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Technical Bulletin #15

NATIONAL SLATE ASSOCIATION

Rake Treatments

Introduction

In architectural terms, a rake is the sloped edge of a gable roof, extending from the ridge, down to the eave. The rake edge can be flush with the face of the exterior at the gable end or extend past the wall anywhere from an inch to several feet, depending on the style of the building and the degree to which it is desired to protect the wall from the elements. Although there is a traditional manner in which to construct a rake, the beauty of slate roofing derives, in part, from the variety of treatments that are possible in its installation. This Technical Bulletin will focus on different types of slate rakes and serves to supplement the notes and detail drawings pertaining to rakes contained in NSA's *Slate Roofs – Design and Installation* Manual.

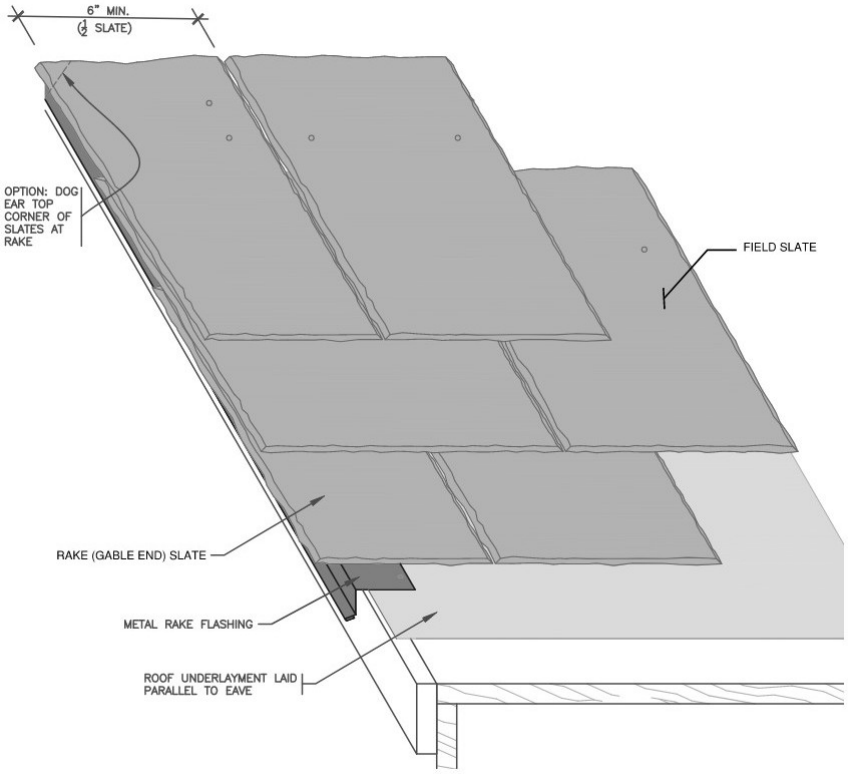


Figure 1. Traditional rake (gable end) in a random width slate roof. (Source: *NSA's Slate Roofs - Design and Installation Manual*, Detail 4-B.)

Traditional Rake

In a traditional rake, the slate shingles overhang the rake board one inch, with, or without, a metal drip edge flashing (Figure 1). It is important to plan the approach of the field slates to the rake to avoid the use of very narrow slates along the rake edge. Narrow slates, those measuring less than six inches in width, are more susceptible to breakage than wider slates.

The idea of planning one's approach to the rake deserves some attention as it is a little understood concept. When slates of random width are used it is a relatively simple task to maintain the random appear-

ance of the roof by using slates of appropriate width or trimming slates to width to maintain proper offset of the random bond lines and avoid the use of narrow rake slates.

When slates of uniform width are used, the approach to the rake edge cannot be left to chance, but rather must be planned. The planned approach involves the use of two or more slate widths to maintain a consistent pattern of sufficiently wide slates and is best illustrated via example, using a series of figures depicting the slate layout on graph paper (Figure 2). For our example, 18x10 slates are being installed with a 3-inch headlap. In Figure 2A, use of alternating whole slates and half-slates will result in the half-slates being too narrow and is, therefore, not recommended. In figure 2B, the use of whole slates and slate-and-one-half slates results in the use of 15-inch wide slates, which would be a custom order and, although possible, an unnecessary added expense.

