

CFSEI FLORIDA CHAPTER

October 2010



November 11th CFSEI Florida Chapter Presentation

Steel Roof Deck Diaphragms on Cold-Formed Steel Framing

1.0 PDH available

We are pleased to announce our upcoming November meeting and dinner presentation on CFS Diaphragms. Thomas Sputo, representing the Steel Deck Institute will be presenting the design of steel deck roof diaphragms attached to cold-formed steel framing. Dr. Sputo will discuss the steel deck diaphragm theory, application of that theory to steel deck diaphragms attached to cold-formed framing, and diaphragm framing details.

Thomas Sputo, Ph.D., PE, SE, SECB is the Technical Director of the Steel Deck Institute, a trade organization of steel deck manufacturers representing over 95% of the volume of steel deck manufactured in the US each year. Additionally, he is a consulting structural engineer with the Gainesville firm of Sputo and Lammert Engineering, LLC, and a Senior Lecturer in the Department of Civil and Coastal Engineering at the University of Florida. He is SECB certified and holds a P.E. license in ten states and plus a S.E. license in Illinois. Tom graduated from The Citadel with a B.S. in Civil Engineering and from the University of Florida with an M.E. and Ph.D. in Structural Engineering.



This presentation will be held on November 11th at Champions Gate Golf Resort in Champs Hall. Doors open at 6pm for registration, happy hour (cash bar) and an Appetizer Extravaganza. The presentation will begin at 7pm.

To register, visit <http://www.cfsei.org/florida.htm> or contact Tamil Samiappan (tsamiappan@itwbcg.com).

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The CFSEI Florida Chapter would like to thank our November 11th meeting sponsors, Aegis, TrusSteel, and Nucor Vulcraft Group for making this event possible.

CFSEI Florida Chapter Annual Meeting Preview!

The planning for our Chapter's annual meeting is already in the works, and we are excited about what we have in store for you this year!

The meeting will be held on Thursday, January 13th, 2011 to coincide with the International Builders Show in Orlando, FL. Registration and happy hour will begin at 5:30 PM, with the presentation beginning at 6:30 PM. We are currently lining up an exciting and informative presentation put on by the Steel Framing Alliance. In addition, we will have the induction of our new officers and Board of Directors for 2011.

Please mark your calendars, tell your friends, and stay tuned for further updates about this special event.

20th International Specialty Conference on Cold-Formed Steel Structures – November 3 & 4, 2010 at St. Louis, MO



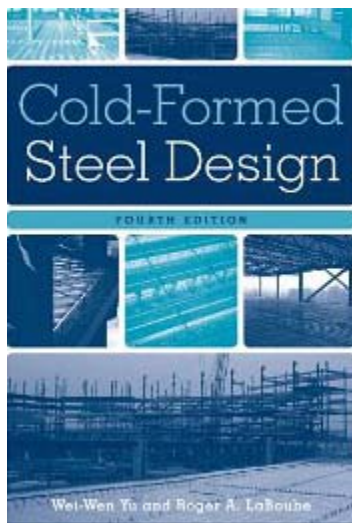
The 20th International Specialty Conference on Cold-Formed Steel Structures will be held on November 3 & 4, 2010 in St. Louis, MO. The host hotel for this mega event is *Hilton St. Louis at the Ballpark* located at One South Broadway, St. Louis, MO 63102.

This conference provides an excellent opportunity for educators, engineers and researchers to share and discuss the recent research findings and design considerations in the field of cold-formed steel structures. This specialty conference will include the presentation of technical papers and the publication of a volume of conference proceedings.

The registration fee for this conference is \$425 for speakers and session chairpersons, \$200 for approved students and \$560 for all other participants. The fee includes reception on November 3rd, lunch buffet for November 3rd & 4th and a copy of the proceeding containing all technical papers presented at the conference.

A continuing education credit of 1.6 CEUs will be awarded for the attendees of the specialty conference. For online registration and program details, including the titles of technical papers presented, please check out *Wei-Wen Yu Center for Cold-Formed Steel Structures* website "www.ccfsonline.org".

Cold-Formed Steel Design, 4th Edition is Now Available



"The Fourth Edition of the textbook *Cold-Formed Steel Design* (ISBN: 978-0-470-46245-4), by Wei-Wen Yu and Roger A. LaBoube was published by John Wiley & Sons, Inc., in September of 2010. The definitive text in the field, thoroughly updated and expanded.

Hailed by professionals around the world as the definitive text on the subject, this 512-page book is an indispensable resource for all who design for and work with cold-formed steel. No other book provides such exhaustive coverage of both the theory and practice of cold-formed steel construction. Updated and expanded to reflect all the important developments that have occurred in the field over the past decade, this Fourth Edition of the classic text provides you with more of the detailed, up-to-the-minute technical information and expert guidance you need to make optimum use of this incredibly versatile material for building construction.

