LAST MONTH, MORE THAN 70 PEOPLE REPRESENTING MORE THAN 40 COMPANIES GATHERED IN ATLANTA TO BE THE FIRST TO EXPERIENCE A TRULY REMARKABLE PROGRAM THAT AIMS STEEL-FRAMING TRAINING AT A PREVIOUSLY UNTAPPED GROUP OF PROFESSIONALS.

“Steel—Doing it Right” is a team effort between the Association of the Wall and Ceiling Industry and the Steel Framing Alliance. Jointly developed over an intensive two-year process, this premier program fully covers cold-formed structural and non-structural steel framing for contractors, suppliers and manufacturers with previous knowledge in steel.

But with all of the other training programs out there, why this one? And why now?

THUNDEROUS POTENTIAL

First, AWCI and SFA recognize the exponential growth of steel framing in both the residential and multifamily/commercial markets. Data collected by the NAHB Research Center show steel framing in 2004 increased over 2003 levels, including some applications where there were significant gains. For instance, steel-framed interior walls in the multifamily segment rose 50 percent during that period; the use of steel in exterior walls grew about 30 percent.

In fact, the use of steel framing in multi-family construction was six times higher in 2004 than it was in 1997. The commercial/institutional construction markets—which include hotels, retail, schools, churches, hospitals, mixed-use, assisted living, dormitories, office buildings, and others—have been significant consumers of steel framing for several decades. These markets continue to represent an excellent long-term growth opportunity.

Second, further industry developments have created a fertile ground for steel. Recognition and acceptance of cold-formed steel in building codes is leading to a better understanding of its capabilities and benefits. Provisions in these building codes allow builders and owners to lower costs and increase the revenue from specific projects. Height and Area Tables in the NFPA fire codes, for example, give unprotected steel construction roughly 2 1/4 times the area value permitted for unrated wood construction. In addition, the same codes permit steel framing in taller structures than wood framing. In some cases, steel provides a three-story height advantage.

Third, as the demand for more cost-efficient, higher-quality construction grows, builders and developers are demanding cold-formed steel for both structural and non-structural applications, with a growing trend toward loadbearing applications that are more complex to design and build.
Low- and mid-rise structures consisting of cold-formed steel as the main structural component have been successfully built throughout the United States, as builders report the performance characteristics of steel framing are resulting in lower construction defect claims.

**EduCating to MEet the Demand**

Both AWCI and SFA recognize the tremendous growth opportunity that lies with cold-formed steel framing with which many of their members are familiar, one whose tremendous attributes make it the material of choice for the future, and one whose abundance is growing.

Although the market share numbers testify to the fact that the vast majority of commercial builders are now using steel framing on interior walls, there is an acute shortage of knowledge among contractors who can accurately bid and build structures that use steel framing in the more complex, load-bearing applications. AWCI and SFA believe that more buildings would use steel framing—and its members would be better able to capitalize on the growth potential in this market segment—if this kind of education were readily available.

To meet this educational need, AWCI and SFA teamed together to develop and conduct this premier program that fully covers cold-formed structural and non-structural steel framing. AWCI brought contractor expertise and field know-how and SFA brought technical expertise and manufacturer support.

**Learning from AWCI and SFA**

The course materials for Steel—Doing it Right were developed by an interdisciplinary team of cold-formed steel construction professionals, engineers and experienced contractors. The combination of engineers and contractors ensures that the materials are technically correct and the means and methods are practical from a contractor’s point of view. The resulting program covers the full range of needs in 13 modules.

I am happy to report that the first presentation of the course was a success. The three-day event delivered all of the module subjects comprehensively, and cumulated by estimating a complex structural cold-formed-steel framing project. Attendees received a 200-page companion workbook to use during the presentation, which uses more than 600 slides. Attendees also received an order form for all the reference materials used in the program to ensure they have a complete library of design and engineering cold-formed steel framing publications.

They also walked away with the knowledge to bid and estimate challenging cold-formed-steel-framed structures, and the ability to spread their knowledge to the rest of their teams. This is the legacy of the partnership between AWCI and SFA—that contractors at every level, their crews, and members of the industry will feel more comfortable using steel. And do it right!

