

93,000 and Counting: The AISC Steel Solutions Center Celebrates 10 Years

The industry's one-stop-shop for structural steel information enters its second decade of service.

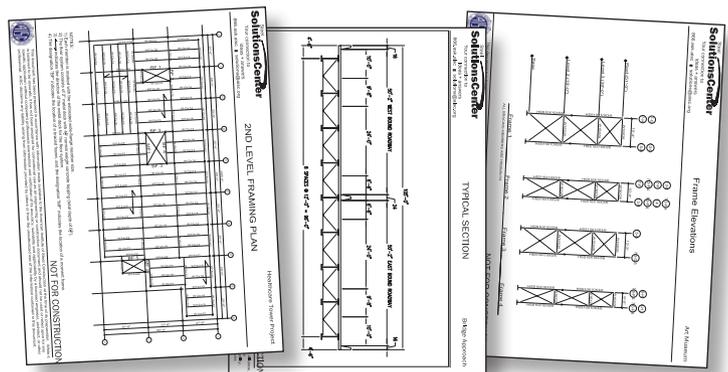
BY TABITHA STINE, S.E., P.E., LEED AP

- “No, there IS a premium to specify and order A36 these days.”
- “How soon can you send us over the drawings?”
- “Is your column layout flexible? What kind of architectural constraints do you have?”
- “The steel option for this project could shave three months off your schedule.”
- “Structural steel is readily available...let me get you in contact with a local service center in your area.”
- “No, you don't need to paint your structural steel. Let me email you one of our FAQs that address this common misconception.”

WALK THROUGH the AISC Steel Solutions Center on any given day and you're likely to hear one of our advisors providing answers just like these—answers we've provided nearly 100,000 times during the past decade. On July 2, 2001, the AISC Steel Solutions Center officially opened for business and its staff quickly grew from one to five engineers (plus part-time consultants) dedicated to creating a one-stop-shop for free technical information, marketplace support, and conceptual solutions for structural steel projects.

Conceptual Solutions

One of the challenges of designing any structure is striking the right balance between the project requirements of cost, schedule, and project-specific needs (such as column-free space or flexibility for future modifications or structural changes). The AISC advisors are experts at evaluating these needs and creating conceptual solutions for owners, architects, and other “front-end” decision makers. These conceptual solutions are tailored to meet the specific project needs and to optimize economy in material, labor, and schedule, while also finding and incorporating new and evolving innovations in structural systems.



▲ Excerpt from typical conceptual study packages submitted to clients.

The Steel Solutions Center works with the project team members to develop steel framing solutions that meet all the functional and architectural requirements. Several framing systems are often discussed, weighing the benefits and drawbacks of each system. These systems can range from standard composite beam construction to more specialized systems like staggered truss, in-wall beam, open-web joist, or Girder-Slab (visit

www.girder-slab.com to learn more about this extremely economical low floor-to-floor height system utilizing structural steel and hollow core plank). Following these discussions, a detailed study of the structure will be developed after structural analysis and modeling have taken place which locates all beams and columns, their approximate sizes, and overall weight of the structural system in tons and lb/sq. ft (psf). The study also includes various non-structural materials such as corrosion protection recommendations, fire protection requirements, and constructability/erection trends for various specialty framing applications. The typical turnaround time for a project is two to three weeks from the time the request is received by the Steel Solutions Center.

One caveat is that these are intended as conceptual solutions and do not include connection design specific structural details. In no way do they replace the work of the project's structural engineer. Instead, they are intended to demonstrate the viability of a structural steel solution with respect to cost, schedule and specific project requirements. In the 10 years since our inception, we have completed more than 775 unique conceptual studies. In addition, many times, due to urgent requests from clients, "similar studies" are passed on which represent a structure with similar structure height, footprint, location (for similar wind and seismic parameters), and structure end use. These similar studies are slightly "tweaked" to have them as similar to the new request as possible, and usually within one to two business days, a basic tonnage and psf can be shared with the client.

