

## Pin Fastening A Key To Success For Cold-Formed Steel

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Over 47% of builders and contractors recently surveyed by the Cold Formed Steel Engineers Institute



(CFSEI) ranked pin fastening as their number two priority for framing with cold-formed steel (CFS)! Number one was training. And why not? Traditional methods for fastening CFS can be laborious, use excess materials, and not accommodate many of the fastening combinations encountered on today's job.

Hardened steel pins have been used successfully in construction for decades. Ironically, it is this lengthy history that carries forward "outdated" testing and performance evaluations of pins that can hinder the use of pins in modern day construction.

Common uses for pins include fastening various materials or fixtures to a wide variety of steel gauges, including "structural" steel, and into different densities of concrete. Most recently, pins are being used successfully to join up to five layers of "steel to steel". Pins are installed at speeds that are five times to 10 times faster than conventional fastening methods. The growth in the use of CFS framing has created innovative designs for structural assemblies that require new fasten-

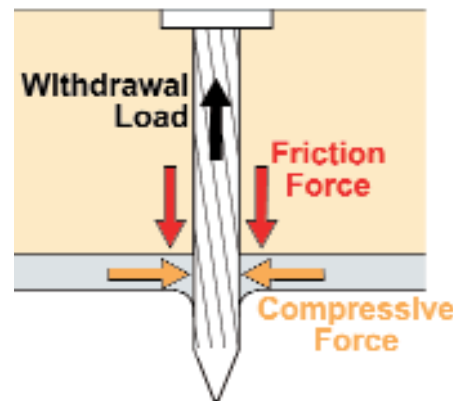
ing methods to assure their economic viability. The demand is growing rapidly, and pin fastening has kept ahead of the curve with innovative new pins and unique high-pressure installation systems.

### What's Being Done?

The Technical Development Committee for CFSEI has begun work towards creating new standards and design guides to increase the use of pins for CFS construction. They are causing the development of:

- Minimum test standard results that can be used to interpolate/extrapolate fastener performance.
- Data to support new "safety factor" recommendations for various building code evaluation services.
- Evaluations of various fastener testing in 20-gauge to 22-gauge and 33ksi to 90ksi steels.
- Evaluations of various fastener installation speeds.
- A matrix of test protocols for comparisons of fastening methods.

A key to the development and use of fastener evaluation protocols will be their effects on "safety factors" used to design CFS structures. As mentioned, the outdated use of the safety factors created for pins in concrete and 3/16" steel plate can cause a design engineer unfamiliar with CFS to vary this value by as much as



100%! A review of just two such recommendations shows one using a pin "safety factor" of "5" while the other, more familiar with the capabilities of CFS, recommends a factor of "2.7".

Today, even without the development of new protocols, pins can exhibit ultimate withdrawal and shear values that are equal to or greater than screw fastening in CFS. In yet another irony, pin withdrawals actually outperform screws in the lightest gauges of CFS (20-gauge to 22-gauge) because of their installation displacing minimum material. So the CFSEI work goes a long way towards established performance equivalency.

### The Benefits

The work showing fastener equivalency benefits all who make up the CFS market by:

- Enabling a wider range of CFS design capabilities.
- Providing economic benefit to developers, builders and contractors/subcontractors.
- Answering the builder/contractors' demand for pin fastening knowledge.

### More Information

You can learn more about pin fastening equivalency by contacting the Cold Formed Steel Engineers Institute ([cfsei.com](http://cfsei.com)) or from Aerosmith Fastening Systems at (800) 528-8183 or [aerosmithfastening.com](http://aerosmithfastening.com) or the Steel Framing Alliance at [steel framingalliance.com](http://steel framingalliance.com).

*The author, Robert J. Shluzas, is president of Aerosmith Fastening Systems and has worked in the building materials and fastener industries for over three decades. He has authored building code specifications and is currently a member of the Technical Development Committee for the CFSEI. He can be reached at (317) 243-5959 or [rshluzas@aerosmithfastening.com](mailto:rshluzas@aerosmithfastening.com).*