

From structural to electrical, engineers play integral role in renovation

BY SARAH CHRISTINE BOLTON

Turning a pre-existing building into a fresh, new space requires foresight, creativity and oftentimes, some challenging engineering.

Several key players, including architects, construction managers and engineers, are required to make such a project happen. Engineering firms in Memphis offer a wide range of services to support a renovation project, including everything from structural design to maintaining the historical integrity of a building.

Different facets of engineering require different phases, says Jay Caughman, vice president at Allen & Hoshall, Inc.

“The structural engineers will usually start, making sure the building is strong enough to support any renovations or additions,” he says. “Then, electrical and HVAC engineers will ensure all the property’s systems are functioning. It oftentimes takes an entire team of engineers to make a redevelopment project happen.”

Once an engineer or team of engineers comes on board for a renovation project, the first step is figuring out the original structure and inner workings of various systems in the building. This can be as easy as finding the original blueprints or as difficult as having to crawl around underneath the structure to look at the plumbing. When they are

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Jay Caughman says ‘an entire team of engineers’ can be needed for redevelopment.

available, pre-existing blueprints are helpful. Unfortunately, they aren’t always available; even if they are, they aren’t necessarily accurate.

“You can’t be sure that’s really the way the building was actually built,” Caughman says.

Original blueprints are convenient, but the project can go on without them.

“It’s not a deal killer if you don’t find them,” says Pat Harcourt, principal and senior vice president at Askev Hargraves Harcourt & Associates, Inc.

If engineers can’t locate the original plans, they usually have one option: Get

out a tape measure.

“You have to go in and do your own reconnaissance,” Harcourt says.

Some newer technologies are being developed and implemented. Caughman is involved with a new 3-D digital scanner, which produces a laser beam across a surface of something you want to image in a 3-D, CAD environment.

“In the past, the best engineers could do is access the facility and tape measure,” Caughman says. “They could get one or two points, measure those points. With this technology, we are able to measure millions of points.”

Once the engineers have an idea of the structure and systems of the building, the next step often requires a delicate balance between making changes and retaining the original design. Historic buildings still have to meet code, and that can present challenges.

“You have to think about fire protection, electrical codes and now, seismic codes,” says Harcourt.

Bernard Zawada of Burr & Cole Consulting Engineers, Inc., was project manager for the recent renovation of the University of Memphis law school. The original building was built in 1886, and renovated several times since then.

The challenge for architects and engineers was maintaining the integrity of the historic building, while also making it functional and modern. In addition to the overall renovations, the building underwent a \$2.02 million seismic retrofit.

“It’s not easy to meet the seismic codes on an older building, but the best time to make seismic improvements is during a renovation,” Zawada says.

Because it wasn’t possible to completely remove some load-bearing walls, a product called shotcrete was used to shear walls at corners and veneer ties around exits. Shotcrete is similar to concrete, except that’s it is literally “shot” or blasted onto the walls, instead of being poured.

Two important keys to success with a renovation are flexibility and innovative thinking, Harcourt says.

“When you are renovating an old building, you always uncover little things that you have to deal with.”