

TOP STORIES**Ongoing Research - Update**

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SFA – Integrated Communications Efforts

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SPECIAL FEATURE: CFSEI**UPDATE: CFSEI Listed As Electronic Continuing Education Provider For SECB**

The **Cold-Formed Steel Engineers Institute** (CFSEI) is now listed by the Structural Engineering Certification Board (SECB) as an approved provider for electronic continuing education. [More](#)

We Need Your Help!

We have exciting opportunity for members of CFSEI to make a difference and help make the CFSEI a truly vibrant organization. All you have to do is join one of our active committees and task groups listed below. [More](#)

FACT SHEET: CFSEI Technology Development Committee

The CFSEI Technology Development Committee (TDC) was established in June 2005 as a combination of the former SFA Technology Team and LGSEA Research Development Committee. [More](#)

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MARKETPLACE**Pittsburgh's Piatt Place A Model In Green Evolution**

Pittsburgh—Piatt Place, a mixed-use destination with 60 upscale residential condominiums in downtown Pittsburgh, is green to the bone. [More](#)

Strength Of Steel – The Case For Cost-Efficient Sustainable Construction

The state of the global economy has changed the construction market for at least the next several years. In a down economy, developers are implementing strategies to maximize their return on investment and this has resulted in evaluating construction techniques and technologies being used. [More](#)

Which Emits The Most CO2 In Home Construction: Steel, Concrete Or Timber?

The climate-conscious home builder may ask him or herself: "What's the most CO2-friendly method of building a home?" We wanted to find that out as well, so we compared three different materials — steel, timber and concrete. [More](#)

AIA Forecasts Modest Rise in Nonresidential Construction Spending

The Washington, D.C.-based American Institute of Architects (AIA) semi-annual Consensus Construction Forecast, a survey of the nation's leading construction forecasters, projects a 6.4 percent increase in spending in 2012. [More](#)

Canadian Construction Spending To Double By 2014

Total Canadian construction spending is expected to double from 2004 levels of C\$150bn (US\$153bn) to \$300bn (US\$306bn) in 2014, according to a report by CanaData which called construction one of the leading growth industries in the country. [More](#)

Landmark US Building Codes Finalized

The International Codes Council on Friday released the final version of their landmark update for US building codes. [More](#)

Freddie To Step Up Multifamily Loans

Freddie Mac plans to accelerate its program to purchase loans backed by apartment buildings, increasing the availability of financing for landlords and helping to bolster the multifamily real-estate market. [More](#)

[TOP](#)**UPCOMING EVENTS****October 06, 2011***Webinar*

CFS Mid-Rise Construction Webinar
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October 10, 2011*Day Long Seminar*

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Ongoing Research – Update

At this time as many of you are sending children off to a new school year, SFA is also positioning our organization to conduct some education of our own based on recently completed research. Our efforts on several projects will help builders and designers to comply with newer energy codes. At the same time, we are approaching the release of a research project that will help promote the sustainability efforts of steel.

Over the past year, SFA has worked with Oak Ridge National Laboratory (ORNL) to test cold-formed steel (CFS) wall assemblies that are built to modern standards. Prior to this effort, there was little to no test data on U-Factors (which indicate the thermal conductance of a wall) except from the early 1990s.

The way walls are insulated has changed dramatically since that timeframe and the industry was faced with the situation of either using extremely conservative and non-competitive design values or not being able to gain approval for lack of test data. The recent research will solve the later problem and set the stage for introducing the results into codes, standards, and software packages in a manner more favorable to CFS.

SFA's code staff has been promoting the use of U-factors in the ASHRAE 90.1 standard that is also a compliance path under the IECC. But we have faced significant resistance without test values. The ASHRAE values are much less conservative for steel and also reflect a more level playing field with wood framing. The ORNL test results will be useful in working with the ASHRAE 90.1 committee to confirm that the calculations and assumptions in their standard are more accurate than the values used to develop the IECC and some state energy codes. Working through the ASHRAE committee process and effecting change may take a long term approach, but we are now in a position to so and hopefully impact the next addition of this important energy standard.

The SFA staff is now working with our building energy team to develop an approach for using the ORNL results in the most appropriate manner to make CFS more competitive. We will also update the SFA thermal design guide to provide compliance values based on the test results.

Look for the updated thermal design guide on our website (www.steel framing.org) and an announcement in your inbox over the next few months. The guide will include U-factors a designer can use for wall assemblies with R-13 and R-19 walls with exterior foam insulation up to several inches thick. We have also included some more unique assemblies using R-15 and R-21 cavity insulation and a series of "warm wall" assemblies.

Warm wall assemblies replace the cavity insulation with varying amounts of foam insulation on the exterior to remove the steel framing completely out of the energy equation. They work well in southern climate and for buildings with EIFS cladding in all climate zones.

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SFA is also nearing completion of a research report from HDR international that consists of a critique of the infamous CORRIM report. This report uses a set of very questionable assumptions to conclude that wood is a superior choice for construction from a sustainability perspective compared to steel and concrete. It has harmed our industry in many ways on the PR level and within the codes and standards arena, especially in the newer green codes.