Figures 2C-2H represent viable approach options. All maintain a 3-inch minimum offset. They vary with regard to the number of slates that will need to be trimmed and how closely the overall bond pattern in the approach slates matches that of the field slates. The former will impact the cost of installing the rake (the more slate to be trimmed, the more expensive) and the latter is solely an aesthetic issue subject to personal preferences. In Figures 2G and 2H, no trimming is required because all of the shingle widths are standard widths for an 18-inch long slate (the 9s, 12s, and 14s, just need to be ordered at the start of the project, along with the 18x10s). The 14-inch wide slates and, to a lesser degree, the 12-inch wide slates disrupt the bond pattern more so than any of the other options. Note that there is nothing technically wrong with the resulting bond pattern; rather, it is a matter of whether the bond pattern is aesthetically acceptable to the designer and owner.

In Figures 2C, 2E, and 2F, one slate in every other course requires trimming because the smallest standard width for an 18-inch long slate is 9-inches. Of the three (in fact, of all of the viable options), Figure 2C most closely matches the bond pattern of the field slates; the slight variation unlikely to be noticed by the casual observer.

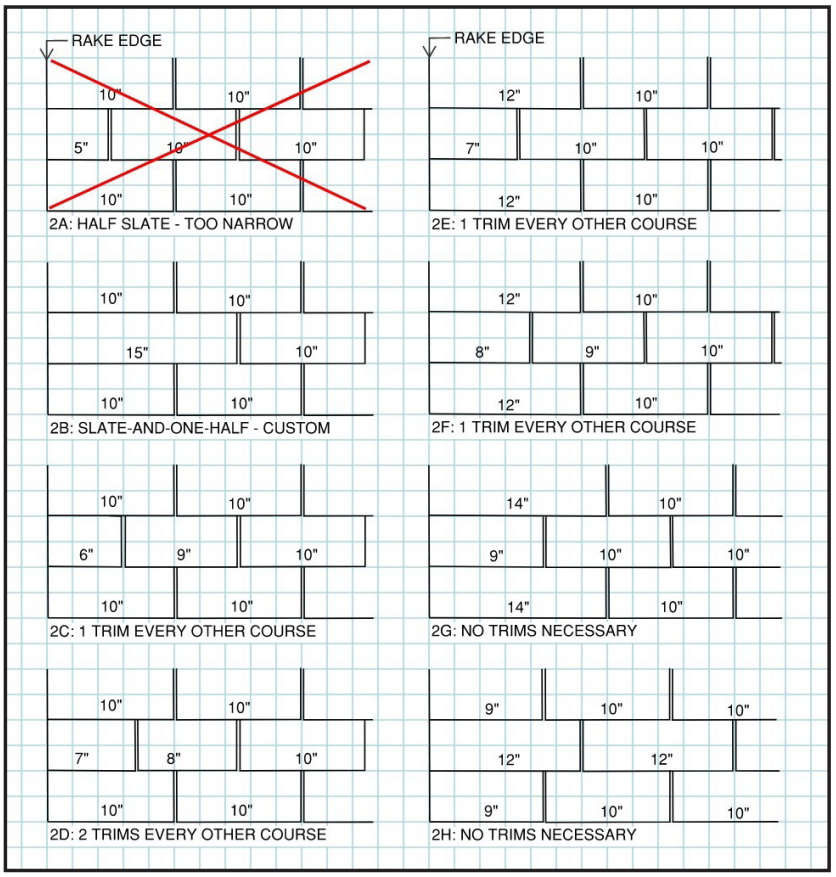


Figure 2. Examples of slate layout options for an 18x10 Uniform roof when starting at a rake or approaching a rake.

In Figure 2D, two slates in every other course require trimming. As is likely apparent by now, the trimming can be reduced to just one slate in this example if the 8-inch and 10-inch slate located to the right of the 7-inch slate are swapped out for two 9-inch wide slates. What should also be apparent is that options 2C-2H are by no means the only viable options.

If working on a simple gable roof and starting at the left rake, the easiest way to make adjustments such that the approach slates to the opposite rake work out, with the least amount of trimming, is to vary the bond lines of adjacent slates over the last third to half of the roof. For example, by increasing or decreasing the width of the bond lines 1/16-inch over 16 slates, a 1-inch decrease or increase in the width of the approach slates can be achieved.