Wei-Wen Yu and Roger LaBoube, respected authorities in the field, draw upon decades of experience in cold-formed steel design, research, teaching, and development of design specifications to provide guidance on all practical aspects of cold-formed steel design for manufacturing, civil engineering, and building applications. Throughout the book, they describe the structural behavior of cold-formed steel members and connections from both the theoretical and experimental perspectives, and discuss the rationale behind the AISI and North

American design provisions. Cold-Formed Steel Design, Fourth Edition features:

- Thoroughly up-to-date 2007 North American (AISI S100) design specifications
- Both ASD and LRFD methods for USA and Mexico
- LSD (Limit States Design) method for Canada
- A new chapter on the Direct Strength Method
- Updates and revisions of all 14 existing chapters

- In-depth design examples and explanation of design provisions

Cold-Formed Steel Design, Fourth Edition is a necessary tool-of-the-trade for structural engineers, manufacturers, construction managers, and architects. It is also an excellent advanced text for college students and researchers in structural engineering, architectural engineering, construction engineering, and related disciplines.”

To order this publication, visit the “Publications” section of www.cfssonline.org.

CFSEI Student Memberships

Why join CFSEI?

Cold-Formed Steel Engineers institute (CFSEI), an institute of the Steel Framing Alliance (SFA), is made of many structural engineers and other design professionals who make efforts to produce safe and effective design methodologies and standards for the design of cold-formed steel structures. CFSEI has access to vast resources of the steel framing industry and offers unique access to technical specifications, publications, and information about the steel framing industry. CFSEI is an opportunity for the Students, the budding engineers, where you can hone your knowledge and become an expert in CFS design.

How much is it?

The cost for CFSEI Student memberships is **\$25 per Student** and for any of its local Chapters, it is absolutely **FREE**.

What are the benefits for Students?

When you join CFSEI and its local chapters, you will receive the following student member benefits:

- Up-to-date information about SFA/CFSEI **current and upcoming** programs and events via Newsletters and e-mails.
- An opportunity to receive **CFSEI's local Chapter scholarships** (if offered).
- Access to the complete up-to-date CFSEI member directory, which allows you to **network** with thousands of industry people.
- An opportunity to **meet local CFS engineers** and other professionals face-to-face at

meetings such as special luncheons or dinner presentations.

- **Discounts** for all SFA/CFSEI documents and American Iron and Steel Institute (AISI) publications (e.g. AISI-S100 North American Specification, AISI Design Guides, etc.).
- CFSEI documents such as Design Guides, Technical Notes, Research Notes and Construction detail drawings for **FREE** download from “Members Only” section.
- Electronic version of all new Technical Notes e-mailed to you whenever they are available. **Free electronic access** to all archived Technical Notes.
- Up-to-date information about current/upcoming programs of your **local Chapter** via Newsletters and e-mails.

How to become a member?

To register online or for more information about Student memberships, checkout membership section at www.cfsei.org. You can also attend one of our local Chapters meeting for the direct submission of Student membership application and to get an idea about the CFS presentation and discussions.

If you have any questions about CFSEI Student memberships, please contact us at membership@cfsei.org.

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HOW WE
TAUGHT ONE SCHOOL
— A NEW TECHNIQUE IN —
PROBLEM SOLVING.

When you've been in the steel industry for as long as we have, you learn a few things. That knowledge came in handy when the designers of the Tampa Preparatory School needed our help constructing their geodesic dome. By working closely with the architect and structural engineer, we realized the answer would be custom joists that would support both the dome and the budget. So we created ultra-precise, arched steel joists and decks that fanned from a center support column. We not only helped a school realize its dream but we showed young kids that every problem has a solution.

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Did you know?

Wei-Wen Yu Center for Cold-Formed Steel Structures



COLD-FORMED STEEL FOR STUDENTS

Wei-Wen Yu Center for Cold-Formed Steel Structures (www.ccfsonline.org) in collaboration with the CFSEI of SFA has a special webpage “*Cold Formed Steel for*

