10 Steps to Performing a Roof Inspection Class

Ben Gromicko
InterNACHI
ben@internachi.org
nachi.org/class

In this class, we'll learn the ten steps to performing a roof inspection.

After this live class, email me at ben@internachi.org and request the link to the final exam. You'll need an InterNACHI username and password. If you're not a member of InterNACHI, I'll provide you with a free student membership (via another link).

After taking the final exam, you'll be able to download a Certificate of Completion. Because the exam is online, you may take the exam over and over until you pass. No two exams will be the same. There are no exam fees. Exams are instantly graded.

The **objective** of this class is to teach good practice for inspecting the roof covering. After successful completion of this class, you will be able to report upon two things:

1. the installation of the roof covering and underlayment complies with common building standards or the general recommendations of most shingle manufacturers; and
2. the installation is such that water intrusion should be prevented.

Because more than three-quarters of all U.S. homes use asphalt roof shingles, we'll be focused primarily on that type of roof.

And this class teaches you how to inspect components that are not required to be inspected during a home inspection performed according to InterNACHI's Standards of Practice. For example, this classes teaches about underlayment (which is beyond the scope of the inspector).

The **scope** of this training class does not cover identifying and evaluating the apparent “bad” conditions of the asphalt covering – like cracking, bubbling, curling, physical damage, and wear and tear - those things are relatively discernible and self-evident.

According to the InterNACHI **Residential Standards of Practice** (www.nachi.org/sop), the inspector shall inspect from ground level or eaves:

- the roof-covering materials;
- gutters;
- downspouts;
- the vents, flashing, skylights, chimney, and other roof penetrations; and
- the general structure of the roof from the readily accessible panels, doors or stairs.

The inspector shall describe:
the type of roof-covering materials.

III. The inspector shall report as in need of correction:
observed indications of active roof leaks.

NY Title 19, Section 197-5.7, Roof Systems

nachi.org/visible

We often see clauses in inspection reports that take this form:

“No visible evidence of [insert applicable defect].”

We have concerns about the words “visible” and “evidence.”

Recommended:

“I did not observe any indications of [insert defect] during my inspection.”

An inspector’s duty isn’t to report on everything visible, but rather only those defects he/she observed and deems to be a material defect.

Do not walk upon any roof surface.

Home inspectors are not code inspectors.

We do not inspect for code violations during a typical residential property inspection. However, we should understand that there are international building standards with which common building practices are designed to comply.

This training will refer to the some recommended best practices and the International Residential Code for the following items:

- roof covering materials,
- asphalt shingles,
- flashing,
- fasteners, and
- underlayment application.

Building code is silent on many aspects of roof covering. The manufacturer's installation instructions (typically found on the packaging of the roof bundles) is the single best source for many of the requirements for the correct protection provided by the roof coverings.

10 Steps to Performing a Roof Inspection

1. **Check the roof covering**

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge
7. Check for an offset pattern

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge
7. Check for an offset pattern
8. Check the roof valley flashing

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge
7. Check for an offset pattern
8. Check the roof valley flashing
9. Check the nail penetration into the deck sheathing

10 Steps to Performing a Roof Inspection

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge
7. Check for an offset pattern
8. Check the roof valley flashing
9. Check the nail penetration into the deck sheathing
10. Check the flashing areas.

Let’s take a pre-assessment quiz to see how much you know prior to starting this class.

Let’s go to Pre-Assessment.

Before we proceed step-by-step, let's first go over a few basic concepts:

- shedding water,
- reinforcement,
- shapes,
- top lap,
- end lap,
- slope or pitch,
- self-sealing strips,
- open valley, and
- closed valley.

Asphalt shingles are designed to be layered.
The layering is designed to **shed** water.

An asphalt shingle roof is water-**resistant** – not waterproof.

A shingle roof essentially relies on the slope of the roof to shed the water.

Asphalt shingles are **reinforced**.

They are referred to as either “organic-reinforced asphalt shingles” or “glass-fiber-reinforced asphalt shingles.”

Most of the shingles you’ll see will be “glass-fiber-reinforced.” The organic ones you may see will probably be old – and they’ll be comparatively really thick.

There are three **shapes** (or types) of asphalt shingles:

- strip shingles,
- laminated strip shingles, or
- individual shingles.

Strip shingles are generally longer in width than height.

Common dimensions are 12 by 36 inches.

Shingles called “3-tab” and “laminated” are all categorized as strip shingles.

Strip shingles are “self-adhering” – they have adhesive seal strips on them that bond the shingles to the other lapped shingle courses.

LAMINATED STRIP shingles are called “architectural” or “dimensional” shingles.

These shingles have additional laminated material to give the shingle a random thickness and a dimensional, architectural appearance.

They are also self-adhering.

