

NATIONAL ROOFING CONTRACTORS ASSOCIATION

HOMEOWNERS GUIDE

to

Asphalt Shingle Roof Systems

National Roofing Contractors Association
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NRCA

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NRCA

National Roofing Contractors Association

10255 W. Higgins Road, Suite 600
Rosemont, IL 60018-5607
(847) 299-9070
Fax: (847) 299-1183
Website: www.nrca.net
Email: nrca@nrca.net

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10255 W. Higgins Road, Suite 600, Rosemont, IL 60018-5607

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Introduction

The National Roofing Contractors Association (NRCA) is pleased to provide you with this information as part of its ongoing effort to educate homeowners about roofing and roofing contractors.

NRCA is one of the construction industry's most respected trade associations and the voice of roofing professionals and leading authority in the roofing industry for information, education, technology and advocacy. Founded in 1886, NRCA is a nonprofit association that represents all segments of the roofing industry, including contractors; manufacturers; distributors; architects; consultants; engineers; building owners; and city, state and government agencies.

Buying a new roof system is an important investment. NRCA wants to assist you in getting the results you expect—a quality roof system at a fair price. Before you spend your money, spend some time learning how to evaluate the roofing contractor who may be doing the work.

You should insist on working with an NRCA professional. You can find a contractor in your area and more information about roofs, including tips for homeowners, at www.everybodyneedsarroof.com.

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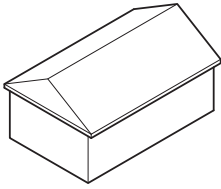
Homeowners Guide to Asphalt Shingle Roof Systems

Most homeowners at some point will be faced with the decision to replace the roof systems on their homes. This guide is intended to help homeowners who are considering asphalt shingles as a replacement for their current roofs, as well as soon-to-be property owners who are involved in new construction. NRCA would like to help you become a more knowledgeable consumer and, ultimately, a better roof system buyer.

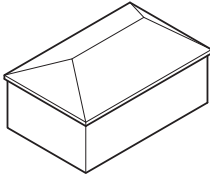
As with all roof systems, the application of asphalt shingle roof systems is not an exact science. It involves the skillful arrangement of multiple components in a defined process. It is a craft involving people who work with a broad range of materials, designs, practices and techniques, climates and changing weather conditions. As a result, the need for understanding published installation guidelines and instructions should be accompanied by accepted local practices.

Residential roof deck construction can range from low slope to steep slope. Figure 1 (on page 8) shows various steep-slope roof deck styles and components. Asphalt shingle roof systems are designed for slopes ranging from 2:12 (2-inch vertical rise to 12-inch horizontal run) to nearly vertical. See Figure 2 (on page 9). Slopes from 2:12 (allowed by most building codes) to 4:12 require specific enhancement of the underlayment configuration, such as double-layer or self-adhering material. Asphalt shingle roof systems are intended to be water-shedding as opposed to waterproof, and, as such, NRCA recommends a minimum 4:12 slope for achieving expected service life performance.

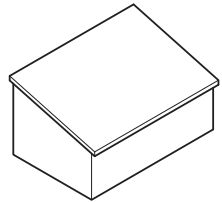
Asphalt shingles produced in the U.S. are fiberglass-based. A fiberglass mat reinforcement is coated with asphalt and has a parting agent (fine mineral) on the back side and granules on the front side. There are a



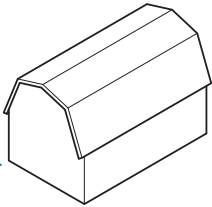
GABLE ROOF



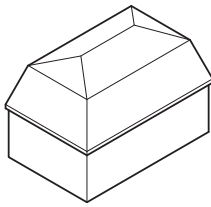
HIP ROOF



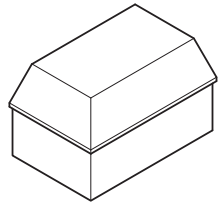
SHED ROOF



GAMBREL ROOF



MANSARD ROOF



EXAMPLES OF STEEP-SLOPE ROOF DECK STYLES

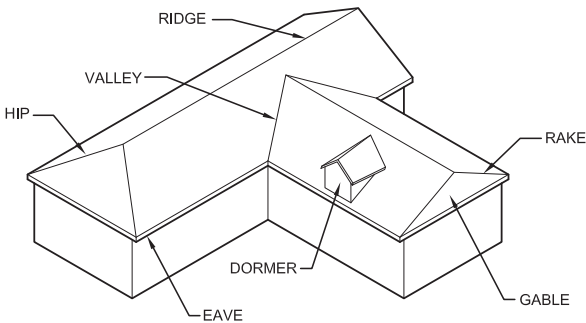


Figure 1: Examples of steep-slope roof deck styles and components of a roof system