SFA plans to use the HDR report to rebut the findings in the CORRIM studies. The initial findings suggest some gross errors in the assumptions that will completely turn around the conclusions in the report. One finding that alone will be significant is the overstating of the tons of steel used in the buildings studied. Other "oversights" include the use of data that is nearly a quarter century old to reflect the energy use and emissions from steel making. This is despite the highly publicized release of data from AISI showing over 30% reductions in energy use for steel making since the early 1990s.

A summary of the HDR report is now being developed and will be released in a coordinated fashion to the media. We will then make it available on the SFA website for more general distribution. We look for this to start turning the debate on steel as the truly sustainable material.

Look for continued updates on these and other SFA sponsored efforts in future editions of Framework Online.

- Editor, Framework Online

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The Steel Framing Alliance has launched a new [Facebook](#) page to provide news and information on new developments and updates pertinent to the cold-formed steel industry.

“The goal of the new [Facebook](#) page is to provide yet another forum for our members and audiences in the construction industry to interact on topics of mutual interest. Through regular updates and engaging content, we’re opening up yet another communications channel to connect with our audiences,” said **Mark Nowak**, **president, Steel Framing Alliance**.

Along with SFA, CFSEI is also addressing its growing social media base via a LinkedIn page.

Like us today on [Facebook](#).

Join us on [LinkedIn](#).

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In early 2011, the Steel Framing Alliance launched a strategic communications campaign to promote the use of cold-formed steel in the mid-rise market – hotels, condos, apartments and similar occupancies. The communications efforts have focused on targeted media relations and advertising. Our efforts also included promoting CFS success stories/case studies and various issues pertinent to the CFS industry.

Advertising: SFA launched a targeted print media ad campaign focused on key markets such as hotels, multi-housing and college/universities. The ad campaign runs through October 2011. Three key publications have run SFA ads – Hotels magazine, Multi-Housing News, American Schools and Universities. SFA developed three different ads with the first two ads focused on creating a general awareness of the many benefits of CFS for structural needs and the third ad focuses on insurance benefits of CFS. Visit the [Media Room](#) at www.steelframing.org to see the ads.

Public Relations: SFA's public relations efforts have focused on media outlets catering to multi-housing, hotels, colleges/universities and commercial construction. Media Relations efforts have focused on two key areas – promote CFS success stories i.e. case studies and engage our audience on key topics such as energy codes, green building and opinion pieces to make the case for CFS.

Our outreach efforts have resulted in news stories and bylined articles in various industry publications including *Buildings* magazine, *Multi-Housing News*, *Commercial Property Executive*, *@The Moment* Newsletter, *Commercial Construction* magazine, *American Schools & Universities* magazine.

Social Media: To increase SFA's online presence, SFA has now created a [Facebook](#) page for SFA. The page is designed with content that is engaging and will provide news and updates to SFA audience. Like us on [Facebook](#) today

Look out for additional updates in the next issue of Framework Online!

- SFA PR Team

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Steel At Work – An Opportunity to Promote Your CFS Construction Project

Do you have an example of a successful construction project that highlights the many benefits of CFS as a structural material in a mid-rise building or in a health care or assisted living facility that requires non-combustible construction? Or one in the works? Have you been part of a construction project that has used steel framing and which resulted in lower costs or insurance savings? Were you able to finish your construction project in record time due to the use of CFS?

We would love to hear from you.

Please contact us with a brief description of your project, how CFS benefited you, the owner, or builder and any insights on the project. We will work with you on successful projects to develop a case study that will be used to promote the many advantages of CFS in various industry publications. We will also promote it on the SFA web site (www.steelframing.org). This issue of Framework includes a news clip from Multi-housing News which features one such success story – [Piatt Place in Pittsburgh](#).

For questions or information on your success story, please email us at publicrelations@steelframing.org

- Editor, Framework Online

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CFSEI
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ENGINEERS INSTITUTE

SPECIAL FEATURE: CFSEI

This issue of Framework Online highlights ongoing efforts by the Cold-Formed Steel Engineers Institute (CFSEI) as well pertinent background information about the many endeavors taken on by CFSEI. CFSEI will be featured on a regular basis in future editions of Framework Online.

SPECIAL FEATURE: CFSEI

UPDATE: CFSEI Listed As Electronic Continuing Education Provider For SECB

The **Cold-Formed Steel Engineers Institute** (CFSEI) is now listed by the Structural Engineering Certification Board (SECB) as an approved provider for electronic continuing education.

The SECB provides a common national process for structural engineers to become board certified. Once certified, engineers must maintain their certification by completing a minimum of 15 Professional Development Hours (PDH's) of continuing education and/or professional development *specific to structural engineering* each year. With both live and web-based American Institute of Architects (AIA) registered continuing education programs, CFSEI provides exactly the type of educational courses structural engineers need to not only maintain their certification but to stay on the cutting edge of cold-formed steel (CFS) structural design.

"With my busy schedule and the cost of travel, the web-based presentations offer real value," said Linda McNair-Perry, P.E., SECB Certified in the Practice of Structural Engineering, and CFSEI member. "Since one of our firm's specialties is cold-formed steel design, attending the web-based presentations allows the engineers at SFC Engineering Partnership, Inc., to stay up-to-date with the latest design methods and information. The inclusion of CFSEI to the SECB list of approved electronic continuing education providers further enhances the value of this resource."

To become certified in the practice of structural engineering, potential SECB members must agree to a 10-point code of conduct, which includes a requirement for practice only in areas of their competence.

