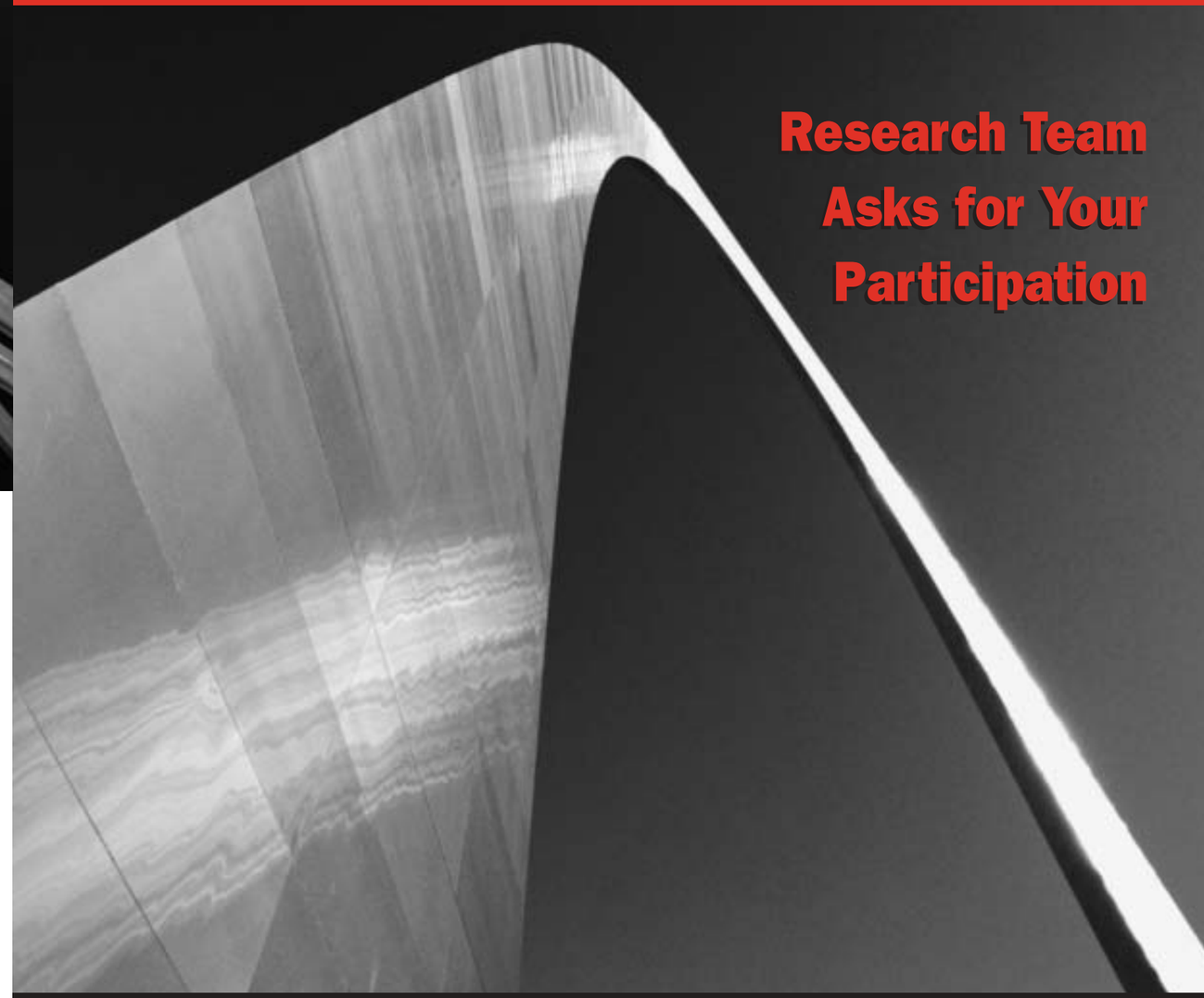
Steel Framing Alliance™

April - June 2003


# FRAMEWORK

YOUR GATEWAY TO THE STEEL FRAMING INDUSTRY



## Research Team Asks for Your Participation


Steel Framing Alliance
1201 15th Street NW, Suite 320
Washington, DC 20005



PRSRT STD
US POSTAGE
PAID
ACTION PRINTING


## Inside

# TABLE OF CONTENTS







**FRAMEWORK**
A Journal of the Steel Framing Alliance

**President/Publisher**
Larry W. Williams

**Editor**
Sarah Humphreys



FRAMEWORK is published quarterly by the Steel Framing Alliance,
1201 15th Street, NW, Suite 320, Washington, D.C. 20005-2482

(202) 785-2022; Fax: (202) 785-3856
www.steelframingalliance.com

Change almost always produces more change. In the case of an organization, it's accepted that the incoming president will bring a new perspective on the opportunities and the challenges ahead. The remaining questions are "how much?" and "how fast?"

Before I answer those questions, let me start by expressing my appreciation for my predecessors, who are two of the industry's best and brightest. Don Moody created a business plan that provided a vision and well defined a path for the steel framing industry to follow. He then led the development of crucial infrastructure that will facilitate the growth of steel framing.

Tim Waite put the focus of the organization onto its members, and expanded the role and involvement of local alliances. This powerful combination of infrastructure and active member involvement is an important factor in constructing a large and viable market for steel framing.

As the Alliance moves forward, the goal is to build on the best efforts of those who have gone before—developing and delivering solutions that will meet member needs and fulfill the vision set forth by the original business plan.

While there is much work to do, the efforts of Alliance members and the industry have produced many excellent tools and have created solutions to some vexing problems. The focus going forward is to use these tools to build value for members and make steel framing more efficient and cost-effective. At the same time, it is committed to identifying opportunities and developing new tools that address the emerging needs of its customers.

**TRAINING AND EDUCATION**

Education is a critical success factor going forward. Builders in both the commercial and residential sectors consistently tell us that the lack of skilled framers, coupled with building inspectors and engineers who are not familiar with cold-formed steel design and construction, still pose a significant barrier.

However, much of this already exists—including training curricula for architects, engineers, framers, building inspectors and plan checkers, as well as other professions that play a key role in the construction process. Hands-on training is also available in a number of framer education programs across the country.

The Alliance is focused on helping its members—and the marketplace in general—identify the training and education they need, and making them available in the most convenient, cost-effective ways possible. This includes implementing new technologies that will increase access and improve the efficiency of its educational programs.

**PUBLICATIONS AND RESOURCES**

The Alliance continues to be an excellent resource for information and publications. A new online store located on its revamped Web site pulls these resources together into one place, with download capabilities that provide the steel framing industry with instant access to a wide variety of information. For Alliance members, the "members only" section of the site provides these publications for free, along with reports that may not be made immediately available to the public.