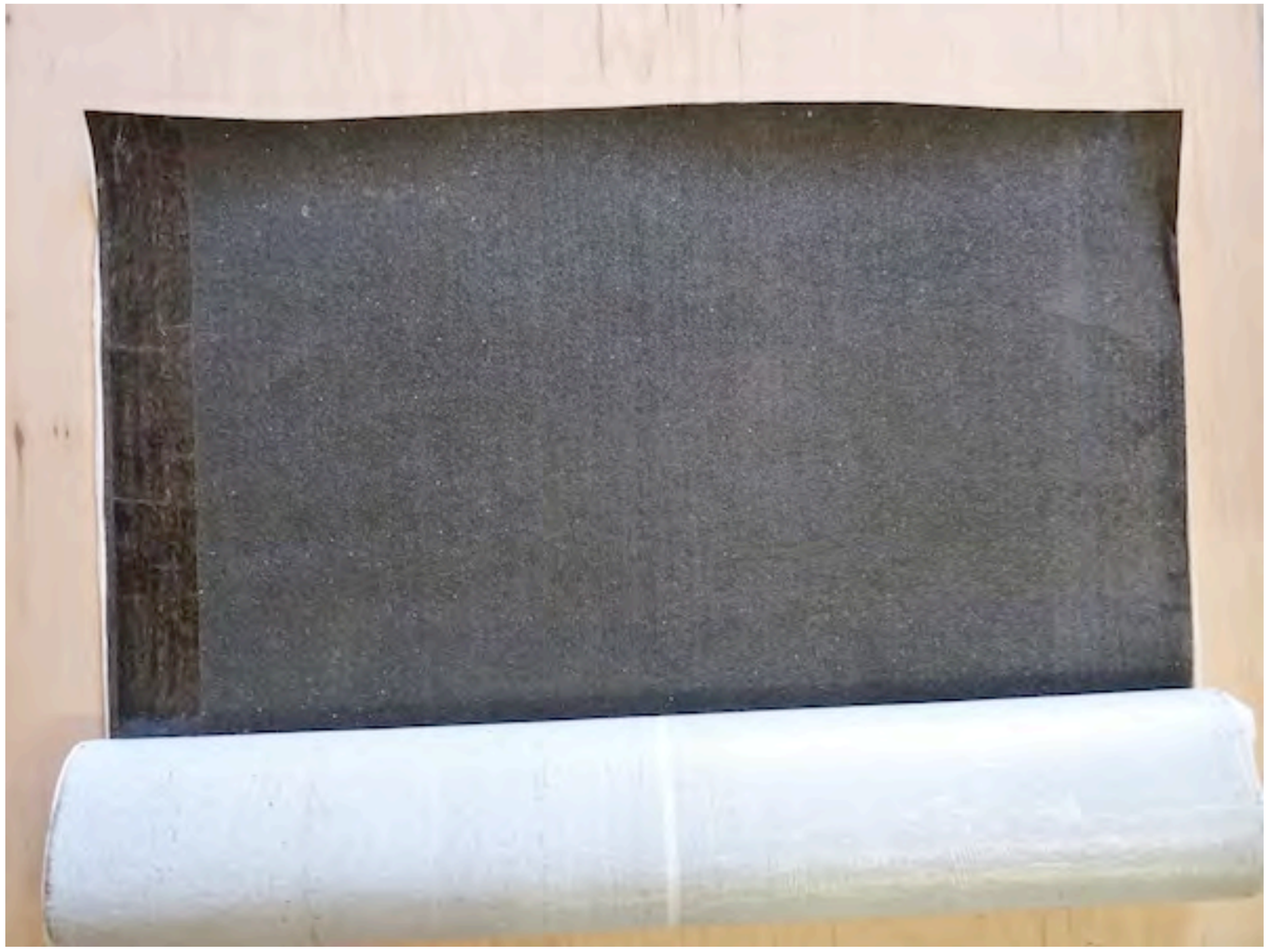
INDIVIDUAL shingles are smaller than strip shingles.

You need more of them to cover the same area.

They are typically shaped – including diamond, octagon, scalloped, and fish scale patterns. Some are interlocking.