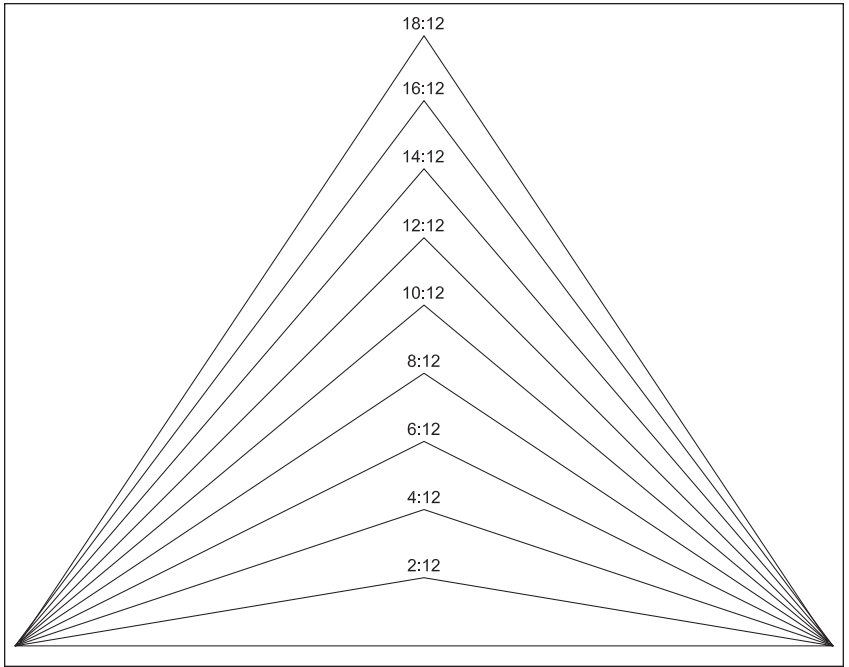


Figure 2: Roof slopes from 2:12 to 18:12

wide variety of styles, colors and prices to choose from, including algae- and impact-resistant products. Asphalt shingle manufacturers have websites that display shingle styles and colors, offer installation guidelines, help find preferred or recommended contractors, and show warranty information.

Why Do You Want a New Roof?

Steep-slope roof systems are replaced for two primary reasons: appearance or function. Appearance generally drives the style and color selection of asphalt shingles for new construction. Existing roofs can be marred by algae and moss, or the color may not blend with exterior features.

Function describes a roof system's ability to perform its intended purpose as a water-shedding surface. Leaks and age (15 to 20 years) warrant an inspection by a qualified roofing professional. Leaks and wear generally are the result of age and natural climate issues such as sun, rain, wind, snow and ice. Visual signs include cracked or missing shingle tabs, cupped or curled shingle strips, granule loss and pockets of vegetative debris. Replacement also may be a direct result of a single event, such as wind, hail, fire or associated falling debris.

Ventilation and Insulation

Roof system replacement is an excellent time to assess existing ventilation and insulation as it affects a roof assembly. Steep-slope roof assemblies create controlled air spaces, generally attics, between the ceiling and the underside of roof decks. There are several options for venting and insulating this space. The attic or controlled air space can be designed as vented or unvented, and insulation can be installed on the attic floor (vented) or on the bottom side of the roof deck (unvented).

Ventilation requires intake vents (soffit, eave, gable) and exhaust vents (individual, continuous, power) at or near the high point (ridge) as shown in Figure 3. NRCA recommends 1 square foot of net free vent area for each 150 square feet of attic floor with vents placed proportionately at eaves and at or near the ridge. Insulation for vented assemblies should not block airflow at eaves, which can be accomplished with the use of baffles. Proper R-value or thermal performance of insulation—and possibly a vapor retarder under the insulation—are necessary for optimum efficiency.