**RESEARCH**

The Alliance provides leadership in research and testing, as demonstrated by the recent completion of tests that resulted in UL fire ratings for party-wall assemblies (see story, page 15). Additional testing is scheduled for this program; other continuing efforts include developing better data on energy efficiency and hybrid construction.

The Research Team of the Alliance has developed a methodology that allows it to identify the most pressing research needs, and then hone in on them according to the highest priority (see page 16). The process, which enlists Alliance members, has already produced a list of projects that will provide immediate benefits to the development and refinement of codes and standards.

**SIGNIFICANT OPPORTUNITIES**

The Alliance is also an active partner in the development of market opportunities, especially those that promise to have the greatest impact on the use of steel framing. Work with the Manufactured Housing Research Institute is now beginning to address the actual implementation of research completed in 2000. This could stimulate significant demand for studs, connectors, tools, fasteners and other steel framing materials and services. In addition, the Alliance's ongoing contacts with members of the U.S. House and Senate could provide funding needed to help improve construction efficiencies and aid in the development or refinement of faster connection methods.

**COORDINATION AND COLLABORATION**

The Steel Framing Alliance may offer many of the tools that are needed by the marketplace—but not all of them. Rather than re-inventing the wheel, the Alliance is committed to facilitating collaboration between those who participate in this industry. In an environment where efforts are coordinated and all are working toward a common goal, the Steel Framing Alliance can concentrate its resources on the most urgent tasks.

**WHEN?**

How quickly will all of this come to pass? The answer, in part, lies with members. The Alliance operates in an environment where resources are scarce. The support and contributions of members of the AISI, as well as those of more than 300 Alliance members, have helped it get this far—but only the continued support of new and existing members can accelerate the progress. Your participation is critical because it helps the Alliance maintain its focus on the efforts, programs and products that provide you with the most meaningful benefits. I welcome your feedback and ideas.

*Larry Williams*

# Alliance welcomes new president, bids aloha to outgoing leader

Larry W. Williams has assumed the post of president of the Steel Framing Alliance, effective April 1, 2003.

Williams joined the Alliance in March 2001 as director of administration and public affairs. In this capacity, he was responsible for managing the Alliance's finances, facilities and personnel, as well serving as governmental liaison. During this time, he also served as managing director of the Light Gauge Steel Engineer's Association, a position he has held since the LGSEA's creation in 1994.

His experience with the steel industry dates to 1989 when he helped introduce to the market a $500 million modernization program by USS-POSCO Industries (a joint venture between US Steel and Pohang Iron and Steel Co.), of Pittsburg, Calif. He has been involved in the steel-framing industry since 1993 and played a key role in the introduction of residential steel framing in the Western United States.

In announcing the appointment, Gregory S. Ralph, chairman of the Alliance Board and director of product development for Dietrich Industries, said Williams' leadership role in transforming the LGSEA from a concept to a global, 1,100-member professional association in less than a decade was a strong factor in the board's decision.

"Selecting the right individual for this important position was critical to the continuing success of the Alliance," Ralph said. "The Alliance is fortunate that a proven association executive of Larry's caliber has agreed to assume this leadership position. He clearly has the skills, vision and passion that are needed as the Alliance continues to drive growth in the use of cold-formed steel framing in residential and light-commercial construction."

Willams

Waite

In assuming his new position, Williams will step down from his role in the LGSEA.

Williams has more than 20 years of progressive experience in marketing and association management. He holds a bachelor of science degree from Pacific Union College in Angwin, Calif. Williams is a member of the American Society of Association Executives and the Greater Washington Society of Association Executives. He is also an accredited member of the Public Relations Society of America and a past president of the San Francisco Bay Area Chapter.

Williams replaces Tim Waite, who departed the alliance March 28, 2003, to pursue a new career with Simpson Strong-Tie in Honolulu. Waite had served as president since July 2001. He began with the Alliance as general manager in 1999, heading up training and local chapter development.

While president, Waite reorganized the association across all market segments, enabling participation from steel production, manufacturing and fabrication through builders, framing contractors and design professionals. As a result, the Alliance is a formidable force in bringing the technology of light-gauge steel to construction markets everywhere.

Also under Waite's leadership, the Alliance committed to effect global change for construction and rolled commercial markets its business plan. He aligned strategies with National Association of Home Builders, NAHB Research Center, Partnership for Advancing Technology in Housing, Light Gauge Steel Engineers Association and others to achieve significant advances in the construction processes used today.

see **"New President"** on next page ▸





# National Alliance meets at PACRIM

For the first time, the Steel Framing Alliance as a national organization convened its spring meetings in conjunction with a local chapter's conference, the 2003 Pacific Rim Steel Framing Conference, in Waikiki in March.

The Hawaii Pacific Steel Framing Alliance welcomed light-gauge steel-framing professionals from Canada, New Zealand, Australia, the Philippines, the U.S. Mainland and its local islands for an in-depth and diverse series of education programs, as well as networking events.

"The conference was successful, most significantly in terms of participation, quality of seminars, caliber of speakers, arrangement of activities, and the receptions of the attendees," said Mardie Torres, executive director of HSA.

Ralph Valentino, chair of the 2003 PACRIM Conference, was pleased with the wide technical spectrum of the conference's seminars, as well as the speakers, location and networking opportunities. "We over here in Hawaii pride ourselves on social activities," he said.

Hawaii provided more than a beautiful setting for the gathering. According to Tom Porter, executive vice president of Los Angeles-based CEMCO, the state has made enviable progress in the use of light-gauge steel framing.

"If the state of California had one-third the market share," he said at the opening dinner, "we would need an additional 500 tons of steel."

"In a recent survey of 15,000 people in Hawaii," said Doug Pearson, president of the Hawaii Pacific Steel Framing Alliance, "80 percent said they would rather have steel framing."

A complete summary of PACRIM's seminars, meetings and events begins on page 20.

**PACRIM SPONSORS**

Platinum:

**CEMCO**

Silver:

**DIETRICH METAL FRAMING, SIMPSON STRONG-TIE**

Bronze:

**MATSON NAVIGATION, WESTERN METAL LATH, GW KILLEBREW, HARDY FRAMES**

## New President

continued from page7

"We thank Tim for his valuable contribution to the Alliance mission and wish him great success with his new position," said Greg Ralph, chairman of the Board for the Alliance. "Tim has not only led the Alliance through an important period of change and growth, but has been a key figure in the steel framing industry for the past 10 years. We look forward to another 10 years with Tim back in industry."

Waite will continue to be actively involved in Alliance activities and direction as a member of the Hawaii Pacific Steel Framing Alliance, one of its local affiliates.

# Many log on for Webcast training

The LGSEA recently held first Webcast training session on the subject of truss design, drawing 24 participants from around the globe.