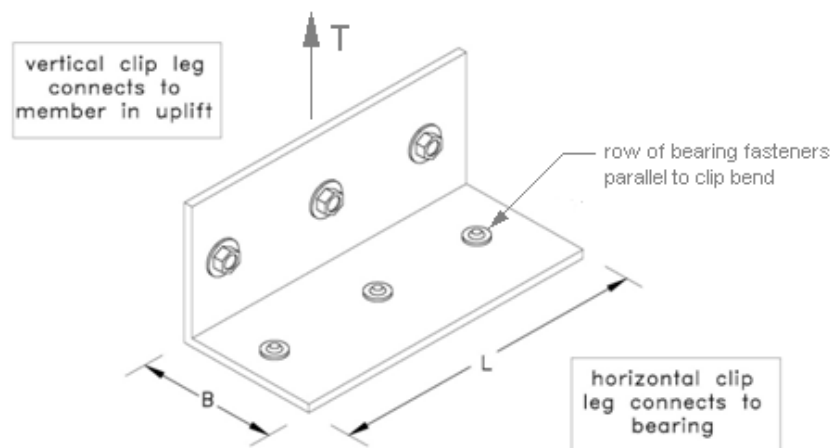
Students” for students to learn the basic design aspects and methodologies of cold-formed steel structures.

The webpage has design documents and capstone design aids to help students better understand the design, fabrication and installation of cold-formed steel structures. The direct link for “Cold Formed Steel for Students” webpage is:

<http://www.ccfsonline.org/Student/Student.html>.

CFS Design Tip

Angle Clip Design



Consider the last CFS angle clip connection you designed:

- Did you specify the bearing fastener placement to be a certain maximum distance away from the clip bend?
- Did you assume that only the row of fasteners closest to the clip bend resists tension?
- Did you perform a prying vs. unfolding analysis of the connection?

If the above questionnaire led you to more questions than answers, your CFS clip design methodology may be in need of some TLC.

Tip #1. Refer to “Suggested Design of Cold-Formed Steel Clip Angles for Tension”

This article by John C. Lyons, P.E. and Rahim A. Zadeh, P.E. can be found in the Spring 2002 LGSEA quarterly newsletter. After logging into www.cfsei.org, CFSEI members can download this newsletter from the “CFSEI newsletters” section. The article explains and provides the suggested design for both the “prying” vs. “unfolding” action that occurs in angle clip connections.

Tip#2. Consider total deflection from the clip completely straightening out

If fasteners that resist tension aren’t placed flush against the clip bend, there will be deflection due to straightening out of the clip if enough load is applied. In design, you may want to make the assumption

that the clip will straighten out completely, and specify fastener placement accordingly to keep the maximum deflection geometrically limited to a certain amount. **However, keep in mind that sometimes it's not possible to place fasteners flush with the clip bend due to installation tolerances.** If you are in doubt about how close a particular type of fastener can be applied to the clip bend, contact the manufacturer.

Tip#3. Consider that only half of each fastener head will resist pull-over

Due to the nature of the connection, only half of each fastener head will resist pull-over. Therefore, when you calculate the allowable pull-over capacity of the fasteners (per the AISI NASpec), keep in mind that it should be divided by two.

Tip#4. Bearing Fasteners that resist tension should be placed in one row

Two rows of bearing fasteners (parallel to the bend) won't equally resist tension in this type of connection. The row closest to the bend will be subjected to the brunt of the pull-out and pull-over. Therefore it is recommended to place fasteners that must resist tension in one row.

Tip#5. Account for reductions in fastener values due to end distance, edge distance and/or spacing requirements

Reductions for tension and shear values of fasteners to the bearing material may be required due to edge/end distance and spacing requirements of the bearing material. Refer to the fasteners' code approval (or other published information by the manufacturer) to make sure these reductions are properly accounted for. Similarly, the shear value of fasteners to CFS may be limited by end distance. Refer to the AISI NASpec to make sure end distance is properly accounted for in fastener shear values for CFS connections.

*This design tip was submitted by Julie Lowrey, E.I. from ITW Building Components Group – TrusSteel.
For questions or comments contact jlowrey@itwbcg.com*

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CFS Design Tip

Considerations for Designing or Specifying Cold-Formed Steel Shear Walls

The most common types of cold-formed shear walls used are sheathed or diagonally braced. Sheathed shear walls are classified as Type I or Type II shear walls and can be sheathed with gypsum, plywood, OSB or sheet steel. A Type I shear wall is fully sheathed and has hold-down anchors at each end of the wall segment. A Type II shear wall (perforated) has openings between the hold-down anchors and does not require any special detailing around the openings.



