BIM Gets Tricky When People Aren’t on the Same Page
Bob Does BIM – A Case Study (Part II)

Bob Jr. was sitting in his big corner office, staring out the window. It was hard to believe that six months had passed since they were the low bidder on the new prison. It had taken nearly two months to get a contract from the mechanical contractor. Bob Jr. wasn’t blaming them. His buddy, Earl Simmons, ran EZ Mechanical, and they were characteristically “easy” to work with. In fact, Earl’s nickname was EZ, and the firm name followed. It had taken Earl all of two months to come to agreement with the general contractor, an out of state firm Bob Jr. had never worked with.

This general contractor had different ideas about signing them up, but mostly those ideas seemed to involve unbundling, or shopping subs and vendors, buyout, and lower prices. EZ wasn’t so easy about cutting his price, but between them, Bob Jr. and EZ had gotten the deal done, and it did seem like they got some concessions on schedule. In fact, Bob Jr. felt pretty good about the GC’s approach to schedule and BIM. They actually seemed to know what BIM was, and their published protocol was frankly better than any of the local GCs.

In the first three months of activity, Bob’s fears about BIM were first relaxed, then reborn. On a positive note, both EZ and Bob’s turned out electronic submittals quickly; the GC’s BIM site manager set up the ftp site for uploading drawings, and meetings on coordination started. The protocol made it clear to Bob’s what their responsibilities for the BIM were. And Bob’s bid time fear about a “robust” model, delivered in a Revit environment were set aside during the negotiations with the GC. They actually understood Bob’s qualification that they were delivering a dwg. file that would require others to load or layer on the equipment files in Revit! The job schedule even seemed manageable, and would allow Bob’s to level its crews and possibly increase productivity with smaller crews!

So what fears were reborn? Bob Jr. called them the three “S” challenges: Stumblebums, Schedule and Stupid. Stumblebums were simply folks doing clumsy BIM. Some of the subs were just not up to speed and had not been involved in such a formal process. Even Bob Jr.’s friend, EZ, fell into the Stumblebum category. EZ had hired an AutoCAD draftsman on a contract basis to make his drawings, but EZ’s CAD sub was late to the game, and the team “stumbled” out of the gate.

Stupid was a different issue. The electrical contractor on the job was an out of state firm that Bob Jr. had never heard of. They turned out to be a broker, apparently a “friend” of the GC, and the only company willing to take the job at the GC’s price. Sparky Electric then subcontracted the work to several local electrical firms, none of which had ever done BIM. So Sparky hired a firm from India to make drawings for them. Unfortunately, Sparky wasn’t familiar with local codes, and Bob Jr. was pretty sure they weren’t familiar with the national codes, either. Certainly, Sparky wasn’t able to communicate project requirements to its foreign CAD sub. At least EZ knew their business; even if they stumbled, they were experts in this type of complicated plumbing and piping work.
That left Schedule in Bob Jr.’s trilogy of fears. No one seemed to understand the importance of getting done with the BIM. It seemed that the schedule for doing work in the field did not match up to the schedule for the BIM process. In addition, many of the subs on the job didn’t have to build what they installed; they simply called the supply house a day or two before they needed the stuff. For Bob’s, fire dampers and in line duct components had always been ordered from approved shop drawings of the ductwork.

To make matters worse, it was getting really hard to get a drawing finished. Stumblebums and Stupids were always late, and when they finally started drawing, they crashed into ductwork that had already been uploaded to the ftp site. The first drawing Bob’s had made had been done for two months before others finally uploaded their files, and Bob’s detailer was well onto other things when the conflict report came back noting seventeen places where ductwork and plumbing or piping conflicted. Of course, there were no electrical conflicts yet; the local electrical contractor had moved his work to below the slab, and the GC had shrugged and said okay; Sparky’s hadn’t uploaded this area yet.

In the old days, Bob’s wouldn’t have had this problem. EZ’s foreman would have lain out around the duct shop. In reality, both the plumber and the tinner would have worked out big problems, which probably meant that Bob’s built a few fittings that Bob Jr. never heard about, as stuff got moved around in the field among friends. With BIM, that shouldn’t happen, but resolving the seventeen conflicts resulted in two jobsite BIM sessions, as EZ’s CAD guy was determined that he wasn’t going to move that two inch vent line. Thirty days later, the design engineer put his foot down, and told the plumber to move. Bob Jr. figured they’d spent two days of wasted time over a simple issue. A forty inch duct clearly cost more than a two inch vent!

Then the sprinkler contractor had a problem. Okay, that was legitimate. Bob’s duct was too high to allow him through the structure, and another conflict report, another meeting, and another day went by.

After two months of Stumblebums, Schedule and Stupid, Bob Jr. called EZ and they set up a meeting with the BIM Manager for the GC. Bob Jr. asked for help. After a long discussion, the BIM Manager agreed; they needed to create a more precise upload schedule for the job, one that allowed for conflict resolution, and yet one that gave Bob’s adequate lead time to order in line components and build its ductwork. Additionally, the upload schedule was revised to break down drawings into areas that more closely matched the work areas that Bob’s and EZ were managing labor and materials around. Rigid dates on the upload schedule made it clearer to each sub when they had to be “done” with BIM for each area, not just each building.

So for the last two months, things seemed to be smoother. Instead of waiting for conflict reports and meetings, Bob’s and EZ’s project manager were doing a better job of pre-planning together and identifying what the detailers were going to do, which eliminated some wasted effort. So as he stared out the window today, what did Bob Jr. think he’d learned?
First, Bob’s would have to be more diligent at the beginning of the project in driving schedule, especially working on getting others to buy into more detailed breakdowns of work areas and tying uploads to the lead time for their work.

Second, Bob’s would have to put more and more emphasis on researching the partners on future jobs, and where it could, it would try to avoid Stumblebums and Stupids.

Finally, Bob’s would have to accept that it might have to add some hours to its detailing estimates on fully-modeled BIM jobs, at least until the rest of the world caught up to the process. Bob Jr. smiled. He was used to pricing field and shop production. Pricing the cost of Stumblebums and Stupids was a new challenge.

While the BIM process was sometimes frustrating, Bob Jr. was pretty confident that the extra planning and coordinated drawings were going to save them money in the field. That was important. He was pretty sure they’d have to upgrade to bigger CAD computers by the time this job was done!

For more information, contact Mike McCullion, SMACNA’s director of safety and health, and project manager, market sector councils (mmccullion@smacna.org / (703) 995-4027).

##