



VECTORWORKS CASE STUDY



PICTURE THIS:
VECTORWORKS ARCHITECT HELPS
HOME THEATER DESIGN FIRM WORK
SMARTER IN 3D



3D MODELING AND RENDERING CAPABILITIES IN VECTORWORKS ARCHITECT HELP HIGH-END HOME THEATER DESIGNER ELIMINATE ERRORS, REDUCE DESIGN TIME AND SHORTEN REVIEW PROCESS WHILE WORKING REMOTELY

MEDIA ENVIRONMENT DESIGN – KIHEI, HAWAII

Media Environment Design designs high-end home theaters. When president and owner Sam Cavitt decided to relocate his business to the Hawaiian island of Maui, VectorWorks proved to be an essential asset—not only increasing his quality of life, but increasing the quality of his work.

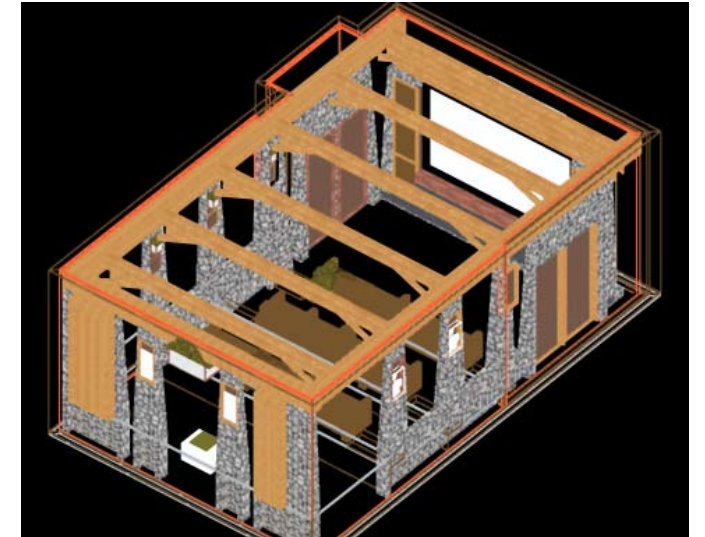
Cavitt sets high standards for design to give his clients the ultimate home theater environment. His firm's goal is to seamlessly integrate acoustics and performance characteristics with the aesthetics of superior interior design. A long-time VectorWorks user, he found the 3D capabilities, specialized symbol libraries and efficiencies of VectorWorks ARCHITECT ideally suited for his needs.

FUNCTION MEETS FORM WITH 3D MODELING

One of the biggest challenges to overcome in designing home theaters is to fit the technical aspects of acoustics into a home environment, according to Cavitt. While VectorWorks doesn't do acoustical modeling, VectorWorks can take acoustics information and build it into a 3D model of a room to create what Cavitt calls the acoustical foundation of room, which allows him to begin visually working with a design concept.

"By using a 3D model to build the design elements from the surrounding home around the functional elements required for the theater, I don't have to compromise the functional design elements as much as I would in a 2D sketch," says Cavitt.

Cavitt has found advantages to using VectorWorks throughout the whole home theater design build process.



CREATING SPECIALIZED OBJECTS WITH VECTORWORKS

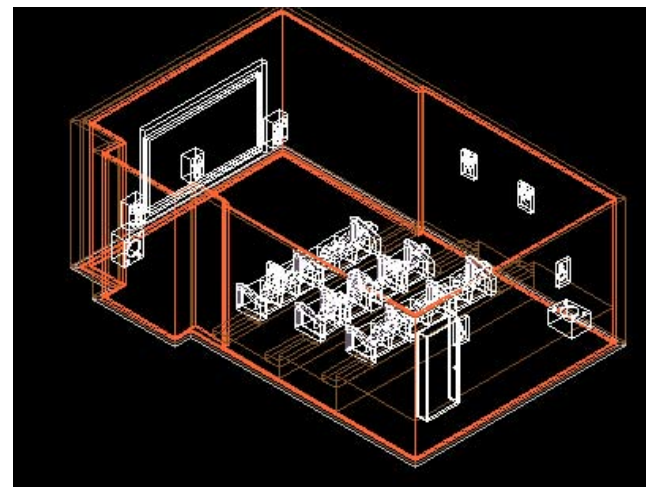
The first thing he does is conduct an acoustical study to determine how the acoustical components, or speakers, should be positioned for maximum performance in the space. In a recent project, his client had already committed to three very large speakers—17 inches by 12 inches by 42 inches—and an equally large set of subwoofers. So Cavitt had to work the speakers, along with eight large seats, into 400 square feet of space. It was clear to him the speakers were going to take up a lot of space, so he needed to position the speaker and the chairs carefully to achieve the most ideal



speaker/listener/room interaction. But he didn't want them to overcome the design intent of the room. His client had a very elegant house, and the theater had to fit in with the existing décor.

