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SBC Roof Series: Slate Roof System

A slate roof system typically consists of natural slate tiles that are installed on a roof to provide a durable and aesthetically pleasing covering. The installation process involves securing the slate tiles to the roof structure using nails or hooks. Slate is known for its longevity, fire resistance, and low maintenance requirements. It offers a classic and elegant appearance and is commonly used in high-end or historic construction projects. However, it's important to note that slate roofing can be heavier and more expensive than other roofing materials. Proper installation and maintenance are essential to ensure the longevity and performance of a slate roof system.

The components of a slate roof system can include:

1. **Slate Tiles:** Natural slate tiles are the primary covering material and are available in various sizes and colors. Slate roof tiles come in various sizes, typically ranging from 12 inches long by 6 inches wide (known as "standard" or "textured" slates) to larger sizes such as 24 inches long by 12 inches wide. The size of the slate tiles can vary depending on the manufacturer and the specific requirements of the roofing project. These dimensions ultimately affect the overall appearance and coverage of the roof and are chosen based on the architectural style and design preferences.
2. **Underlayment:** Typically, a layer of roofing felt or synthetic underlayment is installed beneath the slate tiles to provide additional weatherproofing and protection against water infiltration.

The primary types of underlayment include:

1. **Asphalt-saturated felt:** Often referred to as tar paper or felt paper, this traditional underlayment is made of cellulose, fiberglass, or polyester material saturated with asphalt. It serves as a moisture barrier and provides some degree of protection against leaks.
2. **Synthetic underlayment:** These underlayments are made from polyethylene or polypropylene materials and are designed to be more resistant to tearing, provide better traction for roofers during installation, and offer superior water resistance compared to traditional felt underlayment.

Both types of underlayment are installed directly onto the roof deck before the shingles are applied, and they play a crucial role in safeguarding the roof structure from water infiltration and other potential damage. The specific choice of underlayment depends on factors such as the roofing material used, local building codes, and the desired level of performance.

3. **Ice and water shield:** I & W also known as a weatherproofing membrane, is a self-adhesive, rubberized asphalt membrane that provides protection against water infiltration and ice dams in critical areas of a roof.

This shield is typically installed on the eaves, valleys, rake edges, and around roof penetrations such as vents, chimneys, and skylights.



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The ice



and water shield serves as a secondary barrier between the roof deck and the shingles, offering an additional layer of waterproofing in areas prone to water intrusion. It is designed to provide superior protection in regions where ice or water might accumulate and potentially seep beneath the shingles, which can lead to water damage or leaks in the underlying structure.

In addition to protecting against ice dams, this membrane also serves as a safeguard against wind-driven rain and other forms of moisture intrusion, contributing to the longevity and resilience of the overall roof system. Its self-adhesive nature and high-quality construction enable it to effectively seal around roofing nails or other fasteners, further reducing the likelihood of leaks in vulnerable areas.

This membrane is constructed to be highly resilient and to adhere firmly to the roof deck, creating a watertight seal around vulnerable areas. When correctly installed, the ice and water shield can significantly enhance the overall weather resistance and durability of a roof system, offering extra peace of mind in harsh climates or areas prone to ice and snow buildup.

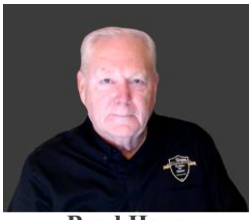
Common widths for rolls of ice and water shield range from 3 feet to 4 feet, and the length of the rolls can vary based on the manufacturer and product specifications. Rolls of ice and water shield are often available in lengths of 65 feet to 75 feet, although longer rolls may also be available.

The specific size of the ice and water shield roll needed for a particular roofing project will depend on the dimensions of the roof, the areas requiring protection, and the installation method. It's essential to accurately measure the sections of the roof where the ice and water shield will be applied to determine the quantity and size of rolls required for the project.

3. **Flashing:** Metal flashing is used to seal joints, edges, and intersections on the roof, such as around chimneys, skylights, or vents, to prevent water intrusion.

Roof flashings are components used to provide protection against water infiltration in vulnerable areas of a roof where slate tiles meet other surfaces, such as walls, chimneys, dormers, or skylights. These flashings are typically made of metal, such as aluminum or galvanized steel, and are designed to redirect water flow away from the seams and joints, preventing leaks and water damage.

Common types of roof flashings include:



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1. **Step Flashing:** These are L-shaped metal pieces that are installed in a staggered pattern along the sloped areas where the roof intersects with vertical surfaces, such as a sidewall or chimney.
2. **Continuous Flashing:** This is a continuous piece of metal flashing that is installed in areas such as roof valleys or along the base of a chimney to create a continuous water barrier.
3. **Drip Edge:** Drip edge flashing is installed along the edges of the roof to direct water away from the fascia and into the gutters, reducing the risk of water infiltration at the edges of the roof.
4. **Apron Flashing:** Installed at the joint between a sloped roof and a vertical wall to prevent water from seeping into this transitional area.
5. **Ridge Cap:** Ridge cap shingles are specially designed shingles installed along the ridges of the roof to provide a finished and weather-resistant covering, helping to protect the roof against wind-driven rain and other elements.
6. **Counter flashing's:** Counter flashing is a specific type of flashing used to protect masonry or other vertical surfaces from water infiltration where they meet a roof line. It is commonly employed in conjunction with step flashing in applications such as chimneys, parapet walls, or other raised structures that intersect with a roof.