Participants logged on from a wide range of locations—including Connecticut, California, Alabama, Hawaii and Ireland—and followed along through PDF seminar materials and notes. They asked questions of the moderator, Roger LaBoube, Ph.D., P.E., director of the Center for Cold-Formed Steel Structures and professor of civil engineering at the University of Missouri—Rolla, via voice and e-mail.

Larry Williams, incoming president of the Alliance, says he is confident the Webcast will prove to be a highly effective educational tool.

"These sessions provide excellent technical training," he says, "especially for those who otherwise wouldn't be able to spend the time or expense involved with traveling to an educational seminar."

The next Webcast will be held May 16, 2003, on the subject of mid-rise design. For more details about the next Webcast, please see the adjacent page.

## Do you have company news?

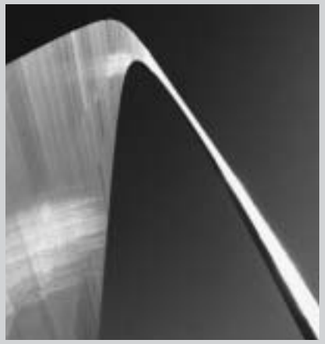
- ✓ **Personnel change?**
- ✓ **Acquisition?**
- ✓ **New Business?**

## you'd like to share with the industry?

***See it in the next issue of FRAMEWORK.***

**E-mail Editor Sarah Humphreys at Humphreys_S@msn.com or call (714) 842-6418.**

# Alliance gets new image



This issue's cover image, a stylized representation of the St. Louis Arch, is also the Alliance's new marquee.

The Marketing Team selected the image to represent the Alliance because it is a symbol for an entrance to a bold and daring place—the West—sought by many Americans for new land, freedom and economic opportunity. It parallels the Alliance's position as the gateway to the future of steel-framed construction.

"Its angular perspective gives it a lofty and imposing feel, elevating our brand to the status of an icon in the industry," explains Lisa Stevens, regional manager for The Brand Factory and leader of the Marketing Team. "The color chosen, steel gray, stands for our steely determination, strong foundation and solid integrity. And the gently curving apex represents both a summit and a bold arrow pointing up toward a bright future for our industry."





# Report on China market now available through Web site

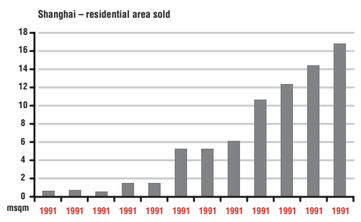
Economic, governmental and cultural trends in China's residential construction market point favorably to enormous potential for steel framing in that country, according to a report now available from the Steel Framing Alliance Web site.

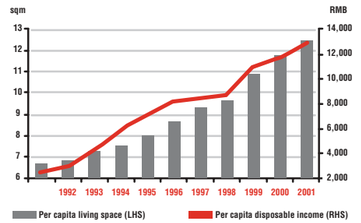
The Shanghai Residential Construction Market Assessment presents results of a study conducted by a team of researchers in the McDonough School of Business international-executive MBA program at Georgetown University. The team examined the market in that city, although much of the report also applies to other large and growing Chinese cities, including Beijing and Shenszen.

"The American Dream is now the Chinese Dream," says team member Chris Fennell, division director, economics and policy analysis, for the National Association of Home Builders Research Center, which has an alliance with the China Housing Industry Association.

Among the most poignant findings outlined are governmental support of home ownership to stimulate the economy, a rapidly expanding gross domestic product, population growth, a six-fold increase in disposal income, vast developable land, and tighter building codes that will ban current standard materials and call for higher-quality, West-produced steel.

The report offers specific advice to




Alliance members and constituents interested in taking advantage of what it concludes is a strong construction opportunity in China.

"Due to the potential of the residential market, support of the government for private-sector home construction, changing attitudes of the Chinese toward home ownership and reforms and regulations and policies," says Fennell, "the team sees the Shanghai market as attractive for light-gauge steel framing use."

The report may be ordered for a fee by e-mailing Janice Duncan at Steel Framing Alliance at jduncan@sfa.com.

## Join the next LGSEA Webcast
## May 16, 2003, 2 p.m. EST
## on the subject of Mid-Rise Design

**Instructor: Don Allen**

- **ASK QUESTIONS, VIA VOICE OR E-MAIL**
- **HEAR THE QUESTIONS OF OTHERS**
- **RECEIVE PDFS OF SEMINAR MATERIALS**

**SIGN UP NOW FOR EARLY BIRD SPECIALS:**

Only $65 for Alliance members and $75 for non-members. Regular price: $85 for Alliance members and $100 for non-members.

**CALL (202) 785-2022 TO REGISTER TODAY!**

# SSMA and Alliance formalize relationship

The Steel Framing Alliance recently announced a formalized relationship with the Steel Stud Manufacturers Association, a partner organization representing firms engaged in the manufacturing, marketing and sale of cold-formed steel framing members in residential and light-commercial construction industries.

SSMA joins several other trade groups and organizations that share reciprocal memberships with the Alliance, including American Iron and Steel Institute, Light Gauge Steel Engineers Association, Steel Recycling Institute, National Association of Home Builders, Manufactured Housing Research Alliance, Steel Truss & Component Association and American Zinc Association.

SSMA membership includes full voting members and associate members.

"Having the two associations correspond regularly, broadening the understanding each other's goals and purpose, is critical to growing our industry," said Tim Waite, outgoing Alliance president. "By streamlining joint efforts, we are more effective in endeavors that help accelerate the use of steel framing in residential and light commercial construction."

A previous example of this working relationship between the Alliance and SSMA was the publication and launch of the steel-stud designator system known as "Right STUF" in 1998, allowing all manufacturers of steel framing and panels to identify their products by a universal code system.

## Teamwork

**MARKETING TEAM**

Work continues on redesigning the Web site, and revenue-generating ideas for the site are being considered.

**TECHNOLOGY TEAM**

The team is clarifying the internal Alliance process for reporting, identifying and researching barriers to steel framing, as well as bringing forth solutions through education.

**EDUCATION TEAM**

The team is looking into providing seminars that offer continuing-education credits in light of daily requests. Its train-the-trainer classes continue to be well received.

**MEMBERSHIP TEAM**

Two-sided flyers promoting the benefits of Alliance membership are written, designed and at the approval stage. The six different flyers are specific to each segment of the steel-framing industry. Membership drives, as well as incentives for current members to recruit others, are being considered.

**COMMERCIAL TEAM**

Commercial Framing Strategic Vision Statements are written, and work continues in identifying barriers in using light-gauge steel in the commercial market.