Cavitt then creates a 3D model that includes dimensionally correct models of all the objects contained in a space, including speakers, seats, the projector and the screen.

"The phenomenal thing about VectorWorks is that it has a lot of wonderful details I use, but I'm also able to create the specialized objects I need for my industry using VectorWorks," says Cavitt. "So once I know all the vectors of all the locations in the room for ideal speaker/listener/room interaction, I place all the objects I've created in the model, and I end up with a model that shows me exactly where everything needs to be."



SEEING IN 3D IS BELIEVING

Video modeling is the next step in the home theater design process. Once again, VectorWorks plays an essential role. Screen size and projector type dictate placement of the projector. Cavitt creates the projector and the screen and places them in 3D space according to the projector's characteristics. Some can adjust or throw a distance from the screen; some require a very specific distance from screen to projector for it to work. So Cavitt has to "see" it in 3D to determine what will work.

"In effect, we use VectorWorks as a solids modeling application"

"In effect, we use VectorWorks as a solids modeling application when we create a 3D model of the light ray as it comes out of the projector and place that ray, the projector and the screen in the model to make sure people and other elements of the design aren't interfering with the light ray."

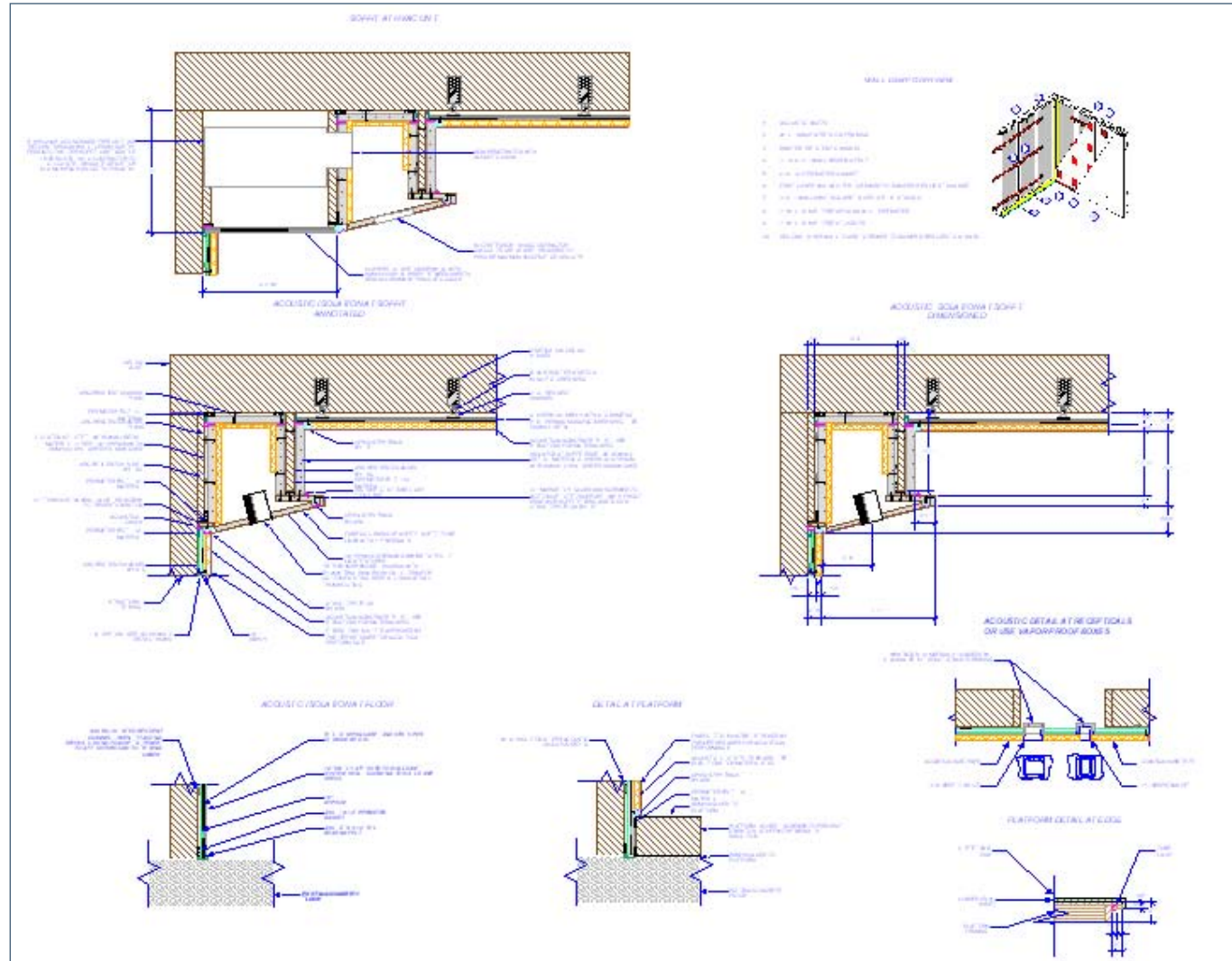
Once the functional model is finished, Cavitt can begin designing the interior. He builds the architectural elements around the functional components in 3D to ensure all elements will work together and fit properly within the space.