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They must also submit evidence of their qualifications through a combination of education, experience, and passing engineering examinations. Once certified, annual recertification is required. It is through this recertification process that the 15 PDHs of continuing education must be submitted, along with an application fee.

CFSEI is now one of 13 providers listed on the [SECB Recertification web page](#) under "Electronic Continuing Education." Since 2009, CFSEI has provided one-hour online live interactive presentations, on topics associated with the structural design and installation of cold-formed steel framing. Starting in 2011, the frequency of these seminars has increased to one every two months. The most recently scheduled "webinar" from CFSEI was the August 25 presentation on "CFS Submittals." Future webinar topics for 2011 include presentations on Mid-Rise CFS Construction, and CFS with building information modeling (BIM). All CFSEI live webinars will eventually be posted online for fee-based remote viewing. For a schedule of CFSEI webinars or to sign up, visit the CFSEI website at <http://www.cfsei.org>.

The Structural Engineering Certification Board was formed in 2003 by the National Council of Structural Engineers Associations (NCSEA), as an independent, national autonomous organization to develop a certification program for structural engineering. The SECB's mission is to determine the level of unique and additional education, examination, and experience necessary to perform the science and art of Structural Engineering; to provide a common national process for structural engineers to become certified; and to provide the public and stakeholders with an identification instrument that distinguishes an engineer with those unique and additional qualities necessary to perform structural engineering. Information about their certification process and application materials are online at www.secboard.org.

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Technology Development Committee – Help us accomplish our goal of upgrading all of the remaining LGSEA Tech Notes to CFSEI status. As Bill Babich, our former Executive Committee Chairman, says: “Adopt a Tech Note!” If you want to adopt a tech note, contact Jay Larson at JLarson@steel.org.

Education Committee – CFSEI has implemented a very active Webinar Program Series. There have been eight webinars to date. Go behind the scenes to help select and produce one of our webinars by contacting Sutton Stephens at sstephen@k-state.edu.

Membership and Outreach Committee – Help our organization reach out to the worldwide structural engineering community by contacting Nabil Rahman at nabil@steelnetwork.com.

2012 Awards Program – CFSEI will be conducting another awards program to select the most innovative CFS projects. The winners will be announced at the 2012 Annual Meeting. Help Steve Tipping steve.tipping@tippingmar.com organize and promote this program.

Certified CFS Engineer Program – CFSEI is exploring the idea of a certification program for CFS engineers. This program could help distinguish you from all of the other engineers. Assist John Lyons JLyons@structural-evolution.com in making this idea become a reality.

- Ed Kile, Chairman, CFSEI Executive Committee

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FACT SHEET: CFSEI Technology Development Committee

The CFSEI Technology Development Committee (TDC) was established in June 2005 as a combination of the former SFA Technology Team and LGSEA Research Development Committee. It reports to the CFSEI Executive Committee and is charged with providing a forum for facilitating the identification and prioritization of needs, opportunities and projects. Membership in the TDC is open to all CFSEI members.

To accomplish its mission, the TDC actively solicits input on needs, opportunities and projects through leadership and active participation in CFSEI Annual and regional Chapter meetings, AISI Committee on Framing Standards, SFA regional Alliances, and other organizations such as the ASCE-SEI Committee on Cold-Formed Members and Structural Stability Research Council (SSRC) Thin-Walled Task Group.

The TDC reaches out through the CFSEI website. To help identify barriers to the use of cold-formed steel framing, the TDC Barrier Survey Form is available 24-7 to allow users to identify the barriers that they perceive or encounter to using cold-formed steel framing more effectively in building construction. Once completed and returned, this form helps determine the market impact and relevance to goals for potential projects. The TDC also develops and conducts a bi-annual priority survey of all CFSEI and SFA members, compiles the survey results and prioritizes potential projects for consideration by the CFSEI Executive Committee. The results of the survey also play an important role in establishing research priorities for the SFA. Look for the survey this fall and be sure to participate so that your voice is heard.

CFSEI takes the input of the TDC and develops Technical Notes and other technical publications and tools for CFS design engineers. CFSEI also reviews and updates Technical Notes previously published by the former Light-Gauge Steel Engineers Association (LGSEA). Added together, the library exceeds 40 Technical Notes on a variety of significant topics, and is growing.

In 2011, the following Technical Notes have been issued:

- G103-11a Tabulated Local and Distortional Buckling Solutions for Standard Shapes (new)
- J100-11 Floor Joist Design (revised and re-branded from LGSEA)
- W103-11 By-Pass Slip Connectors (revised and re-branded from LGSEA)

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The TDC is always receptive to new suggestions for projects and welcomes those who want to roll-up-their-sleeves and actively work on the development of Technical Notes and other technical publications and tools for CFS design engineers.

The strength of CFSEI is its network of professional engineers who are skilled in CFS design and construction and are interested in helping others in their profession. This is how CFSEI enables and aids engineers in the efficient structural design of safe and cost effective CFS structures and is becoming recognized as the preeminent worldwide technical resource for CFS design.

For more information on the TDC, check out its page on the CFSEI website or contact the Chairman, Jay Larson (jl Larson@steel.org) or Secretary, Don Allen (dallen@cfsei.org).

