

Protect Your Eaves From Ice Dams

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THERE'S AN ADVANTAGE TO HAVING LEARNED THE SLATE ROOFING TRADE IN NORTH WESTERN PENNSYLVANIA.

We get five inches more annual precipitation that either Seattle, Washington or Portland, Oregon, both famous for rainy weather. Our annual precipitation of 42.78 inches is slightly more than Boston, but unlike coastal Boston, our weather is more extreme and a lot of our precipitation is ice and snow. It's not unusual to have snow here six months of the year. In fact, our outdoor temperatures during my roofing career have ranged from a low of -30F to a high of 103F. This is hell on roofs.

Slate roofs have historically performed well under these conditions. One problem that occasionally rears its ugly head, however, is "ice damming." Ice dams occur when snow and rain collect and freeze along the eaves of the roof, building up ice — obviously a winter condition. This is exacerbated by poorly insulated roofs that allow warm inner air to melt the snow off the roof from inside. The water runs down the roof only to hit the cold eaves, where it then freezes. If the weather conditions are just so, the ice build-up along the eaves can be extreme — perhaps 12" thick or more. Then, there can be a sudden thaw and perhaps some rain comes along and the ice-clogged eaves of the roof prevent drainage off the roof and become essentially under water. It's almost impossible to prevent roof leakage under these conditions...or is it?

The past two years have been extreme ice-damming years here in western Pennsylvania. We can go decades without ice dam problems, then get a bad year, but two years in a row? Time to spring into action and find a solution.

The standard approach among roofers today, it seems, is to remove the slates along the eaves, apply a peel-and-stick underlayment and then reinstall the slates. This is a poor solution for several reasons. For one, it's temporary

and will be effective only as long as the underlayment lasts. Underlayment should always be seen as a temporary part of a slate roof and is not to be relied on for permanent water prevention. The peel and stick will eventually crack and leak. Pulling the slates up and nailing them back down again is also expensive — too expensive for a temporary repair. Also, peel and stick underlayments can contain high levels of cancer-causing chemicals (see the "Cancer in the Workplace" article in this issue). For this reason alone, they should be avoided. So what are we to do?

First, make sure your roof is well-insulated. This may not completely solve the problem in years of extreme weather (ice dam years), but it will help.

Secondly, there is a quick repair solution that is faster, more effective, and less expensive than removing slates and installing peel and stick. That is to simply install over-sized bib flashings under the joints between each pair of slates along the eaves of the roof (Figure 1). A bib-flashing is simply a flat piece of sheet metal. You can use either copper, terne-coated stainless steel, or .019" aluminum (brown side out). The bibs should be a minimum 6" wide and as long as possible. You can determine how long they can be by sliding one up under the slates until it hits the slating nails. Whatever is still hanging out is then trimmed off. Put a dab of caulk/adhesive in the slot between the slates before sliding the bib in place and wipe off any excess. What the bibs do is fortify the headlap on the slates and cover defects in the slates that can allow water to enter during ice dam conditions. Ice dams will find any tiny defect in the roof — an old repair, a nail hole too close to the slot, a slate that is cracked underneath the overlying slates, etc.

The bibs can cover the defects and tighten up the eaves, slowing down, and most of the time preventing, leakage during ice dam conditions.

A better approach, however, is to increase the headlap of the slates along the eaves. It's the headlap



Each bib is at least 6" wide and slid up underneath the slates until they hit the slating nails.



Figure 2

20" long slates, 8.5" exposure (3" headlap)

20" long slates, 7.5" exposure (5" headlap)



Figure 3



Watch a video showing the installation of ice-dam fortified eaves at SlateRoofCentral/videos.html

Cant →

Copper drip edge with a built in cant is available at SlateRoofWarehouse.com

Figure 4

that permanently prevents water entry. Standard headlap is 3", but you can increase this to 5" along the bottom three feet of the roof when installing a new slate roof (read the article explaining headlap in TR #6 at TraditionalRoofing.com). The increased headlap is not really noticeable to the untrained eye and water would have to run uphill five inches in order to get behind the slates. Figure 2 shows a newly installed slate roof with 5" of headlap along the bottom three feet of the roof and 3" in the remainder. This technique is permanent, involves no cancer-causing chemicals, can be done when the roof is installed and it never has to be done again.

If you want to go whole hog with ice dam protection and slates, install a double layer of 30 lb. felt underneath the 5" headlap eaves slates when installing the roof. Spread trowel-grade roof cement in between the two layers as if you're making a peanut butter sandwich (Figure 3). This is the old-fashioned predecessor to peel and stick membrane — without the carcinogens. A good grade of trowel-grade roof cement, such as Karnak 19, will last many generations.

Once the underlayment has been installed, install a cant strip, or install a copper drip edge with a built-in cant (Figure 4). Then, chalk your roof lines for a 5" headlap. Make sure the starter course is correctly installed (see TR #5) and that it has the full headlap on it as well. Then lay the bottom three feet or so of slates along the eaves with the 5" headlap (Figure 5). Once you have passed the ice dam region of the roof, you can drop your headlap back to the standard 3".

Last but not least, some ice dam problems seem very difficult to resolve, especially on lower-slope roofs. When you run into a seemingly intractable situation, remove the slates from the bottom three feet of the roof and install a copper or stainless steel snow apron. This creates a waterproof eaves that will totally thwart any ice dam that may come along. See the "Snow Apron" article on page 23 for instructions on how to do this.

Ice dams pose a roofing challenge in certain parts of the country. However, the problem can be solved with resourcefulness and ingenuity. Tighten up your eaves when installing a slate roof by increasing the headlap along the eaves and beefing up the underlayment as described above. Fortify existing eaves with bib flashings. For a final solution, install a copper snow apron. ☒



Figure 5