Steven Etkin is executive vice president of the Wall and Ceiling Industry, the Foundation of the Wall and Ceiling Industry and treasurer of the AWCI Insurance Co. In 2005, he received the Pinnacle Award, which is the highest recognition given by the Association of the Association of the Wall and Ceiling Industry to an individual for his community, association and industry achievements.

**THE 13 MODULES OF THE COURSE**

- The Steel Framing Industry
- Steel Framing Materials
- Engineering Considerations
- Basic Construction and Special Considerations
- Fastening and Cutting Guidelines
- Floor Assemblies
- Structural (Loadbearing) Wall Assemblies
- Wind Bearing/Curtain Wall Framing
- Interior Systems
- Roof Assemblies
- Panelization
- Estimating Considerations and Concerns For Cold-Formed Steel Framing.
- Construction Documents, Project Management and Quality Control
THE STRENGTH OF CFS FLOOR ASSEMBLIES WITH CLIP ANGLE BEARING STIFFENERS

By Steven R. Fox

An investigation into the strength of cold-formed steel floor joist assemblies has resulted in the proposal of a design approach to calculate the capacity of a clip angle bearing stiffener.

The study, funded by the Steel Framing Alliance and Steel Stud Manufacturers Association, carried out at the University of Waterloo, Ontario, aimed to determine the influence of joist depth and thickness, clip angle thickness, and offset loading on floor assemblies using clip angles as bearing stiffeners.

Stiffeners are commonly used in cold-formed steel construction to strengthen the floor joists at bearing locations. Design provisions have been incorporated into the AISI North American Specification for the Design of Cold-Formed Steel Structural Members for stiffeners made from stud and track sections. Clip angles are also used extensively in cold-formed steel construction and can have applications as bearing stiffeners.

For the full details of the test program, consult the Steel Framing Alliance research report, The Strength of CFS Floor Assemblies with Clip Angle Bearing Stiffeners, by Steven R. Fox, October 2005.

Test Set-Up

The test procedure consisted of a series of end-two-flange loading tests on stiffened joist assemblies as illustrated in Figure 1. One of the parameters to be tested was the offset of the loadbearing stud and the joist following the limits stipulated in the AISI Standard for Cold-Formed Steel Framing—General Provisions. Shown in Figure 2 are the configurations based on having the clip angle inside the joist flange or on the back, and with offsets left or right.

The range of variables tested included the following:

- Joist depth (8, 10 and 12 inches).
- Joist thickness (43, 48, 54, 75, 97 and 103 mils).
- Rim track thickness (33 and 54 mil).
- Clip angle size (1 1/2 inches x 1 1/2 inches).
- Clip angle thickness (30, 43, 60, 75 and 103 mils).
- Clip angle max. 3/8 inch less than the depth of the joist.
- Three screws located at quarter points along the length of the clip angle.
- Clip angle location (inside joist flanges or on the back of web).
- Offset loading (3/4 inch offset from centerline of loadbearing stud to centerline of joist).

Experimental Results—Failure Modes

Clip Angle Failure: The most common failure mode included combinations of web crippling of the joist and rim track along with local buckling of the clip angle. The photograph in Figure 3 shows a typical clip angle failure.

Excessive Deformation: The photograph in Figure 4 shows the failure of a “Back, Offset-Left” configuration. The large deformation associated with this type of loading is apparent from the photo. In general, if the load was Offset-Left (with the clip angle either inside or on the back), such that the load-bearing stud was over the joist flange, there was significant deformation prior to ultimate failure (as much as 2 inches in the case of the Back, Offset-Left, or 1 inch for the Inside, Offset-Left).

Screw Shear: In some assemblies the screws connecting the clip angle to the joist or rim track failed in shear/tension prior to the ultimate load. In those cases where the failure of the assembly was ultimately associated with the local buckling of the clip angle, failing the screw was not considered to invalidate the test. However, in some tests with the 103-mil-thick clip...
angles, the screws failed but the clip angle did not. The test was discontinued due to excessive deformation. Assemblies that failed in this manner were not used in developing the predictor equation since the clip angle did not fail.

