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President's Message

It has been a privilege to serve as state president for the 2020 year. I have been blessed with an excellent board and executive assistants that have helped us through a challenging year.

SEAoT purchased the professional version of GoToMeeting to host both local and state meetings and will be the platform for our first-ever virtual state conference. While we know the state conference will look a lot different this year, the board has worked diligently throughout the year to ensure SEAoT provides the CEUs required for licensure.

Next year’s board and new president, Niclas Green, will start the transition to hybrid (in person and virtual) meetings.

Over 20 years attending SEAoT meetings, I have become friends with numerous engineers throughout Texas. This comradeship has given me several referrals for projects, and in return, I have referred numerous jobs to SEAoT members. SEAoT members represent a long list of structural specialties and most firms specialize in a finite type of structural engineering. The chapter meetings and the state conference have allowed me to get to know the local engineers as well as those from different chapters.

In addition to the engineers, I have gotten to know numerous vendors that sponsor SEAoT that have been invaluable to helping with unusual structural problems. Euclid Chemical and Sika Corporation have helped me with solutions for concrete reinforcing and protection, I have used Delta Structural Technology to reinforce old bridges and wood structures, and Hilti and Simpson Strong-Tie have helped with connection issues too many to count. There are numerous other vendors that attend most of the state conferences that have been great sources knowledge for me over the years.
Despite the social distancing, Lance Tyson and Charles Hammond on the Legislative Affairs Committee (LAC) have worked with Richard Lawson, our lobbyist, on a Structural Engineering Licensure Title Act. This is an “off year” for the state congress that meets every other year. Elections are coming up, so the LAC has been drafting bills and getting feedback from congressmen such as Dennis Paul, the Texas Board of Professional Engineers, and other engineering organizations (ASCE, TSPE, and others). In 2021, LAC will start to put together a program and lobby congressman for the title act.

Finally, I would like to thank the past president, Kaitlyn Cheesebro Vaclavik P.E., for the help transitioning into this year. Also, congratulations to Kaitlyn and her husband as new parents. Thank you, Stan Agee with Pieresearch as one of SEAoT’s longest and best supporters. I first met Stan in 1998 and, in addition to being a sponsor, Stan had been the treasure for SEAoT through 2011. A special thanks to David Williams from the Dallas chapter for his work in improving the website and acquiring GoToMeeting.

For 2021, I look forward to helping the new president, Niclas Green, and attending the state conference in El Paso.

Respectfully,
Robert L. Nicholas, P.E.
President
In the July SEAoT Board meeting, the board approved draft legislative language that would allow a restricted-use title for “registered structural engineer” and separate seal allowance for engineers who have passed one of the following 16-hour structural exams listed in the NCEES Model Law Structural Engineer designation:

- 16 hours of NCEES structural exams, 8 hours of which are the Structural II exam taken prior to January 1, 2011
- 16-hour state-written structural exams taken prior to 2004
- NCEES Structural II exam, plus 8-hour state-written structural exams taken prior to January 1, 2011
- NCEES 16-hour Structural Engineering exam taken after January 1, 2011

Since the SEAoT SE proposal does not have a practice mandate, engineers who have not passed one of these 16-hour structural examinations can continue to practice structural engineering and continue to refer to themselves as structural engineers.

In August, the Governmental Affairs Committee (GAC) held two meetings with the Texas Board of Professional Engineers and Land Surveyors to discuss the proposed legislation. The GAC also began discussions with ASCE, ACEC, and TSPE, as well as with select legislators, regarding the proposed legislation. The GAC continues to work with the legislature to update minimum building code requirements by municipalities as well as explore ways to mitigate the cost of insurance premiums and improve the Texas Windstorm Insurance Association (TWIA) inspection regime. The GAC is currently monitoring how Covid-19 restrictions may affect the 2021 legislative session and SEAoT’s agenda.
We have long known about the importance of proper alignment for reinforcing cages in drilled shaft construction. It is no less important to provide the same quality assurance for related deep foundation and earth support construction applications.

In order to achieve proper design strength in any drilled and grouted hole the bar or tendon must be centered in the drilled hole to assure proper grout or concrete coverage throughout the design length of the element. PiereResearch®, a long-time industry leader in alignment/centralizer products for the deep foundations industry has developed a new, adjustable, centralizer for augercast pile, micropile, soil nail, and tieback installation. The ADJUSTABLE QUICK-LOCK® UNIBAR® CENTRALIZER is the answer to uniform spacing requirements across a wide range of diameters.