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MARKETPLACE**Pittsburgh's Piatt Place A Model In Green Evolution**

Pittsburgh—Piatt Place, a mixed-use destination with 60 upscale residential condominiums in downtown Pittsburgh, is green to the bone. Completed by Millcraft Industries in 2009, the property is a shining example of how a non-green building can be reincarnated with a sustainable structural material—cold-formed steel—to become a model of green development, and how it can help revitalize a city.

Located at 301 Fifth Ave. in downtown Pittsburgh's Golden Triangle, the building that is now home to Piatt Place originally opened its doors as a four-story structure that served as the home of the Lazarus department store until 2004. In order for Millcraft to reinvent the site as Piatt Place, an endeavor designed by the architectural firm Strada, the developer needed to add three floors to the building to accommodate the condominiums, 180,000 square feet of Class A office space and 50,000 square feet of restaurant and retail offerings. Making the new incarnation of the former Lazarus building sustainable was a high priority; cold-formed steel played a large role in that process.

"Because the steel is so light, they were able to install those three stories on top," Mark Nowak, president of the Steel Framing Alliance, tells *MHN*. "And they had to use noncombustible materials so it's really the lightest non-combustible material you can find out there for structural purposes. They even put those three stories on top and did not have to make significant changes as far as beefing up columns. From the engineers' discussions with us, they really had to do minimal changes even to the foundations to carry the loads. So, from a sustainability standpoint, it allowed them to use the existing building in a very cost-effective manner."

CFS has become a popular alternative to heavier, traditional construction materials for erecting structures between four and nine stories in height. It's lightweight, but strong. Its cost is generally lower than comparable materials and it also allows for a reduction in the construction timeline, given that the CFS product is pre-panelized off site. The material was the perfect choice for the greening of the building that would become Piatt Place.

"I would call cold-formed steel one of the most sustainable materials you could select for this type of application where you're looking at reusing an existing building and expanding it," Nowak says. "It still has a lot of other sustainable attributes. It's the only material that you can reuse over and over and over again, and it doesn't lose its ability to be turned into a product that's every bit as good as the new products available. It's infinitely recyclable."

Since it made its debut, Piatt Place has served as a catalyst for downtown Pittsburgh's renaissance as a lively live-work-play destination—with a flair for environmental friendliness.

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- Yared Bayleyegn

“By itself it’s an example of how to effectively reuse an older building, how to update it and use it in a productive manner, but it also fits in really well with the city’s whole approach to trying to be on the leading edge,” Nowak notes. “Pittsburgh was one of the first cities that first gravitated toward using [the U.S. Green Building Council’s] LEED requirements.

They seem to be focused on some of the green technologies. I just think Piatt Place fits in well with their emphasis on looking green jobs and green construction as they move forward.”

Source: *Multi-housing News*, August 23, 2011

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MARKETPLACE**Strength Of Steel – The Case For Cost-Efficient Sustainable Construction**

The state of the global economy has changed the construction market for at least the next several years. In a down economy, developers are implementing strategies to maximize their return on investment and this has resulted in evaluating construction techniques and technologies being used. Never before has the awareness and interest in environmental conservation been as high as they are today. And nowhere is this more evident than in the construction industry, where sustainable building practices have become as important to the success of a project as quality construction and good design. There is an increased interest in using materials that are cost effective, green/recyclable and last one-third as long as masonry, and provide a shorter construction cycle time. Given the market demands, an immense interest in the use of cold-formed steel (CFS) in primary load-bearing applications exists. Today, load-bearing applications for CFS are being used across the country for new projects in the hospitality, retail, assisted living, multifamily and other mid-rise markets.

A Misconception That CFS Framing Is 'New'

While many still consider load-bearing, cold-formed steel framing to be a "new" building product, it has been used in construction projects throughout North America for more than a century. The use of cold-formed steel as a construction material for buildings got its start in both the United States and England during the 1850s, although it was largely experimental and limited to a few basic structures. Steel framing gained momentum again in 1945 when the U.S. government sought to provide attractive, permanent, affordable housing for the soldiers returning from World War II.

In the past, CFS has dominated the market for curtain walls and partitions in commercial construction, due to its light weight, high strength, non-combustible nature and ease of installation. But with advanced technological developments like panelized systems, the building community has started using CFS for structural applications on mid-rise buildings as high as nine stories.

Mid-rise structures, which are typically four to nine stories in height, frequently are used for hotels, motels and other short-term lodging. Other residential structures also are being built in the mid-rise category, including apartments, dormitories, extended-stay lodging, and multi-family housing projects.

Varied Applications of CFS

CFS has gained market share in recent years for several reasons. CFS provides builder and consumers flexibility in design option that cannot be economically accommodated using concrete and other traditional framing materials (i.e., larger open space, longer spans, higher ceilings, arched ceilings and doorways).

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Additionally with CFS, builders can build faster than other heavy construction materials.

Because steel is non-combustible, the building codes allow steel framing to be used in structures taller than the four-story height limit imposed on wood-framed buildings.

Lower Construction Costs: The use of structural CFS framing in typical mid-rise construction projects can mean lower construction costs. Today, CFS is an excellent and cost competitive choice for structural applications on buildings and in the past few years, several builders have used steel framing for structural applications on multi-story buildings as high as nine stories. Built by Galaxy Builders, Ltd. of San Antonio, Park 4200, a six-story apartment project built over a three-story parking garage in Dallas, found CFS to be a cost-effective solution.