**Track Flange Failure:** In four of the assemblies, again those with the 103-mil clip angles, failure was caused by the loadbearing stud punching through the wall track and shearing the flange of the rim track. This type of failure, as well as the failure associated with shearing the screws discussed above, indicate that caution is needed when using the very thick clip angles. If there is not a direct load path into the clip angle, the assembly may fail in a mechanism not predicted by a clip angle compression member model.

**Effect of Offset Loading:** The different configurations of offset loading are shown in Figure 2, and the photo in Figure 4 shows the deformation that occurs with an Offset-Left loading. It was found that the capacity of the assembly increases as the load is applied more directly over the web of the joist, and that the deformation increases as the load moves over the flange. This behavior is accounted for in the predictor equation for the strength of the assembly.

### Prediction Equation

The following expression is proposed to predict the nominal capacity, \( P_n \), of the assembly:

\[
P_n = (P_1 + P_2 + 0.5A_yF_y) \beta
\]

where,

- \( P_1 \) = End-two-flange web crippling capacity of the joist
- \( P_2 \) = Interior-two-flange web crippling capacity of the rim track
- \( A_y \) = Gross area of the clip angle stiffener
- \( F_y \) = Yield strength of clip angle
- \( \beta \) = Offset loading reduction coefficient
  - 0.90 for Back Inline and Inside Offset-Left configurations
  - 0.50 for Back Offset-Left configuration
  - 1.0 for Inside Inline, Inside Offset-Right, and Back Offset-Right configurations

The nominal capacity can be used in ASD by dividing by the safety factor (\( \Omega \)) given below, or used in LRFD (LSD) by multiplying by the resistance factor (\( \varphi \)).

<table>
<thead>
<tr>
<th>United States</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Omega ) (ASD)</td>
<td>( \varphi ) (LRFD)</td>
</tr>
<tr>
<td>1.811</td>
<td>0.847</td>
</tr>
</tbody>
</table>

The above equation is valid within the following range of parameters:

- **Screws:** #8 minimum for clip angle thicknesses up to 54 mil, and #10 minimum for thicker clip angles
- **Floor Joist and Rim Track**
  - Joist Thickness: 43 to 103 mil
  - Rim Track Thickness: 33 to 54 mil
- **Design Yield Strength:** 33 and 50 ksi depending on material thickness
- **Nominal Depth:** 8 to 12 inch
- **Bearing Width:** 1 1/2 inch minimum
- **Clip Angle**
  - Thickness: 30 to 75 mil
  - Design Yield Strength: 33 ksi and 50 ksi depending on material thickness
  - Not less than 3/8 inch shorter than the joist depth
  - Size: 1-1/2 x 1-1/2 inch angle
  - Screws: At least three screws connecting each leg equally spaced

The AISI Committee on Framing Standards will review the design approach proposal for possible future adoption.

Steven R. Fox is general manager of the Canadian Sheet Steel Building Institute, Cambridge, Ontario, Canada, and adjunct professor at the department of civil engineering, University of Waterloo, Waterloo, Ontario, Canada.

![Figure 3: Clip Angle Failure](image)

![Figure 4: Excessive Deformation](image)
Hurricane Rebuilding Efforts Gain Momentum

The Steel Framing Alliance’s Hurricane Katrina Response Task Group has taken shape and narrowed the focus for rebuilding with cold-formed steel, following a preliminary yet thorough study of the horrendous human loss and an assessment of where efforts will best aid those who experienced the disaster.

Visits to hurricane-torn locales, meetings with local officials and evaluations of steel’s ability to fill the need indicate free-market and government forces will determine where rebuilding will occur, but observations lead the group to believe initial substantial construction will occur near the “Interstate 10 Corridor,” running from Texas to Louisiana, through the Gulf region of Mississippi.

