

## Simple Standby Hot Water

**Q.** I've been told that I can provide "instant" hot water to my second-floor bathroom sink by installing a return hot-water line to my water heater in the basement. Would I need to install a circulating pump with this system?

**A.** Joseph Stoddard responds: In the situation you describe, you can get acceptable results without a pump. The hot water "passive recirculation" loop is a technique I learned from an old plumber years ago. I've successfully used this technique a number of times when the bathroom is located above the hot-water heater. By pro-

viding a return piping run to the hot-water tank, a natural circulation (called a thermosiphon) is created. The cooler water in the upstairs bath sinks back towards the hot-water heater, and the hot water from the heater rises and replaces it.

I've had acceptable results using 1/2-inch-diameter copper return lines, but would caution against using a smaller-diameter return: It might not allow enough water to circulate through the loop.

To install a passive recirculating system:

1. Turn the power off to an electric

water heater, and close the gas supply valve to a gas water heater. Shut off the water supply to the hot-water heater.

2. Drain the heater and the related hot-water lines, and remove the drain cock at the bottom of the hot-water heater.

3. Install a threaded tee stud between the tank and the drain cock (see illustration, left). To prevent bi-metal corrosion, the tee stud should be made from the same piping material used to connect the drain cock to the tank.

Replace the drain cock in the end of the tee stud assembly.

4. Install a tee connection in the sink's hot-water supply line. This tee should be installed in the supply line as high as possible.

5. Run the return pipe from the tee at the high point back to the tee at the hot-water tank, and test for leaks.

Insulate as much of the supply side piping as possible, but leave the return loop uninsulated. This will reduce standby heat loss and also help maintain the temperature differential that "fuels" this passive recirculation loop.

Former builder Joseph Stoddard sizes and sells heating systems for the Bailey Co. in Elmira, N.Y.

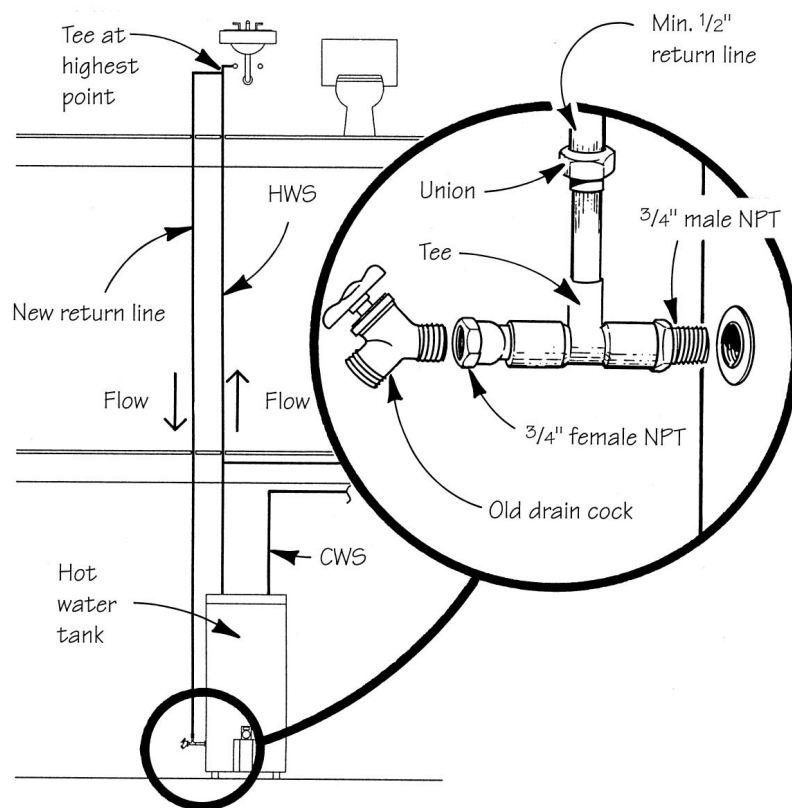
## Cupping Clapboards

**Q.** We were recently called in to make siding repairs on a five-year-old home. The wall system consisted of 1/2x6-inch beveled cedar siding fastened over 1-inch foil-faced polyisocyanurate foam, 2x4 studs with R-11 unfaced fiberglass batts, and an interior poly vapor barrier covered by 1/2-inch drywall.

