BY BILL LEYS


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Scuppers and Drains for Waterproof Decks

My company specializes in installing waterproof decks, but I often also get calls to fix existing decks that are leaking or coming apart. Many times, these jobs are familiar. They are ones we had bid on to build originally, but didn't get—probably because we had priced the jobs to use the best materials available and install them correctly.

The worst dry-rot damage we see usually occurs where drains and scuppers penetrate a deck. We do see some problems with drip edges on open decks, but not as many, as edge flashings aren't subjected to as much water as drains and scuppers are.

A deck enclosed by parapet walls is essentially a big bathtub that drains to a scupper or floor drain. The whole deck surface is supposed to be pitched toward these exit points, and over time a slow leak can lead to some pretty spectacular dry-rotted framing. I've seen fungus, mushrooms, and even worms behind leaking decks and walls.

SCUPPERS

Photo **(1)** above shows significant damage to wood framing from water intrusion at a through-wall scupper. Poor or missing details—including a lack of exterior counterflashing over the scupper and poor installation of the weather-resistant barrier—allowed water to leak in from the exterior side. In addition, the scupper was initially installed with the drain-end of the tube higher than the deck. This caused water to pool in front of the scupper, and eventually that water seeped in past the poorly applied deck coating and around the scupper.

For this repair, the customer insisted on our using copper flashings. We will use copper only if requested and only if the clients sign a waiver against coating failures, because even when copper is installed correctly, coating failures are possible. The characteristic green tint that makes copper so attractive for finish applications forms when acids in rainwater and pollutants in the air come in contact with exposed copper

Photos: Bill Leys


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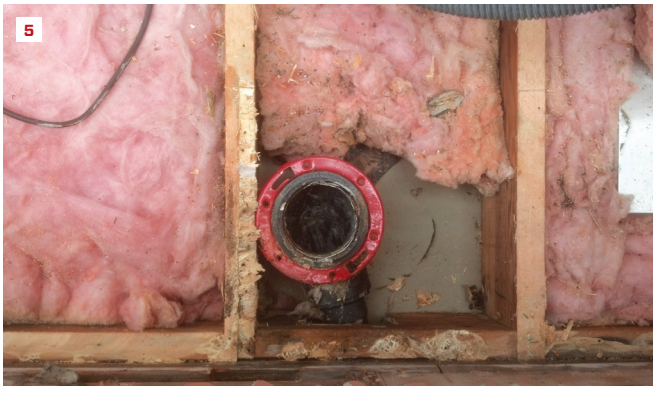
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surfaces. This reaction happens even more quickly in salt air. The patina eventually creeps under the polymer waterproofing and causes it to debond.

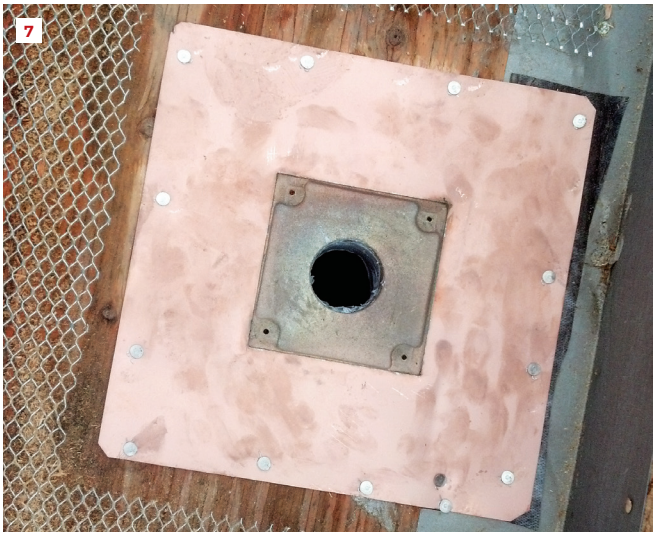
Besides copper, we use two other materials to flash decks: stainless steel and "bonderized" steel. Stainless holds up in salt and urban environments but requires a careful sanding with 80- to 120-grit paper first. When the client can afford it, we use 28-gauge, 316-grade stainless because it holds up better than the 28-gauge, 304-grade stainless we more commonly use. But 316 is a much harder metal; bending a profile on it is more challenging, and sanding or grinding the surface so that a coating will adhere to it is time-intensive. Also, 316-grade material is so hard that it can't be nailed by hand or with a pneumatic nail gun. It must be pre-drilled and screwed, whereas 28-gauge 304 can be nailed with a conventional coil nailer.

The most common metal we work with is phosphated, or bonderized, steel. This is a form of galvanized steel that has been put through a phosphate bath to clean the surface of oils and contaminants, allowing our coatings to bond to it easily. We do not use the shiny galvanized flashings commonly seen at the big-box stores, because they are protected with a thin layer of oil that causes bonding issues for liquid and cementious coatings. Before using these flashings, you would need to weather them for six months or so outside, or else etch the surface with acid, which is difficult to do properly or safely on site. With a bonderized flashing, however, there is no prep work to prepare the flashing for our coatings other than cleaning off any dirt or dust.