STREAMLINING DESIGN REVIEWS WITH 3D RENDERINGS

Once he creates the 3D view, he cuts out sections and creates sectional elevations to present to his clients for review. But more and more, since he moved to Hawaii, Cavitt is using 3D renderings to conduct design reviews via videoconference calls. Not only can his clients see exactly what they're going to get, but he also finds the process to be more efficient than face-to-face meetings.

"Previously, I'd show clients concept elevations, talk about how we'd change some of the elements and redline them," he explains. "That's great if you're in a conference room in front of someone drawing lines on paper. But now I project 3D renderings onto a life-size screen in an audiovisual showroom, so my clients can see my design to scale on a nine-foot screen. This gives them the ability to see things in a more realistic view, which I've found to be an extremely useful technique, because we tend to do fewer revisions. I've also found design reviews to be shorter when I show them 3D renderings. Since we're on the phone and on the computer for a limited amount of time, we tend to get right down to business."



CREATING ACCURATE CONSTRUCTION DOCUMENTATION

After the design concept has been approved and revisions have been made, Cavitt completes all construction documentation using VectorWorks. Typical plans include all elevations, plan views, ceiling views with lighting, details of the millwork, any special details, detailed sections and large-scale details on unique construction details required due to acoustical requirements.

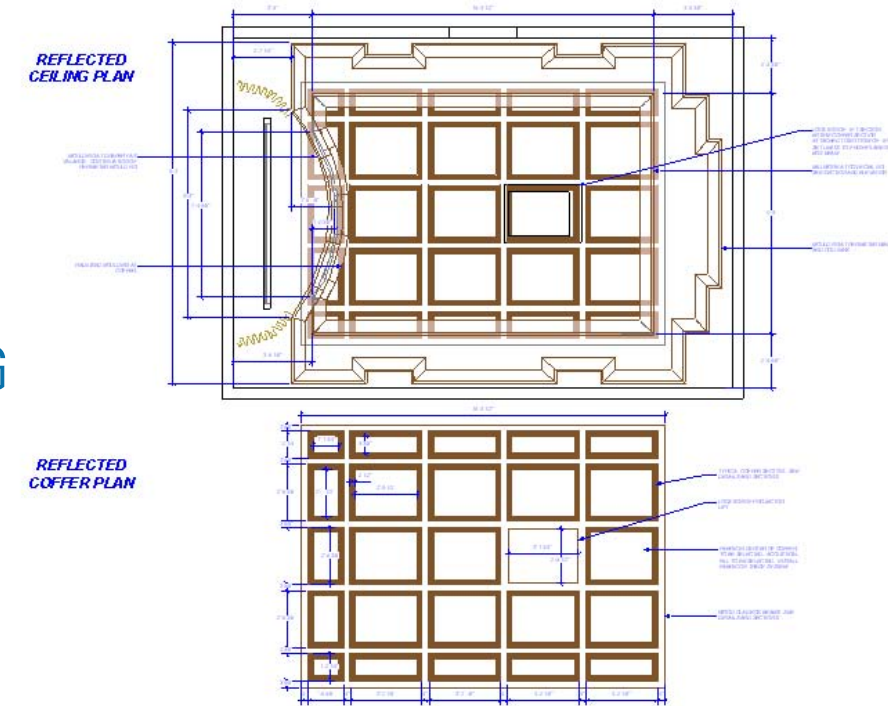
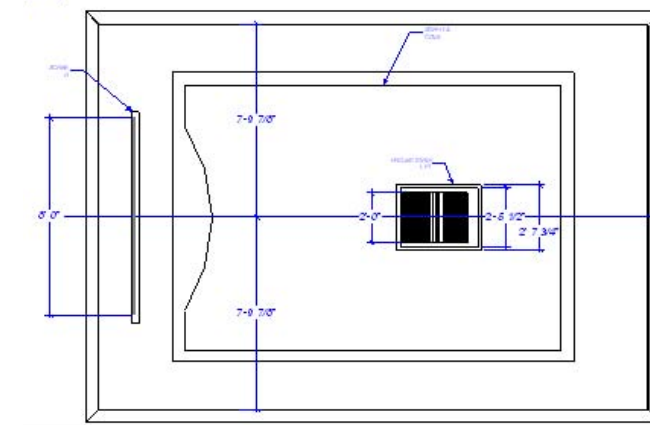
Cavitt praises the benefits of designing in 3D when it comes to creating construction documents—eliminating mistakes, reducing rework costs, saving time.

