

Letters

Hot-Water Systems

I enjoyed reading Gary Klein's article on hot-water conservation ("Efficient Hot-Water Piping," 3/13). This is how I have designed hot-water systems for over 40 years (see blue line in drawing at right):

1. Remove the water-heater drain valve near the bottom of the water heater and use that location for the cold-water inlet. Plug the original cold-water inlet.

2. Run a $\frac{3}{4}$ -inch main line and a $\frac{3}{4}$ -inch return line. Put a spring-loaded check valve in the return line to prevent incoming cold water from entering the return line.

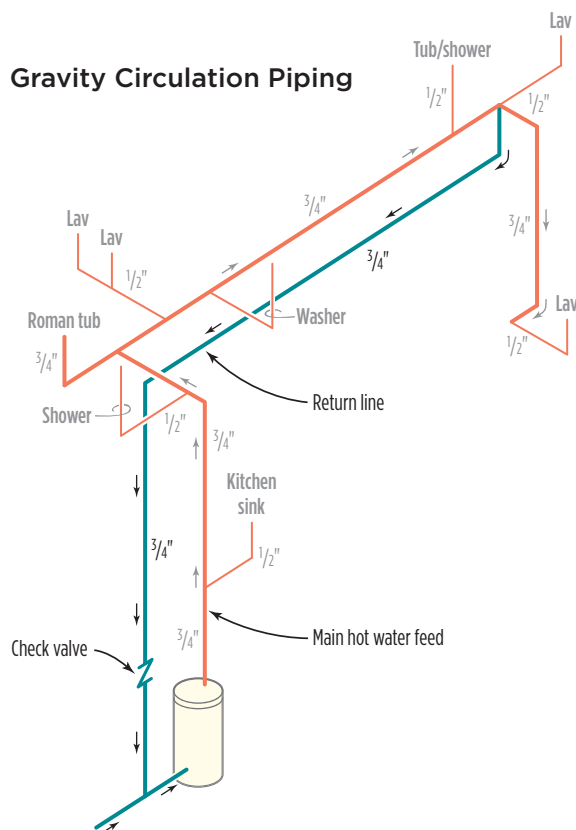
3. The return line should drop gradually without bending upward at any point.

4. The hot water will naturally rise on its own, and when it cools it will return to the water heater.

Normally this is all that needs to be done, but in some larger, newer houses it is difficult to get a downward-sloping return line. In those instances a $\frac{1}{20}$ -hp circulating pump can be installed in the return line. The pump costs less to operate than a 60-watt light bulb does, and the cost is offset by using less water.

Ken Landes
Blue Springs, Mo.

Gravity Circulation Piping



TJ Shear Brace Installation

The March article "Building Stem Wall Foundations, Part II" addresses the use of Simpson Strong-Tie MASA mudsill anchors to attach the mudsill to the foundation. On page 57, the author describes the installation of the TJ Shear Brace anchor-bolt spacer (Simpson Strong-Tie recently acquired the TJ Shear Brace product line from Weyerhaeuser). The caption for Figure 7 (see photo, right) states, "In the rush of the pour, the template was installed upside-down, so the author will just pop it out after the concrete has set up."

The TJ Shear Brace anchor-bolt spacer is intended to be embedded and remain in the concrete. Not only does it help to accurately locate the anchor bolts, but it also plays an integral role in the design and performance of the anchorage as a part of the lateral force-resisting system.

We would like to thank the author for the mention and use of our anchors and shear walls, but we also want to ensure that our products are installed in accordance with the applicable installation instructions so the intended performance is achieved.

Caleb J. Knudson, P.E.
Simpson Strong-Tie



Editor's note: We followed up with Mr. Knudson by phone to find out what role the anchor-bolt spacer plays in the shear-wall bracing system, and also to ask what remedies might be available to a contractor who discovers, as our author did, that the TJ Shear Brace anchor-bolt spacer had been installed upside-down.

While the engineering is by no means simple, the simplest

Letters

answer to the first question, according to Mr. Knudson, is that the anchor-bolt spacer, by virtue of its size, thickness, and shape, both reinforces the concrete and transfers the shear forces from the anchorage into the concrete.

As for available remedies, the good news is that there may well be a nondestructive solution. According to Mr. Knudson, Simpson Strong-Tie typically would work with the engineer of record to calculate the actual demand load on the shear brace system, taking into account the capacity of the anchor bolts and any additional ties that may be embedded in the concrete. In a best-case scenario, this re-evaluation of the load might conclude that the system will function properly without modification. If some additional anchoring is required, it might be possible to use the flat anchor-bolt spacer made for CMU installations in conjunction with epoxy-based anchor bolts to re-establish a connection sufficient to transfer the shear forces. As a last resort, a section of the concrete wall would need to be removed and recast, with the anchor-bolt spacer properly embedded and the new concrete properly tied into the existing wall.

We also checked the installation instructions in the TJ Shear Brace Specifier's Guide (TJ-8620). While several drawings clearly note that the anchor-bolt spacer "remains in concrete," the fact that the hardware component in question is called a "spacer" may lead to confusion about its role as an integral part of the shear brace system. Changing the name to "shear transfer plate" or something similar might go a long way toward preventing this misunderstanding.

KEEP 'EM COMING!

Mail letters to *JLC*, 186 Allen Brook Lane, Williston, VT 05495; or email to jlc-editorial@hanleywood.com. *JLC* reserves the right to edit letters — as well as comments taken from jlconline.com — for grammar, length, and clarity.