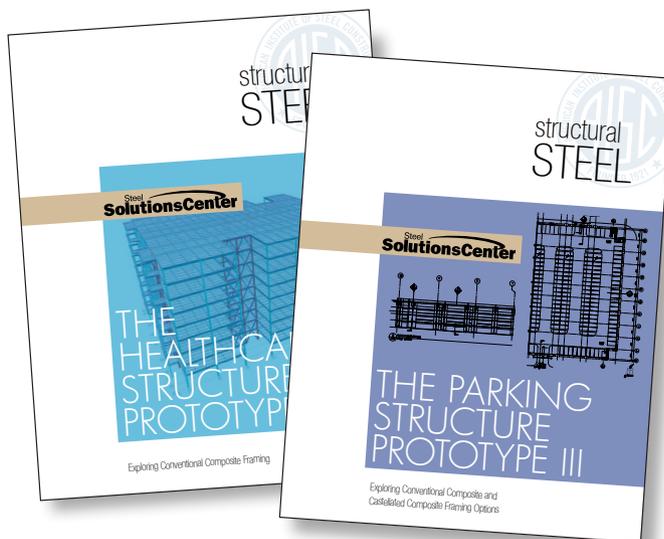
This technical information is often supplemented with both cost and schedule information, including the costs of the related non-structural items such as fire protection. The Steel Solutions Center, in conjunction with AISC regional engineers, works with both AISC member steel fabricators and general contractors to provide this necessary information. Using this, the structural frame can be integrated into the overall project plan including impact on the overall construction schedule.

An example of the conceptual solution process is The Alexan at Lenox, a now completed 300-unit residential project in Atlanta. Schedule was the critical path for this project, which almost always works to steel's advantage. However, the owner was skeptical and was leaning toward either masonry or a cold-formed metal stud system. AISC member fabricator Tom Bourne of Universal Steel, Lithonia, Ga., worked with the owner's local design team and then contacted the Steel Solutions Center. Several alternative steel systems were analyzed before an in-wall beam system was selected based on both its economy and fast erection speed. The system uses steel girders located along the demising or corridor walls with concrete plank spanning between the corridor and exterior walls. In addition to speed, the system allows for low floor-to-floor heights because the structural floor depth is only 8 in.

"The involvement of AISC and the AISC Steel Solutions Center was pivotal to the success of this steel conversion," explained Bourne. "They offered ideas and suggestions. Without them, this project would not have gone steel and the owner would not have had his building completed on time."

The Steel Solutions Center provides these free conceptual solutions to projects that are either already designed in a material other than steel or are designed in steel but in danger of being converted to another material. During the past decade, the Steel Solutions Center has completed more than 775 conceptual solutions, with around 40% resulting in a steel-framed project. And with an average of 800 tons per project, that equates to nearly 120,000 tons of structural steel.

But the reach of the Steel Solutions Center is greater than just these projects. As the database of conceptual solutions grows, the Steel Solutions Center analyzes projects for similarities and then produces "prototype" studies. The prototype dives into general benefits, basic tonnage information, and schedule constraints that may impact a project. Currently, prototype studies are available for healthcare projects, parking structures, multi-story residential buildings, and office buildings. You can download these prototypes directly from the AISC website at www.aisc.org/myproject.