“I’ve had theaters built that I’ve never set foot on site,” he declares. “Contractors were able to get all the information they needed from the construction documentation I created using VectorWorks ARCHITECT.”

SOLVING THE CASE OF THE COFFERED CEILING

However, when unexpected changes during construction do occur, such as when clients request changes, 3D modeling capabilities of VectorWorks solve the problem quickly and easily without delaying the project.

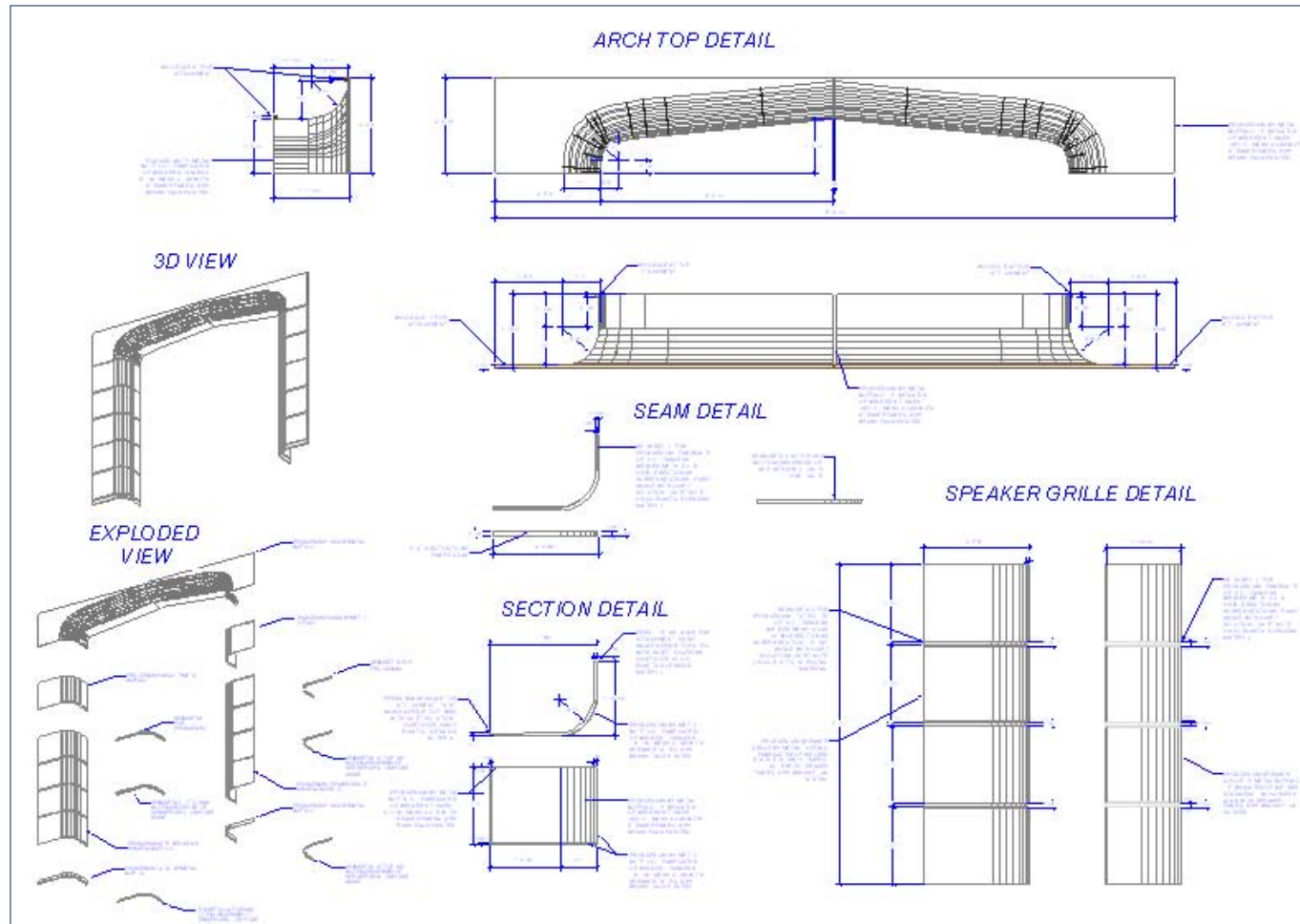
When the client with the elegant home theater design and oversized speakers decided to change the initial ceiling from a fiber optic ceiling with a platform for the projector in the center to a much more elaborate coffered ceiling in keeping with the elegant décor, Cavitt was presented with an engineering challenge. He had to design a lift to accommodate the odd-sized projector—so



