

BUSINESS STRONG FOR SEISMIC COMPANIES

New Products and Services Help SEs Do More For Less

By Larry Kahaner

At RISA Technologies (www.risa.com), Amber Freund, Vice President, Operations, is seeing slow and steady growth since coming out of the recession. From that time, she says, a lot of small engineering startups have popped up, and most have been turning to RISA for their structural analysis needs. RISA has responded, in part, by adding a powerful time history analysis capability to the latest version of RISA-3D. “Simply put, this is the ability to load and analyze structures as a function of time. The primary application of this feature was intended for the analysis of vibrating equipment on steel/concrete frames, but we have also seen users utilize time history for other applications, including wind and seismic.”

Freund says that in a recent project, one of their users had his proprietary structure analyzed in a wind tunnel which produced plots of deflection versus time for a number of nodes on the structure. “The user was then able to import that data into RISA-3D to essentially ‘shake’ the structure exactly as it had been shaken in the wind tunnel. RISA-3D was then able to back out the forces and stresses caused by the shaking. This type of analysis allowed the user to identify stresses in parts of the structure where strain gauges had not been placed during testing.”

As for trends, Freund has noticed the high frequency of new codes being released and the increasing complexity of those codes. “For example, by the time we got the 2011 Masonry Code implemented in our software, the 2013 Masonry Code was already being published. We have worked hard to get ahead of the curve so that new codes are already in the program by the time they are adopted by the states, but it is almost a full-time job for us. The complexity of the new codes is also unprecedented. For example, if you follow the ASCE-7 and AISC codes to the letter, it is virtually impossible to satisfy them with hand calculations. As a staff of mostly professional engineers, we at RISA sympathize with the engineer on the ground who is trying to comprehend all of this. That is why we provide transparency in our software and educational webinars on the ever-evolving nature of the design codes,” she says. (See ad on page 76.)

Frank Metelmann, President of Decon (www.deconusa.com), a Jordahl Company, would like SEs to know about their two product groups. “We have stud rails which provide punching shear reinforcement, and then we have Jordahl anchor channels, which are used to connect high loads and concrete wherever you cannot drill into the concrete. As for new products – it is more software-related. We have a new software that calculates the design of the anchor channels and also for the stud rails.” He says the software is a tool being offered to customers to make it easier for them to design and calculate the loads that can be used with their product. He adds: “For the anchor channels, we have an ICC report and evaluation report which we just received last month.”

How’s business? “Business is doing well. We have full order books for the next year or two,” says Metelmann. “The [U.S.] elections coming up can always throw a wrench into the system, and that is one concern we have, but everything looks positive up to now.”

Sideplate (www.sideplate.com) has been growing at about 25 to 30 percent per year, says Jason Hoover, Eastern Regional Business Manager, Industry Outreach Executive. “This year started a little

slowly, particularly in the eastern U.S., but we’ve been picking up some momentum recently and are on pace to hit a similar target. SidePlate has been in business for almost 22 years, and we still have a lot of growth opportunities. In fact, we are currently looking to hire structural engineers in California and the middle of the U.S.”

Hoover notes: “The SidePlate Bolted SMF [Special Moment Frame] is our latest innovation, which is applicable for high-seismic projects. We completed the full-scale testing earlier this year, and this bolted connection performed better than our fillet-welded connection ever did. In general, the SidePlate stiffness controls frame drifts better than any other connection, but the biggest advantage of our field-bolted connection is the speed of construction. It simply drops in place and gets bolted, so there is no field welding at all. Our motivation is always to make structures more efficient, from design through construction. We’ve consistently heard that welding is expensive and slow, and welders are difficult to find. Developing a field-bolted option was a natural progression for SidePlate.”

He adds: “We continue to see structural engineers asked to do more for less. Design schedules are shorter and expectations are higher, but the fees are not following suit. I do not know the answer to this, but SidePlate has over 20 engineers, and we design well over 100 steel buildings each year. Accordingly, SidePlate’s assistance takes some of the burdens off of the structural engineer of record, and we do this at no charge to them.”

Hoover says that there is a perception that SidePlate is only for seismic projects. “We still fight this consistently. Frame stiffness matters in ‘wind world’ also, and much of our recent growth has been from wind-governed jobs where SidePlate designs save money versus conventional steel frames. I’d also like SEs to keep an open mind and acknowledge that, while we have a new way of doing things, we are partners with them. We do not have anything to sell them as our fees are paid by the construction team, and we can help make their lives easier.” (See ad on page 57.)