There are 3 different new parts to fit shafts ranging from an O.D. of 10" to 24". All 3 parts are adjustable to fit bar sizes #6 thru #18:

- Part No. 1011-6/18UBC => for shafts that are 10/11" in diameter, fits bar sizes #6 thru #18
- Part No. 1415-6/18UBC => for shafts that are 14/15" in diameter, fits bar sizes #6 thru #18
- Part No. 1617-6/18UBC => for shafts that are 16/24" in diameter, fits bar sizes #6 thru #18
ADJUSTABLE QUICK-LOCK® UNIBAR® CENTRALIZERS are made of lightweight, durable, non-corrosive plastic and consist of two identical halves that are fast and easy to snap together. The adjustable centering device will accommodate single bar, single and multi-strand anchors, encapsulated anchors (DCP), and are suitable for steel or plastic pipe applications. The adjustable UNIBAR® can be attached with zip ties or tie wire, and are offset to fit between rebar threads. They are lightweight, economical and do not require nuts or bolts for installation.

Pieresearch® is known for their timely response to orders placed. They will ship directly to any location of your choice. All products are made in the USA and are readily available.

For detailed information about the ADJUSTABLE QUICK-LOCK® UNIBAR® CENTRALIZER and the wide range of alignment/centralizer aids for the deep foundation and earth retention industries visit: Pieresearch.com, or call 817-277-3738.
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Steel mill's 'giant' joist girders are a big engineering feat

Steadily rising in the southeast Texas town of Sinton is the country's most technologically advanced steel mill and the largest project Steel Dynamics Inc. has ever undertaken. The $1.9 billion, 1,000-acre campus includes coating lines, cold and hot mills, and a melt shop with a state-of-the-art electric-arc furnace featuring 24-foot-diameter exhaust ducts. Engineer of record CSD Structural Engineers specified nearly 500 joist girders for the project, but the largest and heaviest of these joist girders posed exceptional engineering challenges for the supplier, New Millennium Building Systems.

Building a behemoth

New Millennium joists and joist girders are key structural elements in the campus' cold mill, hot mill and melt shop. Type B roof deck also is used in the melt shop. Brady Broom, an engineering manager at New Millennium, characterized the joists and roof deck as relatively standard. He said the most challenging engineering involved the massive joist girders required. Their lengths range from 60 to 120 feet in the cold mill to 126 feet in the hot mill and 128 feet in the melt shop; depths range from 4 feet to 14 feet, 8 inches.

New Millennium is producing hundreds of girders and thousands of joists for the three structures. Broom estimates 230 girders are required for the cold mill, 130 for the hot mill and 100 for the melt shop so far. At press time, the project was not yet complete.
Engineering challenges

The technologically advanced melt shop features what Broom called “giant” joist girders to support the loads of 24-foot diameter exhaust ducts on the roof. Corpus Christi-area wind load requirements also factored into their design.

Rethinking girder design: JG-321 is one of the project’s largest roof joist girders. Located in the melt shop, the joist girder was originally specified to be 136 feet, 6 inches long, which would have been a shipping concern. JG-321 also was specified to include a top chord extending 8 feet, 6 inches beyond the load-bearing perimeter wall to support two roof joists and wall girt loads outside.

In addition to the joist girder’s added length, the top chord extension would need to support large loads, adding to material cost. JG-321 needed to be rethought.

“We worked with (Vice President) George Batcha at CSD to devise a way to shorten the girder without extending the top chord,” New Millennium engineer, Lloyd Smith, explained. “A W-section beam serves as a propped cantilever to support the two roof joists and wall girt loads. A double-angle kicker brace supports the beam segment. This created a torsion problem for the girder support beam, so we stiffened the girder by designing it for a fixed-end moment that resolves all the forces and resists the beam torsion. The final solution allows us to fabricate and paint the joist girder, then ship it in one 128-foot-long piece.”

Crane clearance: For two of the bays within the new flat roll steel production campus, crane clearance is another engineering challenge. To support the required structural loads in the scrap bay, two already-massive 96-inch-deep joist girders each need to be increased by 1 foot to 108-inch depth; and in the caster/tundish bay, three joist girders would need to be increased from a 96-inch depth to 120 inches to support the loads there.

The EOR confirmed these increases wouldn’t cause any interference with overhead crane clearance, but other possible issues can come into play. The building owner was consulted for possible related concerns, such as duct clearances, maintenance platforms, conveyor systems, etc.; and the fabricator was consulted regarding possible detailing and fabrication considerations. All matters were discussed and resolved.

The SDI steel mill complex is expected to open in mid-2021, create about 600 jobs, and generate indirect job growth among customers and other support service providers. It is estimated the facility will have an annual production capacity of approximately 3 million tons with the capability to produce the latest generation of Advanced High Strength Steel grades.
By registering for the conference, you will:

- Gain access to innovative technology and structural solutions
- Build lasting relationships with Texas structural engineers & suppliers
- Participate in informative Q&A panels
- Earn up to 10 professional development hours

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2020 CONFERENCE SPEAKERS

LIVE SESSIONS

OCTOBER 29 - SPEAKER PANEL - 11 AM CT
Reimagining the Engineering Industry Post COVID-19
Peter Larson, P.E. - Wiss, Janney, Elstner Associates, Inc.
John Schwab, P.E. - Spannbeton, Inc.