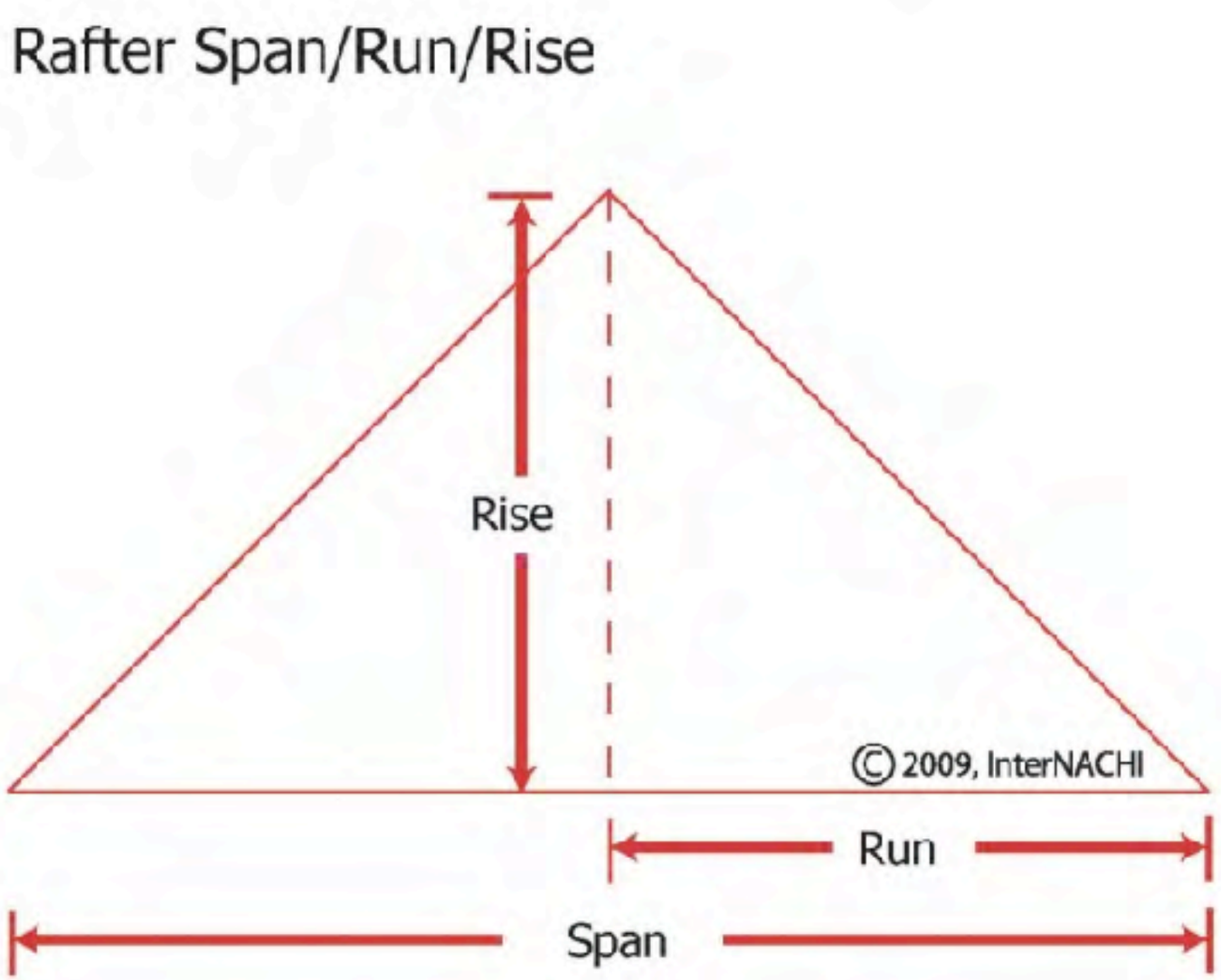
Individual shingles are mostly no longer available.

The term **TOP LAP** is the lap of the underlayment that runs parallel to the eaves.

