



Deck Waterproofing

Q. We frequently build decks over occupied rooms, usually with a top surface of brick, tile, or patterned concrete. What is the best waterproofing detail for this situation?

A. Ken Klein responds: When building a plaza deck over occupied space, treat the waterproofing details as a membrane roofing job. Apply membrane waterproofing over the structural deck, then install protection board and a drainage medium above the membrane, finishing with the traffic surface.

Most of the major manufacturers of waterproofing membranes have horizontal-grade products for plaza deck waterproofing. Sheet membranes and liquid membranes can both be used in this way. (For a list

of waterproofing manufacturers, see "Foundation Waterproofing Options," 3/95.) Each product has its own installation rules you must follow. In choosing a product, long-term performance is a key consideration. It's wise to use only products that have a proven history of good performance in similar applications.

In designing many of these systems in California, we've had good success with W. R. Grace products, but those are by no means the only products for this application. You can apply W. R. Grace's Bituthene directly to a plywood deck. We specify two layers of Bituthene, with the joints staggered. Over that we place Grace's 1/8-inch protection board, followed by its drainage board, Hydroduct HS-2. Then comes the traffic surface.

Traffic surface. If you plan to use tile, I recommend a full mortar bed rather than thin-set. The Tile Council of America has complete guidelines for this application. I suggest you follow them, paying particular attention to control joints.

Brick can be laid either in a mortar bed or in a bed of sand. As for concrete, this is just like any other exterior slab. In both cases, remember the control joints.

Pitch and drainage. The code may consider your deck to be a roof, so both the traffic surface and the membrane layer must have pitch — at least 1/4 inch per foot. (More pitch would be better, but most customers won't accept a steeper pitch than that.) Water should not stand on it, but should run to an internal drain or off the eaves.

For internal draining, I recommend a bilevel drain such as one made by Zurn. Bilevel drains handle water that runs off the traffic surface (which is most of it) as well as any that makes it down to the membrane. You can connect the drain to an ordinary waste pipe that runs between roof rafters and feeds into the house's main drain.

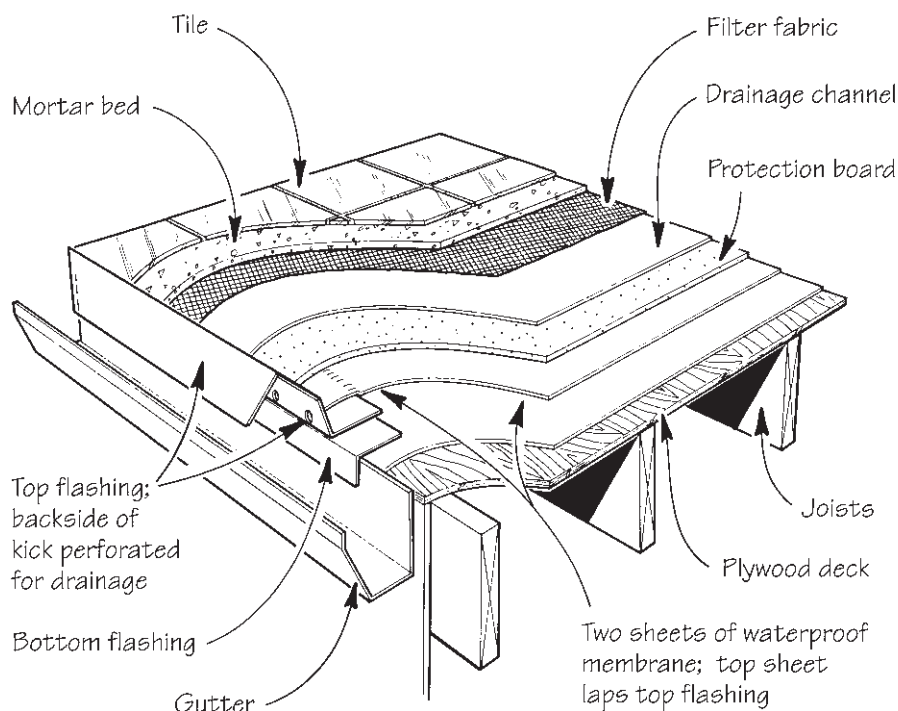
In San Francisco, where my office is located, all residential roofs and decks must drain into the city's oversized sewer systems, and residential waste lines are sized to handle that. If your house has smaller drain lines or a septic system, though, you'd better drain the roof to the eaves.

The eaves flashing detail, like an internal drain, should provide for drainage from both the traffic surface and the membrane (see detail, left). Gutters are optional, but I do recommend them.

Structural strength. One note of caution: Neither your waterproofing nor your traffic surface can be counted on to perform if the roof framing and decking are overstressed or allow too much deflection. If you aren't sure whether the deck will handle the expected dead and live loads, consult a structural engineer.

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Deck Protection



To drain a rooftop patio to the eaves, use a dual flashing detail. The upper flashing handles runoff from the top of the traffic surface, while the lower flashing directs runoff from the membrane layer into the gutter.

Flaking Concrete

Q. What causes a concrete slab to form a thin top coat that can flake off or, if something is dropped on it, chip off in big pieces? Some customers want a glasslike finish on their garage floors, but after screeding and power troweling, the surface often becomes a thin, flaky material that doesn't adhere to the rest of the mix. Is this caused by too much troweling?

A. Carl Hagstrom responds: The situation you described is most likely caused by troweling the surface too soon, not by troweling it too long. After the slab is screeded and bull-floated, "bleed water" will find its way to the surface. This bleed water must be allowed to evaporate before troweling begins. Troweling the surface before the bleed water evaporates causes the bleed

water to be troweled back into the concrete, significantly weakening the surface skin.

When bleed water is present, you will be able to see reflections on the surface of the slab. Begin troweling when you can no longer see any standing water or reflections.

In cool, damp weather, bleed water can stubbornly refuse to evaporate, and there have been instances where I "pulled off" the standing water by dragging a hose across the surface (the alternative was troweling the slab at midnight under the glare of my truck's headlights). This method doesn't get a five-star rating, but it is preferable to troweling bleed water back into the slab. ■

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PETER RINTYE

The reflective sheen on fresh concrete is caused by bleed water on the surface. To avoid flaking, wait until the sheen is gone before you start to finish-trowel the slab.