

# residential essentials

## Low-slope options

by **Tom Bollnow**

**S**ingle-family residential construction projects primarily involve steep-slope roof systems that have slopes greater than 3-in-12 (14 degrees). But there also are low-slope portions of steep-slope roofing projects (porches, dormers, eyebrows, valleys, saddles and flat decks) that have to be considered.

Most local building codes allow a variety of roof membranes for low-slope applications on residential buildings. Therefore, roof system selection should be based on ease of application, intended roof area usage, and compatibility with roofing materials and surroundings.

When selecting a low-slope roof system, it is important to consider climate and geographic location; building code requirements; need for insulation and ventilation; fire, wind and impact resistance; slope and drainage; and maintenance requirements.

### Surfacings

The primary function of a roof system—weatherproof integrity—may be satisfied by any quality roof system if it is properly installed. If the only goal is functionality, the roof system selection process is simple and may be reduced to cost and expediency. The question should not be which low-slope roof system is most useful—the issue is offering a customer alternative roof systems to better complement a home's overall appearance.

A roof system's surfacing is the most significant feature for visual expression and provides protection from rooftop traffic, hail damage and ultraviolet degradation. Surfacings for low-slope membrane roof systems may

be field- or factory-applied and include smooth, liquid-applied coatings; mineral granules; and aggregate.

Smooth surfacings can be used with hot and cold bituminous materials; aluminum-pigmented coatings and colored acrylics are used on built-up and modified bitumen roof systems. Most single-ply roof systems are smooth, but some may allow additional field coatings to be applied. Smooth surfacings offer relatively easy damage assessment; somewhat easy repair and maintenance; and reflective, light-colored outer layers.

Mineral surfacings consist of field- or factory-applied colored granules for built-up and modified bitumen roof systems. The granules are available in a variety of colors and may be blended. The most prevalent mineral surfacing option is factory-applied, granular-surfaced membrane sheets. Mineral surfacings offer ease of maintenance and repair, good impact resistance and color options.

Aggregate surfacings include rounded river gravel, slag, crushed stone (e.g., limestone, marble, crystallite, granite) and decorative material such as red gravel and volcanic rock. Aggregate surfacing is an option for all roof membrane systems. Aggregate surfacing offers good impact resistance and ornamental design options.

### The systems

Built-up roof systems generally use hot asphalt as interply bitumen but also may use coal-tar pitch, polymer-modified mopping asphalt or liquid-applied asphalt. The reinforcing ply sheets generally are fiberglass felt, and surfacing options include mineral granules, smooth coatings and aggregate. Granules generally are incorporated

into mineral-surfaced cap sheets but also may be field-applied with asphalt adhesive.

Polymer-modified bitumen roof systems are applied using hot asphalt, cold adhesives or torching applications. Modified bitumen systems predominantly have factory-applied mineral surfacings but can be aggregate-surfaced or smooth. Some modified bitumen membranes are available in foil-laminated sheets made of aluminum, copper or stainless steel.

Single-ply roof membranes consist of thermoset and thermoplastic sheet materials and can be loose-laid and ballasted, mechanically attached or fully adhered. Typically, a factory field sheet is the surfacing for a residential single-ply membrane. Aggregate surfacing may be used for loose-laid systems.

Other roof systems are available, such as flat-lock standing-seam metal, spray polyurethane foam and various liquid-applied roof systems. Roofing workers should pay close attention to details at roof edges; door sills; vertical walls; flat to steep transitions; and accessories, such as railings and planters.

For additional information about low-slope roof systems, consult *The NRCA Roofing and Waterproofing Manual, Fourth Edition*, as well as roof system manufacturers' guidelines.

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