Unvented, conditioned attic or controlled air space is allowed by most building codes with specific provisions. Unvented spaces have the insulation installed directly to the bottom side of the roof deck, and in the case of cathedral ceiling design, the cavity between ceiling and deck is

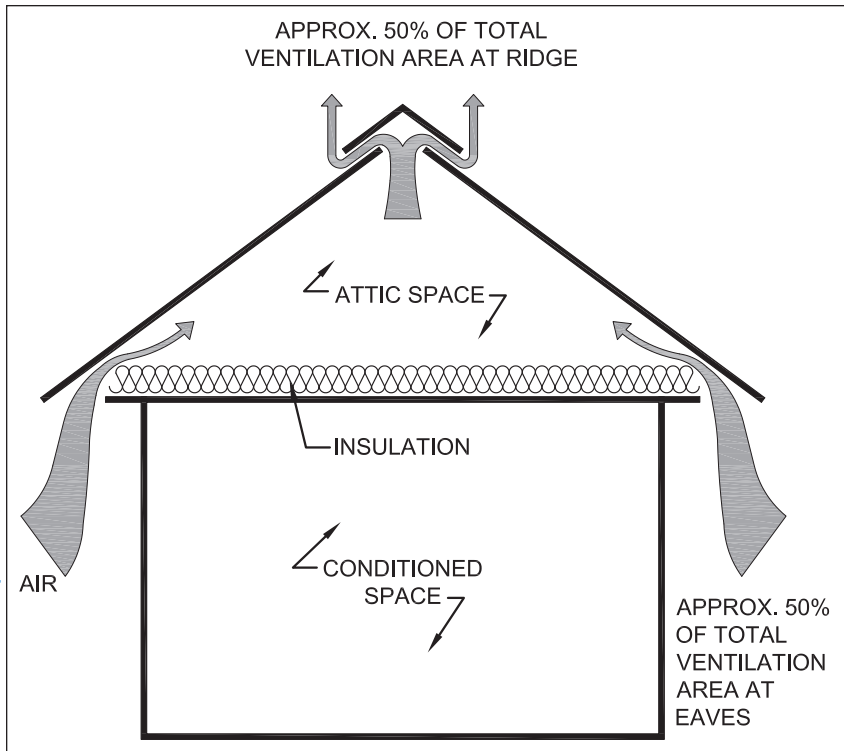


Figure 3: Nonmechanical ventilation of an attic space

completely filled. There are no eave or soffit vents or upslope or ridge vents; all penetrations are sealed at the deck. Often, there is a fan or vent installed to provide periodic exchange of the trapped air. Residential dwellings must be designed properly for an unvented assembly.

Selecting a Contractor/Bidders

Selecting bidders and, ultimately, a contractor may be the most important step on the route to a new roof system. The following checklist should help achieve the expected results of a quality roof system at a fair price:

- Check for a permanent place of business, office contact information, and compliance with state or local municipality for licensing/bonding/permit requirements.
- Inquire whether the contractor is insured against claims covering workers' compensation, property damage and general/personal liability. Ask about the company's safety program.
- Ask the contractor for local references; check with neighbors and friends; and find out whether the company is a member of a local, state, regional or national trade association.
- Contact the local Better Business Bureau or Department of Professional Regulation to check on business history.
- Insist on a detailed written proposal with a complete description of the work and explain exactly what you want included, such as start date, completion date, payment terms and other issues pertinent to your project.
- Have each contractor list the roofing manufacturers with which the firm is licensed or an approved applicator. Their status may affect warranty issues for labor and material.
- Conduct some preliminary research regarding the asphalt shingle product you would like on your home. Check type, style, color, manufacturer and warranties available. Express your preferences to prospective contractors.
- Hire an NRCA professional. You can search for an NRCA contractor member in your area by visiting www.everybodyneedsarroof.com.

Proposal/Estimate/Contract

The proposal or estimate in most instances becomes the contract when

signed by you and a contractor. All agreements and oral commitments should be put in writing to protect you and the contractor. Figure 4 and Figure 5 (on page 14) illustrate some of the typical components of a steep-slope roof assembly and associated construction elements. The illustrations should assist you and a contractor when discussing the scope of work and the materials to be used. Terms such as cathedral ceiling, inlaid gutter, static vent, gable vent, eave vent, power vent, skylight and others describe construction elements that may be found in particular styles of roof system construction. The following items also should be included in the written contract:

- A thorough, itemized description of the work to be done (Although it is difficult to be absolutely all-inclusive, a specific scope of work and descriptions of all materials to be used are necessary.)

