Building Jobs with BIM for Masonry

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Early modeling of school construction provides excellent views of masonry scope and detailing.

Why should BAC members and contractors care about Building Information Modeling or BIM as it is commonly called? “It doesn't matter how good our materials are or how good our skills are if they can't be integrated and utilized in the design and construction modeling systems that are dominating the market today,” says BAC President James Boland. “That's why BAC and IMI are making substantial investments in making BIM for Masonry a reality.”

Not only will BIM for Masonry create an accessible library of masonry materials for architects to put into designs, but it will also feature the properties of those materials and systems, such as R values and structural capabilities. BAC contractors will be able to use it to provide material stocking plans, job layout plans and to participate in planning the schedule for the project – all making them more competitive by being part of the planning process instead of just taking orders.

Most people think of BIM as a 3-D visualization of a building, but it is actually much more. Today, utilizing BIM on a project allows the stakeholders not only to visualize the design, but also to reduce change orders thanks to a “clash detection” feature that shows conflicts between materials and crafts, and controls project cost, scope and schedule. General contractors are using it to facilitate the coordination and collaboration of stakeholders across all aspects of the building project. In fact, owners, such as the federal government through the General Services Administration (GSA), Army Corps of Engineers, Air Force and Coast Guard, are all requiring BIM on specific projects. In 2012, McGraw Hill reported that over 70% of architects, engineers, contractors and owners say they are using BIM on their projects, which is up from just 17% in 2007.
Ohio School BIM Scheduling Project

Since BIM allows a building to be "virtually" built before actual construction, it can be used to demonstrate that masonry is much better for the construction schedule than competing materials. The Ohio School BIM project came about when Fred Innamorato of Foti Contracting (Cleveland, OH) got together with IMI's Tom Nagy, Director of Industry Development in Ohio, and Mark Swanson, Director of Industry Development in Minnesota, to develop a plan to show that masonry is beneficial to the construction schedule. Swanson is an architect with almost a decade of experience working in the BIM environment. The school building is being modeled in REVIT® and the construction sequence is being scheduled and animated in Navisworks®, two examples of building modeling software programs that allow for easy collaboration and communication between members of the design and construction teams.

The three-dimensional classroom wing view can serve as a basis for early energy modeling as well as later clash detection between trades. Aerial perspectives such as this tech lab wing assist construction management issues on-site that include material staging and overall scheduling.

The goal of the project will be to show side-by-side BIM animations of the construction sequence between loadbearing masonry cavity wall construction and structural steel frame with steel stud infill. It will demonstrate that masonry can be installed immediately after the footings, whereas the steel requires lead time for shop drawings and fabrication, which delays its arrival on site.

Why animate the construction? 3D visualization helps decision makers understand the construction sequence and schedule. They will be able to see side-by-side how the masonry installation is progressing on one school model while the alternative model has to wait for the steel fabrication and site delivery. In the near future, the masonry model will also be compared to a precast construction sequence. These animations will be used as an educational tool in seminars, tradeshows and at IMI's Contractor College.

BIM-Masonry will allow masonry contractors the ability to seamlessly integrate information for project management software programs that they currently use such as Navisworks® saving time while providing more robust project information. Navisworks® provides material take off and scheduling information that is often used to simulate construction schedules and resolve potential scheduling and construction conflicts prior to actual construction.