

STEEL CONSTRUCTION

Companies Improve Products to Keep Up with User Demands

By Larry Kabaner

Steel users are demanding changes and companies are responding with updates, enhancements, and new products. Amber Freund, Vice President – Operations at RISA Technologies (www.risa.com), says that the company's software receives new features on a frequent basis. "With regards to recent steel-related improvements, the latest releases added the ability to get both analysis and code checks for cold-formed steel face-to-face and tube members," she says. "Our staff, composed of structural engineers, researched a number of codes and white papers to provide this ability. We added this feature after receiving requests from users who wanted to use face-to-face cold formed shapes but couldn't find examples of how to calculate their capacity."

Another major new feature is baseplate design within RISACONNECTION. Says Freund: "For years we have had users asking for the ability to get baseplate design for their RISA-3D models without needing to enter the forces into another program manually. By providing full integration between RISACONNECTION and RISA-3D, the forces are automatically transferred, and you can now get baseplate design for your RISA-3D models on a Per-Load-Combination basis. This ability means that your baseplate and anchor bolt forces are much more accurate than using envelope forces, giving you the most realistic and economical baseplate designs."

As for industry trends, Freund sees an increased reliance on software to do engineering calculations. "This is a trend that has been ongoing for at least 20 years, and we see no end in sight. Project schedules no longer afford engineers the time to do hand calculations, and permitting officials now require rigorous 3D analysis for many structures that hand calculations were previously considered adequate," says Freund. (See ad on page 84.)

ClarkDietrich Engineering Services (www.clarkdietrich.com) officials would like SEs to know about their TrakLoc Drywall Framing System. The system offers multiple assemblies including the TrackLoc Fixed Length Stud (TLF), the TracLoc Adjustable Stud Assembly (TLA), the TrakLoc Deflection Stud Assembly (TLD), and the TrakLoc Elevator Stud (TLE), according to Chad Casbon, Director of Engineering. "Each system offers the benefit of a snap and lock connection between the top/bottom track and each stud that does

not require screws. Also, they all allow installation from the floor, eliminating the need for lifts which saves time and money. We see an increasing number of circumstances where long-length studs need to be stocked in high rise buildings without the problems associated with closing streets and using cranes, for which a major component is cost. Traditional cold-formed steel members can be spliced, but that requires engineering, more labor, and unknown performance in terms of stiffness. TrakLoc offers a pre-engineered solution with minimal labor and is backed by testing that ensures an expected performance. I would suppose that most engineers are not aware of some of these logistical job site problems nor are they likely familiar with potential solutions like TrakLoc."

The company highlights its involvement with the new Sacramento Kings Arena, the Golden 1 Center, which included 65,000 linear feet of metal stud wall framing. "The project included unique challenges that were solved through collaboration with the framing contractor. One such challenge was the construction of 48-foot tall exterior wall panels that were erected and stacked in a 22-inch wide cavity between the new building and an existing building. All metal stud members were pre-measured and pre-cut to minimize waste and maximize efficiency." Casbon adds: "Another design challenge was the free-standing, self-supporting concession stands with cantilevered canopies framed completely out of cold-formed steel members. All seismic design requirements that are typical in California were satisfied without the addition of more expensive hot-rolled steel members."

"Through the use of BIM, creative engineering, and collaboration, ClarkDietrich Engineering and the other design team members were able to maintain the open space nature of the Arena without compromising any of the desired systems. These efforts resulted in the completion of this fast-paced, high-profile project on time," Casbon says.

Stuart Broome, Business Manager for Engineering at Trimble Solutions (www.tekla.com/us), says that Tekla Structures has been the chosen software solution for steel detailers around the world for many years but more recently has become popular with other disciplines, especially structural engineers. "The fact that it can be used for construction documents as well as shop drawings makes it

very appealing to structural engineers, and its ability to model in any material, including cold formed, means that it is extremely versatile.”

As for new versions, Broome says: “Tekla Structures 2017 has many enhancements, especially in the areas of rebar modeling and drawing production. I expect that Tekla Structures will continue to gain momentum as the structural engineer’s BIM solution of choice because of the ability to work to a high level of detail and pass valuable information downstream. Structural engineers appear to be getting more interested in producing ‘truly constructible’ models rather than ‘design intent’ models which can often be open to interpretation. Tekla Structures does this well, without much additional modeling time and without the model size becoming unwieldy.”