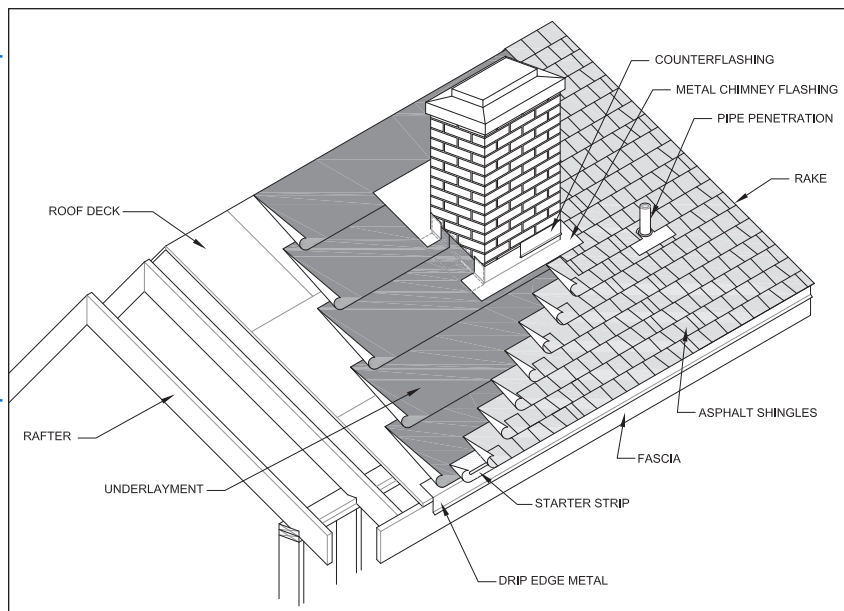


Figure 4: Typical components of a steep-slope roof assembly

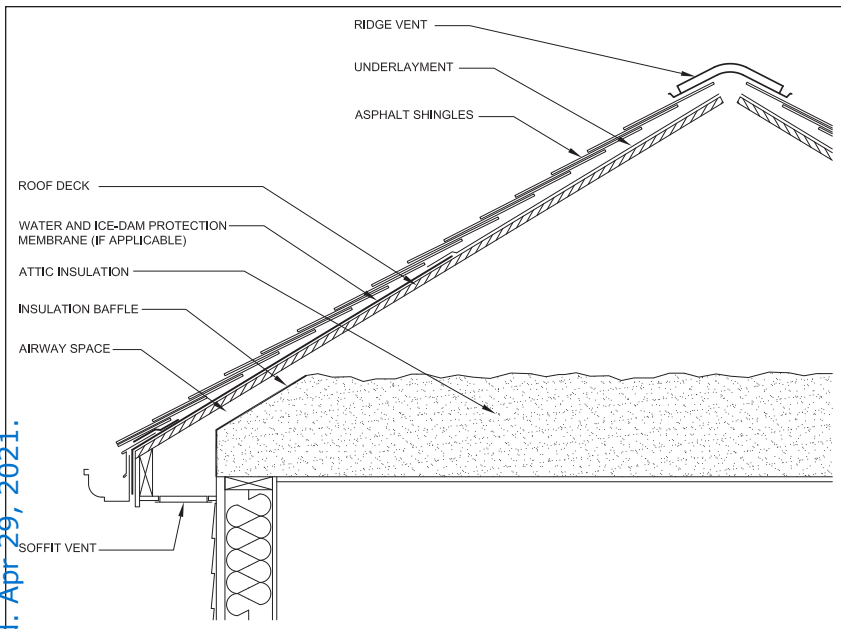


Figure 5: Cross-section of a roof assembly showing construction elements

- Total project cost with a breakdown of labor and material or component costs
- Payment schedule (Try to avoid front-end payments without work being done or materials being delivered.)
- Agreed-upon starting and completion dates and notification for changes
- Clearly defined warranties for labor and materials; warranty issues to consider include:
 - * Warranties may be mutually exclusive or combined under a manufacturer/contractor-approved applicator/preferred contractor agreement.