Compared to the cost of an all concrete structure, Park 4200 was able to save \$4.20 per square foot. This amounts to more than \$400,000 for the 99,000 square foot of interior space.

“By reducing the time for construction of the project, the owner can reduce the interest carry on their loan and they can begin to realize the revenue from the operations of the project. Additionally, a shorter construction time will reduce the hard costs of the project by reducing the general contractor’s project overhead or general conditions.” says Ryan Penlerick, VP of commercial operations, Galaxy Builders. Penlerick estimated the general conditions for a project of this size typically will be in the range of 8 percent to 12 percent of the total project costs. The time savings Galaxy realized in a project of this size will result in savings in the “hundreds of thousands.”

Faster Construction Schedule: For commercial construction projects especially hotels, timing is extremely important. Once a commitment is made to construct a hotel, the owner must hire and train staff within a two to three-week window. An opening date that is firm is critical to start generating cash flow. One such example out of many is the Embassy Suites, a seven-story hotel built by Brackett Builders of Troy, Ohio. The time from groundbreaking to finish was 13 months. The CFS framing was complete in 96 days. According to Vern Hoying, president, Brackett Builders, “There are many other savings beyond the material such as the added time to construct the concrete building that made it worthwhile to use steel framing for Embassy Suites Hotel. The panelized steel system schedule is very dependable and predictable.

Panelized steel systems obviously do not experience weather delays during cold weather as you would see with concrete, block, and precast planks. As there is no concrete shoring to get in the way, mechanical and electrical trades can get started quicker with their rough-in work.”

Yet another impressive example of shorter construction cycle time is Poly Canyon Village. A model for sustainable design using CFS load-bearing members, Poly Canyon Village is the largest CFS load-bearing project in California and the most sizable student housing complex ever undertaken by an American university in a single construction project.

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Spanning 30 acres at the base of the picturesque Poly Canyon, the Poly Canyon project is comprised of nine buildings, four and five stories over slabs or podiums, and adds nearly time, which significantly cut down on any potential downtime for workers and subcontractors. A properly planned steel framing project can be easier to coordinate and require less area for storage and staging (especially important on urban in-fill projects), as well as infrastructure and equipment for handling and installing other systems.

Most construction projects are panelized, meaning the components of the structure (walls, floors, roofs) are assembled in a controlled manufacturing environment.

Lower Insurance Premiums: In addition to builders' risk, significant savings on both construction and ownership insurance costs can occur, including general liability, worker's compensation, and commercial property. Cold-formed steel's unique material characteristics such as non-combustibility played an important role in the development of the builders risk discount program made available in 2005 through Zurich Insurance Services. For more information, visit

www.steelframing.org/insurance.html

Why Consider CFS?

If you are a builder, developer or commercial real estate investor, here's why you should look at CFS very closely. Steel has many advantages with regard to the demands of sustainable development. Today, the market demands an increased need to look at environmentally responsible materials like steel for construction. More steel is recycled each year than all other construction materials combined. But that's just the beginning of steel's environmental story. As a recognized green building material, steel framing projects also can earn credits or points for green building rating programs as well as other government incentives. Steel is the only building material that is infinitely recyclable. While many people agree that steel's recycled content is its hallmark environmental attribute, steel has several other benefits.

Consistent Quality - Steel does not contain knots, twists or warps, commonly found in lumber. It is always dimensionally correct and manufactured to strict tolerances. Steel is protected from corrosion by a galvanized zinc coating.

Resistance to Termites and Pests - Cold-formed steel members are impervious to termites and other wood-destroying insects. Cold-formed steel is resistant to mold and mildew – Steel does not provide a breeding ground for mold as does organic materials.

High-performance material - Steel has the highest strength-to-weight ratio of any building material and behaves in a highly predictable manner when subjected to the structural loads and stresses imposed by high wind or seismic forces. Steel studs cannot absorb moisture.

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This substantially eliminates the expansion and contraction of construction materials and the related cracks, pops, and other deformities in finishes.

Non-combustible - Steel does not burn and will not contribute to the spread or intensity of a fire. Cold-formed steel projects can easily be designed to meet code fire rating requirements. Visit the home page of the Steel Framing Alliance's at www.steelframing.org for more information.

Sustainable building material - As a highly durable, non-combustible, galvanized zinc-coated material (a natural element), steel-framed structures can last hundreds of years, which also reduces the need for future building resources. With the highest strength-to-weight ratio, steel framed projects require less material.

Future of CFS

The steel industry is continuing to pursue an even more sustainable product, building on more than 30 percent reduction in energy used to produce a ton of steel since the early-1990s. Today, high strength steels have been used successfully in the auto industry to improve safety, while lowering vehicle weight is being investigated for use in buildings.

At the same time, coatings that now last 500 years or more will be even better in the future. In the near term, we already see many proprietary products being developed and released to the market.

Wall panel systems with built in thermal breaks are creating high-performing, energy-efficient buildings. Unique designs to studs that lower the amount of steel are delivering lighter products that maintain the same strength as traditional shapes. For floor and ceiling joists, the steel industry has taken on the challenge of making buildings more energy efficient by moving heating and cooling ducts into the conditioned space. Multiple products now are on the market or entering it with large openings to allow ductwork to be run in the joists, rather than through bulkheads or other architecturally distracting features inside the building.

