Though not a new concept, prefabrication is a strategy that is taking off in commercial construction. Healthcare projects, with the potential to reach a critical mass of re-

peating features, such as multi-trade above-ceiling racks, patient bathrooms and headwalls, seem to offer good op-

portunities for a strong return on investment, particularly

inpatient bathrooms and headwalls, which will be installed on this new 830,000-square-foot,

building. At a warehouse five miles from the project site, workers

assembled ducts into 25-foot multi-trade racks to be installed

in U.S. Engineering Company’s warehouse and brought

into the prefabrication environment. Factors such as

wet and cold water.

made in Denver, Colo. By Mortenson Construction, provides a case study for the benefits

of large-scale prefabrication. At a leased warehouse

about five miles away from the job site, work is underway on the assembly of multi-trade racks and headwalls,

which will be installed on this new 830,000-square-foot,

million hospital located in Denver’s urban core. In

addition, 446 bathrooms, prefabricated down to the toilet

paper roll holder, will be shipped to the site from Egpock

Bathroom Pods of Oldcastle in Boston, Mass.

“The prefabrication of patient bathrooms led to

extensive mockups at very early stages, which allowed

hospital staff from nursing to environmental services to

adjust details from HVAC to tile color, and get it exactly

right, before the bathrooms were prefabricated,” said

Rob Davidson, AIA, ACHA, principal at H+L Architecture,

who, along with Davis Partnership and ZGF, is one of the

three architectural firms on the joint venture design team.

PROJECT SCHEDULE CREATED CHALLENGE

THAT LED TO PREFAB SOLUTION

The demands of an incredibly tight schedule pushed the

owner and its design and construction team to consider pre-

fabrication. Sitework started on the project in mid-December

2011 and it must be complete for the hospital to move from

existing buildings and be open and operational by late

December 2014.

“The fact that we are trying to put so much in such a

short amount of time means that we have to work around the

clock and stack trades,” said Jopy Willis, senior superinten-
dent for Mortenson. “BIM gives us confidence that we know

exactly what is going on so that when we build a rack that

has HVAC and every other trade in it, we understand it’s all

going to work when we get in the field,” he added.

Davidson added having all trades coordinated from the

beginning makes for a seamless job.

“(Having the coordination of all the trades from the begin-
nong, on a project this size — mechanical, electrical and

plumbing — it has been a huge plus,” Davidson added. “It

ties into the prefab because by the time we’ve worked out all

of the conflicts through virtual design and construction, it will

be exactly right before it’s fabricated.”

BUILT-IN SAFETY SOLUTIONS

Safety is one of the most obvious benefits of prefabrication.

Assembly of some of a construction project’s most compli-
cated and critical elements in an offsite controlled ware-

house reduces congestion of both personnel and materials

at the site, and significantly reduces time spent off the

ground.

“There is such a high density of trade coordination, which

means reduced coordination on site and less lost time on

the schedule,” said Robert Lanman, executive project manager with U.S.

Engineering. “BIM gives us confidence that we know exactly what is going on so that when we build a rack that

has HVAC and every other trade in it, we understand it’s all
going to work when we get in the field,” he added.

U.S. Engineering believes that those who don’t adapt
to new technologies will be left behind. “Similar to BIM,
prefabrication will become an essential part of the building
process,” said Lanman. “Companies that choose not to
adopt it will likely have to outsource or lose out entirely.”

prefabrication that includes MEP and HVAC components. Approximately 210
multi-trade racks will be installed in the corridors of the new
Saint Joseph Replacement Hospital.