the projector wasn't visible when it wasn't being deployed. Because the client wanted a nine-foot screen, the projector had to be a set distance from the screen for peak performance. And there was a limited amount of offset, which meant the projector had to be a certain amount of space from the center of the ceiling. So the challenge was to get the scale right for the coffered ceiling, while making room for the acoustical equipment in the coffers and the projector lift to fit in the available space.

“With VectorWorks, all the pieces fit right together the very first time”

Cavitt used VectorWorks to create the grid that represented the coffered ceiling his client wanted. He created 3D rectangles, sized them and laid them out, then edited them into coffers that appear in the final design.



"I used the Extrude Along Path tool to extrude the molding profiles around the ceiling coffers, and it saved me a lot of time, which was crucial, as we were already into construction on the project," he explains. "I couldn't imagine doing this type of thing without VectorWorks. I probably would have been able to create the coffered ceiling without it, but not without a lot of extra time and aggravation."

"With VectorWorks, all the pieces fit right together the very first time," he concludes. "The beauty of working in a 3D environment to solve challenges like these is I can experiment with conceptual changes and see how they affect everything else."

3D VS 2D

Cavitt also finds he can visualize a design much better in 3D than when he sketches on paper. He tends to make a lot more mistakes on paper, because he finds it difficult to create a 3D reality in 2D.

"Building in 3D eliminates all the mistakes you can make in a normal 2D design process," he says. "It's easy for me to not translate accurately from one dimension to another in 2D. Whereas, in 3D, I'm taking my drawings directly from the bottle."