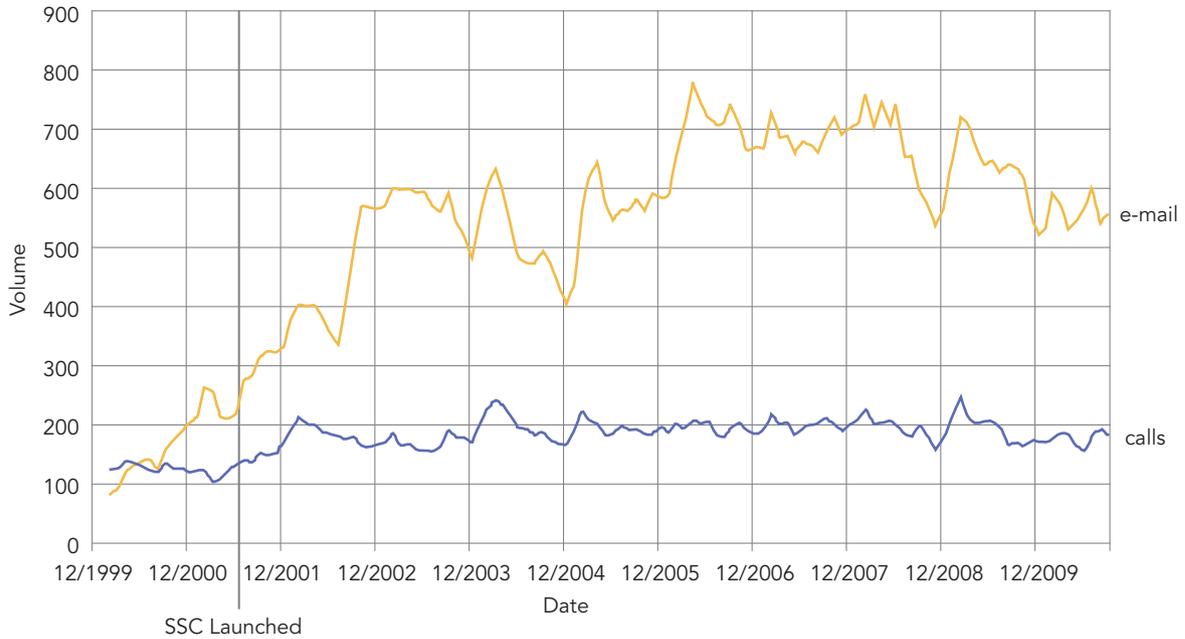
▲ Two typical prototypes available at www.aisc.org/myproject.

Of course, AISC's involvement doesn't necessarily end with a conceptual solution. The Steel Solutions Center also provides support throughout the design and construction phase through its technical assistance program. Questions are usually answered within one business day and, best of all, the service is free.

Technical Assistance

93,000. That's how many questions the AISC Steel Solutions Center has answered since its inception. Today, we average about 200 questions per week with three out of four coming from structural engineers. While many questions are unique, not surprisingly many questions get asked over and over again. Topics range from code interpretations to understanding the *Specification* to investigating various approaches to bolted connections. And while we used to receive just as many inquiries

Contact Volumes Since Inception
Illustrating a 3-Month Moving Average



Who's Who at the Steel Solutions Center

The Legacy

Since its inception in 2001, AISC's Steel Solutions Center has been staffed by a number of talented people. **Bobbi Marsteller, P.E.**, was the center's first employee. An experienced engineer from Halvorson and Partners, Chicago, she came to AISC specifically to establish a central clearinghouse to provide structural steel related information. Following its successful launch and several years of operation, Marsteller moved into the role of AISC's vice president of certification where she served for several more years.

Bert Purba was one of the original Steel Solution Center advisors, along with **Jason Erickson, S.E.**, who several years later became the center's director. While Erickson was at the Steel Solutions Center, he developed a number of electronic spreadsheets for specific utility functions that the staff shared with interested engineers. In time these became the core Steel Tools offered on the AISC website. Erickson is now with the structural engineering software company CSC.

Todd Alwood, LEED AP, who is now the manager of certification business development for AISC, first joined AISC in 2002 as an advisor with the Steel Solutions Center. He later became the regional engineer for the upper Midwest.

Bill Liddy joined AISC as a regional engineer after many years with American Bridge Company. Liddy had always loved answering questions and coming up with solutions, so when he "retired" from that position in 2002 he came to work in the Steel Solutions Center. Liddy served as an integral part of the core knowledge base until his retirement in the spring of 2007. Shortly thereafter AISC presented him with the Lifetime Achievement Award.