“After touring the area, we’ve looked at the requirements for the potential rebuillding of the affected areas and at first glance we think that the steel industry is well equipped to immediately be involved in the rebuilding utilizing cold-formed steel framing,” says Alan MacQuoid, the task group’s leader.

Taken into consideration in the assessment was operating capacity of members of the Steel Stud Manufacturers Association, largely rollformers, and SFA to provide the steel, MacQuoid says. After careful study, it was concluded both membership groups could meet the need throughout the estimated 10-year reconstruction timeframe.

While the task group recognized the opportunities, it also identified forthcoming challenges. These included logistics and distribution, especially considering the history of relatively low volume in the area; ensuring code officials and plan checkers are well trained in what to look for when builders have plans for cold-formed steel construction; and setting up facilities to train enough workers to meet the capacity.

“We have a great deal of confidence cold-formed steel will be accepted down there,” MacQuoid says, “but we have a big job ahead of us.”

TXSFA Broadens Reach, Changes Name

In an effort to reflect the expanding geographic coverage of the Texas Steel Framing Alliance, its Board of Directors voted to change its name to the Greater South Steel Framing Alliance.

Also, Chris Burke has been appointed the group’s full-time permanent executive director. As such, he is responsible for office administration, communications with members and non-members, membership recruitment, and event planning. He has been serving in this capacity in an interim role since August.

Burke can be reached at 4621 S. Cooper, Suite 131-352, Arlington, Texas 76017; Phone: (817) 357-0340; Fax: (817) 462-0658; e-mail: cburke@steelframing.org.
Steel the Choice for Self-Storage Facility

More stuff is spelling more steel, as the product proves itself the perfect framing material in the ever-prevalent field of self-storage facilities.

Locking up that argument is a 90,000-square-foot three-story self-storage warehouse in Avon, Mass., in which the use of steel-framing system saved the owner time money over other materials in several ways.

The building combined a floor system of clear-span metal decking from wall to wall with 5 1/2-inch poured concrete with preassembled components, some panelized. Steel Elements Inc., the manufacturer and material supplier on the job, shipped 25 truckloads of components to the job, including the decking, trusses, pour stops, studs, purlins, blocking, header piers, metal roofing, metal siding, and screws and other fasteners.

“The prefabricated header and post piers made up the garage door entrances, so onsite they just had to bolt them to the slab,” says Scott Coulombe, CEO of the Gorham, N.H., company, which has been in business for two years. “It made the job go extremely fast.”

Also speeding up the nine-month job was the fact that all of the steel components had been fabricated and delivered to the job in 10 weeks, and were fabricated to the right dimensions. Coulombe credits his company’s in-house engineering and sophisticated tooling system for the accuracy of the parts.

“We roll-form our own steel and design all our own pieces to make accessories,” says Coulombe, “and we use laser projection systems to template our trusses.”

He also describes his company’s panelization tables, which allow for stud and track to be screwed together semi-automatically.

Assembling components in the shop reduced the number of pieces to handle on the jobsite tenfold. Instead of erecting and assembling 1,500 small pieces, site crews had to install only 150, translating to 112 fewer worker hours outdoors during a Massachusetts winter.

“Installation was easy, like an erector set,” says Robert Pouliot, co-principal of Boardwalk Development LLC, a design-build firm that was the contractor for the Avon facility. “Each of the connections for the steel studs or the tracks was tied with self-tapping screws, which is typical of the
Steel Framing Alliance’s Spring Forum and Annual Meeting, this year hosted by the CASFA, promises a full schedule of educational sessions, industry networking and an exciting showcase of new-product introductions.

Slated for Tuesday, May 2, through Thursday, May 4, at the Disneyland Resort in Anaheim, Calif., this Spring Forum carries on its tradition of drawing hundreds of construction professionals—from the curious and the well-heeled in steel—from the surrounding area for the full spectrum of the steel experience in a packed schedule.

**Tuesday, May 2**

10 a.m. to Noon

CASFA builds its Gazebo Exhibit, which will hold the new-product expo. It is the visitor’s first chance to see truss products—including NuTruss, GusTruss and Alpine Trusses—and walls products—including NuCon walls, Clark-Western walls with lath, Dietrich walls, CEMCO walls and CEMCO’s Sure-Board—installed and in place.

