

Tiger Claw[®]

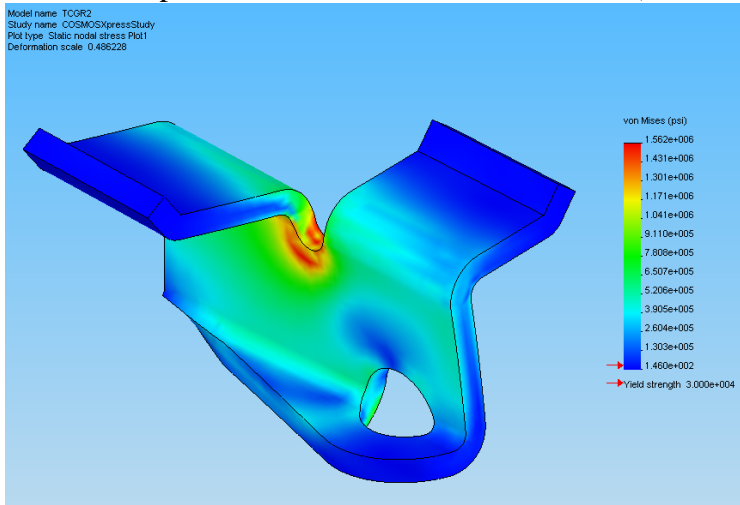
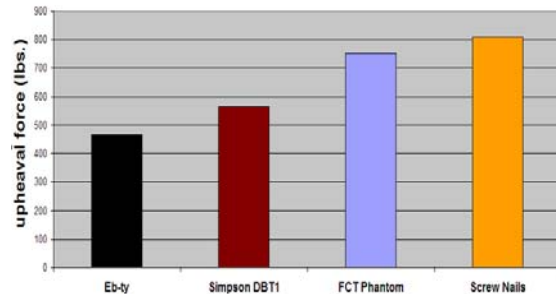
Hidden Deck Fasteners

Phantom Load Analysis Summary

Testing was conducted Jan. 06 –Feb. 06 at Rochester Institute of Technology in Rochester, NY in order to draw maximum upheaval comparisons between three hidden fasteners currently on the market. All three fasteners are designed to accomplish the common goal of securing a decking board to a joist without any visible damage to the exposed surface of the board. The tests were performed using individual sample decks assembled with the test fasteners. An upward force is directly applied by a MTS Universal Test machine while the deck frame is fixed to machine base.

The Phantom had proven to be 35% stronger than the Simpson DBT-1 and 63% stronger than the Eb-ty. The Phantom has a maximum upheaval of 753 lbs. across test board (4 fasteners).

Upheaval Load Comparisons



This image illustrates the finite element analysis on the Phantom fastener using ANSYS software at the RIT Engineering lab. The Von Mises stresses (psi) shown are for a load that would cause failure. Stresses experienced between the two upper legs indicate the first place for failure. Fastener material properties are: Yield strength =45.5 kpsi, Tensile strength =101.7 kpsi.

A bearing load applied across a decking board (14.5 x 5.5 inches - area of a single board on 16" o.c. joists) can demonstrate what natural forces the fastener is capable of withstanding. The Phantom fasteners are calculated to withstand a load of 240.2 lbf for that area. A category 5 hurricane for this same area is calculated to exhibit a force of 157.4 lbf. A category 5 hurricane would require more than 80 lbf in addition to its force in order to cause failure in the fastener.

In conclusion the comparative test data illustrates the Phantoms hold down strength is comparable to some traditional fastening methods and superior to other hidden fastening systems on the market. It also illustrates adequate hold down to withstand hurricane force wind loads.

Material: 304-2B Annealed Stainless Steel
Thickness: 0.06 inch thick
Meets ASME – SA240, ASTM –A240, AMS 5513 Standards

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