- * A labor warranty from a contractor and a material warranty from a manufacturer are common.
 - * Practical limits on labor/workmanship are two to five years.
 - * Material warranties for three-tab shingles generally are 15 to 30 years limited, and most laminated/architectural/specialty shingles are lifetime and limited.
 - * Inclusions and exclusions should be clearly explained.
 - * Be aware that warranties do not increase or ensure service-life value.
- Fees, permits, licenses and insurance included in the contract cost
 - A statement that allows either party to cancel the contract within specified time limits before work commences

All contracts should include both parties' full names, addresses, telephone numbers and any items necessary for complete disclosure. Never sign a partial or blank contract; read the contract carefully, initial and date any changes, and retain a copy for your records.

These suggestions and recommendations for contract inclusion may not be all-inclusive. Additions and alterations should be agreed upon by you and the contractor. Do not be overly concerned about cost at the expense of value.

Scope of Work and Materials

The following items are offered for consideration when developing a detailed list of points to be included in the scope of work and summary of materials for a roofing project. Delete and/or add items depending on the relevance to your specific project.

Scope of work

- The new roof system construction process can be a removal and replacement, re-cover or new construction. A roof assembly refers to a roof deck and roof system.
- A roof system includes the underlayment layer, ice-dam protection, asphalt shingles, fasteners and accessories.
- A ventilation investigation should include intake at eaves (soffits); exhaust mechanisms at or near the ridge, such as gable-end louvers, static vents, ridge vents or power vents; attic insulation R-value; possible blockage of eave vents; and need for a vapor retarder.
- A list of existing site conditions, such as leaks, damage (interior and exterior), landscaping (including driveway, walkways, patio and plantings), utilities and any neighbor issues, should be provided.
- A diagram of the location for primary setup and site protection should be provided.
- A discussion of weather limitations and restrictions as they affect work progress should take place.
- Unit cost provisions for contingencies and unforeseen issues, such as structural deck and wood trim repair or replacement, and sheet-metal accessories (new or reuse existing) should be detailed.
- Cleanup and visual review with you and the contractor should take place as soon as possible after completion.
- Manufacturers' installation instructions should be used as primary construction guidelines.
- Any other issues peculiar to the individual dwelling and property should be noted.

Materials

- **Roof deck**—The most common roof deck materials are plywood and oriented strand board (OSB). NRCA recommends ½-of-an-inch nominal thickness minimum. Boards should be 1x6 minimum for existing or replacement decking. Existing skip or spaced sheathing decks must be covered with plywood or OSB. Plank decks typically are a minimum 1½ inches thick and designed with tongue-and-groove side laps.
- **Underlayment**—This is the layer covering the deck under the shingles. The most common underlayments are traditional #15 or #30 asphalt felts and fiberglass-reinforced asphalt felts. Self-adhering polymer-modified bitumen (peel-and-stick) and synthetic sheets may be used in certain applications. Be sure the shingle manufacturer approves the underlayment because it may affect warranty issues.
- **Ice-dam protection**—Self-adhering polymer-modified bitumen sheets installed at eaves often is required by building codes or recommended in climate zones where snow and ice dams are likely to occur. See Figure 6 (on page 18) and Figure 7 (on page 19). Ice-dam protection does not prevent ice dams; it protects interior space from water intrusion caused by ice dams. An ice-dam protection membrane also is recommended in valleys; at sidewalls and headwalls; and around pipes, chimneys, vents and skylights.
- **Asphalt shingles**—Three-tab traditional products still are available. Architectural (also referred to as “laminated,” “dimensional,” “textured” and “specialty”) shingles are most prevalent. Architectural shingles are available in various styles, thicknesses and colors, as well as offer algae, wind and impact resistances.