**RESEARCH TEAM**

Recent accomplishments include studies on a thermal stud, completed evaluations on built-up jack and king studs, and double-sided shear walls. Nearing completion are single L-headers and ICF-to-steel hybrid connections. Work continues on the cost and short-term energy comparison, the long-term energy comparison, wood-to-steel hybrid connections, fire and acoustic studies for residential and commercial, ILZRO corrosion monitoring, top load-bearing tracks, and corrosion of galvanized fasteners.





# Orlando eco house framed in steel

Steel was the framing material on Orlando House, a new demonstration home currently educating the public on the latest environmentally friendly and energy-efficient building products and methods on the market.

Certified green by the Florida Green Building Coalition, the two-story 2,400-square-foot house is currently open for tours to showcase its materials, which were carefully selected based on the Florida Green Home Standard checklist.

"Everything inside is state of the art," says Dean Grant, president and CEO of Steel Framing Inc., of Ocala, which supplied the steel-framed panels. "They used all kinds of special cutting-edge products all through the house."

Orlando Housing Development Supervisor Joe Sandley says steel was chosen as the framing material based on its recyclability and sustainability in Florida's extreme climate and conditions, including termites, moisture and wind. It joins other green products for the home including bamboo floors for bamboo's resource conservation and fiber-cement siding for its durability.

Although the steel is not visible, educational literature about steel is on display.

"It basically proves to the people in Orlando that this is the up-and-coming product," says Grant. "It gives us something to show off. It looks just as nice or nicer than any other house."

# Panel fabricator marks movement to steel

Stucc On Steel Buildings Systems LLC announces the groundbreaking of its first custom home framed entirely in light-gauge steel, in Winchester, Va.

The company will supply fabricated panels and ready-cut materials to builder Ritter Construction Co. for the new luxury home, along with its exterior structural stucco finish. Stucc On Steel uses the Dietrich Trade Ready Header in its fabrication, and also specified the Dietrich Trade Ready Floor System for the floor framing to handle long spans and loading requirements.

"The homeowner is in the insurance industry and chose to avoid mold, mildew and rotting that can be associated with wood," says Stucc On Steel President Donald Stevens. "We provide a thermal/vapor barrier on the exterior side and an additional thermal break on the inside of our building system. Once insulated, it is not uncommon for us to reach R-30 in a standard 6-inch wall frame."

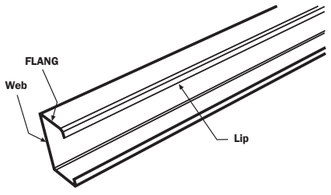
The home will be open to visitors this summer prior to its completion. To schedule an on-site tour, contact the company at (540) 678-4159.

# Identification and Standards for Steel

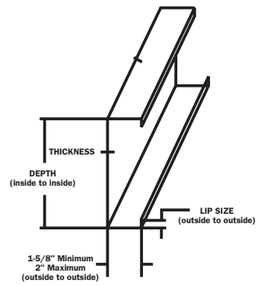
by Maribeth Rizzuto

Many builders using steel today made the transition one step at a time. It is not a major transition because a steel house is framed much like a wood house.

Stud spacing is 16 or 24 inches on center, and materials like plywood and OSB are attached in much the same way as current practice. Steel framing studs and joists are manufactured in standard sizes and dimensions and are identified by standard designators. Becoming familiar with the identification of steel framing material is the first step.

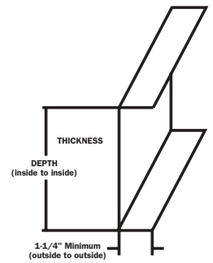



The most common steel shape used in residential construction is the C-shape (above). It is used for walls, floors and roof framing. It comes in a variety of sizes and can be purchased from distributors and roll formers across the country. A 2-by-4 steel stud has the same depth as a wood stud (see table). Each C-shape has a web, flange and lips. The minimum flange size is 1.625 (1 5/8) inches and the maximum is 2 inches. The minimum lip size is 0.5 inch. The depth or web of a C-shaped stud or joist is measured from the outside of the flange (below).




The steel thickness contributes to the steel member's strength. Over the last several years the industry has moved away from referring to steel thickness in terms of "gauge" in favor of the term "mil." The mil thickness measures the uncoated base metal material. One mil is equivalent to 1/1000 inch. Therefore, a 20-gauge stud measuring the minimum uncoated base metal at 0.033 inches is said to be 33 mils thick.

Similar to using top and bottom plates in wood framed construction, a steel framer uses tracks to hold wall studs in place. Steel track is a U-shaped member. It is measured from the inside of the flange to the inside of the flange to allow for the corresponding stud to fit inside the track (below). Studs are then screwed into the track.




Selecting the right studs for construction has been simplified with the adoption of standard designators. Manufacturers of steel framing eliminated confusion caused by varying company descriptions by adopting Universal Designators. These designators use the web depth, flange width and minimum base metal thickness of the framing member, in conjunction with the system known as STUF:

**S:** Stud or joist sections with flange stiffeners (C-shapes).

**T:** Track Sections.

**U:** Cold-rolled channel of channel studs (without flange stiffeners).

**F:** Furring channels (or hat shapes).

The web depth is listed first followed by the STUF designator. Immediately after the letter designator, the flange width is listed, followed by a dash and the material thickness. The web and flange depth is expressed in 1/100 inch, and the minimum base metal thickness in mils.

| Nominal Member Size (reference only) | Universal Designator | Web Depth (inches) |
|---|---|---|
| 2 x 4 | 350S162 - *t* | 3.5 |
| 2 x 6 | 550S162 - *t* | 5.5 |
| 2 x 8 | 800S162 - *t* | 8 |
| 2 x 10 | 1000S162 - *t* | 10 |
| 2 x 12 | 1200S162 - *t* | 12 |

***t* = steel thickness in mils**

A common 2-by-4 stud used for a one-story house in steel would have a 3 1/2-inch web, a 1 5/8-inch flange, a 1/2-inch flange return or lip. The universal designator for this stud is 350S162-33. Other sample designators are listed.

Manufacturers of steel framing materials now mark the steel-framing members with these designators for easy identification in the field. They also help to facilitate plan checking and code inspections.

The steel framing industry has developed additional tools to make framing with steel even easier. The latest standards, The Prescriptive Method for Cold-formed Residential Steel Framing, incorporates the use of the Universal Designators and enables designers and framers the opportunity to select steel framing studs, joists and rafter sizes from tables for framing a house. The tables have been pre-calculated by engineers using regional design loads and engineering practices. This development positions steel framing on equal footing with traditional building products by eliminating the need for engineering of an average house.

Another great reference tool for the identification of steel framing members is the Steel Stud Manufacturers Association Product and Technical Information. It is available at www.ssma.com.