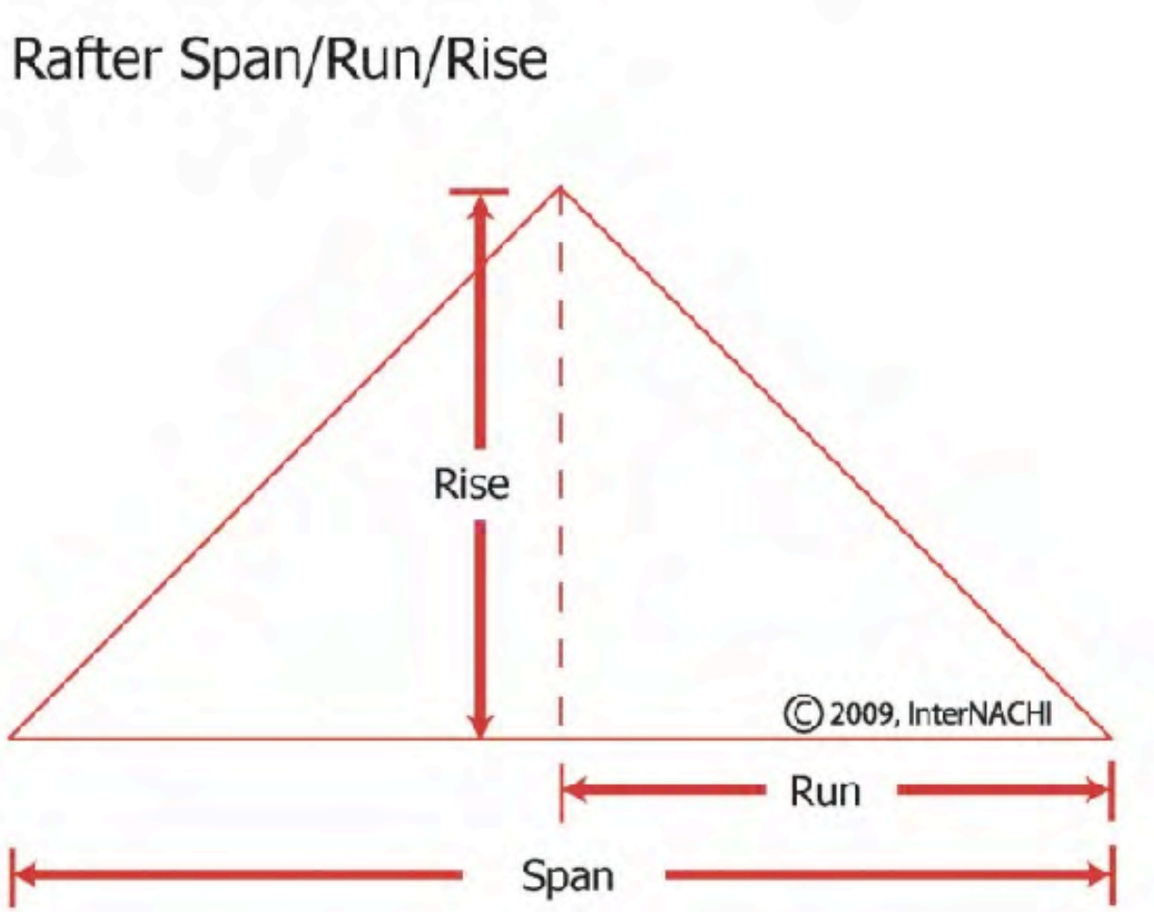


The term **END LAP** is the lap of the underlayment at the end of the roll.

The terms **SLOPE** or **PITCH** indicate the incline of a roof, expressed as a proportion of the vertical to the horizontal. They do not mean the same thing.



The illustration above shows a simple gable roof and the general relationship between rise, run and span. Roof framing is a practical application of geometry, and roof slope is based largely on the properties of a right triangle.



In roof framing, the base of the right triangle is called the run. The run is the distance from the outside of the wall's top plate to a point directly below the center of the ridge. The vertical leg of the triangle is called the rise, which is the distance the roof rafter board extends upward above wall's top plate.