Finally, a building can't be designed in a vacuum. The integration of design software with manufacturing capability already is having an impact on the future of steel framing. Plants will produce and install products with virtually zero waste as more of these technology improvements enter the market.

"As steel framing continues to grow, so do its opportunities. Innovative assemblies are on the horizon to continually improve the performance of steel buildings and make them compatible with newly evolving insulation and finishing products. Further, integrated panelization and design software and roll-forming equipment is making it easier for a builder to work with steel.

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Design efficiencies continue to improve as well. CFSEI is a group of engineers dedicated to developing and disseminating information to others in the field to enable cost effective use of CFS," says Mark Nowak, president, Steel Framing Alliance.

- Mark Nowak is the president of the Steel Framing Alliance (SFA), a market development group charged with making cold-formed steel framing the building material of preference in both the residential and commercial construction markets.

Source: Commercial Construction magazine, July/August, 2011 issue

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MARKETPLACE

Which Emits The Most CO2 In Home Construction: Steel, Concrete Or Timber?

The climate-conscious home builder may ask him or herself: "What's the most CO2-friendly method of building a home?" We wanted to find that out as well, so we compared three different materials — steel, timber and concrete.

Surprisingly, it's not timber. The answer is steel, which has a CO2 Index of 1 compared to 1.52 for concrete and a 4.44 for a timber-framed home.

Here's how we found the answer by using a single-story, ranch-style house in Texas with three bedrooms, two baths and a garage for a model. The living space was approximately 116 square meters, plus an attached 47 square meter garage and storage area.

The structural systems for all three construction materials were designed by professional engineers. Contractors then developed cut lists and block totals from engineered drawings.

For the steel version of the house, two different approaches were taken: standard profiles, using mostly 0.84 mm material for field framing and high tensile strength (60 ksi) steel combined with more advanced geometries. We then obtained an average total steel weight figure from the two designs. Wood sheathing for the roof was not included, since these elements would be identical for all three houses.

For the wood house, two general contractors (unknown to each other) were asked to develop lumber takeoffs based on the US prescriptive code, and the totals were averaged. We added a standard 15% for lumber yard and site cull. By using a 25% figure for mill waste, in addition to cull, we arrived at a CO2 emissions estimate with a standard deviation of 2.5 tons of CO2 emissions for the sample house.

The block house was engineered using empirical codes for the same location. We then submitted the drawings to a masonry contractor, who developed a block materials list, plus a wastage allowance. Only one block takeoff was collected, assuming minimal variance in builders' block totals. A 5% breakage figure was added. The roof was framed in steel, so that total structural emissions could be calculated.

Units of measurement were kilograms of steel, cubic meters for wood, and kilograms for CMU blocks plus steel trusses.

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CO2 emissions analysis methodology

In the US, industry CO2 emissions are calculated by the respective trade associations, in compliance with EPA reporting requirements. The American steel industry submits emissions reports that are non-controversial. Concrete block manufacturing is more variable, but rough industry emissions averages were obtained from the trade associations. Timber emissions resulting from logging operations are more difficult to calculate. Unlike other countries, the US timber industry reports only net sequestration, so there is no easily obtainable separate category for logging produced emissions. Our approaches for the different material industries follow.

Cold-formed steel emissions estimates

Data from the three most recent available years was collected: 2006, 2007, and 2008. Tonnage was averaged for these years, yielding a figure of 93.8 million metric tons (Mmt).

Average annual CO2 emissions for the US steel industry for 2006-2008 were 111.7 Mmt per year¹. This overall industry figure, with a CO2 emissions intensity of 1.19, was used to calculate emissions for the steel elements in the Texas house. While emissions vary among different mills, we used the average US industry figure.

CMU industry emissions estimates

2006 concrete emissions, for both process and energy use, were reported at 70.21 Mmt CO2 in EPA reports to the Energy Information Agency². The market share of CMU is not available, so we relied on recommended weight formulas in order to estimate annual emissions. The weight of CMU block for the sample house was estimated at 76 metric tons of concrete and mortar. We derived an emissions estimate by calculating 8% emissions by weight of CMU. Steel trusses for the CMU house were added to the total emissions burden of the CMU house.

Timber industry emissions estimates

The US timber industry does not directly report logging emissions to the Intergovernmental Panel on Climate Change. Values were arrived at through several methods: assessing comparable softwood timber producers' reported emissions, in this case Canada and Sweden³, evaluating rough submittals in EPA annexes⁴ and relying on the professional literature. One such study by Heath and Birdsey, US Forest Service carbon scientists, estimated the long term sequestration value of a no logging scenario in the US would save 1.203 billion tons of CO2 emissions annually⁵.

The below illustrates forest carbon flux after a clear-cut harvest. Note that the site vegetation does not begin to achieve net sequestration for many years, since wood products, slash, and litter are decaying faster than growth. It takes 200 years or more before the site sequesters the amount of carbon held previously.

CO2 intensity for logging is roughly estimated at 0.96 Mmt of CO2 per cubic meter of industrial roundwood production, based on typical country forestry emissions reports.

