

Seeing Doug Horgan's photos of corroded aluminum flashing in "Repairing a Stone Patio Over a Living Space" (Jul/16) left me concerned about using metal flashing with concrete. What is the best type of flashing to use with concrete?

Bill Palmer, an engineer and the editor-in-chief of *Concrete Construction*, a sister publication of *JLC*, responds: The aluminum flashing shown in Horgan's article had been in contact with a concrete sub-deck, which caused it to corrode. This corrosion will occur under certain conditions.

First, there has to be some chloride in the concrete. Most concrete does not have chloride in it when placed, unless the chloride is added as an accelerator in cold weather (which is a fairly common practice). As the name implies, an accelerator speeds up the curing process and reduces the risk of frost damage. Calcium chloride is an excellent accelerator, and when used in most residential concrete applications, it does not pose a problem—unless there is aluminum present, either embedded (as in aluminum conduit) or in contact with the concrete surface, as with flashing.

There also has to be some steel (or other dissimilar metal) in the concrete. Most placed concrete in residential construction contains steel in the form of rebar—either for structural reinforcement or for crack prevention. And there has to be some moisture present, as well, to allow the galvanic reaction to proceed between the aluminum and the steel. This reaction causes the aluminum to deteriorate.

As for the basic question of what types of flashing can be used with concrete and masonry, Heckmann Building Products, which makes flashing for masonry construction, recommends against using aluminum as flashing with brick or concrete. If metal is to be used as flashing, stainless and galvanized steel are better choices. Stainless steel is one of the least reactive metals, but it can be difficult to cut and bend, and some of the lower grades of stainless might be more reactive than you would think. Copper is a good option too—but it is expensive.

The truth is that any metal flashing will eventually corrode if left in contact with concrete. Some metals, such as aluminum, corrode much more quickly, especially in an area that will see salt for de-icing in the wintertime. If using heavily galvanized steel, spray any cut surfaces with zinc paint and isolate the flashing

with peel-and-stick membrane at joints and corners.

Another metal flashing that is used with concrete and masonry in many parts of the country is lead. Lead flashing is non-reactive for the most part, but it comes with its own intrinsic challenges because of its toxicity. Yet another option is to avoid metal flashing altogether and to use a PVC or rubberized-asphalt product.

Finally, be as careful with products that will be used with masonry, such as brick or block, as you are with concrete. Although mortars are made of different materials, the issues of corrosion are still present, and highly reactive metals such as aluminum should be avoided.

Aluminum flashing should never be used in applications where it is in contact with a concrete surface.



I enjoyed John Spier's article on installing pre-hung doors. What about when the floors will be carpeted?

A John Spier, owner of Spier Construction, a building and remodeling company on Block Island, R.I., responds: In my article "Hanging Pre-Hung Interior Doors" (Jul/16), I discussed the process I've developed for installing interior doors in a fast and efficient manner. Because of space constraints, I did not address the particular situation of when a floor is to be carpeted.

The scenario for carpeted floors starts much the same as with other types of flooring: checking the opening for level across the threshold, as well as front to back on the threshold. But carpeting tends to be more forgiving than other flooring materials, so those assessments are just for general reference. From that point on, my approach to installing the doors is very dif-

ferent, though it is still fast and efficient.

The process I use takes advantage of the fact that the installers like to tuck the carpeting under the door jambs and the baseboard, which gives the installers a bit of a "fudge factor." If you leave a jamb $\frac{1}{8}$ inch short on a wood floor, it sticks out like a sore thumb. But with carpet, that discrepancy is hardly noticeable. For that reason, I cut both jambs to a length that keeps them roughly $\frac{3}{8}$ inch off the subfloor. I also make sure that there will be plenty of space to keep the bottom of the door clear of the carpet.

After cutting the jambs to length, I set the hinge jamb on a $\frac{3}{8}$ -inch-thick shingle butt. I shim and nail that jamb, plumbing it in both directions with a long level.

Next, I release the door slab from the

strike jamb and slide a shim or two under that jamb, adjusting the height until there is an even gap between the top of the slab and the head jamb. If the hinge jamb is plumb and the slab is square, then the top of the door should be level. When I'm satisfied with the height of the strike jamb, I insert shims behind the jamb and nail it off, adjusting the jamb until it aligns perfectly with the door stop.

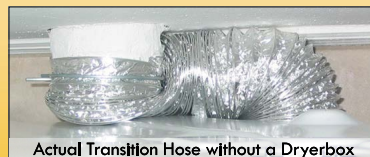
At this point, the only other difference with installing a pre-hung door for a room that will be carpeted is that I keep the shims and the nails close to the floor on both sides. Keeping the shims and the fasteners low helps to prevent the carpet installers from moving the jambs out of position when they come along with their knee-kickers.

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