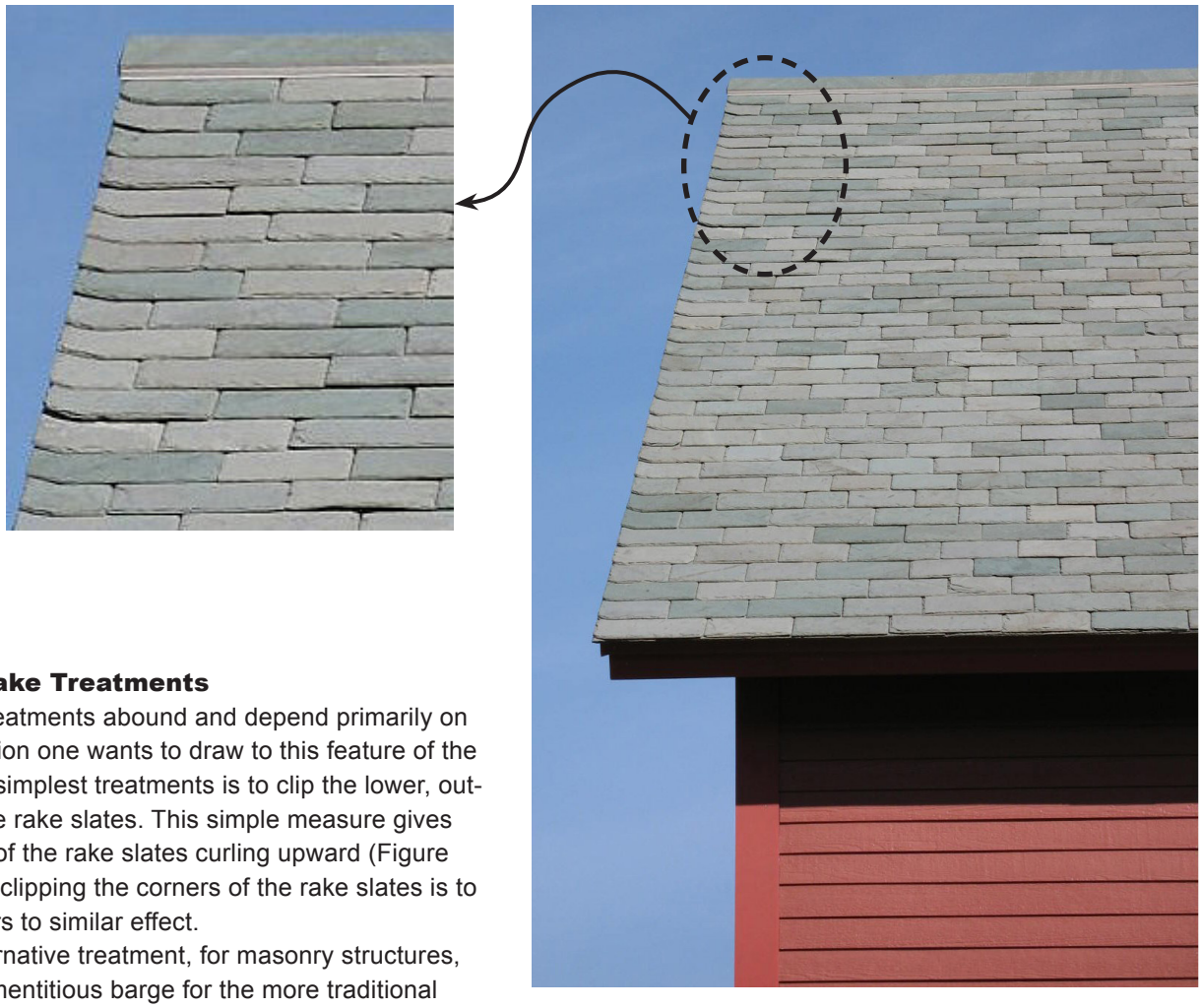


Figure 3. Clipped corner rake slates on the office of The New England Slate Company, Poultney, Vermont. (Note, also, the treatment of the ridge, where slate slabs have been employed.)