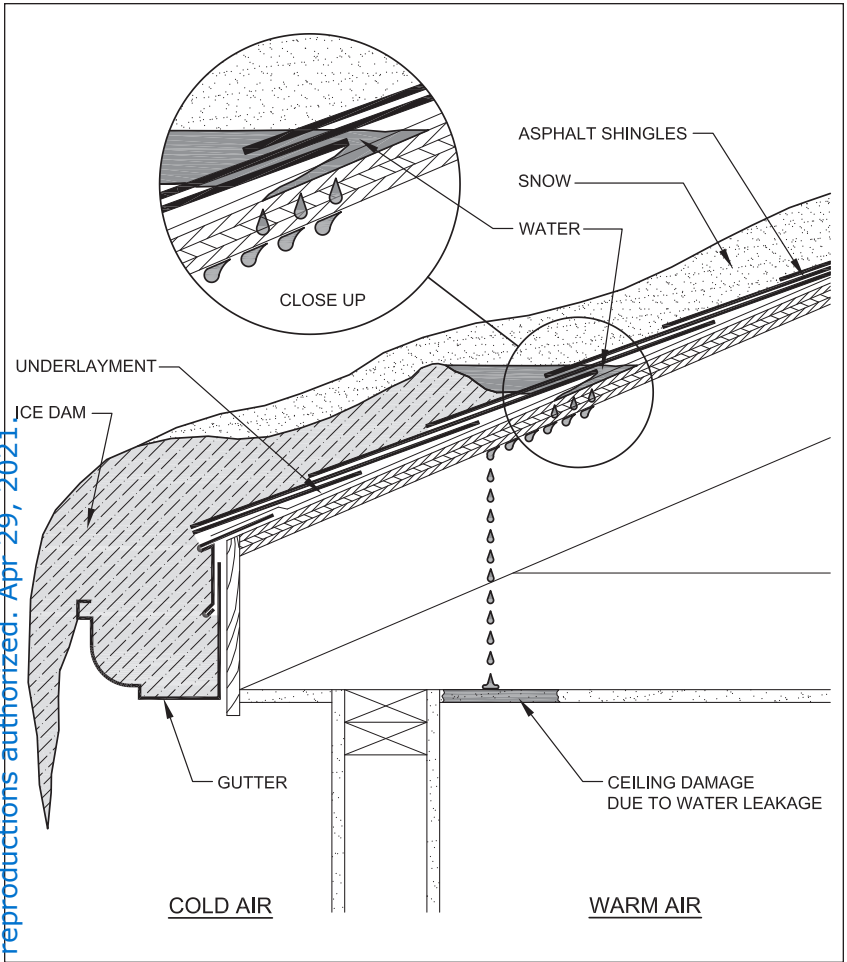


Figure 6: Example of an ice dam

- Accessories—Sheet-metal items include drip edge at eaves and rakes, sidewall and step flashing, counterflashing, headwall and apron flashing, cricket (upslope of chimney), all types of roof vents, kickout flashing and skylight flashing. It should be

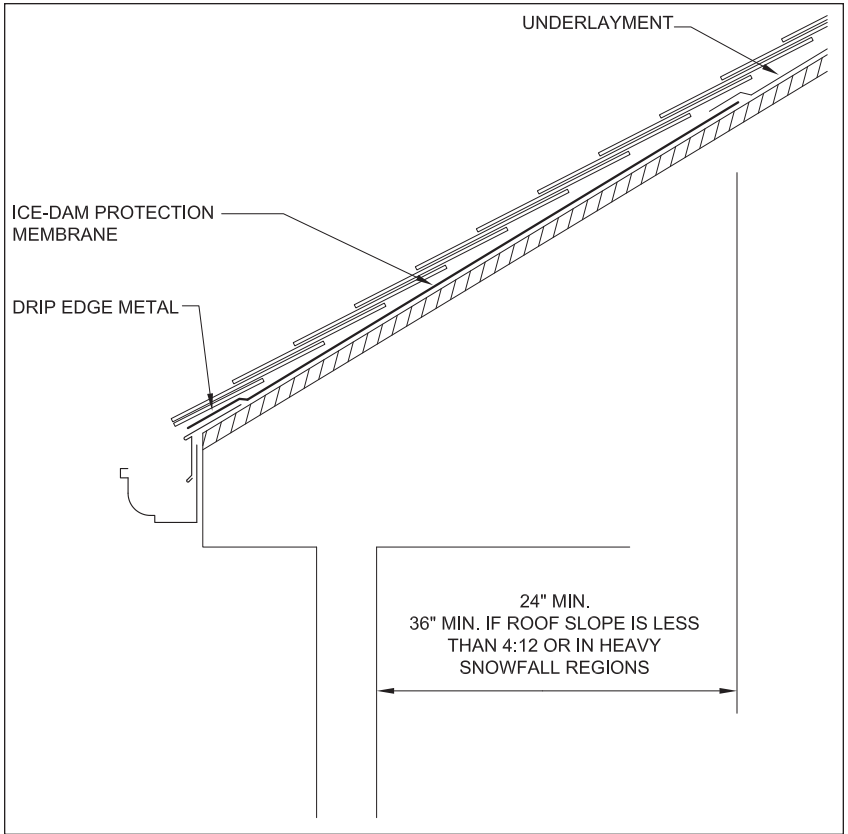


Figure 7: Ice-dam protection membrane installed at an eave

indicated whether the contractor is reusing existing accessories or installing new accessories, and style, type, color and gauge (thickness) should be specified. Additional items include vent pipe flashing, power vents, skylights, fascia, and trim board along eaves and rakes. See Figure 8 (on page 20) and Figure 9 (on page 21).

