TECH TALK:

Random Width Slating In Diminishing Courses — UK Style

by Michael Hill

My experience of random width slating in diminishing courses [*graduated* slating in American terms] differs from that of American slaters. Here in England the slates arrive in crates of random widths and lengths. The first job is to sort them to size according to length, but leave the widths totally random. As the lengths of slate are not accurate in each size, this needs doing with care. Basically, slates in any length can vary by 3/4" i.e. a 20" slate runs from 19 3/4" to 20 1/2" — this is how it is, a slate can be 1/4" under size or 1/2" over size. The next job is to work out the total width available in each length. To do this, you determine an average width in each length of slate by measuring the width of ten slates, adding them together, then dividing by 10. Then multiply by the number of slates in that size. For example, start with your largest slate, lets say 22", you have 150 of them. Measure the total width of ten slates; lets say it equals 120". Divided by 10 equals an average width of 12". Multiply by 150 slates equals 1,800".

Now carry out this operation for each length of slate, you'll find that the average width diminishes along with the length. As an example, on one job that I did recently the slates ran from 20" to 12" in 1" drops, giving you nine lengths in total. The average width of the 20s was 12 1/2" and that of the 12s was 9". What you end up with in your notebook is a list of slate lengths and their lineal (horizontal) measure in inches. For example, you may have 2,079" of 20" slates, 1,500" of 19" slates, 4,175" of 18" slate, 2,308" of 17" slate, etc.

Using your roof measurements, work out how many courses of each size you have for each slope, and as you allocate them, subtract them from your list. For example, on one slope you will need 805" of 20" slates. You have 2,079" in stock. After subtracting 805", you now have 1,274" remaining for other slopes. A word of warning, Always plan to have a few slates of each size left over as spares.

Now comes the important part, working out the lathing gauge for diminishing courses [Editor's note: In the UK, slate is installed on battens or lath — strips of wood spaced to allow for the nailing the slate. Since the distance between the nailed courses decreases on the way up a diminishing course slate roof, the spacing (*gauge*) of the lath, must also decrease.] The first thing to do is work out the slate exposure as you would for normal slating [the length of the slate minus the headlap divided by 2 = the exposure]. For example, a 20" slate with a 3" headlap would have an 8.5" exposure [(20" - 3")/2= 81/2"]. This is also the lathing gauge for that course.

Important: *If this gauge is less than the previous actual gauge, subtract the difference.* Lets say that your next course of slates is 19" [(19" - 3")/2 = 8" gauge]. This is 1/2 less than the previous gauge, so subtract the difference, making the gauge for the 19" course 7 1/2". Remember, only subtract the difference if it is LESS than the previous actual gauge — do not subtract the difference if it's the same as or greater than the previous actual gauge. Therefore a second course of 19s would go on at its 8" gauge.

Figure 1

Slates Laid at 3" Headlap

Slates	N/G	A/G
20"	8.5"	8 .5"
19"	8"	7.5"
19"	8"	8"
18"	7.5"	7"
18"	7.5"	7.5"
17"	7"	6.5"
16"	6.5"	6.5"
15"	6"	5.5"
15"	6"	6"
14"	5.5"	5"
13"	5"	5"
12"	4.5"	4"
12"	4.5"	4.5"

Lets see how this works on a typical roof (Figure 1). The slate sizes are in the left hand column, followed by the normal gauge, and then the actual gauge.

This method guarantees two things: the headlap will never be less than the specified headlap, and the lap margins (the visible part of the slate when laid, referred to as *exposure* in the U.S.) will decrease nicely up the slope. One of the worst sights you can see in diminishing course work is a margin [exposure] in one course bigger than the margin in the course below. All these measurements are written into my notebook on the job. I also use a lath board the same length as the roof rafter to mark each gauge onto it as I work out the measurements. That way, I know when I've reached the ridge board.

Figure 2

Stone Tile	N/G	A/G
48"	22.5"	22.5"
43"	20.0"	17.5"
40"	18.5"	18.5"
37"	17.0"	15.5"

and so on.

Now you've got all the information you need to install the slate laths to the roof. After that, the slates can be holed and brought up to roof level for laying. [Editor's note: In the U.S., slate roofs are typically installed on solid board decks, not lath, so no lath gauging is necessary, and the slates are "holed" (punched for nail holes) at the quarry when manufactured, so holing on-site is not needed.]

The above-mentioned method of calculating the gauge works just as well no matter what the drop in sizes may be. I've worked on stone roofs where I've had to drop 5" from one course to the next; it went like this (Figure 2). Now, if you look down the Actual gauge (A/G) column you will see that the gauges are bouncing around all aver the place, but rest assured that the margins and laps will be correct.

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