

Case Study: Cannon Design

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Company Profile

Cannon Design is an Ideas Based Practice, ranked among the leading international firms in planning and design for healthcare, research, education, corporate, sports and government clients. At present, the firm employs a staff of over 1,000, delivering services in 17 offices throughout North America, as well as abroad in Shanghai, China, and Mumbai, India.

Recognized for design excellence and technological innovation, and known for performance and dedication to client service, Cannon Design's 'single firm, multi-office' practice approach enables the firm to focus the resources of its staff through a network of 17 regional offices. By assembling all disciplines within the organization, a committed team of architects, engineers, planners and interior designers offers clients a single point of responsibility and accountability, ensuring each project's success.

The firm is focused on quality – with client satisfaction as the ultimate measurement. Cannon Design works continuously to advance the state of the art, contributing to the built environment and quality of life of the people for whom it creates living and working spaces.

Business Goals

For several years now the construction industry in the United States has been evolving and requiring less costly and quicker turnaround times for project deliveries both for architects and engineers as well as for general contractors. These changes are forcing companies of all types to employ more efficient processes with fewer resources. The adoption of BIM has helped to address this with some success. However, the effective deployment of BIM does not come without a good deal of effort and planning. Cannon Design has taken a systematic approach to deploying its integrated BIM systems.

Office Standards

The deployment of new processes to achieve efficiencies and time savings and the profitability that comes along with it requires a measure of consistency not only in office standards but with critical production standards as well. "We have multiple offices in

varying regions of the country and abroad, with regional differences and practices, all operating as a single firm. The flexibility of any solution to be able to respond quickly to these regional differences while maintaining a uniform base of documents was critical.” explains Frank Sturniolo, AIA, CDT, LEED AP, associate vice president and key member of Cannon Design’s BIM team. “The unified approach to standard practices across all offices can generate consistent results faster, allowing us to better maintain project drawing templates and updates to our specification office masters.”

Facilitating the Multi-Disciplined Office

In a recent survey performed by McGraw-Hill Construction Group, 1 in 4 of the companies surveyed claimed reduced times for review and approval processes through the use of BIM. With a multi-disciplined office the need to identify duplicate effort is key to reducing production times. Cannon Design has always been committed to being on the cutting edge of technology and to reducing the chance of information loss through duplication of data entry.

Improve Quality Assurance

Few would argue that a high quality set of construction documents demands respect on the job site. Technologies that would allow Cannon Design to enhance their high level of quality were to play a significant part of any process change or software application adoption.

Process Solution

Instill a Single Firm Wide BIM Mentality

Any organized and important undertaking requires leadership from the top. As with any change the types of adjustments that come with employing a firm wide BIM strategy isn't always well received initially. Without constant attention established and traditional boundaries between disciplines could breakdown as everyone adjusts to a new way of thinking. You find yourself rethinking roles and adjusting workflows which may have been in place for some time. Don't be surprised if new positions, not called for previously, are introduced. Properly instilling a firm wide BIM mentality can actually help build and retain team spirit.



If a firm wide BIM mentality is promoted from the top down, people get on board quickly and work towards a single well defined goal.

Institute a Training/Retraining Program

Enthusiasm alone is not enough to pull this off, however. You need to acquire the knowhow as well. There are several reasons for high quality training. Learning the use of BIM in depth provides the firm with the opportunity to achieve the expected results and may inform the developing process about safer and more sophisticated means. “We are training our Architects on the need for adopting the use of proper assembly codes and classifying project construction systems using a standard CSI Uniformat structure,” explains Sturniolo. “Fostering the communication necessary between the specifiers and other team members at the earliest possible timeframe.”

Better training speeds the roll out process and allows you to take advantage of advanced features which in many instances will ease the stress of the adoption of new systems. As

with any training program, the need to have quick access to both inside and outside resources is critical.

Use a Pilot Project

Whether you refer to it as a pilot project or a multi-phased project, consultation programs have you walking before you run. These kinds of programs help to work out snags and refinements in the work flow. You will want to pin point these potential hurdles and address them as a team before they affect the critical path of a project. BIM Strategies in many cases affect multiple stages in the production sequence, therefore a collaborative approach is best when redefining established practices. Take advantage of a pilot or phased project before deploying on a larger scale, it is in your best interest.