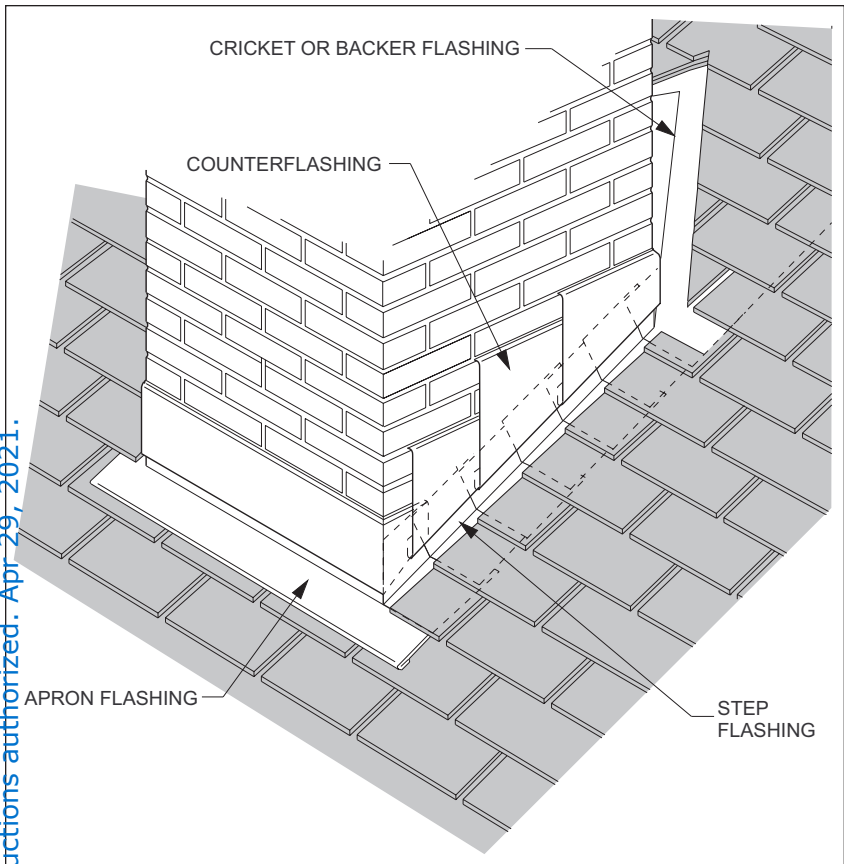


Figure 8: Flashing accessories used at a chimney

Installation

Talk to the work crew upon arrival, reviewing setup and scope of work as necessary. Establish an open line of communication for questions from either side. Specific installation guidelines and instructions can be found on the shingle manufacturer's website and on each wrapper of a shingle bundle. Be firm but understanding with the work crew; call the

