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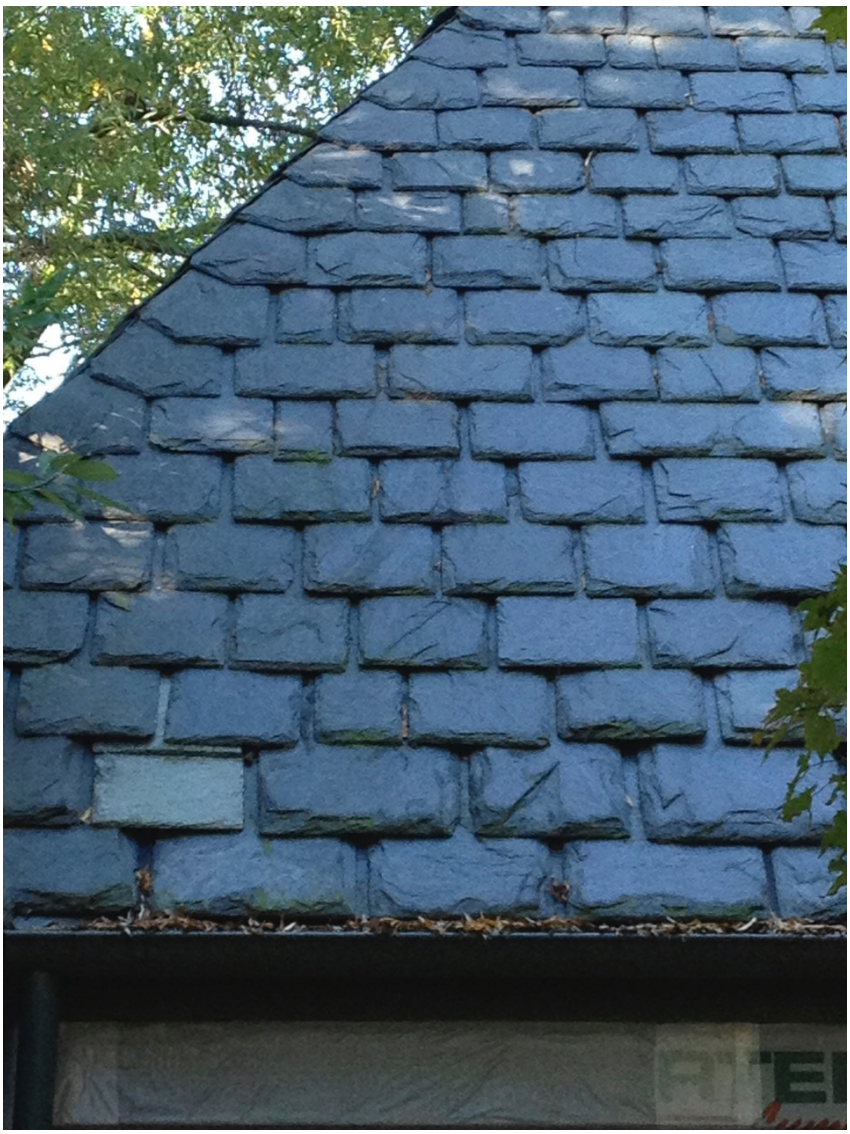
Technical Bulletin #2

NATIONAL SLATE ASSOCIATION

Technical Bulletin No. 2: Vertical Joint Spacing



Vertical joint spacing refers to the amount of space between two adjacent slates within the same course[1]. As roofing slates are hung by the shank of a nail, or a slate hook, a slight amount of movement may be expected in any given slate shingle due to wind loads and thermal expansion and contraction. To compensate for this, a small space is typically allowed between side-by-side slates within the same course. The basic recommendation is that adjacent slates be placed tightly together, but not so tight as to overlap, as overlapping of the vertical edges of adjacent slates can subject the slate to premature breakage[2]. A slight gap of 1/16" to 1/8" between adjacent slates (roughly equivalent to the point of a slate hammer) is recommended. This gap can, however, vary from 0" (slates just touching) to 3/8", or more, based on the width and thickness of the slate, roof slope, seasonal rainfall, the severity of

[1]The vertical joints between slate shingles are also known as "bond lines," "side joints," and "keyways."

[2]Note that while the inadvertent side-lapping of slates in a standard slate roof is to be avoided, side-lapping is common in many German-style slating methods and, for example, when installing slate on the radiuses of eyebrow-style dormers (see *Slate Roofs: Design and Installation Manual,* 2010 Edition, National Slate Association, 2010, pages 50 and 207-208, respectively.)

Figure 1: Fairly wide vertical joint spacing on a graduated slate roof.
(Photo by Clay Heald, New England Slate Company)

Figure 2: Open slating method on a barn in Vermont.
(Photo by Perry Phoenix, Phoenix Roofing)

local climate conditions (e.g., sea-coast vs. arid plains), and regional practices. A gap at the wider end of the range can enhance the shadow lines and textural appearance of the slate, especially when thicker shingles are used (Figure 1). Note that, in all cases, it is recommended that a minimum distance of 1-1/2" be maintained between the vertical edge of the slate and the nail hole in the slate in the course below.

