

Adding Loads to Basement Piers

Q. A client wants me to add a second story addition on a small Cape. The addition would necessitate bringing new floor and roof loads onto existing steel columns in the basement that heretofore have supported only first-floor loads. Are the footings for those steel posts up to the additional loads? Standard practice in this area is to pour a 2x2-foot pad, 8 to 12 inches thick; the slab is 4 inches thick.

A. Christopher DeBlois responds: Determining whether or not a slab or footing has adequate capacity to safely support a point load is a two-step process. First, determine the design load carried by the column. Based on the tributary area from the framing at roof, attic, and floors, collect the loads from each level and add them up through the building. Typical column loads in residential construction (not counting giant mansions with football fields for great rooms) can be as little as a few thousand pounds and as much as 10 tons. In the former case, no steel column is even needed and the load could have been supported directly on a slab. Even a 4-inch slab-on-grade can support up to 5,000 pounds without a footing if you put a decent base plate on the column (1/2x9x9 inch, for example). In the case of 10 tons, however, only a good footing designed for the necessary load will do. In a retrofit, plan on cutting out whatever concrete is there and installing a new footing to be certain you have adequate capacity.

The gray area in between is where all those gray hairs come from. If the standard footing is 2x2 feet, then the load capacity of the footing should be at least 10,000 pounds (2 ft. x 2 ft. x 2,500 pounds per square foot), and

perhaps even more if the soil has a bearing capacity in excess of 2,500 psf. You can probably support a little bit more given that 2,500 psf is a fairly conservative soil capacity (unless you built on muck), and that live loads for house floors, bedrooms, and attics (40 psf) are often conservative. Make sure also that you account for the full roof snow loading in your area. I would not recommend stretching these assumptions more than 20% without some additional verification. If your column load is more than 12,000 pounds, or if you're not really sure there is a 2x2 footing, put in a new one of adequate size.

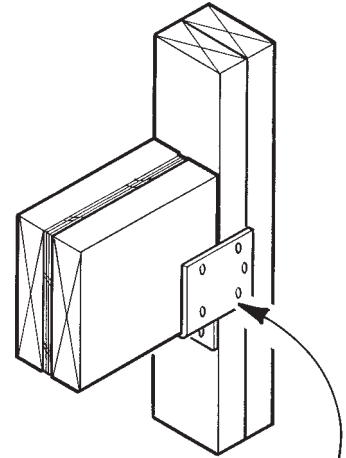
Christopher DeBlois, P.E., is a structural engineer with Palmer Engineering Co. in Chamblee, Ga.

Strength of Header Hangers

Q. How do header hangers (see illustration, page 24) compare, from a strength standpoint, with traditional supporting jack studs?

A. Robert Bouchet responds: If the header and jack stud are perfectly cut so that the header bears completely on the jack, the jack stud would have about three times the capacity of a header hanger in download. It should be noted, however, that the strength of the header hanger may still be sufficient for a particular installation. The advantage of header hangers comes in eliminating the jack stud altogether, thereby allowing better insulation properties, saving on lumber, and allowing slightly wider openings in tight framing situations. Simpson's HH

Frugal Framing




Simpson HH-series header hanger

series hangers, with their 2¹/₈-inch seat, will also provide support for a header that has been cut slightly short.

Robert Bouchet is an engineer with the Simpson Strong-Tie Co. in Pleasanton, Calif.

Repainting Greasy Walls

Q. I occasionally need to repaint kitchen walls that have a thin buildup of grease on them. Are there any products available that will cut through this film so I can apply latex or polyurethane?

A. Henri de Marne responds: For heavy buildups, use Speedy White Hearth and Stove Biodegradable Cleaner. If you can't find it locally, call Speedy White at 800/872-8855 or write them at 871 Fairport Rd., East Rochester, NY 14445. This product will do a better job than 409 or Mr. Clean, which might be sufficient for light contamination. 

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