

Construction firms: It's prefab-ulous for some of work to be done offsite

BY CATHY PROCTOR
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Bathrooms are being built in Boston that patients, employees and the public will use when the new Exempla Saint Joseph Hospital opens in January 2015.

Other key elements of the hospital — such as the overhead utility racks that will run above the ceilings in the hallways, and hold ductwork, plumbing, electric and data cables — will be made in a 50,000-square-foot, rented warehouse north of Interstate 70, about five miles from the new hospital's construction site on the southeast corner of Downing Street and East 20th Avenue.

And about half the building's exterior walls will be built at a local subcontractors' shop, then trucked to the building site and put into place.

It's called modular building, or prefabrication — prefab for short. And it's making the construction of complex buildings such as hospitals faster and safer, while raising the quality of the finished product, say Denver-area construction executives and building owners.

"It's not a new concept, but it's becoming more popular because of its lower cost, faster time frame and it's inherently greener," said Tracey Daniels, spokeswoman for the Modular Building Institute in Charlottesville, Va., a nonprofit group that



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M.A. Mortenson Co. vice president and general manager Maja Rosenquist, left, and William Gregor stand outside a prefabricated bathroom. Gregor is project manager for the new Exempla Saint Joseph Hospital.



EGGROCK BATHROOM PODS BY OLDCASTLE

A worker at Eggrock Bathroom Pods by Oldcastle, which is located in suburban Boston, moves prefabricated bathrooms that will be shipped to Denver for the new Exempla Saint Joseph Hospital.

advocates for prefab construction techniques.

Construction time reduced

Prefabbing speeds construction schedules because work can be done simultaneously at the construction site and at off-site locations. That also lowers costs because fewer people are needed. And it's greener because there's less waste at an indoor manufacturing environment than at construction sites, Daniels said.

M.A. Mortenson Co., which has a \$386 million contract to build the new Saint Joseph Hospital, will have up to 40 tradesman working at the warehouse when work at the hospital construction site gets into full swing in mid-December, said William Gregor, Mortenson's project manager for the new hospital.

The \$623 million project — which includes such items as equipment and furniture — broke ground in December 2011, and construction is expected to be finished in September 2014.

Saint Joseph's need to have the hospital open by January 2015 drove Mortenson and hospital officials to figure out how to speed up construction but still maintain high-quality standards, said Bain Farris, the hospital's president and CEO.

The new hospital replaces three outdated buildings that went up in 1910, 1932 and 1964.

"When we looked at our schedule, and how tight it was, it became clear that we couldn't meet the December 2014 deadline by the traditional ap-

proach," said Al Davis, vice president of facilities development for Exempla Healthcare, Saint Joseph's parent company. "We couldn't do it all on-site and do it in a linear approach — we needed to work differently."



Bain Farris is head of Saint Joseph Hospital, which is building a new facility.

That meant getting hospital personnel, architects, designers and construction executives together early in the planning process to decide how to streamline construction and allow elements to be prefabricated off-site. Among the decisions was lowering the bathrooms' ceiling heights from 9 feet to 7-feet, 9 inches so they could fit inside truck trailers for the trip from Boston to Denver, Farris said.

In the end, prefabrication and other streamlining efforts cut a year off the construction schedule, Davis said.

"Prefabbing allows us to pull a lot of the trade hours forward in the schedule," Gregor said. "Usually, workers can't do their work [on the bathrooms and the utility racks] until the walls are up and the building is weathertight. With prefabbing, we're able to build those now, so they can just be lifted up into place."

Prefabbing in a warehouse also allows work to be done when bad weather closes construction sites, he said.

Maja Rosenquist, vice president and general manager for Mortenson's

Denver office, said at its peak, the project will have up to 850 people working on it — and that would be 20 percent higher using traditional building methods.

"Prefabrication is definitely a corporate strategy for us," Rosenquist said. "St. Joe's is probably the fastest-paced hospital that's ever going to go up in Colorado."

Prefabs also used in hospital expansion

Elsewhere, Haselden Construction LLC of Centennial is prefabricating elements of the University of Colorado Hospital's \$400 million expansion tower at the Anschutz Medical Campus in Aurora, expected to be complete in March 2013. Haselden is building overhead utility racks and some bathrooms offsite, said Neil Sharples, project executive and head of Haselden's virtual construction department.

Building the utility racks offsite is easier and safer than the traditional method, Sharples said.

"On the site, you have plumbers, electricians, all the trades working on the racks, 15 feet off the ground, on ladders, with all the workers and all the congestion. With prefab, you've taken all those people out of the corridor and put them to work off the site," Sharples said.

And working in a warehouse, an environment that's far more controlled than an open-air construction site, means higher quality for the finished work, Rosenquist and Gregor said.

"It's almost like a manufacturing atmosphere," Rosenquist said.