Regardless of the flashing material chosen, it's critical to integrate the scupper assembly with L-flashings and the deck waterproofing materials. Note in photo **(2)** that the L-flashing laps over the scupper flanges and that these laps are bedded in a polyurethane caulk.

Prior to applying our primer and waterproof top coating, we sand the interior of the scupper to promote adhesion of the coatings to the metal. This prevents the coating from debonding as the copper oxidizes, as it has on the scupper in photo **(3)**. We then prime the scupper and lap on a cementious or epoxy waterproofing when we finish the deck. Coating a copper scupper with the decking materials isolates it from air and water, helping to prevent the reaction that takes place with uncovered copper. But the copper is still vulnerable at exposed edges, which is the reason we require a signed waiver.

We counterflashed the exterior side as a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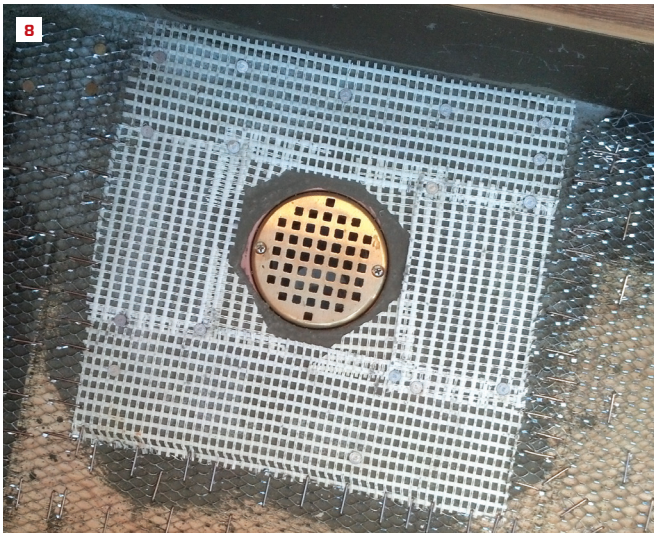
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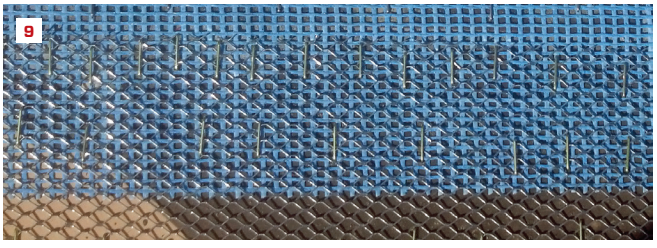
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best-practices method **(4)**. We nailed it at the top, but not at the bottom so the contractor installing a water-resistive barrier can slip that layer under the shield and trim his paper down over the front of the shield, providing a highly leak-resistant barrier.

DRAINS

Leaks at drains often occur because the original contractor had used the wrong assembly, such as a toilet closet flange **(5)** or a plastic shower drain **(6)**. Neither type can be integrated with deck waterproofing materials. Instead contractors usually just pump a lot of caulk around them and hope for the best. Eventually they leak.

We replaced both of those drains with commercial deck-drain assemblies, like the ones shown above **(7, 8)** from Thunderbird Products (thunderbirdproducts.com). The wide copper flange can be integrated with layers of waterproofing, and because this flange is never exposed to the elements, it won't oxidize, so the polymer bond stays intact over time.

To prevent galvanic corrosion, care needs to be taken to isolate the copper flange from the metal lath that is commonly used with cementitious waterproofing systems. The copper flange is first coated with primer—a diluted mix of the polymer additive used for the cementitious waterproofing. Then we cut and fit metal lath around the flange without allowing the two metals to touch **(7)**. We bridge between the flange and lath with glass fiber reinforcing mesh, such as Dryvit's Panzer mesh. If bonderized steel L-flashing laps the copper drain flange, the two metals should be separated with a peel-and-stick membrane. Ideally, L-flashings should lap over the drain flange, but in retrofit repair work we will sometimes compromise if the existing flashing is in good condition and we feel we can successfully waterproof it.

We secure the lath and reinforcing mesh with 1-inch-crown stainless steel lathing staples **(9)**. We nail-off the flange with 1¼-inch stainless steel ring-shank coil gun roofing nails, which provide considerably more holding power than the cheaper smooth-shank roofing nails **(10)**. Stainless fasteners are hard to find in my area; we order them online as we need them from Fastener USA (fastenerusa.com).

When we are satisfied with the preparation and installation of our drains or scuppers, we can then set about installing the rest of the waterproofing system **(11)**.

Bill Leys is the owner of Central Coast Waterproofing in Arroyo Grande, Calif., and a regular presenter at JLC Live.