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COMSTOCK CANADA LTD.
Workers in Comstock Canada Ltd.'s fabrication facility work on the racks which helped in the coordination and installation of mechanical/electrical services on the St. Joseph's hospital build.

The role of BIM in constructing St. Joseph's hospital

DON PROCTER
correspondent

Prefabricating mechanical/electrical services in modules off-site takes modular construction in a new direction that could slash months off construction timelines and eliminate trades coordination headaches on large complex building projects.

That is the viewpoint of **Hugh Munro**, a partner in **Geninfo Solutions Inc.,** a Toronto-based firm specializing in Building Information Modeling (BIM) and construction document production services.

Munro has every reason to feel confident about the idea taking off because Geninfo is providing such a service to Comstock Canada Ltd., the mechanical/electrical contractor for the 855,000-square-foot St. Joseph's Healthcare West 5th Campus under construction in Hamilton.

Geninfo's scope of work includes BIM services for a 3D virtual build followed up with the coordination of mechanical/electrical services, installed in 40-foot-long racks built at Comstock's facilities offsite.

"They (Comstock) said they could save months on the services installation by taking this approach to the project," points out Munro.

"The most challenging component for mechanical contractors is the labour. When you can control labour by using modular racks like this, you will be much more efficient."

On a big and busy site like St. Joseph's the unusual approach eliminates traditional installation in which various subtrades "are tripping over themselves" on site in confined working spaces to complete their contracts, says Munro.

A side benefit is that the prefab process also eliminates potential on-site safety risks such as crews installing services from ladders.

The racks, he points out, are simply hoisted onto the ceiling in the hospital's corridors and fastened to hangars. It's a no-fuss operation, compared to the traditional build.

Sean Shabaga, construction manager, PCL Constructors Canada Inc., says BIM assisted the constructor in working through details and spotting trouble areas early on at St. Joe's.

It also helped the construction manager avoid clashes through BIM's ability to detect clashes virtually, he says. A case in point is interferences of materials in a 3D project model.

"If we have a supply air duct running into a beam, we go to our client with RFIs asking how they want to fix or change the interference (clash) in order for Comstock to get a clash-free model," says Munro.

"The whole idea is there will be no surprises when they fit everything into the racks."

Geninfo modeled and coordinated services for the project at its facility in Mumbai, India.

Munro and his partner at Geninfo, **Naresh Chawla**, see modular racking as viable in any complex hospital project or for large commercial or highrise residential projects. When the savings are calculated to be "huge" as they are at the St. Joseph's hospital, it is easy to convince contractors to buy into modular racking, says Chawla.

It is just one segment of BIM which is helping to revolutionize the way buildings are designed and constructed, he adds.

Comstock's modular racking of mechanical/electrical services at St. Joseph's may be the first in Canada, Munro says, but it is gaining usage in the U.S. and many European builders are experienced with BIM and modular racking.

Comstock has indicated that it will include modular racking as a deliverable on many future jobs it bids on, says Munro.

One of the reasons that it is slow out the gate in Canada is that BIM is not an easy technology for contractors to adopt internally. It can be costly and it is complex. That's where service providers like Geninfo come into play.

The Hamilton hospital addition is a Design Build Finance Maintain (DBFM) project by Plenary Health. PCL is responsible for design and construction, as part of the Plenary Health consortium.

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