Broome also notes that Tekla Structural Designer (TSD – Trimble’s analysis and design solution) has seen many improvements and additions in the last 12 months. “The one that has been most well received is the ability to model and design a wide variety of foundations. Pad footings, strip footings, pile caps, and raft foundations are all now included,” he says. “However, it is the ability of TSD to work so well within the BIM environment that is continuing to drive our business. TSD 2017 continues to deliver in this area whether you are using Revit or Tekla Structures as your BIM platform. The fact that TSD is a physical modeling solution rather than a traditional ‘wire frame’-based analysis tool make this integration very easy for us to provide.”

More enhancements are part of Tedds 2017, including code updates. “Tekla Tedds has always been a favorite of our clients. However, now that Tedds has been available in the U.S. market for some years, our clients are starting to venture beyond the component calculations included in the structural calculation library and are now using Tedds as it was originally intended—as a total calculation production suite.” Adds Broome: “Tedds includes code tables, code graphs, section data, section property calculator, 2D frame analysis, and the ability to write electronic calculations in an MS Word environment. Structural engineers appear to be placing value on the capacity to produce, submit, and archive all of their structural calculations electronically. We expect this trend to continue.”

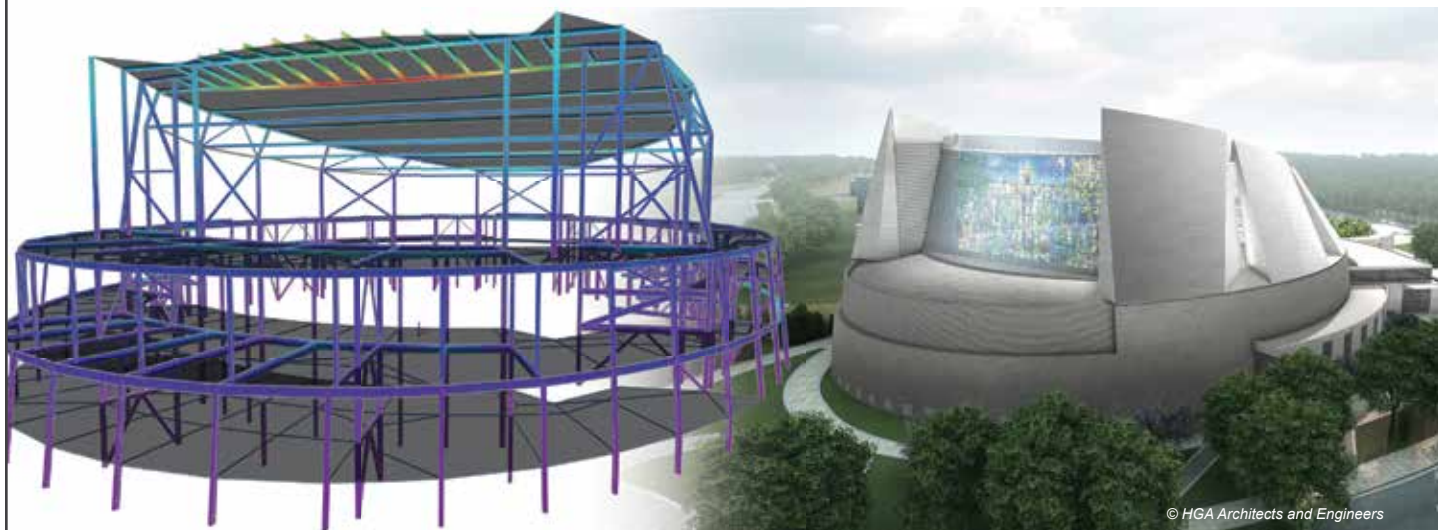
How’s business? “I say this every year,” Broome adds, “and I can say it again this year – business has never been better. I have seen a huge shift in attitudes to new technology over the last five or six years. Structural engineers seem to be moving from being afraid of change to now striving for improvement. The race to be the most productive and competitive is on, and we think our clients have the best chance of winning that race. We look forward to sharing in their success.” (See ad on page 3.)

Ben Follett, U.S. Product and Marketing Manager at Nemetschek (www.nemetschek.com/en), is also weighing in with his company’s updates. “Our version 17 release is planned for May. With that release will come updates to all the steel-related codes, updates for

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the AISI code, as well as updates for the AISC 360 codes. We also have a project for composite improvements that will finalize or solidify our work for composites based primarily on user feedback and user beta testing. The hope is that we are providing users the composite workflow that they have been asking for and we have been trying to achieve,” he says.