*Maribeth Rizzuto is Steel Framing Alliance's general manager for the U.S. East Region and industry training.*

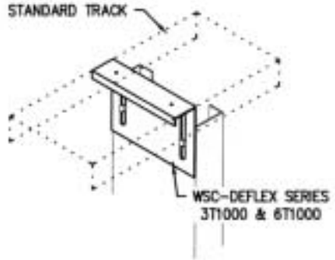
Six-inch Flex-C Trac® now available in 16-gauge with all the same great features of the 20-gauge product and a two-inch leg height.

Flex-Ability Concepts
Tel: (405) 715-1799
Fax: (405)359-8942
info@flexc.com

FLEX-ABILITY CONCEPTS

A Rinker Materials/Bethlehem Steel joint venture, Steel-Con produces light-gauge steel roof and floor trusses, plus framing and accessories for walls and floors.

Steel Construction Systems
11250 Astronaut Blvd.
Orlando, FL 32837
Telephone: (407) 438-1664
www.rinkersteelcon.com

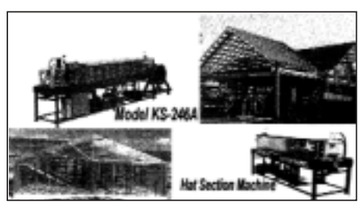



## WSC DEFLEX SERIES CLIPS

- **WSC-Deflex 3T1000 for use in 3-5/8" Studs.**
- **WSC-Deflex 6T1000 for use in 6" Studs.**

400 Metuchen Road
South Plainfield, NJ 07080
(908) 757-9000; (800) 627-4661
FAX: (908) 941-0005
E-Mail: sales@marinoware.com
Website: www.marinoware.com

MarinoWARE
A DIVISION OF WARE INDUSTRIES, INC.




## Stud & Hat Machine

Frame your next home with the KS246A Framaker and the KH153 hat section machine from Knudson, the leader in rollforming.

Distributed by George D. Helmer Co. & Associates,
4939 Milwee Unit D, Houston, TX 77092.
(713) 681-1824 or
e-mail: cgdhelmer@aol.com.

Knudson
Distributor





Residential Steel Framing? We've got solutions!

- **Design assistance**
- **Material take-offs**
- **On-site training**
- **Tools, fasteners and accessories**

For more information, please call
1-800-370-3755, or visit www.steelpros.com

**SteelProfessionals**
Helping The World Build With Light Gauge Steel℠

*the logo you emailed me is not openable.*

Alpine Structural Consultants – Professional design services for truss and conventional framing systems (steel and wood), including members, bracing, connections, decks, and diaphragms.

Sowri Rajan
800-755-6001 x4752
srajan@www2.alpeng.com
www.alpinestructural.com

ALPINE
Alpine Engineered Products, Inc.

End the mystery of making the switch from wood to steel with the book Steel-Frame House Construction, written by the NAHB research center former Alliance President Tim Waite.

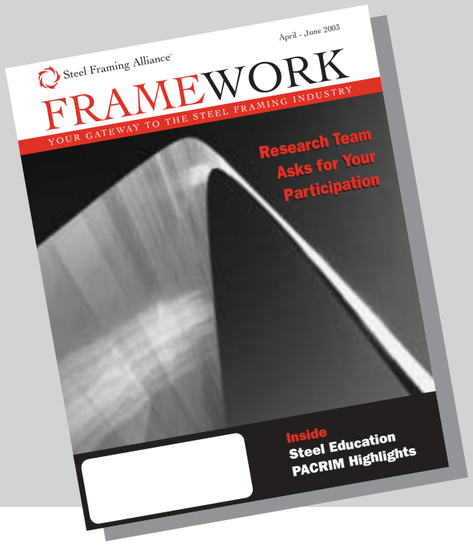
To order, call (202) 785-2022 or visit www.steelframingalliance.com.


The new free TrusSteel Cold-Formed Steel Truss Design Guide contains guide specifications, CAD details, code reports and more.

TrusSteel Division
Alpine Engineered Products,
888-565-9181
info@TrusSteel.net
www.TrusSteel.com

ALPINE TrusSteel®
Cold-Formed Steel Trusses












# Steel Assemblies Achieve UL Fire Rating

by Larry Williams

A recent fire-test project concludes owners, builders and contractors can achieve significant potential savings using cold-formed steel framing in UL load-bearing fire-rated party walls.

The project, started in early 2002, charged a team of industry experts with identifying non-rated steel wall and floor assemblies for multifamily town homes and apartments that are comparable to rated systems framed with wood or other materials. To date, two tested steel wall assemblies have achieved the fire rating.

"Currently, low-rise multifamily wood-framed buildings can achieve the one-hour rating by constructing a double stud wall with 5/8-inch (16 millimeter) gypsum board on each exterior side," explains Nader Elhajj, director of structures and materials for the National Association of Home Builders Research Center and member of the Alliance Research Team. "The only UL-tested steel assembly that comes close to the wood assembly requires additional layers of gypsum board between the studs. This is costly and labor intensive."

Fire testing before

Fire testing after

The test proceeded beyond the target time rating, until failure of the system.

The testing, commissioned by the U.S. Department of Housing and Urban Development, the Steel Framing Alliance and the National Association of Home Builders, was performed at Underwriters Laboratories in Northbrook, Ill., and witnessed by NAHBRC. All tests were performed in accordance with ASTM test procedure E119 (ANSI/UL 263; NFPA 251).

The first test was for a gravity load-bearing one-hour-rated party wall, framed as a double wall with two adjacent 350S162-33 studs. The walls were insulated with 3 1/2-inch fiberglass batt insulation, and finished on both outer faces with one layer of 5/8-inch rated gypsum wallboard installed vertically with #6 screws. The screw spacing was

see **"UL Fire Rating"** on next page ▸

## UL Fire Rating

continued from page 17

12 inches on center around the perimeter of the wallboard and 12 inches on center away from board edges. The interior face of each wall was braced at mid height using 1.5-inch 33-mil steel strapping screwed to each stud, and a 2-inch air gap was left between the two runs of steel.

The first wall assembly test achieved a one-hour fire rating with 80 percent of the design axial load.

The second test was for a two-hour load-bearing party wall. The assembly was the same as the one-hour assembly, with one change: double layers of wallboard were applied to each outer face, rather than single layers. Screw attachment of both layers was the same: #6 screws at 12 inches on center in both the perimeter and field.

This wall achieved the targeted two-hour rating, with axial capacity of 100 percent of design load.

"Lack of available fire-rated options for cold-formed steel framing has been hindering its widespread use in low-rise multifamily buildings," says Elhajj. "These tests provide valuable results to builders and designers that will help them expand the market share of cold-formed steel."

