

Trends in Technology

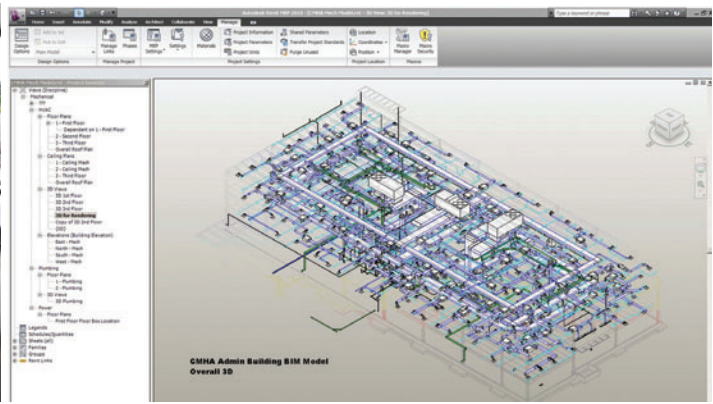


Photo by Mont Tucker

Building Business Through Technology

A case study reveals the benefits of embracing the latest tech tools in construction

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Ozanne Construction Company

New technologies and their applications are changing the way owners, architects, engineers and contractors work together, most definitely for the better. AEC professionals routinely use building information modeling, email, web-based file-sharing and management systems, virtual scheduling, quantity and cost estimating, mobile and hand held devices, and high speed Internet service.

These 21st century tools of the trade enable project teams to work more closely together and provide greater access to information for owners.

State of Ohio BIM Protocol

The changes to Ohio's design and construction procurement laws popularly known as Construction Reform are most significant. However, the roll-out of the BIM Protocol by the Ohio Department of Administrative Services (ODAS) is equally important. The ODAS BIM Protocol is an excellent guide that defines the State's expectations concerning the use of BIM along with information on the types of applications needed to implement the BIM process. The document also provides:

- Information on standardization, deliverables and a level of effort guide for each of the project phases
- Information on Ohio's immediate, short term, mid-term and long term goals
- Model use, data requirements, model management, and selection processes

for firms, and compensation expectations for each of the project phases

- Implementation guidelines, a BIM Execution Plan Outline and a BIM Execution Plan form

It is a great tool for architects, engineers, contractors and owners to reference when planning the implementation of BIM within their organizations.

CMHA HQ Administrative Campus & BIM

As an example, Ozanne Construction Company recently completed the new headquarters building and service garage for the Cuyahoga Metropolitan Housing Authority (CMHA) as design-builders utilizing the BIM process for select tasks.

Design

The design of the architectural, structural, and some portions of the M/E/P systems were generated utilizing the Autodesk Revit® BIM authoring tools which allowed Ozanne Construction Company to produce models that displayed key components of the building

structure. Visualization of the model enabled the owner to make critical decisions earlier in the process avoiding potential delays.

Clashes and Conflicts, M/E/P Coordination

Utilizing the BIM analysis tool, Autodesk Navisworks®, Ozanne Construction Company was able to identify potential clashes and conflicts between the structural steel, ductwork and piping during the design development phase and avoid potential claims. The team found and resolved over 200 conflicts between architectural, structural and mechanical drawings prior to starting the work. The company estimates that it saved more than \$150,000 in claims and changes as a result of its clash detection. Resolution of problems early in design also helped the company deliver the project to the owner six months ahead of the contract completion date.

Structural Steel & Precast Erection Sequences

During the design phase, Ozanne Construction Company developed a virtual timeline using Autodesk

Navisworks® to show the erection sequences for the structural steel and precast planks. The company used the BIM model to display the structural steel frame for the precast subcontractor and steel erector. This was the most effective use of the model. By working together, the team was able to locate all cutouts and openings and accurately cast the planks so that there were ZERO conflicts or field cuts, which was a first for the precast subcontractor.

Ozanne Construction Company's investment of time and money in the BIM process, software and training paid for itself on this project.

Technology

Technology has changed the way Ozanne communicates and manages construction projects today. The company has incorporated these sys-

Type	Product
Web-Based File Sharing	ArchitTrek Basic FTP Site
BIM Management	Autodesk Revit Architecture Autodesk Navisworks Manage
Schedule Management	Oracle Primavera P6
Estimating + Quantity Surveying	Sage Timberline Estimating OnCenter OnScreen Takeoff
Contract, Cost & Engineering Management	Oracle Primavera Contract Manager Proliance ePM
Accounting	Sage Timberline Accounting
Workforce Tracking	PosData BioScan

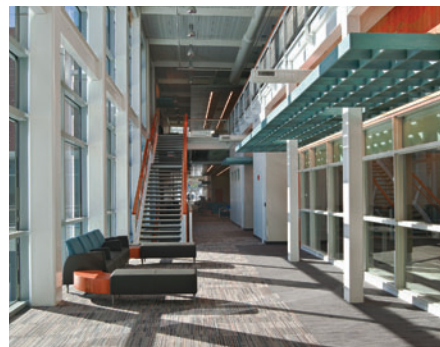
tems into its management process for all of its projects. See table (above) for some of the applications the company uses.

Due to the rising popularity of handheld devices and the availability of wireless high speed Internet service, the construction industry has embraced this technology in both the office and the field. It has become easier to provide field staff with hand-

held devices, such as tablet PCs, iPads, and smartphones. Construction field reporting and accessing the project drawings, specifications and BIM models is available to the field staff as they are "walking the site."

With the increasing impact of technology in construction, owners, architects, engineers, contractors and other stakeholders will need to be engaged much earlier during the project to collaborate and coordinate the implementation of technology from planning through closeout and facility operation. **P**

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