ARCATspecNEWS No. 8 - Early December 2006
by Mark Kalin FAIA FCSI

In this Issue
INTEGRATING SPECS AND BIM
BIM IMPROVES SPEC COORDINATION
BIM DOORS ARE PERFECT
BIM REDUCES BIDDING COSTS
BIM WANTS COST NOT SPECS
BIM NEEDS UNIFORMAT, NOT MASTERFORMAT
WHATS A SPECIFIER TO DO

Integrating SPECS AND BIM

How will the rapid growth of Building Information Management (BIM) software affect the preparation of specifications? What's all this talk about embedding spec information in the attributes of CAD objects? Is BIM only a fancy version of desktop publishing? Will building product manufacturers be able to cope with BIM? A few plus-and-minus observations from the shallow trenches of 12 recent BIM projects:

BIM Improves Spec Coordination

Plus: BIM software can model the building exactly - you can potentially query the model for how many doors or square feet of paint are necessary - and that's a potential big plus for specifiers trying to make sure the drawings and specifications are coordinated. **Minus:** Most architects are using BIM as a design tool, and not modeling every inch of the building. There's no sure coordination tool built into a project that's only partially modeled. At a recent BIM conference in Boston, one speaker remarked that their firm took a designer-only approach to BIM. Their architectural BIM model would only include major design elements like the building exterior, and interior materials were likely to be 2-D representations drawn onto interior elevations without intelligence. That is, a door may look like a door in an interior elevation, but if it hasn't been entered as a door object, its just a pretty picture. In addition, for many projects the detail sheets aren't enlarged portions of the BIM model, they are representative details from the firm's library of details.

BIM Doors Are Perfect

Plus: Sure its easy to specify a door in the model - 3 feet by 7 feet by 1-3/4 inches, ANSI/SDI A250.4, Level 2, Performance Level B, Model 1 full flush hollow-metal door, one-hour fire-rated, shop-primed for site finish, meeting NFPA 252, gobblydegook thermallly broken, gobblydegook NFPA 80 and then there's the frame and 4 more standards ..... or specify the door as Steelcraft L20 Model F and be done with it .... or link to the internet

http:/www.steelcraft.com/pc_doors_lseries.asp and hope the page hasn't changed since you inserted it. **Minus**: No, its not easy to specify a door in the model unless the person inserting the door is an absolute expert or unless the door knows its environment - ie in an exterior wall in a fire-rated exit stair in a 34 story condominium building in Miami. Way too much of a burden for a designer when room sizes and functional relationships and architectural design are paramount. Most architects will concede that many detailed product decisions are only flushed out in the submittal process by a subcontractor or distributor really familiar with the requirements - architectural specs are not the same as a purchase order to the mill. This can completely break apart the typical scenario of a specifier seeking advice from a building product manufacturer's rep as to what to include in the spec so a subcontractor won't have to guess with their quote in the 48 hours they have to put the bid together. Is the specifier supposed to step aside and tell the rep to visit the BIM model and put their own info in? Maybe.

BIM Reduces Bidding Costs

Plus: Owners and builders clearly expect the BIM model to provide reliable information, including quantities and links to cost information. How better to reduce inaccurate quantity take-offs and unseen conflicts between building systems. How better to reduce the $1 billion plus subcontractors spend annually preparing their bids for projects. Conversely, building product manufacturers may be asked to participate in reverse auctions as every product is reduced to a commodity and cost triumphs over quality. (In England, Quantity Surveyors for projects regularly develop quantities of materials for subcontractors to bid on, reducing the price differences to volume discounts and labor costs. Reverse auctions work only if detailed criteria are available.) **Minus:** I believe the cost of a project is as much determined by the location of the project, availability of skilled workforce, schedule, and goodwill of the participants as by the cost of the materials only. Rule-of-thumb estimates say that building materials are less than 45 percent of the cost of construction. Architects have been wary of providing quantities.