Alternative Rake Treatments

Alternate rake treatments abound and depend primarily on how much attention one wants to draw to this feature of the roof. One of the simplest treatments is to clip the lower, outside corner of the rake slates. This simple measure gives the visual effect of the rake slates curling upward (Figure 3). A variation of clipping the corners of the rake slates is to radius the corners to similar effect.

A second alternative treatment, for masonry structures, substitutes a cementitious barge for the more traditional wood rake board (aka barge board; see Figure 4). A typical overhang is about 2 inches, to help ensure that rainwater drips away from the wall. The slate shingle undercourse is set level and laid bevel down. The overhang dimension and thickness of the slate undercourse might be increased on a very tall building to make each more visible. In Figure 4, the undercourse slates measure approximately 1/4-inch thick. They appear to be much thinner than the roof slates because, near the eave of the graduated slate roof from which this section was taken, the roofing slates measure 1 to 1-1/2 inches in thickness. Varying the color of the slate undercourse might also impact its visibility, depending on the color of the masonry wall, the cementitious barge, and the slate shingles of the roof. The thickness of the barge

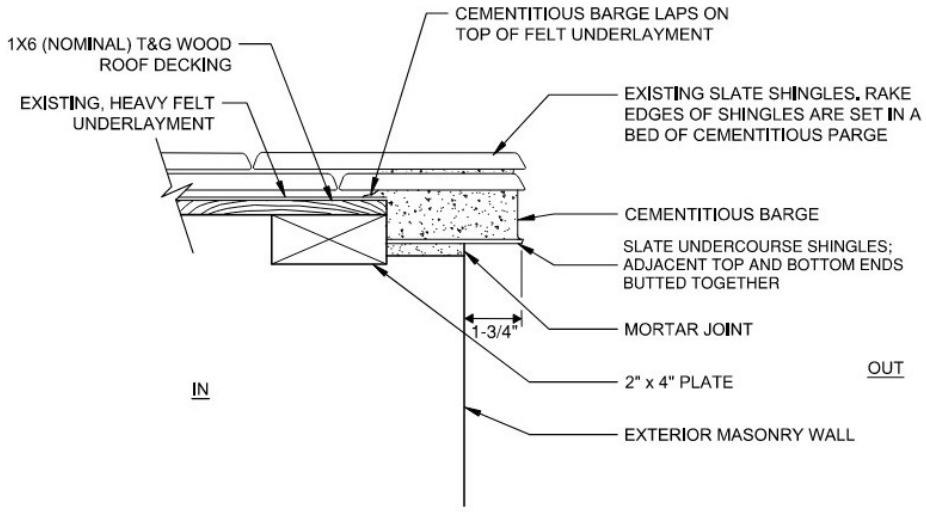


Figure 4. Section through the cementitious barge at the rake of an historic building located in Pennsylvania.

itself is in direct proportion to the height of the rafters/roof decking above the top of the masonry wall, but a typical dimension is 2 to 4 inches. To make the assembly more weathertight, the outside edges of the rake slates are set in a cementitious parge or setting mortar as each shingle is installed (Figure 5).

In new construction, or rehabilitation of an existing cementitious barge, it would be prudent to install a self-adhering ice dam protection membrane at those portions of the wood roof deck and roof framing in contact with the cementitious barge and undercourse's setting bed to help protect these elements from moisture damage.

The cementitious barge derives from century-old stone roofs of the United Kingdom, where, perhaps, they were employed to accommodate the non-planar nature of the stone shingles (Figure 6). Bennett and Pinion, in there classic work



Figure 5. Cementitious barge at the rake of a dormitory in southeastern Pennsylvania. The setting bed, or parge, between the roofing slates was installed as the slates were set in place. In this image, the lower portion of the parge has eroded, or cracked and fallen out, after nearly 100 years of service.



Figure 6. A centuries-old residence in Oxford, England, exhibiting a prominent cementitious barge at its verge.