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The US Department of Agriculture⁶ reported 2005 US wood products consumption at 599,523 cubic meters, a figure which includes consumption of imported wood products. US CO₂ emissions from consuming wood products are estimated at 575.5 Mmt annually. This figure does not include site emissions from soil, and follows Kyoto protocols in not allowing for harvested wood products (HWP) sequestration. The reason for not allowing HWP sequestration is that the wood is replacing wood products that have decayed. HWP carbon sequestration is only 15% of site emissions according to accepted forest carbon science calculations.

Emissions estimate for sample house

Slightly different methods were used to arrive at each structural material's CO₂ emissions score reported in Table 1. Since plywood roof sheathing is assumed to be identical for each house, this material was not included in the emissions calculations. Steel and masonry calculations are roughly accurate, but there are minor uncertainties in the timber calculation, which are reflected in the standard deviation.

Long term trends will favor steel, as energy intensity is declining, and less so timber, since climate disruption is increasing tree mortality worldwide. Degraded forest habitat from industrial logging is a significant factor in this mortality, which has doubled in the US since 1970, but this is not factored into the above emissions calculations.

The American housing industry has an historic opportunity to make substantial contributions toward reducing CO₂ emissions into the atmosphere. In a rational world, the outcome would be to switch to inert materials for structural components. Homes would last longer, resist wind, fire, and earthquakes better, and enable the return of robust American forests.

– *Mike Roddy and Dr. Reynaud Serrette. Roddy has developed environmental impact analyses for Nucor Steel and the American Iron and Steel Institute. Prof. Serrette has been involved in light frame construction in North America for the past 23 years and he is currently involved in the development of sustainable (materially and economically) light building systems for the Caribbean basin.*

Roddy is a former builder/developer who works for a commercial solar business. Serrette is an Associate Professor of Civil Engineering at Santa Clara University.

Source: *Thingprogress.org (Blog), July 26, 2011*

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MARKETPLACE**AIA Forecasts Modest Rise in Nonresidential Construction Spending**

The Washington, D.C.-based American Institute of Architects (AIA) semi-annual Consensus Construction Forecast, a survey of the nation's leading construction forecasters, projects a 6.4 percent increase in spending in 2012.

“Consumer and business confidence is poor and the overall economy has yet to pull out of the downturn that began in 2008, which both add to the general sense of anxiety and uncertainty in the real estate market” said AIA chief economist, Kermit Baker. “Spending on renovations of existing buildings has remained strong, but the depressed demand for new construction isn’t likely to improve until next year, led by the commercial sector: offices, retail, and hotels.” Baker notes increased demand for metal, adding: “Steel, copper, and aluminum have all increased ten percent or more in the past year, offsetting declines for lumber and concrete products. Rising energy costs also have been central to the unusual volatility in building material prices” To learn more, visit www.aia.org.

Source: *Metalmag*, September 1, 2011

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MARKETPLACE**Canadian Construction Spending To Double By 2014**

Total Canadian construction spending is expected to double from 2004 levels of C\$150bn (US\$153bn) to \$300bn (US\$306bn) in 2014, according to a report by CanaData which called construction one of the leading growth industries in the country.

“It will continue to be a trendsetter for years to come,” CanaData chief economist Alex Carrick said of the industry. “Emerging nation demand will spur on expansion plans by owners in the resource sector, helping with overall construction activity levels.”

Sector-by-sector CanaData expects the currently strong residential housing market to tail off in 2013 before rising again in 2014, Steel Business Briefing notes.

Nonresidential construction will slow in 2012 and 2013 as government stimulus efforts taper off before improving in 2014 as demographics create further demand for health care and education projects.

Depressed commercial and industrial construction are only in the early stages of recovery, the report notes, and because of a slow world economy the sector will not see substantial improvement until 2012.

“A particular problem has been weak trade with a US economy that remains sluggish, to say the least,” the report notes.

There are currently 35,000 more construction jobs in the country than there were prior to the recession in the fall of 2008.

Residential and engineering projects account for about 40% of total Canadian construction spending. The remaining 20% is spent on nonresidential construction which breaks down to commercial work (55%), institutional (34%) and industrial (12%).

Source: *Steel Business Briefing, September 1, 2011*

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MARKETPLACE**Landmark US Building Codes Finalized**

The International Codes Council on Friday released the final version of their landmark update for US building codes.

The changes represent the largest single-step efficiency increase in the history of the national energy code. It requires homes and buildings to achieve energy savings 30% higher than the 2006 code.

Since homes and buildings produce fully half of US greenhouse gases and use over 75% of the electricity generated from power plants, the new code is a very significant energy policy decision.

The upgraded International Energy Conservation Code is expected to save American homes and businesses \$40 billion annually in energy costs by 2030, says the Alliance to Save Energy. The code will also eliminate the need for about 47 coal plants.

The International Codes Council is comprised of about 500 state and local building code officials from around the country, who meet every three years to consider updates to the International Energy Conservation Code. Last October, they voted overwhelmingly to approve the stronger codes, which were finalized by the IECC last week.

"It's notable that the votes that will have the most profound impact on national energy and environmental policy this year weren't held in Washington or a state capital, but by governmental officials assembled by the International Code Council in Charlotte, North Carolina," says EECC Executive Director William Fay.

"If your roof was leaking water, you'd fix it," says Emily Fischer, Clean Energy Associate at Environment America. "Similarly, it doesn't make sense to construct new buildings that leak energy, particularly when many builders across the country are already constructing homes that meet and even exceed the new codes approved today. The newly approved codes seal up those energy leaks, put cash back in people's pockets, and could prevent millions of tons of pollution."