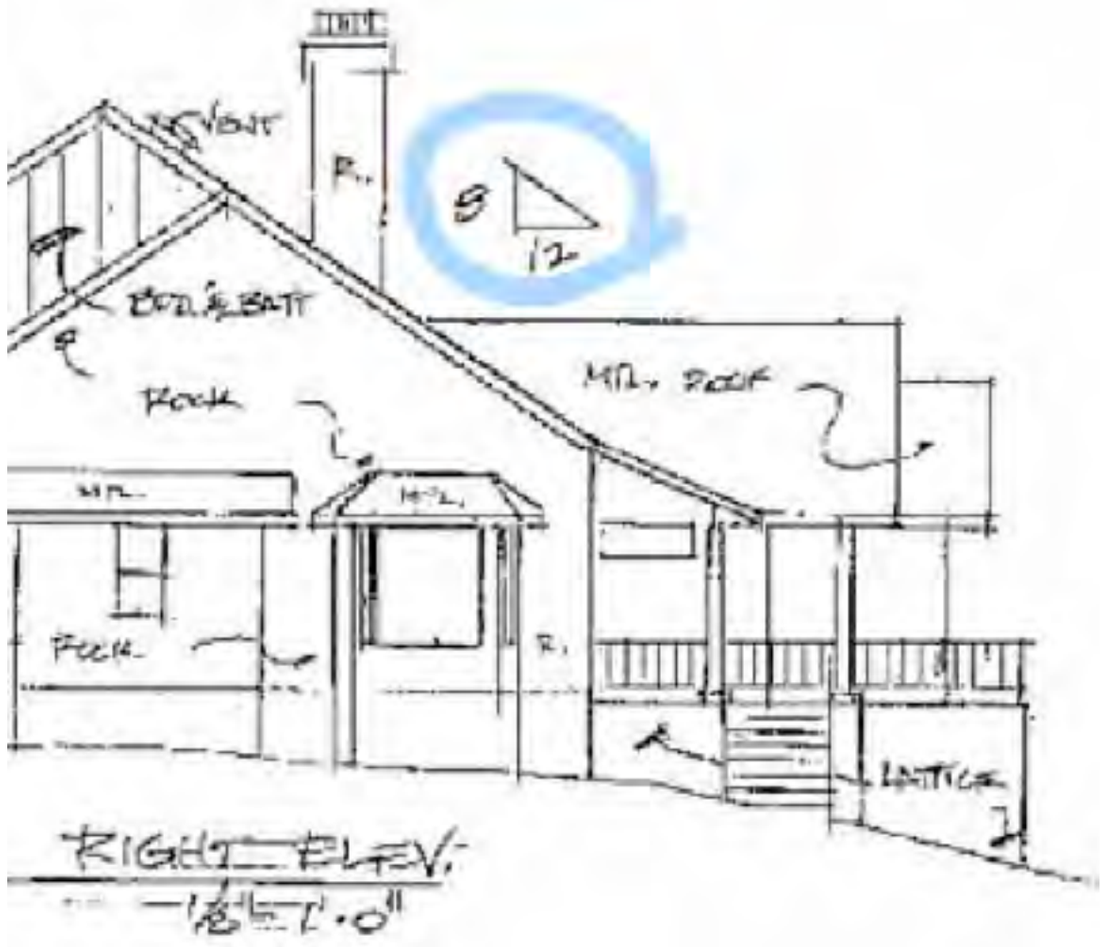
Slope

Slope is the incline of the roof expressed as a ratio of the vertical rise to the horizontal run, where the run is some portion of the span. This ratio is always expressed as inches per foot.

Slope Ratio

A roof that rises 4 inches for every 1 foot or 12 inches of run is said to have a “4 in 12” slope. If the rise is 6 inches for every 12 inches of run, then the roof slope is “6 in 12.”

The slope can be expressed numerically as a ratio. The slope ratio represents a certain amount of vertical rise for every 12 inches of horizontal run. For example, a “4 in 12” slope can be expressed as the ratio of 4:12. A “6 in 12” slope is expressed as 6:12.



The triangular symbol above the roof line in this architectural elevation provides information on the roof's slope.

Slope is expressed:

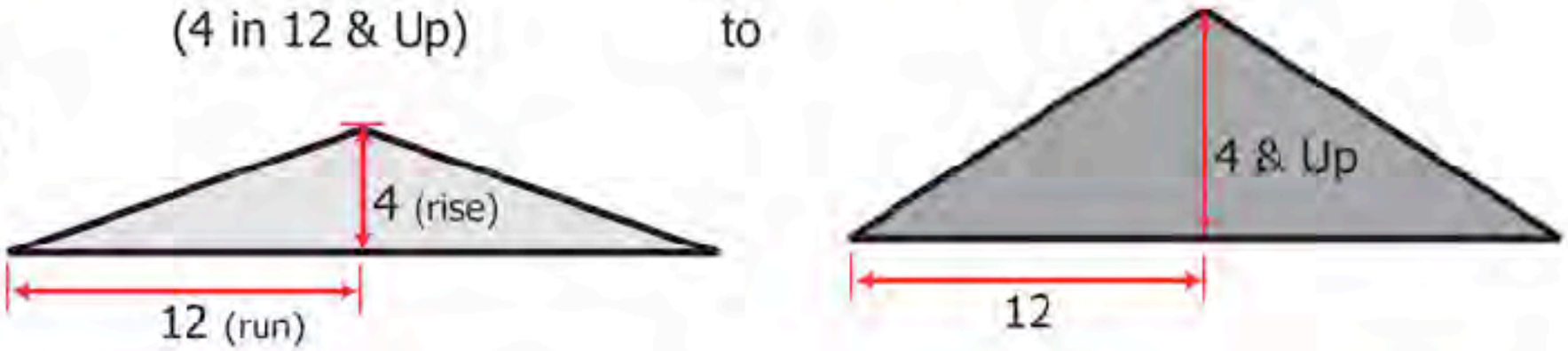
- as a ratio; and
- in inches per foot.