Builders can start using these assemblies now. Although the assemblies will not be listed until the 2004 edition of the UL Directory, they are available on the UL Web site. Both the one-hour and two-hour assemblies were given the V446 listing in the UL Fire Resistance Directory.

Full details of the testing may be downloaded from the Alliance Web site, www.steelframing.org.

*Larry Williams is president of the Steel Framing Alliance and past managing director of the Light Gauge Steel Engineers Association.*

## Industry experts participating in the study

**BILL FREEBORNE**
U.S. Department of HUD

**NADER ELHAJJ**
NAHB Research Center

**KEVIN BIELAT**
Steel Framing Alliance

**DEAN PEYTON**
LGSEA

**THOMAS SHEPPARD**
USG

**JAY LARSON**
Bethlehem Steel

**JEFFREY POSTER**
Brookfield Homes

**JONATHAN HUMBLE**
American Iron and Steel Institute

**GREGORY RALPH**
Dietrich Industries

**BUD WATERS**
Hunt Building Corp.

**EDWARD WIRTSCHORECK**
National Evaluation Service

**TIM WAITE**
Steel Framing Alliance

**DON MOODY**
NuconSteel

**DAVID APPLEMAN**
Brookfield Homes

**LEO DE MEO**
Dofasco

**DAVID BALL**
Lennar Homes

***The Technology Team of the Steel Framing Alliance was established to identify technological barriers to the use of steel framing; prioritize and evaluate barriers; identify and recommend research, tests and solutions; and make recommendations to Operating Team on prioritized barriers to be addressed and technical research to be initiated. Naturally, this is an ongoing process in a field that is evolving as rapidly as cold-formed steel framing itself.***

***The adjacent Barrier Survey form was developed by the Technology Team as a tool to facilitate the identification and prioritization of barriers to the use of steel framing.***

***The team encourages you to complete one or more of these forms and return them to the Steel Framing Alliance Technology Team by faxing them to the Alliance office. All input is considered important and will help the Technology Team in its efforts.***

***Says Board Chairman Greg Ralph, "I would hope by this time next year we have 500 proposals we need to manage."***

***Barrier Survey Form***



### Technology Team – Barrier Survey Form

The Steel Framing Alliance Technology Team is interested in identifying barriers to the use of cold-formed steel framing. Please use this form identify the issue you perceive or encountered as a barrier to using cold-formed steel framing in building construction.

1. Barrier: (describe the technical issue): _____

2. Building element affected: (check all that apply)
   - ❑ Roof Framing ❑ Wall Framing ❑ Floor Framing
   - ❑ Other (describe): _____

3. Market segment affected: (check all that apply)
   - Residential: ❑ 1-2 Family ❑ Multi-Family
   - Commercial: ❑ Retail ❑ Office/Bank
   - ❑ Food Service ❑ Hotel/Motel
   - Institutional: ❑ Dormitory ❑ Healthcare
   - ❑ Education ❑ Assisted Living
   - ❑ Other (describe): _____

4. Region affected (states, provinces, etc.): _____

5. Influencer affected: (check all that apply)
   - ❑ architect ❑ code official ❑ framer
   - ❑ spec. writer ❑ owner ❑ subcontractor
   - ❑ engineer ❑ builder ❑
   - ❑ other: _____

6. Impact (describe the impact this barrier has on project; e.g., material, labor cost, availability, compliance, etc.): _____

7. Circumstances that made you aware of this issue: _____

8. Contact information: Date: _____
   Name: _____ Company: _____
   Address: _____
   Phone: _____ Fax: _____ E-mail: _____

# Don't be Afraid of What You Don't Know

by Matt Macarewich

Photos by Matt Macarewich

I've been working with wood most of my life. I like the feel of it. I like the look of it. And I don't mind brushing the sawdust off my arms after sanding it smooth. Throwing my bags on, loading my pouches with handfuls of 16- and 8-penny sinkers. Ah, yes, we've all been there.

Yet, in the back of my mind I always thought this business of driving nails into this hunk of wet tree was pretty animalistic. (How's that for a word?) I thought to myself, if someone really applied himself or herself, he or she could come up with a better way to put houses together.

And one day there it was, shining in all its glory. A home being framed out of steel studs, headers, post, beams, floor joist, rafters—everything. It looked like a spacecraft. It looked perfect. And I knew right there, this is for me. And as luck would have it, I got a call from someone who was looking to build a custom home out of steel. He asked me if I would be willing to try one. It appeared no other contractors he had talked to would be interested. I didn't even hesitate saying yes. I wanted to do it. I knew if I put my mind to it, I could do it.

So there I was committing to building something in which I had little knowledge, and no experience. Isn't that how we all expand our horizons? After all it wasn't the unknown. Someone had engineered the plans. The structural calculations were based on tested and approved material-load capacities. And as I started further research, I found the method of putting the frame together was very similar to what I was used to. There were studs, posts, beams, headers, joist, rafters, hold-downs and shear-walls. The difference was the material of choice was steel instead of wood.

After meetings with experienced residential framing contractors—and there were a few—my confidence grew. And I knew I could handle the project at hand. I began searching for books, videos or magazines with any information even remotely covering steel framing. Some of the books pertained to typical commercial curtain wall and non-load-bearing types of construction. I found only a few commercial details applied. As my search continued, I did find numerous articles and a few books that both answered my old questions and also created new ones.

Then just as the project was to be permitted, the engineer of record on the project decided to leave the foundation portion of the project to someone else. Apparently the city plan checkers had disagreed with the engineer over a basement wall design. This left the architect and me scrambling to find someone to design a foundation that the city building department would approve. We found another engineer to design the foundation, but he needed the architect to draw all the foundation to light-gauge steel-framing details.

Seeing how I had been extensively researching the steel framing, the architect asked if I could assist him in the connection details. So I acted as a mediator between the two engineers, the architect and the city. During our discussions, I learned about the unique characteristics of light-gauge steel, as opposed to wood. One major difference I discovered was that the frame of steel-framed homes is considerably lighter than wood-framed homes, which means less weight on the foundation—a fact the city plan checker was not willing to accept. Rather than trying to educate the city plan checker, which had already proved futile, we decided to design the foundation for a heavier wood structure, even though the frame was to be steel. This satisfied the city and allowed our project to be permitted.

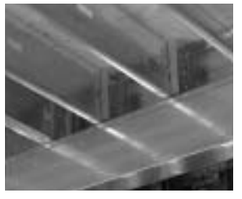
To this day, this approach of supplementing a wood related code or calculation to resolving light gauge steel plan review questions is common practice. Only in recent years has the standards and specifications been adopted into codebooks. It will take some time for the counties, cities, and independent plan checking companies to catch up to rapidly changing building methods. Most of the building inspectors I work with welcome the change, and are interested in learning the specifics. Years ago, steel framed homes were built based on a specific manufacturers proprietary assembly. The building departments required the structural engineer of record to do a visual inspection of the project at completion of framing. And then provide a wet stamped letter certifying that the entire structure was built per plan.