The counter flashing is typically made of metal, such as aluminum or galvanized steel, and is customized to fit into a receiving groove or reglet that has been cut into the masonry. This installation method helps seal the top edge of the step flashing and serves as an additional defense against water penetration.

The purpose of counter flashing is to redirect water away from the intersection of the vertical surface and the roof, preventing water ingress and potential damage to the building structure. Properly installed counter flashing increases the overall weather resistance and longevity of the roof system by providing a secure and reliable secondary barrier against moisture.

Maintenance of counter flashing is crucial to ensure its ongoing effectiveness in protecting the vulnerable areas of the roof and the adjacent vertical surfaces. Regular inspection and timely repairs or replacements can help maintain the integrity of the waterproofing system provided by the counter flashing.

4. **Ridge Tiles:** These are specially shaped slate tiles that cover the horizontal ridges of the roof and provide a finished look while protecting the roof's peak.



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Slate

ridge caps are specialized slate tiles

used to cover the peak, or ridge, of a sloped roof. These ridge caps are specifically shaped and sized to fit over the apex of the roof, providing a finished and protective covering. They are designed to overlap and interlock, creating a seamless and water-resistant barrier along the highest point of the roof.

Slate ridge caps are crucial for protecting the ridge from water infiltration, as well as providing an aesthetically pleasing finish to the roof. They are often secured with nails or hooks and are carefully installed to ensure a tight and secure fit.

5. **Battens:** Wooden or metal battens are fixed to the roof structure to support and space the slate tiles evenly and provide a secure attachment surface.

Battens are an important component of a slate roof system, providing the structural support and framework for the installation of slate tiles. These long, thin strips of material—usually wood or metal—are attached to the roof deck or sheathing. The slate tiles are then installed over these battens.

Battens serve several key purposes in a slate roof system:

1. **Support:** Battens create a stable and even surface for the attachment of slate tiles, ensuring that they are properly secured and aligned.
2. **Alignment:** By providing a consistent spacing and layout, battens help maintain a uniform appearance for the installed slate tiles, contributing to the overall aesthetics of the roof.
3. **Ventilation:** Depending on the specific design, battens can also enable airflow beneath the slate tiles, contributing to the overall ventilation and climate control within the roof system.

It's important for battens to be carefully and securely installed, as they form the foundation for the slate roof installation. Proper spacing and attachment of battens play a crucial role in the long-term performance and durability of the slate roof.

6. **Ventilation:** Proper ventilation plays a crucial role in maintaining the durability and longevity of a slate roof. In a slate roof system, ventilation serves to regulate temperature and moisture levels within the attic space, protecting the roof structure and ensuring optimal performance. Here are some aspects of ventilation in a slate roof:

1. **Ridge Ventilation:** Ridge vents are installed along the peak of the roof to allow hot air and moisture to escape from the attic space. This promotes air circulation and helps prevent the buildup of condensation, which can lead to mold, mildew, and wood rot.



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2. Soffit Ventilation: Soffit vents are positioned along the underside of the roof's overhangs. They offer intake points for fresh air to enter the attic, displacing warm, moist air and assisting in regulating the temperature and humidity levels within the attic space.
3. Gable-End Ventilation: Gable vents, installed on the gable ends of the roof, facilitate airflow in and out of the attic, contributing to overall ventilation and climate control.

Proper ventilation helps to prevent moisture buildup and excessive heat in the attic, which can negatively impact the slate roofing materials and the underlying roof structure. It also assists in reducing energy costs and maintaining a healthy indoor environment.

7. **Nails or Hooks:** These are used to secure the individual slate tiles to the roof structure and are typically made of copper, stainless steel, or galvanized steel to prevent corrosion.

In a slate roof installation, nails and hooks are essential fasteners used to secure the individual slate tiles to the roof structure. They provide the means of attachment, ensuring that the slate tiles remain in place and create a weatherproof barrier. Both nails and hooks are typically made of corrosion-resistant materials such as copper, stainless steel, or galvanized steel to withstand the elements and prevent deterioration over time.

Nails: Traditional slate roof installations often use copper nails due to their durability and resistance to corrosion. The most common size for copper nails used in slate roofing is 2 inches in length with a smooth shank to minimize splitting of the slate tiles when driven through.

Hooks: Slate hooks are another method used to secure slate tiles to the roof. These hooks are typically made of stainless steel or other durable metals and are designed to hold the lower edge of each slate tile in place, ensuring a secure fit.

Both nails and hooks are selected based on the specific requirements of the roof installation, including the type and thickness of the slate tiles, the roof pitch, and the local climate conditions. Proper selection and installation of these fasteners are critical to the overall performance and longevity of the slate roof system.

Each of these components plays a crucial role in creating a durable and weather-resistant slate roof system. Proper installation and maintenance are essential to ensure the longevity and performance of the entire system.