



PATH (Partnership for Advancing Technology in Housing) is a private/public effort to develop,

## ***Acknowledgements***

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## **Background**

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A major impediment to the use of steel framing which has long been recognized is the lack of cost-effective tools and fasteners to make connections quickly and easily. The Steel Framing Alliance has consistently identified tools and fasteners as one of the top priority research areas necessary to make steel framing competitive with other materials. Recent studies by HUD illustrate the cost impacts in this area. In *Steel vs. Wood, Cost and Short Term Energy Comparison: Valparaiso Demonstration Homes*, an extensive time and materials study showed a nearly \$500 higher cost of fasteners on a steel home compared to an identical wood-framed home. Similar labor

5. How much does the clinching equipment cost, and are there offsetting cost savings from the elimination of screws or from productivity increases?

## ***Approach***

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Based on the availability of the tool and the manufacturer interest, we selected two tools manufactured by Attexor Inc., of Springfield, Massachusetts. Attexor is a Swiss-owned provider of clinching technology for a wide variety of applications including automotive, HVAC equipment, appliances, and construction.

Attexor makes a wide range of tools for clinching. Some are stationary tools that can weigh up to 60 lbs, while others are more mobile and wei





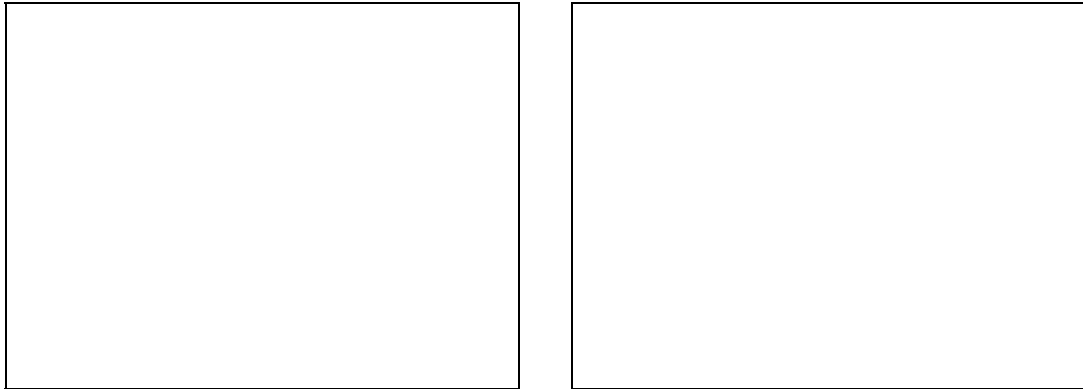
after consideration of the advantages and disadvantages, the S&G manager concluded that the







place the studs. On the track-stud sections, they are much shorter and don't require a special table. The track is placed over the open side of a full length stud to hold it in place. The shorter stud section is then placed with its web against the track web and held manually while the screws are applied. The track/stud is then removed and another pair is placed on the full length stud. Unfortunately, this set-up will not allow access to the underside of the track which is necessary for clinching.



Left: Laborers fabricating panel components off-line. Also, the table height is set for optimum



that are eliminated is perhaps the most readily quantified benefit of clinching. The screws used by e d

The second application was a short section of a joist and a 2-inch angle connector. For this application, the lighter Attexor tool would not fit over the end of the joist. Thus, the heavier tool that had a wider opening at the jaw of the tool was used. Although it fit over the assembly and could be positioned over the location of the clinch, the distance it had to reach caused the jaw to catch on the floor joist flange when the trigger for the tool was pressed. If the connector were located nearer the top or bottom of the joist, instead of the center, then the clinch would have functioned properly by accessing the connection from the end of the joist instead of over the flange.







This is a very unlikely scenario given the track record of clinching tools in other industries, including automotive and aerospace.

Another point to keep in mind is that this analysis only addresses some of the potential savings from clinching. It is unlikely that a contractor would invest in a clinching tool and limit its use to the one application we analyzed to determine benefits.

### ***Code and Approval Issues***

To further complicate the situation, the ICC-ES “interim” acceptance criteria reports are divided into

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There are also recommendations for the framer and/or builder that would make clinching more practical including:

## Appendix: Time-Motion Notes