The siding was cupped towards the interior of the building, and the stain originally applied to the siding was peeling off in many areas. When we removed the siding, there was no visible moisture on the back. What could have caused the siding to fail, and how can the problem be corrected?

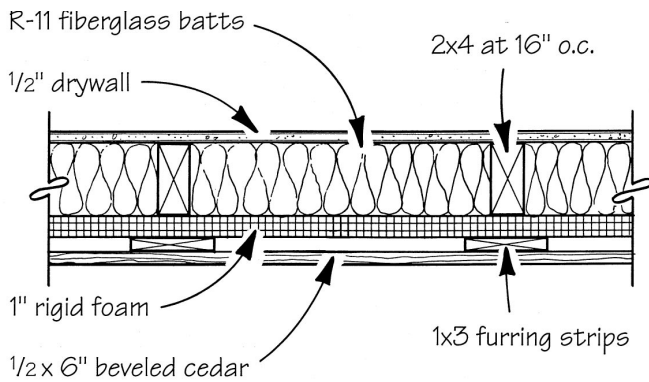
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### Simple Standby Hot Water



When a sink is located above the hot-water heater, you can provide instant hot water at the sink with a simple passive thermosiphon loop, plumbed with standard fittings.

## Rain Screen Siding



When applying wood siding over rigid-foam insulation, use furring strips to create an air space that buffers moisture cycling.

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**A.** Henri de Marne responds: Siding applied directly over rigid insulated sheathing has a history of failures. The consensus seems to be that rigid-foam sheathing is so impermeable that moisture absorbed by the siding (from direct rainfall or “splash back” at horizontal surfaces) cannot be buffered by temporary absorption in the underlying wood framing elements. The rigid insulation also prevents the wall framing from absorbing any of the heat generated by exposure to direct sun.

Depending on the action of the rain, sun, and temperature, the siding cups as moisture is driven back and forth through the siding. In this case, the peeling of the latex stain indicates that a solid-color stain was used. The surface film of stain lifts off the siding when underlying moisture tries to escape by migrating through the surface of the siding.

Inward cupping results when the interior surface of the siding is drier than the exterior surface, and the back of any siding exposed to direct sun will often be “baked dry” when the foam sheathing blocks heat transfer to the underlying framing.

The first line of defense against these types of problems is to thoroughly back-prime the siding. Field-cut ends should also be coated with stain or preservative. The siding should be installed over furring strips, creating what is called a “rain screen” cladding system (see illustration, above). The resulting air space allows both heat and moisture to dissipate. This buffering effect can be increased by venting the air space at top and bottom.

Henri de Marne is a consultant in Waitsfield, Vt., specializing in moisture-related construction problems.

## Gaps Between Plywood

**Q.** Most sheathing manufacturers recommend that panels be spaced at the edges and ends. Since panels measure a full 4x8 feet, the only way I’ve been able to provide this spacing (and maintain standard joist and stud layout) is by trimming the ends and edges of the sheathing panels. Why don’t manufacturers size the panels 47<sup>7</sup>/<sub>8</sub> by 95<sup>7</sup>/<sub>8</sub> inches?

**A.** Ed Keith responds: The APA, as well as most panel manufacturers, recommends 1/8-inch spacing at the edge and end of panels. APA manufacturing standards are designed to accommodate this spacing by permitting a full 1/8-inch plus-or-minus tolerance on the length and width of sheathing panels. Many manufacturers do, in fact, cut their panels a little short and narrow. While the amount of cutback varies among manufacturers, it’s typically 1/16 inch. Why not a full 1/8 inch? The 1/16 inch may be a compromise to avert rejected panels that are too short or out of tolerance. ■

Ed Keith is a senior engineer at APA - The Engineered Wood Association in Tacoma, Wash.

Got a question about a building or renovation project? Send it to On the House, JLC, RR 2, Box 146, Richmond, VT 05477; or e-mail to [jlc@bginet.com](mailto:jlc@bginet.com).