Roof Slopes

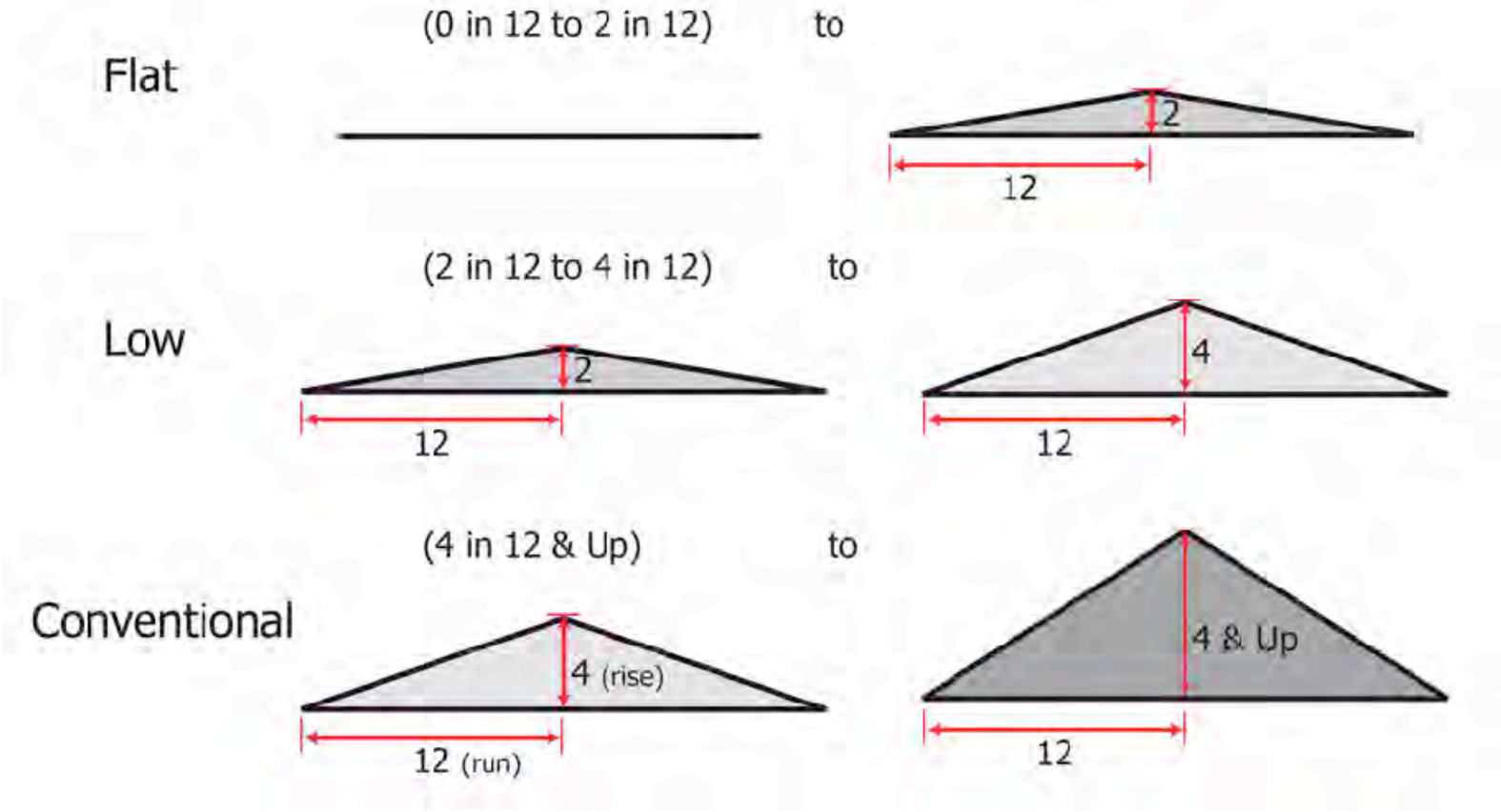
Flat (0 in 12 to 2 in 12) to

Low (2 in 12 to 4 in 12) to

Conventional (4 in 12 & Up) to



Roof Slopes



A conventional roof can have a slope of 4:12, which means that when 12 units are measured horizontally, the roof surface rises vertically 4 units.

SELF-SEALING STRIPS refers to the adhesive on a shingle that is placed so that the lapped shingle will adhere to it. The adhesive helps in resisting uplift caused by strong winds.

An **OPEN VALLEY** is one in which the roof covering abuts the valley lining (or flashing), and the lining is exposed (metal flashing is typically used in the valley).

A **CLOSED VALLEY** is one in which the roof covering covers the valley lining (or flashing) and the lining is not exposed.

Okay. Those were a few basic concepts.

