attending community events once again. The sound system for the 794-seat structure was designed and installed by Listen dealer, Audio Designs.

Student interns under Sweers' supervision run the site. Stickers and signs, available from Listen, remind patrons that the assistive listening devices are available.

➤ Listen Technologies...  
www.listentech.com

## AMX And Barco Perform Duet

RICHARDSON, TX—AMX and Barco have formed a partnership that will enable the projector manufacturer to embed AMX's Duet platform modules into its iQ series for communication with AMX control system products. With Duet modules embedded into Barco iQ products, AMX's NetLinX Master will automatically be able to recognize the device.

➤ AMX...www.amx.com  
➤ Barco...www.barco.com

## Belden Launches IBDN FiberExpress Catalog

FORT MILL, SC—Belden CDT Networking released its new Optical Fiber Solutions Catalog, a full-color catalog detailing Belden IBDN FiberExpress systems, cables and connectivity products. The 48-page brochure provides an overview of the FiberExpress Solutions, which include a wide range of products designed for campus backbones, in-building backbones, and both centralized and fiber-to-the-desk (FTTD) installations.

Belden IBDN FiberExpress Systems are comprised of either multimode or singlemode components. Pre-terminated Systems are also part of the FiberExpress offering. All components ensure optimal reliability and exceptionally fast deployment in either traditional networking installations or temporary situations.

➤ Belden CDT...www.beldenibdn.com