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A photograph of a construction site showing workers on a steeply pitched roof covered in dark grey slate tiles. One worker in a white hard hat and blue shirt is standing on a metal walkway, pulling a rope. Two other workers in white hard hats and safety gear are crouching near the edge of the roof. The background shows a scenic view of a valley with trees and a lake under a clear blue sky.

The **Natural**
Slate Roofing

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The Natural

Striking Natural Slate Blend Makes Roofing Project Pop

by Tom Watts



The Most Commonly Asked Slate Questions

Roofing Contractor asked V. Cassel Adamson, III, president of The Virginia Slate Company, to answer some of the most frequently asked questions about the slate industry in the United States.

Is slate readily available?

Yes, here in the United States, natural slate roofing is available from several different sources. Most of the U.S. companies have one quarry or one color of slate and source out any other products that their customers might be seeking. There are only a few U.S. companies that truly offer a full range of domestic and imported slates from around the world. The slate industry is leaning toward a global market. For example, 15 years ago in England, its domestic slate, called Welsh slate, dominated over 99 percent of the British slate market. Today, it is less than 10 percent of the market due to the increase in imported products. The imports offer different qualities, varieties, more availability and different ranges of pricing. If global trends continue towards a "single world market," then the likelihood of growth for the imported slates in the United States is great and will continue to have a strong future.

Michael Dunn, president of Dunn Roofing and Sheet Metal Inc., of Nokesville, Va., understands the complexity of natural slate.

For the last decade, Dunn and his partner and wife, Kara, have gained knowledge of the slate industry to the point where the projects they undertake are some of the largest in the United States.

With 45 employees at his disposal, Dunn's team resembles a small army of experienced commercial roofers ready for

anything, including a recent project that required a 750-square slate roof.

One of the largest projects ever for Dunn Roofing and Sheet Metal was the Long and Foster headquarters project in Virginia near Washington, D.C. Construction began in October 2007 and concluded this past March, on time and under budget.

The Long and Foster project — the second-largest job for Dunn Roofing in the past four years — consisted of three continuous phases: the office building, the garage and

The Most Commonly Asked Slate Questions

In the United States, quarries are generally producing one or two truckloads a month, which equates to 50 to 100 squares, with only a few quarries capable of producing more. In Europe, there are many “mom and pop” operations that produce over 180,000 to 200,000 squares a year or 3,600 squares per week. That would be approximately 72 full truckloads per week. The demand for natural slate roofing in the U.S. can easily be supplied from producers around the world. As the production in the U.S. is limited, we as global consumers benefit greatly from slate produced worldwide.

How much does slate weigh?

Slate weighs between 800 to 1,000 pounds per square or 8 to 10 pounds per square foot. The weight of each slate piece is directly related to the thickness of each piece of slate. The thinner the slate, the lighter it is. The thicker the slate, the heavier it is. Since all slate material is still hand split today, the thickness for each slate varies according to the eye of the splitter. Most producers offer slate in several ranges of thickness, however the majority of slate sold today in the United States is ¼-inch to ¾-inch thick.

How much does slate cost?

Natural slate today costs on average \$400 to \$500 per square. Slate roofing in the United States normally runs around \$400 per square plus the cost of shipping. Some softer weathering or fading slate is less expensive because they are easier to mass produce. Harder unfading slates are more desirable and thus bring more of a premium because it is harder to mass-produce. The size of the slate also affects the cost of the material, as well as current stock levels. Thicker slate cost are normally higher because there is more material per piece, thicker material is harder to produce, there is more trim work usage and the cost of shipping is higher due to the additional weight of each piece of slate. Slate jobs are priced out individually because of the variables of product color, size, thickness, quantity, current availability of that requested size, and shipping cost. There is no such thing as a normal cost. One can only give a ballpark figure until the project progresses to a point where more of the decisions are made regarding the different variables. Only then can a true cost be determined for the material. And as we all are aware, in our current time shipping cost are always subject to change.

the bridge connecting the office building and the garage.

“As this was a new building under con-

struction with a tight schedule, we first installed the ice and water shield material at the proper locations and Titanium UDL 30 underlayment over the plywood installed by the general contractor,” Michael Dunn told *Roofing Contractor*.

The roof deck, meanwhile, consisted of ½-inch DensDeck and ¾-inch plywood over engineered steel trusses.

“After the underlayment was installed we followed behind with the copper work,” Dunn said. “A cornice gutter was installed fabricated from 16-ounce copper. The girth of the gutter was 48 inches.”

All of the gutter joints were flat locked and soldered together, Dunn said, and at the top of the cornice where the gutter wrapped up and over the edge, the joints of the gutter form a standing seam.

“One of the most challenging aspects of the job was soldering the gutter joints from inside a basket in a 120-foot man lift in the dead of winter,” Dunn said. “Following the copper work with the slate was quite challenging.”

The question for Dunn Roofing and Sheet Metal was how to go about loading and installing slate on a 10/12 slope at 65 feet to 90 feet in the air.

“We processed our thoughts carefully,” Dunn said. “At the dormer roof areas we decided to erect scaffolding from the ground to the eave in order to safely perform the work at the areas that required mostly detail.”

The slate was loaded to the roof using cranes.

“Most of the time the slate was taken from the pallets to the roof and set on roof jacks and scaffolding boards,” Dunn said. “At other times the slate was taken from the ground to the platform on top of the scaffold system.”

The cost of the equipment rental was “astounding,” Dunn said, but his crews of approximately 15 to 20 slate workers accomplished the slate installation on schedule.