Now almost eight years later, and with more than 15 steel-framed homes under my belt (not to mention a few more pounds), I still love doing finish carpentry with wood—especially knowing I'm installing it in a steel-framed home that be there for a long, long time. So now when I throw my bags on, they're full of screws. My new screw gun has taken the place of my worn-out hammer. A sharpie marker has replaced my pencil. My level has magnets along the edge. And my bags have suspenders, because I am getting older.

I have gotten comfortable with steel framing. As I have come to know it well. I noticed more and more builders getting familiar with steel too. They stop by my jobs and ask questions about it. I always give them the tour, and I see the excitement in their eyes. And, yes, I think they have seen the glory, as I did.

Don't be afraid of what you don't know. Feel confident in your ability to learn. Ask questions and grow.

*Matt Macarewich is CEO, Steel Professionals. He will join Framwork with subsequent articles and can be reached at matt@steelpros.com.*



# Seminar Roundup

The latest information and ideas were featured at the PACRIM conference, hosted by the hawaii pacific alliance, in 12 educational programs. The seminars led by the leaders in steel-framing research and design, as well as industry executives.

Maribeth Rizzuto, general manager of the U.S. East Region and industry training for the Alliance, presented **Fastening Systems: How New Tools are Innovating Steel Framing Construction Technology.** The audience at this seminar learned about the latest tools, fasteners and connectors that are quickly changing the landscape of building with steel. Rizzutto presented some of the newest "tools of the trade" and other equipment on the horizon together with representatives from Simpson Strong-Tie, DeWalt and Aerosmith.

Michael L. Zieman, president of RADCO and member of the Manufactured Housing Research Alliance, presented **Steel-Framing Applications for the Manufactured Housing Industry.** The audience learned the cost benefit analysis comparing the wood- and steel-based framing systems and solutions to the technical barriers, as well as the re-engineered structural-steel framework that drastically reduces home production time.

Chris Fennel, division director for the NAHB Research Center, unveiled **Opportunities for Steel Framing in China.** This market analysis of residential construction in Shanghai revealed fascinating trends in residential building, as well as the Chinese government's reforms that will directly affect the success of light-gauge steel framing. As described on page xxx of this issue of FRAMEWORK, the complete report is available by calling the Alliance.

Dr. Gregory Zhang Ph.D., R&D manager and senior scientist for Teck Cominco Metals Ltd., representing the International Lead Zinc Research Organization, and Dr. Ian Robertson, of the Department of Civil Engineering at the University of Hawaii at Manoa, shared the podium to present **Corrosion of Steel Framing and Fasteners: Research Update.** The two discussed how the two groups are getting to the facts about corrosion by monitoring the steel framing in four houses built in different corrosive environments on the East Coast and the corrosion of fasteners in five structures around Oahu.

Nader Elhajj, PE, director of structures and materials for the NAHB Research Center, presented **Fire & Acoustic Details Used in Steel-framed Homes: Research Update.** The presentation covered the results of the latest testing, which is also described in the article beginning on page 15 of this issue of FRAMEWORK.

**Steel Framing Alliance Research Team: Latest Research Results** were presented by Jay Larson, developmental engineer at Bethlehem Steel Corp. and leader of the Alliance Research Team, and Elhajj, also a team member. It provided an overview of the Alliance research organization and gave detailed reports on several of the most interesting research projects that are finished or nearing completion. It was followed by a lively discussion about the possibilities of producing a thermal stud.

Courtney J. Hanson, of NuconSteel Corp. and leader of the Alliance Commercial Team presented **Market Opportunities for Light-gauge Steel in Commercial Framing.** He explained how in-depth market analysis proved commercial framing a good fit for the Alliance's business plan. Attendees learned what the commercial market holds for steel, market opportunity, current share and growth potential.

Larson, who serves as chairman of the AISI Committee on Framing Standards, also presented **New Approved Building Standards for Light-gauge Steel.** These new ANSI standards for steel framing, adopted by the ICC and NFPA building codes, offer the building community more flexibility in design and construction. They provide the latest technology for designing, specifying and construction market's growing desire to innovate buildings methods with new materials. The publications are a culmination of several years worth of hard work and includes a new Prescriptive Method, General Provisions, Header Design and Truss Design Standards.

Joe Lymans, executive director of the Insulating Concrete Form Association, presented **Insulating Concrete Forms used with Steel Framing.** Steel framing is used in many homes built with ICFs. To maximize the opportunities presented by both products in construction, a joint research program was launched to provide guidelines and details for combining ICF systems with steel framing. Lymans presented the new guidelines, which include structural connections, details and prescriptive design tables.

Robert C. Grupe Jr., director of architectural and technical solutions for CSI, addressed **Mold: Growing Concern for Builders and Homeowners.** Claims for damage caused by mold are proliferating at a rapid rate. Significant changes in how structures have been built in the past 25 years are exacerbating mold problems. Grupe explained how to prevent mold growth in both existing and new structures.

Larry Williams, president of Light Gauge Steel Engineers Association, and Don Allen, of Starzer Brady Fagan Associates Inc., shared the podium for **Details for Mid-Rise Load Bearing Structures.** This seminar was a step-by-step review of a typical mid-rise structure and the process of designing the cold-formed steel elements.

The pair also teamed for **Connection Design,** which addressed one of the most challenging aspects of engineering cold-formed steel structures. The seminar provided guidance on the appropriate use of the AISI and AISC specifications, discussed fastener types and design considerations, and used design examples to demonstrate how these principles are applied. Fastener types covered in this section included welding, screw fasteners, pneumatic pins, clinches and bolted connections.





# Speakers and quotes

**Kenneth Choate,** president of the Building Industry Association of Hawaii and vice president of Haseko Homes, spoke at the Aloha Reception & Dinner Meeting. Describing himself as a "relatively simple guy who loves to build houses," Choate said of steel, *"One of the greatest benefits of it is the sum of its benefits."*

**Les McGrath,** federal president of Australia's National Association of Steel House Framing, spoke at the International Luncheon about his country's framing methods and penetration into the vastly potential market, saying, *"We can only get there with cooperation between Australia and our American friends."*

**David C. Jeanes,** president of the American Iron & Steel Institute, gave the keynote speech at the Membership Dinner Reception, spoke about the state of the steel industry in the United States, proclaiming it *"clearly the material of the future."*

**Greg Ralph,** director of product development at Dietrich Industries and chairman of the Alliance, speaking at the Membership Dinner Reception, said, *"I look forward to where we are in the next five years because we will own the framing market."*

*The Welcome Cocktail Reception, sponsored by Atlas Steel Corp., and the Corrosion Reception, which followed the seminar on the subject, presented two of the week's gracious and enjoyable networking opportunities.*

Danny Feazell of Premium Steel Building Systems, xxx of xxx, Nader Elhajj of NAHB Research Center, and Kevin Bielat and Maribeth Rizzuto of Steel Framing Alliance.