The primary advantages of "gapping" the slates are as follows:

- **Can help compensate for the dimensional tolerances of slate shingles, which can vary up to 1/8" per foot (the allowed variance in slate shingle width from top to bottom per ASTM C406, Standard Specification for Roofing Slate), thereby keeping bond lines properly aligned on a roof comprised of a uniform slate size.**
- **Future repair work can be simplified, as ample room is available for fasteners (e.g., as in the nail and bib, and slate hook methods) and for ease of sliding the replacement slate into position.**
- **Wider spaces may allow for better drainage and less clogging with leaves, pine needles, etc.**

Taken to the extreme, the "Open Slating Method" can be viewed as a variation of expanded joint spacing to upwards of 4" to 6" apart, depending on the width of the slates used (Figures 2 and 3). Typically, wider slates (10" to 14" wide) are used to help maximize the spacing between slates. This method could be referred to as an economy method or a lightweight slate system as fewer pieces per square are used. Although this extra spacing enhances breathability of the roof and deck, it

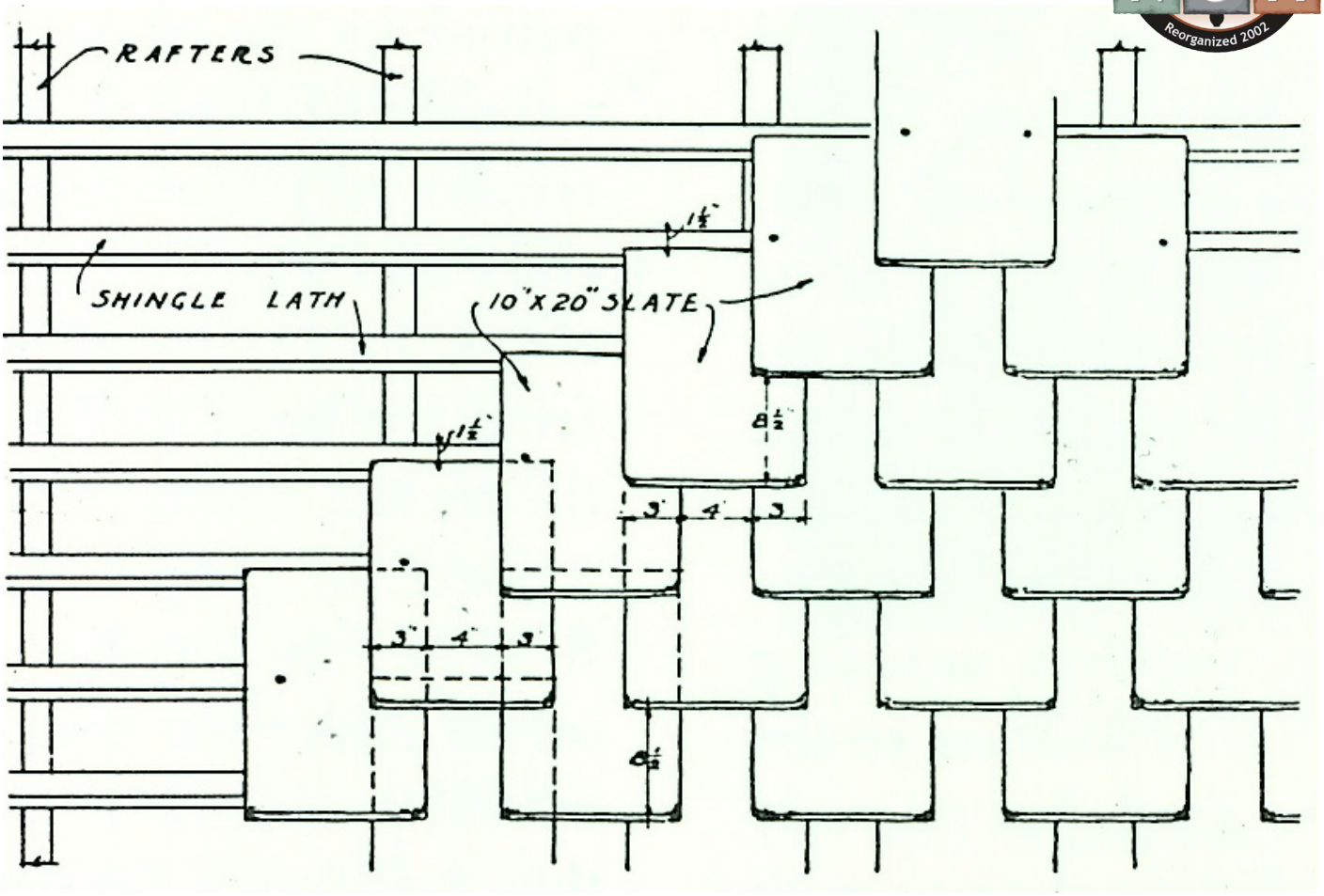
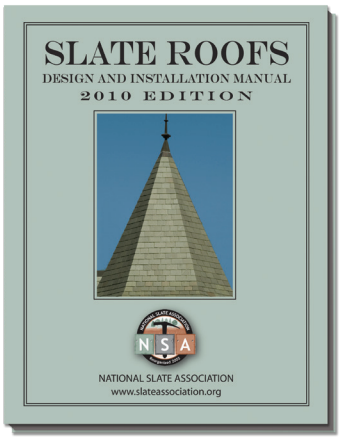


Figure 3: Detail - Open Slating method. (Source: *Slate Roofs*, National Slate Association, Second Edition, 1929, p.70.)

also increases the chances of water infiltration. As such, open slating is most appropriate for secondary structures, such as tobacco barns, slaughter houses, etc., where extra ventilation is beneficial and some water infiltration is acceptable. Note, too, that the sizeable gaps created by the open slating method can also invite insect infestations, such as by mud wasps and bees. Special attention to headlap, offset, roof slope, and nail hole positioning should be taken. Open slating is not typically used on occupied structures[3].

[3]Where open slating has been used on residential buildings in the past, there is often a secondary means of weatherproofing present, such as an older wood shingle roof.

For more information on vertical joint spacing, please see *Slate Roofs: Design and Installation Manual*, 2010 edition, available at www.slateassociation.org



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