Kurt Gustafson, S.E., P.E., joined the Steel Solutions Center as AISC's director of technical assistance in 2004. His decades of experience included an early

stint at American Bridge, where he had worked with Liddy, and involvement with many Chicago landmarks such as the John Hancock Center, Standard Oil Building (now Aon Center) and Sears Tower (now Willis Tower). Gustafson redefined AISC's role with regard to technical assistance and immediately became a key resource to colleagues, committees and engineers in the industry. He remained a vital part of the organization until his death in June 2010.

Amanuel Gebremeskel, P.E., who came aboard after Liddy's retirement to work alongside Gustafson, has recently taken on a consultant role and continues to provide answers to the industry.

Several current AISC regional engineers have been a part of the Steel Solutions Center team as well. **Erika Winters-Downey, P.E.**, now the Great Plains regional engineer, served as a Steel Solutions Center advisor for two years before moving to Lenexa, Kan. In 2010 both **Jacinda Collins, P.E.**, and **Monica Shripka, LEED AP**, (formerly Stockman) took on the role of regional engineer after being Steel Solutions Center advisors.

Other familiar names from the team include **Kimberly Swiss**, who continues today as a consultant with AISC Certification, **Colleen Stack**, **Keith Mueller** and **Sergio Zoruba**.

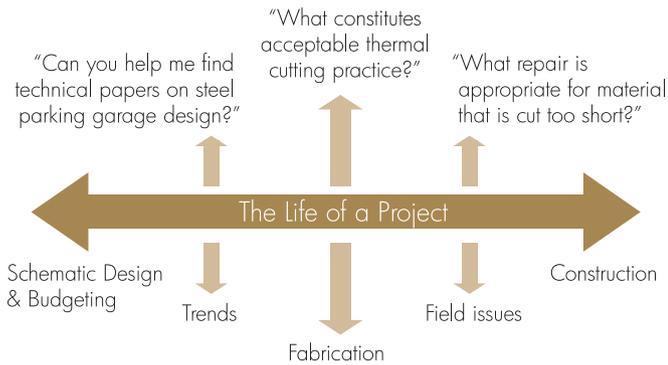


Liddy



Gustafson

on our toll-free number (866.ask.aisc), today around 80% of the inquiries come via email (solutions@aisc.org).



Because many of the questions asked are of more general interest, we take six to 10 questions each month and print them—along with answers—in the Steel Interchange section of *Modern Steel Construction* (www.modernsteel.com). And some of them also become the basis for the magazine's

monthly Steel Quiz. Finally, as we see patterns emerge, we produce longer, more detailed answers in SteelWise, a technical feature appearing in most issues of *MSC*.

steelTOOLS

A few years ago, one of AISC's staff engineers was tinkering with Excel and wrote some pretty useful utility programs for such things as aiding in torsional analysis and calculating the surface area of a wide flange section to determine the amount of paint needed. These "Steel Tools" were posted on the AISC website and quickly became popular with the design community. And it turned out that a lot of engineers were writing similar small programs, which led to the obvious question: *Why shouldn't engineers collaborate to avoid the "reinvention" of the wheel? Why not share these "Steel Tools" with their peers?*

The result was the creation of an AISC social networking website (www.steeltools.org). While the primary use of the site has been for file sharing, the site also allows visitors to post comments on existing steelTOOLS and discuss relevant topics.

The SSC Staff Today

After a year as a Steel Solutions Center advisor and nearly three years as an AISC regional engineer, **Tabitha Stine**, S.E., P.E., became AISC's director of technical marketing and head of the Steel Solutions Center in 2008. Prior to joining AISC, Stine earned a bachelor degree in civil engineering from Southern Illinois University at Carbondale and a master degree in structural engineering from the Illinois Institute of Technology in Chicago. She also worked for the Chicago engineering firm Sargent & Lundy.