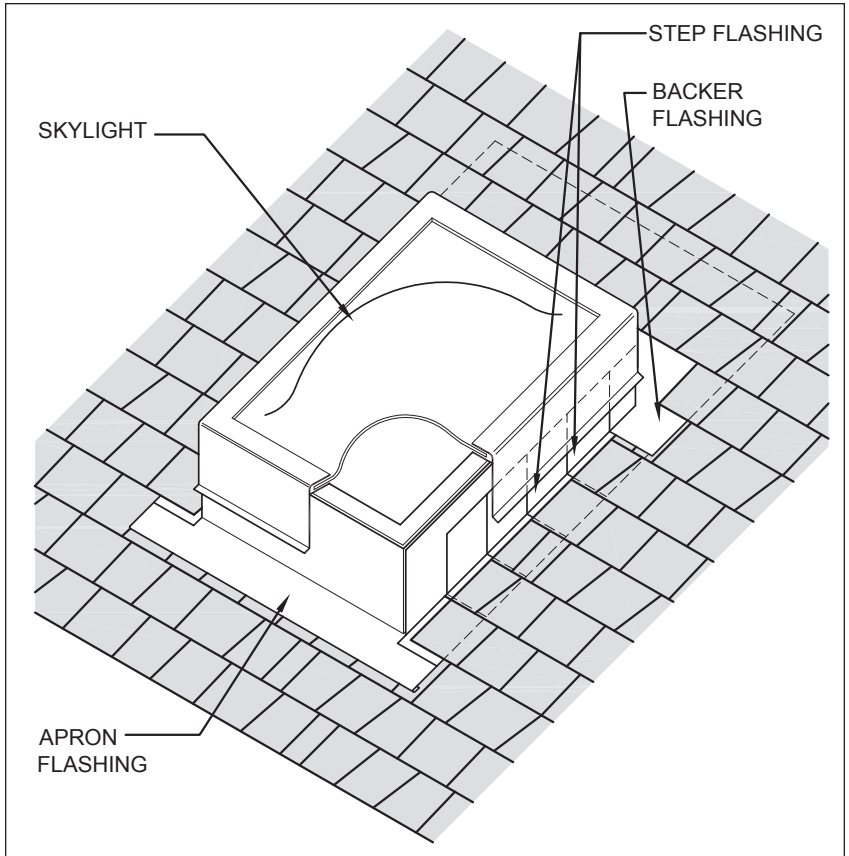


Figure 9: Flashing accessories used at a skylight

contractor or estimator immediately with any concerns regarding the scope of work or materials; and make every attempt to resolve questions as soon as possible and to the satisfaction of each party.

NRCA's *Quality Control Guidelines for the Application of Asphalt Shingle Roof Systems* can be used to augment a manufacturer's installation guidelines and instructions. The guidelines were a joint effort developed

by the Asphalt Roofing Manufacturers Association and NRCA that documents asphalt shingle installations from start to finish in a format that offers criteria to evaluate the asphalt shingle application and guidelines to correct variances.

Project Completion

Upon completion, review the aspects of the project as enumerated in the scope of work, and contact the contractor with any questions. Request any and all warranties for labor and materials. Close-out and final payment should occur when you and the contractor are satisfied that all contractual issues have been addressed.

Upon completion, ask what you, as a homeowner, can undertake with regard to periodic maintenance. An annual or semiannual inspection should consist of visual examination of the roof surface and adjoining projections that break the roof plane, such as sidewalls, chimneys, pipes, skylights and dormers. Surface issues include shingle curling or splitting, dislodged or missing shingle tabs, and excessive granule loss.

An inspection can be performed from the ground—often with the aid of binoculars—or from a ladder at the roof system’s edge. NRCA does not recommend you access or walk on the roof unless you have experience and use proper safety protocol. Repairs, if needed, should follow the same guidelines, and retaining an experienced NRCA professional is advised.

Sources of Additional Information

If you wish to pursue more in-depth information regarding topics discussed in this guide, you are encouraged to refer to these additional references. Specific documents are highlighted under several of the sources to pinpoint subject matter. All asphalt shingle manufacturers are listed to help you research shingle styles, colors, warranties and installation instructions.

Air Vent

(800) 247-8368

www.airvent.com

“Principals of Attic Ventilation”

Asphalt Roofing Manufacturers Association (ARMA)

(202) 207-0917

www.asphaltroofing.org

“Asphalt Roofing Residential Manual”

National Association of the Remodeling Industry (NARI)

(847) 298-9200

www.nari.org

National Association of Home Builders (NAHB)

(202) 822-0200

www.nahb.com

National Roofing Contractors Association (NRCA)

(800) 323-9545

www.nrca.net

“FYI,” *NRCA Guidelines for Asphalt Shingle Roof Systems, Quality Control Guidelines for the Application of Asphalt Shingle Roof Systems*

Asphalt Shingle Manufacturers

Atlas Roofing Corp.

(770) 933-4479

www.atlasroofing.com

CertainTeed Corp.

(610) 341-7000

www.certainteed.com

GAF

(973) 317-5906

www.gaf.com

IKO Manufacturing Inc.

(815) 936-9600

www.iko.com

Malarkey Roofing Products

(503) 283-1191

www.malarkeyroofing.com

Owens Corning

(419) 248-6031

www.owenscorning.com

PABCO Roofing

(800) 426-9762

www.pabcoroofing.com

TAMKO Building Products Inc.

(417) 624-6644

www.tamko.com

Building Products of Canada Corp.

(514) 364-0161

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Fax: (847) 299-1183 | www.nrca.net | Email: nrca@nrca.net