Harold Pawasarat of Honsador Lumber, Robert Lee of Atlas, John Carpenter of Alpine TrusSteel and Wayne Lincoln of Honsador Lumber.

Partygoers at the Welcome Cocktail Reception.





Jay Larson of Bethlehem Steel

Claude Ranger of Stairframe Systems and Larry Williams of the Alliance

Kraig Stevenson of International Code Council, Tim Waite of the Alliance, Mardie Torres of HSA and Dr. Gregory Zhang of Teck Cominco.

Bobbie Kane of Archectural Woods Inc.

Micah Kane, representing the governor of Hawaii, and Doug Pearson of HSA.

Mike Fernandez and Ralph Valentino of HSA

# Membership Milestones

## The Alliance Welcomes New Members* ...

"Built Better" Steel Frame Construction
A-1 A-Lectrician Inc.
Actus Lend Lease
ADTEK Engineers Inc.
Advance Engineers Ltd.
Aerosmith
All Steel Panelizing Inc.
Argos Systems Inc.
Beachwood Housing Dept.
Beacon Bay Homes
Belt Construction Corp.
Berridge Manufacturing Co.
Boyle Engineering Corp.
Building Materials Technology Systems Co.
California Skills USA
Churchill County High School, Western Nevada Community College
City of Chillicothe, Ohio
City of Delaware
City of Dublin
City of East Cleveland
City of Fairview Park
City of Mayfield Heights
City of Shaker Heights
City of Solon
City of South Euclid
City of Westerville, Ohio
City of Wickliffe Bldg. Dept.
City of Willoughby Hills
Composite Framing Systems
Congressman Gary Miller
Consolidated Fabricators Corp.
CrownPoint Institute of Technology
Custom Touch Construction
Daley's Drywall
Delaware County
Dept. of Education—Kohala H.S.
Don Allen
Earl Composite Systems
Engineering West Consulting Engineers Inc.
Evergreen School District/Evergreen High School
Excalibur Steel Structures
Fayette County Building Dept.
Florida Renovators Inc.
Fusion Building Solutions
Genesis Construction of Mid-Atlantic Inc.
George D. Helmer Co. & Associates
Goldin Metals Inc.
Gordon Homes
Henkel Loctite Corp.
HSF Home Steel Framing Inc.
Inter Island Construction Inc.
ITW Buildex
John Herring, Architect
Jordan Vocational High School
Joseph Porretta Builders Inc.
Kai Hawaii Inc.
Kiehm Construction Inc.
Kiwi II Construction Inc.
Knapp and Tang Structural Engineers
Knudson Manufacturing
L & L Steel Builders Inc.
LSA Inc.
Mandel Group Inc.
Morgan High School
Mountain West Restoration & Construction Inc.
MSBS Inc.
Newark/Licking County, Building Code Dept.
Newport Partners LLC
Next Generation Steel Systems
Orange Village
Oregon Institute of Technology
Pletz Construction Inc.
PMH Associates Inc.
Porter Drywall Inc.
Repco Industries Inc.
Ross County Building Dept.
RSJR Engineering Ltd.
S.B. Barnes Associates
Steel Homes International Inc.
Steel Source Inc.
Steel Stud Manufacturers Association
Steelmann Building Corp.
Stephen Fuller Construction Services LLC
Stone & Associates Corp.
Structural Concepts LLC
Summit Structural Stud Panels & Trusses
Sunny Construction
Super Stud Building Products Inc.
Texas State Technical College
The Brand Factory
The East Cleveland Building Dept.
ThermaTech Corp.
U.M.B. Corp.
Universal Beam
Village of Obetz
Village of Warrensville Heights
Walls of Steel Inc.
Western Iowa Tech Community College
Western Technologies Inc.
Wheeler Construction Co.
WhitePoint Homes
Village of New Albany, Building Department

*as of third quarter 2002

## ... Recognizes Members of at least Five Years ...

Ariel Truss Hawaii, Inc.
ATTEXOR, Inc.
BOC Gases/Gaspro
CEMCO
City & County of Honolulu-Bldg.Dept
County of Kauai, Bldg.Div.,Dept.of Health
Dick Pacific Construction Co.
ET&F Fastening Systems, Inc.
Honsador Lumber Corporation
HPM Building Supply
Hunt Building Corporation
Island Building Systems (Force 10)
John Wagner Associates
Light Gauge Steel Engineers Association
Robert Alexander Lazo, A.I.A.
S&G Construction, Inc.
Simpson Strong-Tie Co.
State of Hawaii DBEDT
Sunrise Construction, Inc.
Soldat Construction
State of Hawaii Dept.of Health-Solid Waste
University of Hawaii at Manoa-School of Architecture

## ... And Marks Members' Five-year Anniversary this Quarter.

DeWalt Industrial Tools
Lincoln & Associates
Shioi Construction Inc.





# Membership Spotlight: Benefits to Builders

Membership in the Steel Framing Alliance allows builders to:

- Participate on member teams and help steer the Alliance's national activities.
- Join local chapters, where everything that happens nationally is put to the test and adapted to local market needs.
- Network with other builders and suppliers who share useful solutions.
- Test new tools and fastening systems that will help reduce their cycle time and increase profit margins.
- Train their crews on steel using national standards and accepted practices.
- Obtain assistance with local code officials.
- Differentiate their businesses with Alliance branding materials.
- Receive significant discounts on Alliance resources, including consumer marketing collateral and training books and videos.

# 2003 CALENDAR

## Industry Events

**APRIL**
**1** NAHB/RC Green Builder Conference, Baltimore
**9-11** CSI Show, Chicago

**MAY**
**4-6** AISI Market Development, San Diego
**7-11** NAHB Spring Board Meetings, Washington, D.C.
**8-10** AIA Convention, San Diego

**JUNE**
**17-20** PCBC, San Francisco
**22-28** SkillsUSA, Kansas City, Mo.

**SEPTEMBER**
**17-21** NAHB Fall Board Meetings, Boston

**OCTOBER**
**28-30** METALCON & SFA Fall Forum, Tampa, Fla.

**NOVEMBER**
**5-7** AISI Market Development, Carlsbad, Calif.

# Coming Next Issue ....

**RESEARCH: REPORT ON THE THERMAL STUD**

**EDUCATION: THE TOOLS TO USE WITH STEEL**

**CODE CHANGES AFFECTING STEEL FRAMING**