Afternoon:

1:30 p.m. to 3 p.m.:
- Fire, Sound, and Thermal

3:15 p.m. to 4:45 p.m.:
- Basic Shear Systems: Issues that Affect your Designs
- Mid-Rise Construction

**Wednesday, May 3**

Wednesday is “Engineering Day,” as CASFA gears the days events toward engineers, architects and code officials who desire to stay on the cutting edge of today’s industry technologies.

**Thursday, May 4**

Thursday is “Contractor and Code Officials Day,” with a hands-on, get-involved-with-steel-framing program. The eight technical programs—ideal for architects, contractors, code enforcement personnel and inspectors—will share insight into today’s field issues.

**Evening:**

The Steel Framing Alliance Annual Meeting and Keynote Dinner will be held inside the California Adventure Park. Families are welcome, as the both Disneyland and California Adventure Park tickets are available for Spring Forum guests!
Does a steel-frame house require more energy to heat than a wood-frame house assuming quality insulation is used? Specifically, is it colder because of the steel?

A properly insulated steel-framed house does not require any more energy to heat than a wood-framed house. As a matter of fact, many of the winners and finalists in the National Association of Home Builders green building competition included steel framing. It is true that steel conducts heat better than wood. However, a properly insulated steel-framed structure can exceed the energy efficiency of most wood-framed homes. Long-term, steel is a much better framing product with respect to the integrity of a wall against air and water infiltration. Wood-framed walls will grow and shrink based on the moisture content of the air in the wall cavity. This can cause cracks in drywall, nail pops, and gaskets and sealants to leak over time. A properly constructed steel framed structure is more likely to maintain its weather-tightness over time.

Because of its thermal conductivity, the best way to insulate steel framing is to use rigid insulation such as foam board on the outside face of the studs, rather than cavity insulation between the studs. If cavity insulation is used, a spray-in product such as Icynene, or a product to insulate the steel framing from the sheathing, such as Integrity Gasket, may be used.

I want to remove a portion of a non-load-bearing wall to open my foyer. Since my home was built with steel studs, I don’t know how to go about it. Do I just saw through the portion to be removed as if it were wood? Any info would be helpful.

If you want to remove the entire wall (from floor to ceiling), all you have to do is pull or break off the gypsum wallboard, and twist out or unscrew the studs from the top and bottom runners. If you want to only remove part of the wall, such as creating an opening or a knee wall, you can cut the studs. Special abrasive and metal-cutting blades are available for circular saws that can replace standard wood cutting blades. Note that this type of metal cutting produces hot sparks, so wear appropriate eye, hand and ear protection.

If you remove only the top part of the wall (to create a “knee wall” or low partition), you may need to stabilize the lower part of the wall; without the connection at the top, it will have reduced lateral stability. Some companies make special clips that can be installed at the base of the studs and bolted to the floor or foundation, which create a better moment connection between the studs and the floor below. Check the member directories of Steel Framing Alliance at www.steelframing.org or the Steel Stud Manufacturers Association at www.ssma.com to see if a manufacturer in your area carries these sorts of products.

Most steel framing and accessories are sold through drywall supply yards; you can check your local Yellow Pages or online directory for “Drywall Supply.” The saw blades I mentioned earlier are available at many hardware and tool stores. These blades fall into two general types: black, fiber-reinforced abrasive blades, which grind a narrow kerf in the steel, and the metallic-based metal cutting blades, which look more like the typical wood-cutting blades but have hardened tips and a different configuration for cutting steel. There are also some specialty saws that can be used for steel cutting, but since you are only removing one wall, you probably will not need one of these. These saws have special features such as heat-resistant blade covers, and magnetic “chip” collectors, which retain the flecks of metal created by the cutting operation.

Thanks to all for your inquiries!
THE REAL STORY ABOUT COLD-FORMED STEEL AND SUBTRADES

BY MARIBETH RIZZUTO

As cold-formed steel framing has gained in popularity, so has the need for sub-trades willing and able to install the mechanical elements in the structure.

