



Flashing 101 – The 1% Rule!

The commonly quoted ‘1% Rule’ asserts that 99% of the sources of rainwater damage are found at 1% of the building envelope. While there may be a touch of hyperbole to this catchy expression, all building professional would agree that leakage problems at exterior walls typically are found at changes-in-plane and changes-in-material such as window and door perimeters and wall intersections with decks and balconies.

In other words, rainwater infiltration usually occurs at the transitions between the work carried out by different trades. In most cases, successful long-term weatherproofing of these transitions requires careful design and installation of *flashing* crafted from corrosion-resistant metal or flexible waterproof membrane.

The 2007 California Building Code includes the following guidance for flashing exterior walls:

- *“Flashing shall be installed at the perimeters of exterior door and window assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projects and at built-in gutters and similar locations where moisture could enter the wall.”*
- *Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim.”*
- *“Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior.”*

These simple but far-reaching instructions are an example of ‘performance’ language. The CBC authors do not prescribe any specific flashing design or any particular material or any standard installation practice; instead, the CBC simply mandates that a project’s designer and builders have a shared responsibility to design, craft and install all flashing necessary to keep the exterior walls dry at penetrations, intersections and perimeter transitions.

A majority of construction defects litigation cases arise from simple lack of attention to the 1% Rule. Consider the photograph below, which depicts a transition between hardboard lap siding and white-painted wood trimboards that form an aesthetic ‘bellyband’ at the floor line between the 1st & 2nd stories of this multifamily residential building. Note the metal Z-flashing (also painted white) that was intended to weatherproof this change-in-plane (and change-in-material).

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Is this metal Z-flashing ‘installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior’? The answer, of course, is a resounding “No”.

The Z-flashing is sloped toward the building interior, causing water to collect against the water-sensitive hardboard siding, which is improperly installed in direct contact with the metal flashing. Further, the corner overlap joint between the two pieces of Z-metal is not sealed, allowing water infiltration into the wall assembly.

Then, in an unsuccessful attempt to correct this leakage problem, an unknown party later smeared a bead of caulk along the base of the hardboard siding; however, the caulk also blocks the intended exit route for any incidental moisture (from a source located higher up the wall) that may have reached the building paper installed behind the siding. Further, the topical application of caulk at the top of the metal flashing joint quickly failed, allowing continued leakage at the corner.



Photo 1 – Is this metal flashing installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior?

Now, let’s assume that in addition to localized siding damage, inspectors also find moldy gypsum sheathing and structural decay behind the bottom piece of siding and the bellyband boards. Which party (or parties) should be held responsible for correcting the deficient flashing and repairing the resulting mold & moisture damage? The sheetmetal installer? The framer? The sider? The architect? The general contractor? The owner? The hardboard siding manufacturer?

In practice, virtually every insured party involved in the design and construction of a failed building gets blamed, sooner or later, during the ensuing construction defects litigation process. Sometimes, such widespread apportionment of shared responsibility for a construction defect is appropriate; however, it also can simply represent an unprincipled effort by one or more parties to hide their culpability behind a smokescreen of half-truths and outright misrepresentations. For example, in this case the sheetmetal installer may argue any or all of the following positions:

- I installed the metal flashing with proper outward slope but the flashing later was pushed flat by the siding installer. *(It's the sider's fault!)*
- The hardboard siding soaked up water like a sponge, damaging the building paper and causing mold growth on the gypsum sheathing. *(It's partly the manufacturer's fault!)*
- The framer should have provided outward slope in the horizontal wood trimboard under the flashing. *(It's the framer's fault!)*
- The architect did not supply a satisfactory detail for how to flash this transition. *(It's the designer's fault!)*
- It was the project's maintenance personnel who applied the caulk that trapped water within the wall. *(It's partly the owner's fault!)*
- I just did exactly what the general contractor paid me to do. *(It's the GC's fault!)*
- *(Everyone who ever touched this wall is at fault, except me!)*

Without debating the merits or legitimacy of any of these claims, they do help explain the most serious problem plaguing designers and builders throughout North America: skyrocketing insurance premiums due to the high costs of prosecuting and defending a rapidly growing number of mold & moisture damage claims that in most cases still can be traced back to an insufficient understanding or focus on the 1% Rule.

The ultimate solution to this insurance crisis is education. To that end, the many industry organizations and manufacturers who, in recent years have established free websites that detail proper flashing practice should be commended. An excellent example is the *Build a Better Home*® program (www.buildabetterhome.org) established by APA – The Engineered Wood Association, which provides an extensive series of flashing details and basic construction guidelines for foundations, walls and roofs.

Until all participants in a building's construction – from the owner to the designer to the builder to the superintendent to the foreman to the skilled laborer – truly recognize the importance of proper flashing of the building envelope, increasingly costly mold & moisture damage claims will continue to threaten the viability and diversity of our homebuilding industry.

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