Heath Mitchell, P.E., is AISC's director of technical assistance. He joined the Steel Solutions Center in November 2010 and coordinates all of the answers to technical questions submitted to AISC through the Steel Solutions Center. Mitchell previously worked for AISC from 1999 to 2001. Since then he has been employed by PCS Structural Solutions, Tacoma, Wash., while maintaining his involvement with AISC as a committee volunteer.

Matthew Brady, P.E., joined the Steel Solutions Center team in December 2010. In addition to providing conceptual studies to decision makers on a wide variety of building projects looking to utilize structural steel as their framing system, he also answers incoming technical questions. Prior to joining AISC, Brady worked in Chicago designing buildings at Holabird & Root, and bridges for Alfred Benesch, as well as working for Lockheed Martin on FAA-related projects. He also is company commander for the 631st Engineer Support Company of the Illinois Army National Guard.

Erin Criste is an AISC staff engineer providing technical assistance in the Steel Solutions Center. She attended Vanderbilt University in Nashville, Tenn., for undergraduate studies in civil engineering earned a master degree in structural engineering from Rice University in Houston in 2002. She subsequently worked for Nelson Architectural Engineers in Houston and Dallas for three years, and for LSC Design, York, Pa., also for three years, coming to AISC in 2008.

Martin Anderson, LEED AP, holds a Bachelor of Arts in literary theory from Vanderbilt University, and Master of Arts in English and American literature from Washington University in St. Louis, which led him into technical writing. Specializing in software, he worked on a number of books and proprietary manuals before embarking on an extended trip around the world. Upon his return, he entered the field of environmental and ecological design, with a particular interest in the adaptive reuse of existing structures. He joined the Steel Solutions Center team in 2006. He also recently completed the Construction Management program at the Illinois Institute of Technology, Chicago.

Carlo Lini became the newest member of the Steel Solutions Center team in February 2011. A civil engineering graduate of Michigan Technical University, Lini earned his master degree in structural engineering from Purdue University in 2004 and since then has been a staff engineer with Ruby + Associates, Farmington Hills, Mich.



Stine



Mitchell



Brady



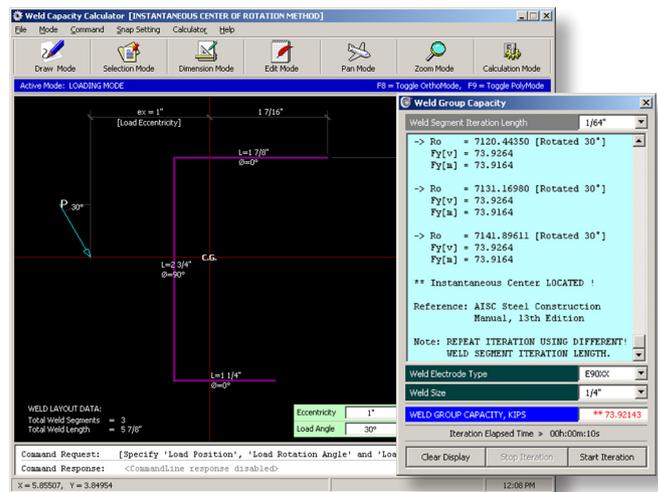
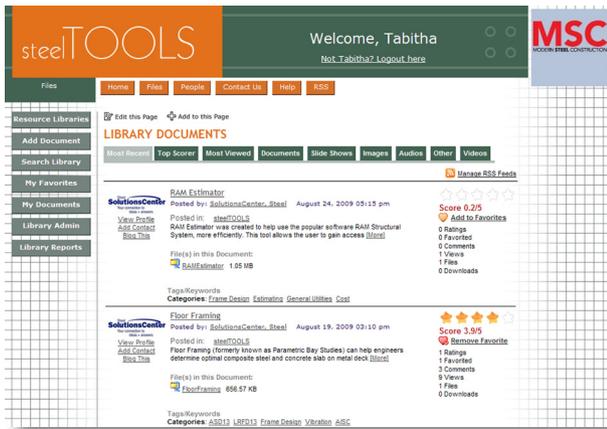
Criste