For the commercial side of things, it is pretty much a no-brainer, with a plethora of skilled electricians, plumbers and HVAC specialists to do the job. On the residential end it is a different story. There are very few residential electricians, plumbers and heating and cooling professionals that have had exposure to cold-formed steel. It’s up to all of us involved in the industry to help educate them about how easy it is to work in a house framed with steel.

Builders need to take the first step by involving the subtrades early in the planning process to cover issues like the location of the panel box, and stacking of the plumbing runs for bathrooms and kitchens. We’ve heard, and in some instances, witnessed the horror stories where steel structural members landed directly in the path of a waste pipe, or panel box, and the simple solution by the electrician or plumber was to cut the structural member—Ouch! Imagine the problem that creates!

It’s not a problem isolated to steel; it happens with wood-framed structures as well. Think about the costs that misstep will require for repair? Consider the wall that was framed without lining up the punchouts. Picture an electrician trying to pull wire, or the plumber trying to run copper or plastic pipes.

Long story short: If you want to get competitive prices from the trades, do the simple things to minimize extra work for the subs. Include the subcontractors early in the project.

• Locate a plumber, an electrician and an HVAC installer willing to work with steel before the framing begins, especially if steel framing is not common in the region.
• Train subcontractors as necessary.
• Subcontractors working with steel for the first time may struggle with the learning curve and charge more to cover the extra time they need.
• Experienced plumbing, electrical and HVAC subcontractors charge the same for a steel- or wood-framed house.

ELECTRICAL INSTALLATION

When working with steel framing, electricians must follow the National Electric Code plus any additional local regulations for wiring and electrical methods.

The electric cable used in residential steel framing is the same as that used in residential wood framing. It’s nonmetallic-sheathed cable!

In most instances electricians wiring a wood house must bore holes to run the wiring. In steel the framing members are pre-punched to accommodate the wiring. A bushing or grommet is secured in the steel punchout to protect the nonmetallic-sheathed cable from potential damage. Snap-in plastic bushings, or grommets, like those manufactured by Arlington Industries (www.ailiftings.com), fit into existing irregularly shaped punchouts in steel studs. (See Figure 1.) They comply with paragraph 300-4 (b) (1) of the NEC that requires non-metallic sheathed cable to be protected by bushings or grommets when passing through steel studs. The grommets fit properly in the hole and do not slide out when the electrician pulls the wire.

SECURING WIRING

To secure wires at receptacle locations, the electrician may use zip ties, such as Ty-Rap, manufactured by Thomas and Betts, www.tnb.com. The ties with a molded screw hole fasten to the steel. Where vertical running wire needs to be secured, zip ties attach the wires to the steel stud; some stud manufacturers have an extra small hole punched next to the normal stud punchout for this purpose.

Standoff clips are also available to secure the wiring. (See Figure 2.) They are screwed into the stud with No. 8 self-drilling screws.

Requirements for the placement of steel plates to protect nonmetallic sheathed cable that falls close to the edge of any stud, joist or rafter—are almost identical. Refer to the NEC 300.4 for specific language.

ELECTRICAL BOXES

Steel-frame electricians usually follow these suggestions.

• For switches or single outlets, RACO (www.hubbell-raco.com) has plastic boxes with side-mounted tabs to screw into the web of the stud. (See Figure 3.)
• The side tab keeps the gyspumboard from bulging out or forming a bump in the surface of the wall.
• For larger boxes, electrical catalogs have two- and three-outlet electrical gang boxes. The thin metallic face tabs on these boxes typically do not make a large bulge in the gypsumboard.

It is also important to realize that because of layout, not every electrical box or switch will be mounted on the hard side of the steel stud. Any force exerted on the electrical box in the wall could bend the attached stud’s flange and crack the gyspumboard. It is recommended to have extra track material 6 inches to 8 inches long pre-cut for the electrician to use to cover the stud to properly mount the electrical box. Having the track pre-cut saves the electrician time.