He notes that the company has always been customer driven and will remain so. “That is our number one goal. We answer questions within the same day for all of our customers. On the developer side, we truly only develop based on customer feedback,” Follett says. “If there are things that need to be added or need to be changed, or if our priorities are one thing but our customer or group of customers or group of potential clients think that they should be another, then obviously we are going to be very open to making that.”

For the future, Follett sees the continuing interest in interoperability not only between the architect and the engineer but between the engineer and the fabricator. “I think that is going to play a critical role going forward. Trying to determine how to better exchange data or models is important because we often spend much time and money on change orders during the construction phase. A lot of that could be mitigated by having better coordination and cooperation between the engineer and the fabricator, and ultimately the contractor.”

Nick Decker, the Senior Industry Specialist at Bluebeam, Inc. (www.bluebeam.com), says the company takes great pride in partnering with customers to create new features and fine-tune workflows that eliminate the tedium of repetitive, time-consuming tasks. That optimizes collaboration and workflow efficiency. “Every new iteration of Bluebeam Revu grows with and responds to the evolving workflow needs of our customers. Structural engineers use Revu every day to expedite reviews and preserve value,” he says. “Bluebeam Revu delivers enhanced PDF-based takeoff and workflow automation tools that span the entire project lifecycle and maximize workflow efficiency, making for a powerful end-to-end solution.

“The Batch Markup Summary feature in Revu 2016 allows the project team to produce a single comprehensive report detailing the changes made across an entire document set. With expanded data sorting and filtering capabilities, running multiple reports in both PDF and Excel formats is easier than ever.”

Decker adds: “The Legends feature enables engineers to visualize the markup data directly on the PDF, which was a highly requested workflow enhancement. By summarizing the markup data in a customizable table, the legend on the PDF automatically updates in real time, providing the user with data at a glance.”

Decker notes that Bluebeam Revu is used by customers in more than 100 countries. He says: “Bluebeam Revu is used by 94% of top US contractors, 86% of top U.S. design firms, 92% of top design-build firms, 74% of top international design firms, and 78% of U.S. specialty contractors. Bluebeam was also ranked as one of the nation’s fastest growing technology companies by Deloitte Technology Fast 500 three years in a row.”

As for what trends he is seeing, Decker says that project teams are becoming more dynamic, handling more projects across increasingly larger geographical areas. “Having an open, lightweight platform on which to collaborate with team members across the globe has become a necessity and not a luxury. Beyond that, engineers and designers are

wearing more hats than ever and utilizing more software solutions to complete their daily tasks. To expedite those workflows across independent systems, engineers are requesting systems talk to each other, and that file types be viewable and editable across multiple software platforms. This explains the rise of APIs for system integrations and open file formats, like IFC.”

According to Carlos de Oliveira, P.Eng, co-founder and President of Cast Connex Corporation (www.castconnex.com), headquartered in Toronto, Ontario, architecturally exposed structural steel (AESS) is omnipresent in modern airports. The company is currently supplying components for Austin–Bergstrom International Airport and Charlotte Douglas International Airport, and has in the past supplied castings for airports from coast to coast to coast – from critical structural elements in the seismic-retrofit of Oakland International Airport to its Universal Pin Connectors and Architectural Tapers used at the ends of AESS braces in Bangor International Airport.

In Austin–Bergstrom International Airport designed by Gensler and Architectural Engineers Collaborative, CAST CONNEX® Universal Pin Connectors™ are used at the ends of key AESS elements on the exterior of the new terminal expansion, while custom designed castings support AESS roof trusses spanning 90-feet across the terminal.

For the Charlotte Douglas International Airport Concourse A Expansion project, CAST CONNEX provided pre-tender concept development support to Perkins+Will, C Design, and Stewart Engineering, and is supplying design-built custom cast steel column bases that not only provide fire- and blast-resistant structural supports for the 145-foot long roof trusses, but are also a key part of the new building’s architectural expression.

“While educational, cultural, and commercial projects continue to be our company’s ‘bread and butter,’ airports and transit terminals are sectors where steel castings can flex their structural and architectural muscle,” says Carlos. “It is in those large scale projects where we get to push the boundaries in terms of providing highly integrated elements that are critical to both the structural performance of the buildings as well as to their overall architectural quality.” (See ad on page 2.) ■



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