

18 STEPS TO A SUCCESSFUL SLATE ROOF INSTALLATION

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Slate roofs are arguably the finest roofs in the world — beautiful, natural, and long lasting. Like any facet of the construction industry, however, installations of slate roofs benefit from experience, knowledge and practice. Here are 18 things to keep in mind before tackling a slate roofing project:

1) CONSTRUCT THE ROOF PROPERLY. The roof must have a slope of 4:12 or above (4 inches of rise to 12 inches of run). If the slope is 6:12 or lower, then the headlap must be 4" minimum. The steeper the roof, the longer it will last. If the roof slope is shallow enough to walk on, someone *will* walk on it and damage the slates. So if you're going to design a long-lasting slate roof, make the slope too steep to walk on. Also, you should assume that all elements of the roof assembly will function successfully for at least 150 years. This means using roofing slates, fasteners and a roof deck material with known and proven longevities of a century and a half. Roof decking with the required longevity includes solid lumber at least 3/4" thick and other durable decking materials such as nailable concrete and gypsum. Avoid any laminated or glued roof decking products, despite the fact that plywood and OSB are the roof deck materials of choice for standard roofers and architects today. Slate roofs are not standard roofs — they're exceptional roofs which will grace the building they're on long after the installer is dead and even after his grandchildren have grown old. For this reason, fast and cheap roof decking materials should be avoided. For example, we recently reslated a roof on a house that was 170 years old. The first 40 years, the house had wood shakes on it. The next 130 years, it had Vermont "sea green" slates on it. The 130-year-old slates weren't even that bad, but bad workmanship and incorrect maintenance over that period of time had despoiled the roof to the extent that it had to be reslated. We nailed the new Vermont sea green slates to the original roof deck — 1" thick oak boards. I have seen slates re-nailed to a 215 year old original 1" pine roof deck in Scotland. If you're going to build your roof out of plywood or OSB, there is no way you will ever be able to reslate the roof over the original deck after the original slates wear out. In fact, the original slates will probably outlast the roof deck. Instead, you will have to replace the entire roof deck as well, an issue that can be avoided by having the foresight to use a long-lasting roof deck material in the first place.

2) SELECT THE CORRECT SLATES. This means you need to do your homework and understand the differences between roofing slates — they aren't all the same by any means. Price and color are *not* the only criteria to go by when selecting roof-

ing slates. You should also consider the size, thickness, type, and manufacturing quality. Some roofing slates will contain pyrites that will run red stains down the roof. Some imported slates can fade badly and even fall apart within a few years. Thick slates are harder to cut and may require more experience during installation. Small slates take longer to install because it takes more of them to cover a section of roof. Some manufacturer's quality control is lacking. Some drill the nail holes in the slates while some punch them, some cull out bad slates, some leave them in the mix for the contractor to sort out. Foreign slates can be a real gamble if you

don't know where they come from and what kind of track record they have. There is a lot to think about when selecting roofing slates. U.S. or Canadian slates from a reputable manufacturer are usually a good bet. There are a lot of good foreign slates too, but finding a reliable source of them can be difficult.

Source lists for new and salvaged roofing slates, domestic and foreign, are available at SlateRoofers.org.

3) BEFORE YOU START, DO YOUR HOMEWORK. There is a wealth

of information about installing slate roofs available in book form and on the internet. You *must* understand the concept of "headlap" (see below). Take the time to read about the common mistakes people make when installing slate roofs (TraditionalRoofing.com/TR4_mistakes.html). Read about how to install starter courses (TraditionalRoofing.com/TR5_starters.html). Take a look at common contractor errors (TraditionalRoofing.com/TR7_errors.html). Watch some video clips (SlateRoofCentral.com/videos.html). Read about drip edges and cant strips. If necessary, look at some of the nuances that may be pertinent to your installation such as cleats on apron flashings and ridges, and soldering flashing, to name a few. There is no excuse for anyone to install a slate roof today without knowing the basic information, which is readily available. Many informative articles about slate roof installation can be found at TraditionalRoofing.com as well as at SlateRoofCentral.com, including educational video clips. Spend a few hours perusing this information as it could save you a lot of money and headaches.

4) USE THE CORRECT TOOLS. You will need at least a slate cutter, slate ripper and slate hammer for each installer. You can buy these in a tool set with a



free Slate Roof Bible at SlateRoofWarehouse.com. Take a look at some tool demonstration video clips there as well. You will also need roof brackets, ladder hooks, scaffolding, and other tools and equipment.

5) DON'T RELY ON UNDERLAYMENT. The underlayment (typically felt paper) is temporary — *not* permanent. Over generations, it will wear out, disintegrate and crumble underneath the slates. If your slate roof depends on the underlayment to keep out the water, it is an incorrectly installed and faulty roof. Slate roofs, in fact, do not require underlayment at all — barns typically do not have underlayment. Use the underlayment to keep out the water until the roof is installed. A single layer of 30# felt is traditional, but a double layer (half-lap) may be preferential in some situations. The underlayment will keep out the water until the slates and flashings are installed and it makes a good surface on which to chalk lines. Underlayment should always be installed *underneath* the slates, *never* overlapping them or on top. If you're concerned about ice-damming, double the felt along the eaves and spread trowel grade roof cement in between, then increase the slate headlap along the eaves to 5". See the article in this issue about installing ice dam resistant eaves.