SERVICE PANELS

When installing a service panel, use either wood or steel blocking behind the panel to provide a solid backing. (See Figure 4.) It may also be beneficial to attach a wood 2-by-6 between the studs immediately above the panel to provide a nailer for securing wiring entering the panel.

Tips for wiring:

• Think about the electrical layout carefully; consult between architect, builder and electrician.
• Put the service panel (breaker panel box) close to the kitchen or utility area to minimize the length of heavy wiring runs.

PLUMBING INSTALLATION

Plumbers should consult the International Residential Code, Chapter 26 and any local plumbing codes in their area. They need to ensure that all fittings are tight and pipe is secured and protected from damage and corrosion.

To complete their work, they must run the plumbing lines through the walls and floor framing, hang and secure the piping in place, and test the lines.

HANGERS

Just like wood-frame construction, plastic or copper pipe must be supported with hangers secured to the studs. Hangers must be attached to the steel studs using a minimum No. 6 self-drilling screw in 18- and 27-mil studs and a self-drilling No. 8 for thicker steel studs.

Copper hangers should never be attached directly to steel studs. Copper pipe and galvanized steel studs are dissimilar materials that will corrode if left in contact with each other. Plastic isolators, steel hangers with an isolator for the copper pipe, or some other method must be used so that the two materials do not touch. Plastic pipe hangers and plumbers tape may be used to eliminate electrolysis problems.
THE REAL STORY...
CONTINUED FROM PAGE 32

ISOLATORS

Plastic and copper pipe have specific requirements when used with steel. Just like the wiring, both must be secured and protected from sharp edges when passing through steel stud punchouts. Copper pipe needs protection from electrolysis.

Companies manufacturer pipe insulators and suspension clamps to protect the plastic pipe or to insulate copper. (See Figure 5.) Some building inspectors allow pieces of foam pipe insulation placed around the pipe at stud punchouts. This is an inexpensive solution, and it works well where copper pipe runs vertically along the studs.

Tips for the plumbing:
• Cluster plumbing lines for the kitchen, laundry, bathrooms and water heaters together as close as possible on the plan to minimize the number and length of piping runs.
• Stack bathrooms and plumbing facilities vertically in two-story homes as much as possible.
• Establish a clear vertical path with alignment framing, without interrupting structural members.

HVAC Installation

The HVAC subcontractor usually has the most experience working with steel, especially if he or she uses steel ductwork. HVAC installation is covered in Chapter 14 of the International Residential Code. No. 8 self-drilling screws generally attach plastic or metal ductwork to the framing. Sometimes chase walls are necessary to conceal the ductwork. The architect and framing contractor should coordinate the location of duct runs.

Tips for HVAC installation:
• Place heating and cooling equipment in a central location on the floor plan to provide for good air distribution and minimize the number and length of duct runs; the longer the ducts, the greater the loss of energy.
• Provide vertical or horizontal chases for ducts, flues or returns, as necessary.
• Incorporate HVAC equipment in the plan to avoid complications with the structure or other utilities.

Holes

Where can I cut a hole?!

Holes are necessary to run the utilities in the house. There are several different ways to make holes in steel studs, joists or track material for running utilities.
• Keep the subcontractors in mind:
  • Make sure all pre-punched stud or joist holes line up.
  • Place punchouts in the studs under windows.

Hole Saws

For thicker steel and holes up to 6 inches in diameter, hole saws by companies like Lenox and Greenlee are available. These saws are used on an electric drill and cut through the steel studs. Unibits (Figure 8) by Irwin Industrial Tool Co. (www.Irwin.com) and Step Bits by Greenlee may also make holes in steel up to 1 3/8 inches.

By following the steps laid out in this article, we should be able to expand the number of subtrades willing to work with steel-framed homes, providing a better end product!

That’s it for this issue. Next time will take a look at insulation methods when framing with steel studs.

Maribeth Rizzuto is director of training and education for the Steel Framing Alliance.

In addition to the resources already listed, more information on this subject can be found at:

National Electrical Manufacturers Association
WWW.NEMA.COM

International Code Council
WWW.ICC-SAFE.ORG

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