OCTOBER 30 - KEYNOTE - 11 AM CT
Understanding Structures: Concrete Never Lies
Dr. Ramon Carrasquillo

PRE-RECORDED SESSIONS

Basics of Strut and Tie Modeling
Royce Floyd, Ph.D., P.E., Associate Professor

Architectural Exposed Concrete
Rob Kinchler, P.E. Greater Southwestern Region Manager for CRSI

Gusset Plates: The Evolution of Simplified Design Models
Bo Dowswell, P.E., Ph.D.

Large Scale 3D Printing: Concrete Construction Applications
Edel Arrieta, Ph.D.

Best Practices for Expert Witness Testimony
Cara Kennemer

Wind and Storm Design for Mission Critical Projects
Brad Cheshire, P.E.

Bridge Repair Practice and Considerations
Brian D. Merrill, P.E.

Castings in Architecturally Exposed Structural Steel
Suzy Rajamoney, P.E.

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PFS System from Simpson Strong-Tie Now Code Listed for Building Portal Frames for Wider Openings with Faster Installation

Pleasanton, Calif. – Simpson Strong-Tie, the leader in engineered structural connectors and building solutions, has received code listing from the International Code Council Evaluation Services (ICC-ES) for its Strong-Wall® site-built portal frame system (PFS) designed to provide engineers, builders, and framers in prescriptive markets with an easy way to meet code-defined wall bracing requirements when building narrow wall widths.

Since first developed by the APA Engineered Wood Association and accepted into the 2015 International Residential Code® (IRC®) requirements, portal framing methods (including continuous sheathing and portal framing with holdowns) have been a common source of confusion in the field. Installations without holdowns or anchor bolts in the correct locations, or that do not orient sheathing with the strength axis vertical, or that place the sheathing splice in the center of the portal leg, are often flagged during inspection.

Simple and quick to install, the PFS from Simpson Strong-Tie provides builders with a cost-effective alternative to IRC braced wall solutions. Available in single-wall and double-wall portal frame kits, the PFS includes holdown assemblies, adjustable post bases and standoffs, multi-ply screws, connector screws, a 6-lobe T40 driver bit, and complete installation instructions. Contractors simply add lumber and assemble.

“Side by side, the time savings between using the PFS vs. continuous sheathing is pretty incredible,” says Allen Cohn, president and founder of West Hartford, CT-based Creative Communities Builders, who did a side-by-side comparison of the PFS with a code-prescribed portal frame. “The efficiency makes life much easier on my framing contractor, and the building inspector readily accepted the solution, which means I’ll be using the PFS on all of my projects moving forward.”

Launched in March 2019, the PFS is designed and tested for site-built simplicity to provide engineers and builders with a faster, easier solution for maximizing wall openings without compromising strength. Simpson Strong-Tie worked extensively with ICC-ES and an industry consortium of wood and engineered wood manufacturers to develop testing criteria and achieve code listing for the PFS.
“Already a faster and easier solution for building portal frames in the field, the PFS now provides reliable, code-listed assurance to engineers and building inspectors,” says Simpson Strong-Tie vice president of Connectors and Lateral Systems, Sam Hensen. “The Strong-Wall PFS provides a turnkey solution for constructing site-built wall openings faster, easier and more cost effectively than traditional methods.”

Part of a larger suite of prescriptive design and construction solutions from Simpson Strong-Tie, the PFS is supported by an online wall-bracing length calculator, a bracing selector app, and other free tools available on strongtie.com to help meet IRC wall bracing requirements.

Features and benefits of the code-listed Simpson Strong-Tie Strong-Wall site-built PFS portal frame system include:

- Allowance for narrow wall widths: The PFS allows builders to maintain narrow return walls at garage openings and provides a solution to maximize portal openings for large picture windows or sliding glass doors in standard wall framing.
- Easy assembly: The PFS saves time for installers and increases engineers’ and specifiers’ confidence that parts will be installed properly.
- Faster approvals: The code-listed PFS provides building officials with quick assurance that portal frame systems have been built to code.
- Cost effectiveness: The PFS is a less expensive option than prefabricated shear-walls or moment frames.
- Design flexibility: The PFS helps maximize equivalent wall length, enabling engineers to design structures with wider portal openings more economically.

For more information about the Simpson Strong-Tie Strong-Wall® site-built portal frame system, visit strongtie.com/PFS.
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