6) GET THE STARTER COURSE RIGHT. Read an article about the five most common mistakes made when installing starter courses at TraditionalRoofing.com/TR5_starters.html. Install a cant under the slate starter course — either a wooden one, a copper one, or use another method, but get it in there. It will tilt the starter course so it's at the same angle as the rest of the slates on the roof. Make sure your starter course slates have enough headlap and sidelap.

7) BLEND THE SLATES. If installing a new slate roof requiring several pallets of slate, blend the slates by taking some from all the pallets at once before sending them up onto the roof. Otherwise, the roof can look splotchy.

8) GET YOUR HEADLAPS AND SIDELAPS RIGHT. Headlap is the overlap each slate had over the slates two courses below. Lack of headlap can condemn an entire brand-new slate roof. Read an article about headlap at TraditionalRoofing.com/TR6_headlap.html

9) DO NOT WALK ON THE SLATES DURING INSTALLATION. Use roof jacks and planks. Stage the roof properly. Walking on slates during installation is the most common cause of "shedding slates," or slates that break and fall off after the roof has been installed. Shedding slates can be avoided by properly staging the roof during installation.

10) CHALK YOUR SLATE COURSES. Install every course of slates along a permanent (red) chalk line chalked on the surface of the roof, measured from the bottom of the roof to ensure accuracy and consistency. The lines mark the top edges of the slates. Do not chalk on the slates themselves and do not "eyeball" the courses by trying to lay the slates without chalk lines. You can easily lose your headlap and ruin the roof if you do not follow this important bit of advice.

11) LAY YOUR STARTER SLATES BACK SIDE UP. The starter course should be laid back side facing up to allow the edge bevel to merge flush with the edge bevel of the first course (which is laid back side facing down, as are all other slates on the roof, except the starter course).

12) DO NOT OVER-NAIL OR UNDER-NAIL THE SLATES. Slating nails shall not be driven in so far as to produce an excessive strain on the slates. If the nails are driven too hard, they can punch through the slates and leave the slates hanging on one nail. The nails should instead be driven to a depth such that the nail heads lie within the counter-sunk nail hole crater. This way, the nail heads will not rub excessively against the overlying slates, eventually wearing a hole in them. This is why a counter-sunk nail hole is important on standard thickness slates (3/16" - 1/4" thick), rather than a drilled nail hole. Thicker slates can get away with drilled holes because a) they can be too thick to punch, b) they are more immune to the rubbing of underlying nail heads, and c) they tend to be more irregular and have enough space between them to leave room for a nail head. Read more about nail holes at TraditionalRoofing.com/TR5_hole.html.

13) USE GOOD FLASHING MATERIAL. Copper flashings or stainless steel are best. Use minimum 20 ounce copper on valleys and built-in-gutters. You can use 16 ounce copper on ridges, step flashings and chimney flashings, although 20 ounce is better. Sheet lead is also a good flashing material.

14) USE A GOOD RIDGE AND HIP SYSTEM. Saddle ridges, Boston hips, mitered hips and copper or stainless steel hips or ridges, are all good. The worst ridge is when you just run your field slates to the top and leave them with exposed nail heads and sealant along the apex and nothing else. See slate saddle hip and ridge instructions at SlateRoofCentral.com/install_hips_ridges.htm, and copper ridge installation at SlateRoofCentral.com/videos.html#ridge.

15) USE GOOD NAILS. Do not use electro-galvanized nails except to nail felt paper. Use copper or stainless steel roofing nails for the slates. You can use hot-dipped galvanized roofing nails on slates too, especially when installing recycled salvaged slates. See SlateRoofCentral.com/videos.html#nails_eg.

16) HIRE THE RIGHT CONTRACTOR. If you're hiring a contractor — get a good one. I guarantee that if the contractor is not familiar with everything on this page, he should not be installing a slate roof. Read the article in this issue about this subject.

17) HAVE COMPLETE CONTRACT DOCUMENTS. If you're using a contract document, make sure it is thorough and detailed. Do not leave any details to guesswork. Spell out everything — headlap; type of slates including size, thickness, origin, color, and shape; gauge and length of nails; type and gauge of flashings; type of cant; etc., etc. There is a sample contract as a PDF and as a Word file at SlateRoofCentral.com/install_contract.htm.

18) KNOW HOW TO REPAIR THE ROOF. You will probably break some slates during the installation and you could lose a slate or two after the roof has been installed due to damage to the slates during installation. You should have a few slate hooks available to use for repairing the roof. See SlateRoofCentral.com/videos.html#repair. 