



# Profile | Sutter Midtown engineers

Capital Engineering Consultants is working on two of the region's largest projects



Lowell Shields, president of Capital Engineering Consultants, stands before a model of another Sutter hospital his firm is working on. Capital Engineering is also working on the new terminal at Sacramento International Airport, right. Top, everything comes together at Sutter Midtown.

Sutter Health's massive midtown project is somewhat of a personal mission for Lowell Shields, president of Capital Engineering Consultants Inc.

The firm is the mechanical engineer on the \$724 million project, designing plumbing and air flow for its hospital, medical office and ambulatory care facilities.

Shields has more experience with it than just about anybody — he's worked on it in some capacity since the mid-1990s, first when it was just a concept and

now overseeing a team that's responsible for piping and climate systems.

STORY BY  
**MICHAEL SHAW**

PHOTOS BY  
**DENNIS MCCOY**

"My kids were born in Sutter Memorial," the hospital in East Sacramento that will be closed when services provided there move to midtown, he said. "I've got a very strong interest in seeing it through."

If there's a big project in the Sacramento region, Capital Engineering could be on the job.

The company also is working on the

new \$1 billion terminal at Sacramento International Airport. Capital, headquartered in Rancho Cordova, has worked on more than 5,000 educational facilities worth \$4 billion under the State School Building Program. It has done everything from prisons and libraries to high-tech laboratories. It even has a speciality dedicated to the mechanical systems in kitchens.

But health care facilities are a different breed altogether. With a combination of new construction and renovation of existing space, the Sutter project is especially complex.

"Every single space in a hospital has to be looked at carefully," he said. "In the case of a remodel, you're doing that in pieces hundreds of times."

That's the case with Sutter General Hospital, which continues to function while the massive renovation takes place.

Building in midtown on a constrained site was the primary challenge, but Shields said there were many other obstacles to overcome. The engineers need to think about the little things, like how to angle the air intake vents so they

aren't affected by helicopters landing on the new hospital's roof. When germs can be carried on air currents, some areas of hospitals need positive air pressure and others need negative pressure.

And then there are many different standards for health care facilities under the state's regulatory system. The stricter the standard, the more expensive the work. So engineers need to ensure the proper standards are being followed, both to protect patients and keep costs down.

One indication that Sutter has been happy with the performance of engineers on the project is that the various engineering firms have stayed on board despite the turnover of architects and contractor.

The electrical engineer is Mazzetti Nash Lipsey Burch, which works on complex facilities from laboratories to data facilities and energy-efficient classrooms. Rutherford Chekene of San Francisco is the structural and geotechnical engineer. Its portfolio ranges from historic-building renovations to cutting-edge laboratories.

Capital Engineering is Sacramento's 13th largest engineer by revenue



## Capital Engineering Consultants Inc.

**Headquarters:** Rancho Cordova

**Local boss:** Lowell Shields, president

**Local licensed engineers:** 15

**Revenue:** \$11.2 million in 2009

**Website:** capital-engineering.com

volume, with gross billings of \$11.2 million in 2009.

Spending years of effort to see a project through isn't a big deal for Shields.

He's been with Capital for 32 years, and the company gave him his first job upon graduating from college.

"It's all a blur now," he said.

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