Some legal groups are standing by ready to ask a court to determine how liability is shared when many team members share input and output from a model - whether incomplete or incorrect information is professional negligence or just the normal standard of care. Personally, I don't believe the BIM model will change the standard of care already established by the courts.

BIM Wants Costs Not Specs

Plus: The BIM manager of a large firm was honest enough to admit that better specs weren't their goal for BIM - the goal was better design, improving resources for design decisions, better cost control and comparisons, faster construction document production and the flexibility to make major changes late

in the process quickly. Watching a BIM model take 4 inches out of the floor-to-floor height of a building in minutes with corresponding changes in mechanical systems and exterior elevations is completely amazing. **Minus:** The current generation of CSI-bred specifiers is aging, and the gauntlet of their brass-knuckled, I-can-specify-anything approach hasn't been picked up by new-to-the-game architects. In BIM in design the issue isn't the spec, the issue is the quality of design and cost control for the project versus the owner's budget versus the performance of the building. While the construction managers don't want the responsibility and liability for product selection, they are quick to provide value analysis to control cost through reduction of quantity or quality. In all fairness, that's the right thing for them to do - unless they want to start designing.

BIM Needs Uniformat, not Masterformat

Plus: Some BIM software comes with CSI 5-digit masterformat numbering embedded and it is comforting that new software takes existing tools and puts them to work, and 4-D models can be represented as 3-D models even 2-D drawings. Keynotes can be used to identify materials and print schedules and reports. **Minus:** Now the hard part. CSI Masterformat numbering is a product classification system. A BIM model is an assembly system. Using Masterformat is the same as trying to put a square peg in a round hole - doesn't work - won't work - can't work. Most major cost estimating firms, contractors and construction managers in the United States use Uniformat II as the basis of their cost model. BIM will eventually use the same protocol. We should be using Uniformat II and the new ASTM standard classification for elemental cost summaries. The US Department of Commerce Technology Administration and the National Institute of Standards and Technology got it right in NISTIR5839. I believe we inherently understand terms such as foundations, exterior enclosure, roofing, interior finishes better than 03-3000, 07-5000, 09-2600.

I have given my 5,000 hours of service to CSI (probably more) but we are not in a toolshed picking parts. The airplane and automobile designers have known for two decades that they profit by manipulating assemblies and assemblies of assemblies. The 5-digit to 6-digit conversion was implemented over the objection of the initial CSI task team. Specifiers are confused by the numbers and very slow to adopt the new system. Libraries of catalogs of building products are being taken out of CSI masterformat order and put on the shelves in alphabetical order. (and how many binders have Div 3, 5, and 9 on their spines - where were we to put those?)

As much as I like catalogs, manufacturers who don't move their information to organized on-line cataloging sites won't reach their intended audience. (Yes, that's an unsolicited plug for ARCAT). Enter 'wood doors' in google and you get 3,960,000 entries in 0.21 seconds. Enter 'wood doors' in ARCAT and you get 34 companies that actually make wood doors - including 21 with guide

specifications, 10 with SpecWizards to help you write the specs, 9 with computer detail libraries, even one with the new ARCAT green info.

What's A Specifier To Do

Plus: The specifier is still an integral part of the design team - knowledge of building materials and assemblies is indispensible regardless of BIM software.

Plus: The specifier will need to coordinate the symbols and attributes in the BIM model so they coordinate with external databases maintained by specifiers, architects, contractors, estimators, and product manufacturers.

Plus: Maybe they got it right in 1920 when manufacturer's had standard spec sheets, and drawings just indicated deviations. Maybe specifiers should look to the guidance of national standard specifications like UFGS or those used in Canada, England, even many regional and manufacturer's spec databases which may set the tone for the specifications of the future.

Plus: Its a great time to get involved in defining the construction information systems of this new BIM world. Please roll up your sleeves and help.

(Note: Much of this material was included in the presentation at the Ecobuild Federal Conference Program at the Washington DC Convention Center, in the session "Integrating BIM and Specifications." For a free copy of the session handout, email mkalin@kalinassociates.com.)