Anderson



Lini



steelTOOLS is a free online community with many useful features, including:

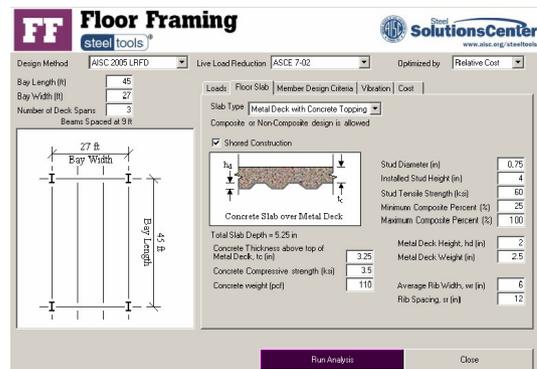
- ▶ the full set of previously released AISC Steel Tools—in an open access file format that enables users to download, update, and modify the tools as they see fit
- ▶ a file-sharing platform for all members of the design and construction industry to download or post files, vote, and comment on others' design tools and software utilities
- ▶ a full-service social networking environment that includes the ability to connect with others, read current 'hot topics', and discuss blogs about issues that interest designers and practitioners

The site is open to all members of the construction industry, and any construction-related tools and files are welcome. Since the launch of **steelTOOLS.org** on SteelDay in September 2009, more than 210 tools/files have been posted, in addition to the dozen AISC has developed and made available. The site averages nearly 200 unique visitors per day who have downloaded more than 16,500 tools to date.

Marketplace Support

The Steel Solutions Center doesn't just deal with questions that focus on the details of designing with structural steel. The Steel Solutions Center is also where fabricators, contractors, architects, engineers or project developers turn when they have questions about cost trends, availability of material, supply chain issues, new technology, innovative systems or general information regarding the use of structural steel.

- ▲ Tool posted by user Redem Legaspi – Weld Capacity Calculator.
- ▼ Tool posted by AISC Steel Solutions Center – Floor Framing.



The Future of the Steel Solutions Center

Despite the difficult economy, AISC is committed to the Steel Solutions Center and continues to fund its operation. Currently, there are six full-time staff plus several outside consultants working on both technical assistance and producing conceptual solutions.

Remember, if you have a question about steel, simply call 866.ask.aisc or email solutions@aisc.org. MSC

Resources from the AISC Steel Solutions Center

steelwise

The Steel Solutions Center contributes a monthly column in *Modern Steel Construction* magazine on various steel design and construction topics. Check out the entire suite at www.modernsteel.com/steelwise.

steel interchange

Monthly in *Modern Steel Construction*, the Steel Solutions Center answers technical questions posed by readers that address topics related to material availability, sustainability, and anchor rods... just to name a few. Read each monthly set at www.modernsteel.com/steelinterchange.

Engineering FAQs

Over time, the Steel Solutions Center has compiled frequently asked questions and answers on a wide range of topics related to structural steel. Visit www.aisc.org/faq to learn more.

ePubs & freePubs

Find almost every AISC document in electronic form, including AISC *Steel Design Guides*, *Engineering Journal* articles, and project case studies. Download your favorites at www.aisc.org/epubs.

steelTOOLS

A free file sharing site facilitated by the Steel Solutions Center. Users can post their own "steelTOOL" shortcut spreadsheets or download those posted by others to help simplify the design and construction of structural steel. Visit www.steeltools.org today.

Steel Talks

AISC engineers and staff are available to give steel-related presentations to fabricator and engineering associations. For a current list of topics and to request a Steel Talk at your next meeting, visit www.aisc.org/steeltalks.