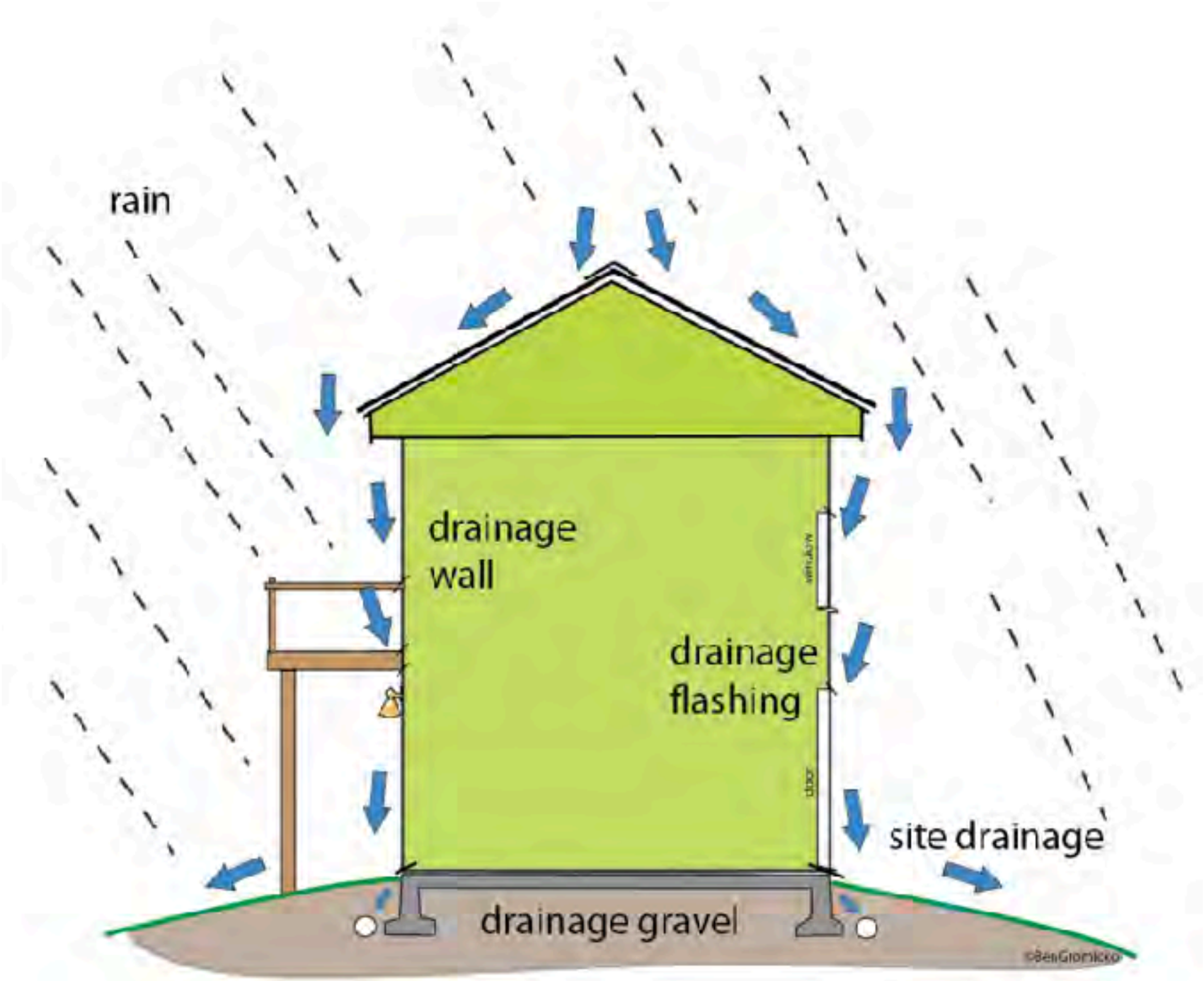
Now, let's go to the **10 STEPS**.

There are 10 steps to inspecting the roof covering. Let's go over them step-by-step.

STEP #1: Check the roof covering.

Determine if the roof covering is designed to provide a weather barrier. The purpose of the roof covering is to protect the structure underneath from water intrusion and water damage. The design of the roof system must take into account the underlayment requirements, the type of roof geometry, the weather conditions based upon location, and the type of roof covering materials.

www.nachi.org/gallery



The roof covering provides a first line of defense against the elements. It also tends to be the most exposed component of a building's exterior envelope. Therefore, roof coverings should be selected, detailed, and installed to provide durable resistance to water penetration.

The 2015 International Residential Code states:

R903.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure... Roof assemblies shall be designed and installed in accordance with this code and the approved manufacturer's installation instructions such that the roof assembly shall serve to protect the building or structure.

Building codes don’t address many of the details required for a complete and proper installation of the many available roofing products. If you look to code to provide information about what to inspect at the roof system, you won’t find much detail. When the code says something like “in accordance with the manufacturer’s installation instructions” – that should not be taken lightly.

A home inspector will have to do some research about the common installation guidelines or industry best practices and recommendations – these are important things to research. There are many manufacturers of asphalt shingles, and most (if not all of them) have websites with technical installation guidelines available for free downloading.

In short, the thicker and heavier the shingle is – the better.

Heavier weighted shingles, laminated or textured shingles, tend to perform and appear better.

Inspection Tip: I like to look at the edges of the roof covering to see how many asphalt shingle layers there are. It's fairly easy to see if there are two layers of shingles installed when you look at the rake edge.