Wood Sheathed



X-Braced



Sheet Steel Sheathed

Items to consider before designing or specifying cold-formed shear walls

- Relative stiffness of different types of walls based on 10' wide x 10' tall wall segment with 5 kip lateral load at top. (Neglects hold-down deflections):
 - OSB sheathing (7/16") ~ 1
 - Sheet Steel (.027") ~ 1.2
 - Plywood sheathing (15/32") ~ 1.4
 - Diagonal straps (6" x 54 mil) ~ 1.6
 - Masonry (8" w/ #5@48) ~ 15
- Aspect ratios (h/w):
 - 2:1 is the maximum allowed for cold-formed steel walls without strength adjustments.
 - 4:1 is the maximum if strength adjustments are made.
- Diagonal strap braced walls:
 - Thick x-straps (68 mil and 97 mil) will cause a bulge in the wall. Make sure you have a wall finish that can hide the straps or use wider / thinner straps.
 - Straps are difficult to tension in the field to remove any slack. Shop-installed straps can loosen during transit and on multi-story applications the panels will compress causing the straps to bow.
- Using Type II (perforated) shear walls at areas with doors and windows instead of smaller Type I shear walls
 - Type II walls only need hold-downs at the ends eliminating intermediate hold-downs
 - Type II walls have several limitations that must be checked
 - AISI does not provide a method for estimating lateral displacement so be cautious if using in a deflection sensitive design
- Seismic
 - The available strength of connections for boundary members has to exceed the nominal tensile strength of the boundary member.
 - Chord members must be anchored so the bottom track is not required to resist uplift by bending of the track web.
 - The available strength of connections for diagonal strap bracing shall exceed the expected yield strength of the diagonal strap bracing member.
 - The connection of diagonal strap bracing shall be welded unless engineering calculations can demonstrate that the gross cross section yielding failure mode will occur prior to net section fracture based on pattern and spacing of fasteners.

- Eccentricity must be accounted for in the design of single-sided diagonal strap bracing.
- Provisions shall be made to guard against loose diagonal straps
- Guidelines
 - AISI North American Standard for Cold-Formed Steel Framing – Lateral Design 2007 Edition with Supplement No. 1 and Commentary (AISI S213-07)
 - 2008 Edition of the Cold-Formed Steel Design Manual
 - CFSEI Design Guide for Cold-Formed Steel Framed Wood Panel or Steel Sheet Sheathed Shear Wall Assemblies

*This design tip was submitted by Paul Dalia, P.E. from Light Gauge Steel Engineers Group (LGSEG)
For questions or comments contact pauld@LGSEG.com*

Upcoming Industry Shows

Metalcon 2010

Where: Las Vegas, NV

When: October 20-22

Overview: from www.metalcon.com

“Build with metal. Roof with metal. Learn more about metal.

METALCON International is the single resource for anything you've ever wanted to know about using metal in construction. It's a tradeshow that educates professionals on how to integrate metal into traditional and sustainable construction.

METALCON attracts a worldwide audience

Curious and seeking solutions, METALCON attendees are concerned about the environment and sustainability. They're innovative, motivated and building the structures of our future with the best products and techniques available. METALCON is the place to network with like-minded colleagues, see market innovations, to find and buy new and existing products.

Exclusive combination of industry professionals

METALCON is the **Metal Construction Association's** annual event. MCA members, exhibitors and attendees are vested in the growth of the industry. Their collective knowledge, resources and networks create an exhibit floor experience more powerful than anything else around. Frankly, there's no other niche tradeshow for metal construction that compares.”

NAHB International Builders' Show 2011

Where: Orlando, FL

When: January 12-15

Overview: from www.buildersshow.com

“The International Builders' Show is the largest annual light construction show in the world—over miles and miles of the latest and most advanced building products and services ever assembled. See all of the latest innovations for yourself with hands-on demonstrations and working models in over 300 building industry categories at the National Association Home Builders' annual convention.

(article continued on next page)



THE COMPLETE STEEL TRUSS SOLUTION

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Think of it as your convenient corner marketplace. It's where you'll find more builders and more suppliers than anywhere else in the world. Make sure you're there to discover the products and services you need to keep your business going strong.

Who should attend the Show?

Any professional involved in the residential or light commercial construction industries; such as home builders, remodelers, Realtors[®], etc”

UPCOMING EVENTS

All Day CFS Session (Metalcon Special Program) - Las Vegas, NV	October 19
Metalcon - Las Vegas, NV	October 20–22
20th International Specialty Conference on CFS Structures – St. Louis, MO	November 3–4
STEEL Doing it Right – Chicago, IL	November 8–9
CFSEI FL Chapter Presentation on CFS Diaphragm Design – Orlando, FL	November 11
NAHB International Builders' Show – Orlando, FL	January 12–15
CFSEI FL Chapter Annual Meeting – Orlando, FL	January 13

WELCOME NEW FLORIDA CHAPTER MEMBERS!

Robert Bullard, P.E. - Absolute Engineering Group

Pedro R. Munoz, P.E. - PRM Engineering, LLC



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