Figure 7. A slate verge with 18x10 slates laid on wood battens. (Source: Bennett and Pinion, *Roof Slating and Tiling*, p. 55.)

entitled *Roof Slating and Tiling*, provide a typical detail (see Figure 7) and the following description:

> The verge[1] occurs at all gable ends when the slates are carried out over the wall or, conversely, when the gable wall stops underneath the slates. The ragged ends of the slates, just like the end of the slates at the eaves, need treatment to make them resist the action of penetrating wind.[2]

Bennett and Pinion go on to state ways to make the verge more prominent:

> There are several ways of giving a very bold finish, such as treating the undercloak with some other type of material to thicken it, or to put two or three courses of slate like the suggested treatment for eaves. Cement is always used for bedding undercloaks, and sometimes a cement fillet, run on the splay, increases the depth of the verge.[3]

A canted rake is another alternative treatment in which the rake slates are tipped, or canted, back toward the roof (Figure 8). There are several ways to achieve the cant: 1) using a wood cant, similar to that traditionally employed at the roof eave; 2) by raising the rake board above the level of the roof deck and infilling the resulting void with tapered wood blocking; and,

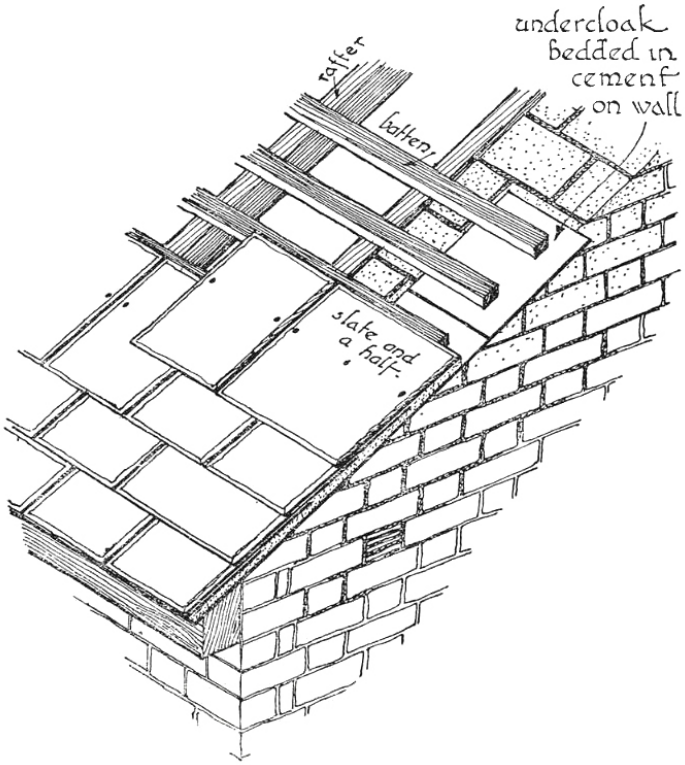






Figure 8. Canted rake slates on a building in the Finger Lakes region of New York State (left). In this case, the cant was achieved via a sloped cementitious barge (right; a better matching repair mortar would have been preferable).

3) sloping a cementitious barge to the desired angle. In a canted rake, it is important that the rake slates are laid with sufficient offset so that rainwater flowing toward the center of the roof makes its way to a non-canted field slate, without contacting a nail hole in the course below.

The traditional slate rake and few alternative treatments have been discussed above. The actual number of rake treatments and layouts is limited only by the creativity of the designer and installer. Note that with regard to historic structures, it is often desirable, and sometimes required (should the property be listed in a local historic register) to maintain the historic appearance of the building and use the existing, original rake treatment when repairing, rehabilitating, or replacing its slate roof.

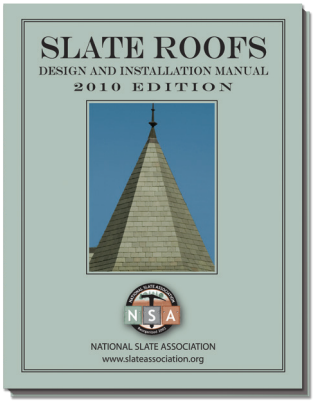
Endnotes

[1]"Verge" is the English term for what is called a "rake" in the United States.

[2]Bennett, Frank and Pinion, Alfred, *Roof Slating and Tiling*, Dorset, England: Donhead Publishing Ltd, 2000 (originally published in 1948 by Caxton Publishing Company Ltd), p. 54.

[3]Bennet and Pinion, p. 54.

For more information on slate roofing, please see *Slate Roofs: Design and Installation Manual,* 2010 Edition, available at www.slateassociation.org



For more information about The National Slate Association, visit **www.slateassociation.org**

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