Consolidated Redundant Tasks and Roles

“We have a fairly extensive checklist that we developed over many years that we use in our initial discussion with the architects to determine the scope and size of a project,” says Sturniolo. “Then we jump right in and work with the team to identify assemblies and classify them with Uniformat Classifications.” Entering data about project materials and products earlier in the process prevents team members from having to reapply materials or reenter data at a later stage.

The most common cause of ‘dropped’ information is at the transition between project phases. Concentrate on these periods and look to find times in the work flow when data is being reentered into older non-compatible applications. If you can eliminate these periods of poor data transfer, you’ll be removing most of the redundancies in these more traditional processes.

Technical Solution

Employ a Single Source Data Model

Centralize your data. This eliminates the vast number of network files and the differences between offices, server names and drawing files. Separating the raw data from the day-to-day workstation applications will keep local program settings intact and leave project data safe from any corruption and data loss during any software upgrades.

Cannon Design centered this task around their need for integration between construction specifications and BIM models by implementing InterSpec’s e-SPECS[®] for Revit enterprise software solutions. “Prior to utilizing e-SPECS, we were already fully MasterSpec[®] based, using a mixture of MasterSpec Sections out-of-the-box, and a series of customized masters.” Sturniolo explains. “The decision to use e-SPECS came when we decided as a firm to utilize Revit and drive ourselves towards BIM. The ability to connect the specs and the model in a single database, and to generate keynotes from the specifications were the driving factors.”



“It used to be that the team kept a cut book of materials on the project. More and more, instead of a single printed binder we’re loading PDF’s into an e-SPECS project as a project file ...not just for specifying materials, but for reviewing them later during construction administration.” Frank Sturniolo

Standardize on as Much Content as Possible, Maybe by Building Type

Standardize in the areas where it makes the most sense. In many cases that covers 90% of the effort. Frank Sturniolo describes it this way: "Since we do a lot of repeat work for key clients, the ability to organize decision making by client type is a real time saver, and adds to our consistency. We're looking at the use of e-SPECS client accounts for building types...such as hospitals or schools, where we can try to make fundamental decisions early for similar buildings."

"We try not to add unique assembly codes when possible, opting for utilizing the e-SPECS out-of-the box codes whenever possible. When we believe we have a long term need for unique assembly codes, we review it as a team, and then one person maintains control over making the changes and pushing it out to all the Revit users."

Standard keynoting practices can also reduce time and effort and provide improved quality. "Prior to automated keynotes through e-SPECS, keynoting was either done note-by-note by the project architects, or the specifier would assist the team in developing a keynote.txt file for use with Revit; which was extremely time consuming and difficult to maintain."

Benefits

Cannon Design is still smoothing out some bumps here and there but implementing a new BIM approach has certainly shortened the production time and increased accuracy and efficiency. Information can now be retrieved quickly and extracted from the central database. Collaboration software like e-SPECS, Navisworks and RISA 3D has fostered better communication within project teams. e-SPECS Designer ensured all specifiers were working from the same database of master specification documents with real time access to the latest updates. Client Accounts and Revit project templates assure consistency in multiple projects with the same client. More accurate keynoting in the model, assures conformity between specs and the model. Cannon Design has deployed BIM to allow for continuous project review rather than periodic drawing checks.

Future Plans

"The system we've set up works well for us...whether working in a single office or across multiple offices. As improvements are made to the software, we discuss how the new features might be adapted to our workflow...always ready to adjust how we work for greater efficiency." – Frank Sturniolo.

Products

- Microsoft Office Suite®
- Microsoft SQL Server®
- Autodesk Revit®
- InterSpec e-SPECS for Revit
- InterSpec e-SPECS Designer
- InterSpec e-SPECS Desktop
- MasterSpec®
- Avatech® Tools
- Timberline, estimating software
- Autodesk Navisworks
- RAM Structural Systems
- RISA 3D
- SketchUp®

Services provided by other groups or companies

- Autodesk consulting services
- Autodesk Reseller training services
- InterSpec training services
- e-SPECS Revit Pilot Integration Program