Says Rich Madden, Marketing Director at New Millennium (www.newmill.com), “To optimize building design and safety, Flex-Joist tension-controlled open web steel joists are engineered to exceed standard steel joist design for strength, reliability and ductility. This alternative design approach gives building owners and specifiers the option of consistently higher steel joist performance at an affordable cost. Increased strength, higher reliability index, and improved ductility provide an enhanced timeframe for emergency management in the case of an overload situation. The Flex-Joist system can be coupled with a third party overload sensing system to enhance building safety further.”

Madden continues: “A Flex-Joist project is ideally suited for the optional, post-erection installation of electronic sensors by a third-party provider. In the event of an overload, the bottom chord and end webs of a Flex-Joist will be highly stressed prior to collapse. Sensors and alarms installed along these components by the third-party provider can establish an early warning system for possible overload removal, roof shoring, and evacuation of personnel.” He adds a disclaimer that “no joist will withstand sudden and catastrophic impact forces that

exceed system capability. Flex-Joist design offers the probability of high ductility and time delay under static gravity overload conditions.”

Says Madden: “The open web steel joist industry produces millions of joists each year that safely support roofs and floors in hundreds of thousands of buildings. Due to the range of potential overload condition, including unusual snow and rain levels, it is inevitable that some percentage of roofs and floors will be overloaded beyond anticipated worst-case load conditions during the lives of these structures. The Flex-Joist Gravity Overload Safety System offers a safety feature to building owners and managers seeking additional protection against potential overload conditions and related risks of damage, injury and exposure to liability. Under most overload conditions, Flex-Joist introduces important advantages including engineered overload safety for floors and roofs, a steel joist structure designed to flex under extreme static gravity overloading, a time delay for possible evacuation and injury prevention, and possible shoring, removal and collapse prevention.”

Emory Montague, Director of Engineering at Simpson Strong-Tie (www.strongtie.com), suggests that with the increase in urban light-rail infrastructure and a younger demographic of environmentally-conscious consumers, there is an increase in dense urban infill rental units under construction nationwide. “This trend is expected to be steady or increase over the next ten years. Some cities are also looking at ways to make their communities more resilient, giving them the ability to bounce back quicker after a natural disaster. This push for better performing structures has increased the focus on providing more robust connections to create a continuous load path, tying the structure together from the roof to the foundation. These multi-story structures have demanded new solutions, where the continuous rod and screw systems have gained wider acceptance over the last five years because of their relative low labor costs,” he says.

To help meet these and other challenges, Simpson Strong-Tie recently released the Strong-Rod Systems Seismic and Wind Restraint Systems Guide (F-L-SRS15). Says Montague: “the guide provides insight into a variety of special design considerations when using continuous rod systems for shearwall overturning restraint. It also outlines how to take advantage of working with us as your full-solution design partner. By contacting Simpson Strong-Tie early in your project and sharing specific design loads and structure geometry, we can collaborate to create the most cost-effective and project specific solution for shearwall overturning restraint using the Strong-Rod Anchor Tiedown System (ATS).”

Montague says that one reason they offer this service is because Simpson Strong-Tie is constantly innovating to find better products that make installations faster, save cost, or provide additional benefits to their customers. “One of the main considerations to address when using continuous rod systems in multi-story, light-frame construction is wood shrinkage. Take-up devices are used to keep the rod system components tight and ready to function in an earthquake or storm after the wood framing has settled. We offer several styles of take-up devices to suit the application and load requirements. Recently, we extended our ratcheting take-up device (RTUD) line of products from sizes that accept 3/8-inch and 1/2-inch diameter threaded rod to include the RTUD5 for 5/8-inch and RTUD6 for 3/4-inch diameter rods. The RTUD is extremely cost effective, code listed (ESR-2320) and allows for unlimited shrinkage compensation.”

Business is strong, concludes Montague. “With our new, more streamlined rod system assemblies and lower costs to the installer, we have seen a significant increase in Strong-Rod Systems sales in 2016. Our innovative truss and floor-to-floor screws are also gaining popularity in high-wind areas.” (See ads on page 17 & 31). ■



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