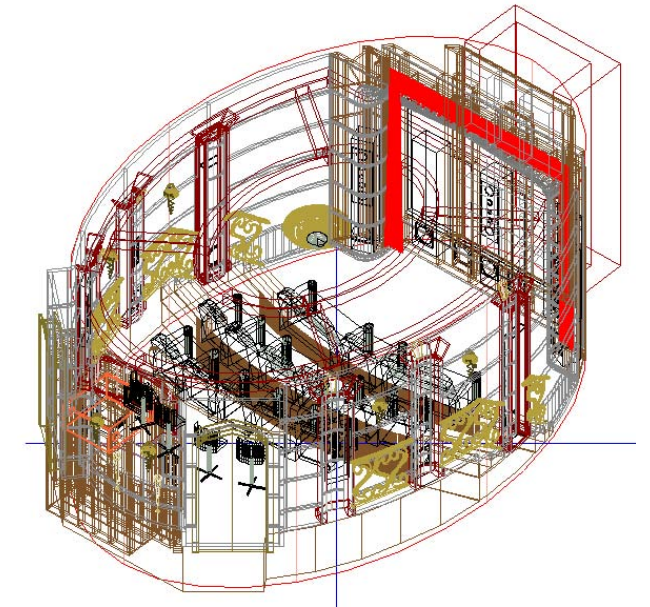
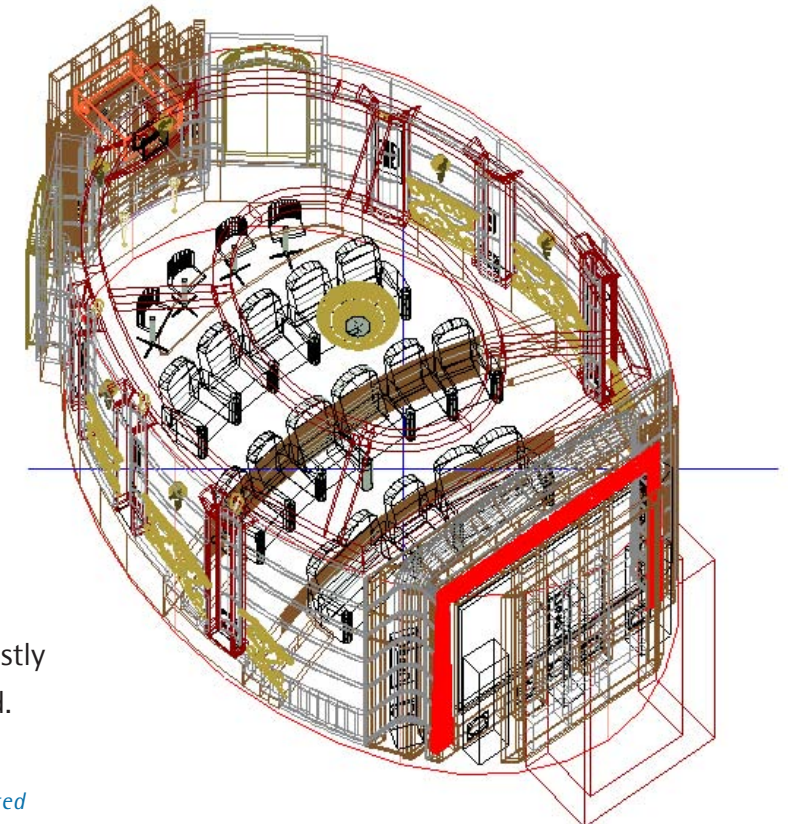
ELIMINATING COSTLY MISTAKES WITH 3D

He also notes that he has found errors made in design when completing his construction documents. But he was able to go back into his VectorWorks file and resize objects, saving the costly expense of having to correct mistakes in the field.

"Designing in 3D with VectorWorks has definitely eliminated mistakes and cut down on expensive redesigns for me"

"It's very inexpensive and efficient to do a redesign on the computer," he says. "All it costs is a little design time. But if you're in the field and you have expensive millwork that has to be resized, that's an expensive error that takes a lot more time to fix, which could potentially set back finishing the project."

"Designing in 3D with VectorWorks has definitely eliminated mistakes and cut down on expensive redesigns for me," Cavitt adds.



FIVE EASY REASONS FOR CHOOSING THE INTUITIVE, AFFORDABLE SOLUTION

Cavitt did consider converting to AutoCAD prior to upgrading to VectorWorks 11, because a lot of his vendors and business partners used AutoCAD, but just couldn't justify the expense or the effort.

"I did an assessment and decided not to convert to AutoCAD for several reasons," he explains. "One, AutoCAD would have cost me more than three times as much as VectorWorks does new with RenderWorks. I had all the functionality I needed for a fraction of the price. Two, I knew the learning curve for AutoCAD was a lot longer than for VectorWorks. Three, I communicate effectively with the engineers and architects I work with already with no problems. I can export all my drawings in DWGs with no problem.



"At the same time," he continues, "some of the most creative architects I know use VectorWorks, and we're all talking the same language. Four, I can create much more quickly than I could in any other program. Five, I can create my theaters more accurately. Certainly, other programs do a beautiful job rendering, but they're nowhere near as precise. My focus is on providing rock solid drawings for construction, and the process of creating in 3D enable me to do that. Then there's RenderWorks for the renderings.

"So there's really no alternative to VectorWorks in my mind," Cavitt concludes.

For more information, contact Nemetschek North America, makers of VectorWorks, at 888-646-4223. Or, visit us on the web at www.vectorworks.net.