The Energy Efficient Codes Coalition - an alliance of government, business, manufacturing, low-income housing, and environmental groups - developed and advocated for the new package of code updates.

Local building codes across the country are based on these national model standards. The new codes address all aspects of residential and commercial building construction, laying a strong foundation for efficiency gains.

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In the residential sector, improvements will:

- Better seal new homes to reduce heating and cooling loss
- Improve the efficiency of windows and skylights
- Increase insulation in ceilings, walls, and foundations
- Reduce wasted energy from leaky heating and cooling ducts
- Improve hot-water distribution systems to reduce wasted energy and water in piping
- Boost lighting efficiency

In addition to those features, commercial building codes include continuous air barriers, daylighting controls, use of economizers in additional climates, and a choice of three paths for designers and developers to increase efficiency: renewable energy systems, more efficient HVAC equipment, or improved lighting systems.

It also requires commissioning of new buildings to ensure that actual building energy performance meets the design intent.

Attempts by the homebuilders' lobby to roll back efficiency provisions from the 2009 code were defeated.

Even considering the marginal increase in construction costs for more efficient buildings, these measures will save homeowners money by reducing monthly utility bills. The net savings translate into an extra \$500 for the average homeowner each year.

However, while the national model energy codes are now 30% stronger, those energy savings are not yet guaranteed for homeowners. States, counties, and cities will now consider adoption of the new codes.

Source: *Sustainablebusiness.com*, August 1, 2011

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MARKETPLACE**Freddie To Step Up Multifamily Loans**

Freddie Mac plans to accelerate its program to purchase loans backed by apartment buildings, increasing the availability of financing for landlords and helping to bolster the multifamily real-estate market.

Freddie Mac, the government-backed mortgage-finance giant, will likely fund more than \$16 billion in apartment-building loans this year, up from \$14.8 billion in 2010, said David Brickman, head of multifamily funding for the McLean, Va., company.

More than half of this year's total will come in the second half, including a just-closed \$73.5 million loan on Rosslyn Heights apartments, a 366-unit complex in Arlington, Va., he said.

The bulk of the loans will be packaged into commercial mortgage-backed securities and sold to investors, which have shown strong demand for CMBS that are issued by government-backed entities such as Freddie Mac and Fannie Mae.

Fannie Mae invested \$10.5 billion in the multifamily market for the first half of this year, putting it on track to exceed the \$16.9 billion in purchases for last year.

At the same time, investors have been stepping away from CMBS packaged and sold by private investment banks.

"It's been steady growth, and that's a very stark contrast to what's been going on in the [private] market," said Freddie Mac's Mr. Brickman. "We are getting very strong support from the market."

The demand for Freddie Mac's commercial mortgage bonds was apparent last month, when its eighth deal of the year was caught in the middle of a ratings drama. An 11th-hour internal review at Standard & Poor's had prevented the firm from delivering final ratings on a \$1.5 billion CMBS offering from Goldman Sachs Group Inc. and Citigroup Inc. and on a \$1.04 billion offering from Freddie Mac. The Goldman-Citigroup issue still had a rating from Morningstar, while the Freddie Mac deal still had a rating from Fitch Ratings.

Freddie Mac bought a \$73.5 million loan on the Rosslyn Heights apartments in Virginia as part of its expansion in commercial real-estate financing.

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With only one rating, Goldman Sachs and Citigroup yanked their CMBS from the market, hired Moody's Investors Service to provide a second rating and pushed the deal into the autumn months.

But Freddie Mac's deal went off anyway, as investors told dealers they were comfortable with the Freddie Mac CMBS, even with just the single Fitch rating.

"Not a single one of more than 30 investors dropped from the deal" after the dealers reconfirmed the trades, Mr. Brickman said.

The disparity illustrates the fragile state of the \$700 billion CMBS market just two years after it began to recover. As investors backed away from risky assets this summer and were met with greater rating uncertainty, banks are halting loans in the pipeline or renegotiating them with less favorable terms, said David Viklund, a real-estate lawyer at Paul Hastings in New York.

Meanwhile, yields on Freddie Mac CMBS, called K Certificates, are about 3.13%, 0.84 percentage point over a common benchmark. Yields on top-rated, private CMBS are running at about 4.84%.

The apartment-building sector, the only type of commercial real estate funded through federally backed programs, may be able to withstand any hiccups in the economic recovery, analysts said. In addition to funding availability, rising rents and a lack of supply in many regions are acting as tail winds for apartment-building values.

By contrast, office buildings and retail stores have been the main beneficiaries of the private CMBS market, with those sectors constituting nearly 80% of CMBS in the last quarter, according to Moody's Investors Service. Multifamily was "well represented" in precrisis CMBS, though the delinquency rate on those loans has soared to about 15%, making it one of the worstperforming sectors of CMBS, Moody's said.

Freddie Mac's and Fannie Mae's multifamily delinquency rates are a fraction of those for CMBS, though their funding has also been tied to excesses of the real-estate boom, such as the failed \$5.4 billion acquisition of two huge apartment complexes in New York City, Stuyvesant Town and Peter Cooper Village.

Source: *The Wall Street Journal*, August 31, 2011

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