Finding the Right Slate

Not just any slate will do for Dunn Roofing and Sheet Metal Inc. On the Long and Foster headquarters job, Dunn utilized a slate blend to make the project as unique as they come. In particular, he used East



■ **Above:** The Long and Foster Headquarters in Virginia was topped with a blend of East Moorland Green and Unfading Green slate. **Opposite page:** The Long and Foster Headquarters project consisted of three continuous phases: the office building, the garage and the bridge. The project totaled 750 squares. (Photos courtesy of The Virginia Slate Company and Dunn Roofing and Sheet Metal.)

Moorland Green and Unfading Green slate from The Virginia Slate Company.

“It’s a blend we decided to try because of the busy variegated quality of the East Moorland Green,” Dunn said. “What we mean by blending is simple. We purchased half of the slate East Moorland Green and half of the slate Unfading Green.”

When the roofing crew loaded the slate to the scaffold boards and onto the roof, they meticulously stacked the slate, mixing the two types of slate as workers stacked it on the boards.

“When we blended in the Unfading Green it added a variation to the slate pattern on the roof that made the roof pop,” Dunn recalled. “We noticed this after building an architectural sample, a 10-foot by 12-foot stud wall with plywood, and covered the plywood with the system.”

The sample was left on the ground for the owner and architect to review. “The owner and architect seemed excited about the slate pattern and approved the sample,” Dunn said. “They made a great choice.”



■ Dunn Roofing and Sheet Metal Inc.’s safety plan called for anchor points at the ridge, lifelines, snap hooks, lanyards and full body harnesses, as well as a scaffolding system.



■ The project's biggest challenge was meeting the demands of the schedule while safely installing the slate.

The installation at the Long and Foster headquarters was labor-intensive. "The 750 squares is a large amount of slate at 160 pieces per square and hand nailing each piece," Dunn said. "It's our second largest slate project in four years — probably the largest slate project performed in Virginia this year."

Safety and Deadline Challenges

As one might expect, safety on a jobsite at 90 feet in the air concerned Dunn.

"We mostly used anchor points at the ridge, with lifelines, snap hooks, lanyards and full body harnesses, and proper scaffolding systems," he said. "Worker training included toolbox talks, and from time to time special safety meetings performed by sources outside the company."

Still, Dunn said the biggest challenge was meeting the demands of the schedule, including tight deadlines.

"Safely installing the slate and the copper to meet production rates required by the construction schedule was grueling," Dunn said. "Having the patience to communicate properly with the customer in regard to the installation schedule at every weekly progress meeting had its place on the list."

One of the keys to the project's success was the construction team's ability to pro-

actively deal with the pressure of performance on the job, according to Dunn.

"Building a monument this size at an accelerated pace and in the end looking back on how the entire construction team stayed together to make it happen," Dunn said, referring to the challenges posed by the project. "The crew made it happen."

The Virginia Slate Company

Dunn said "special thanks" are due to Cassel Adamson and The Virginia Slate Company team.

"This is our second large project with Virginia Slate, and with the worries of material availability very much a concern, we have to say, based on our experience, that The Virginia Slate Company can deliver slate on a 'just-in-time' scheduled basis," Dunn said. "The timing of delivery couldn't have been any more precise than what they delivered."

Dunn said the quality of the slate was as close to being as perfect as slate can be.

"The packaging was sturdy enough for us to deliver the slate 90 feet to 110 feet in the air without safety worries," Dunn said. "The overall experience with The Virginia Slate Company has been pleasurable."

For his part, V. Cassel Adamson III, of The Virginia Slate Company in Richmond, Va., said good slate and good contractors go hand in hand, and the result was an impressive structure.

"This project is right on a major highway that can be seen for miles," Adamson told *Roofing Contractor*. "This project is by far one of the most impressive jobs that has been done with natural slate roofing in the United States in the past decade." **R**

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Are there different sizes, thicknesses and/or colors of slate?

Slate lengths in inches are: 12, 14, 16, 18, 20, 22, and 24 inches, while the widths are usually determined by the length of the slate. The widths are never less than half of the length. In other words, a standard slate cannot be 18 inches long by 6 inches wide. The width would have to be minimally 9 inches, which is half of the length. Slate length, width and thickness vary. Since slate products are natural stone, the product can usually be cut to a customer's requested size in length, width and thickness. Any deviation from standard production demands a premium price. Unfading slate is normally a harder stone that changes very little from its freshly quarried look. Whatever changes occur are uniform typically throughout a slate roof provided that the material comes from one quarry. Unfading slate products are in higher demand over the "weathering" slate products and command about a \$100 premium more than the weathering slate. There are also fading slate or "semi" weathering slate that change color once exposed to the weather. The reason for this change in the color is due to the high percentage of iron (rust) and calcium, which causes the slate to lose its color pigment. These slate normally turn brown in color. These softer semi-weathering slates are often considerably less expensive and can cost in the lower \$300 range.

What does "standard" or "random" mean?

Standard means all of the slates are the same size in both length and width. Random is where all of the lengths are the same size but the widths will vary. In this case all of the slate would have the same exposure, it is just the width of each slate piece that would be "random" or varying. In some cases, different patterns can also be achieved in the thickness of the slate and this is called graduated. This is where the thickness of the slate at the bottom is thicker and gradually the thickness decreases as it goes up the roof. This is more common in old European homes and newer affluent homes. This is the costliest application of all. The bottom line for the owner of the project is to determine what look they are going for at what price. But it can be easily said that all slate roofs are unique, beautiful, and last a lifetime.