IMPACT
PROTECTION

With only a few exceptions, a second layer of roof covering (or a new roof covering) should **NOT** be installed **without first** removing the existing roof covering. This is especially important where any of the following conditions exist:

- Where the existing roof is water-soaked or has deteriorated to the point that the existing roof is not adequate as a base for the second layer.
- Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
- Where the existing roof has two or more layers of any type of roof covering.
- For asphalt shingles, when the house is in an area that has severe hail storms.

When the 2nd roof covering is installed, the flashing must be redone.

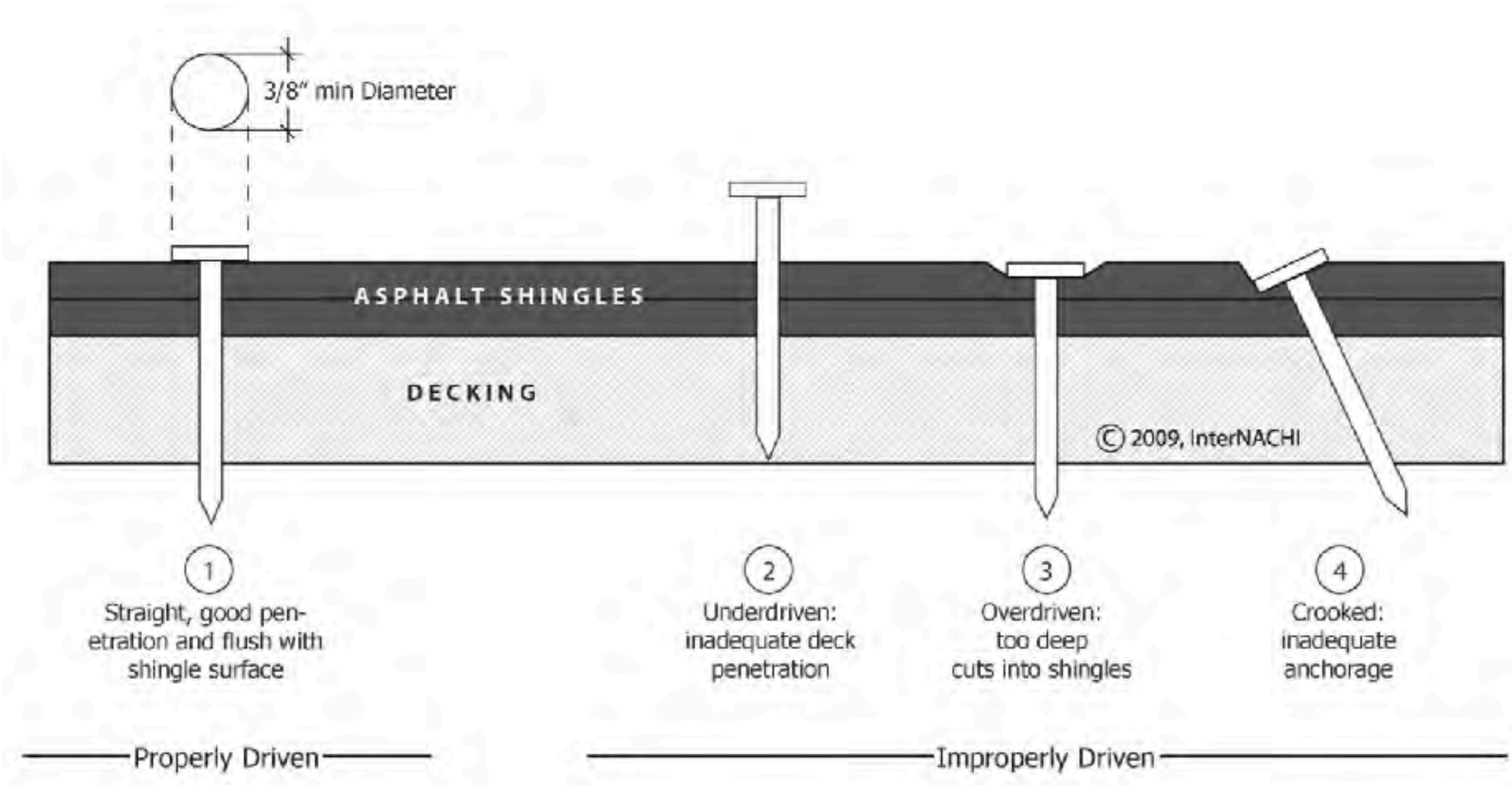
The flashing should be reconstructed for that layer.

If I'm on an asphalt shingle roof, and there's a second layer installed, I'll go the step flashing area and check to see of the step flashing has been redone or re-installed. I like to see that the step flashing has been installed with the 2nd layer of asphalt shingles. If it hasn't been, I report it has an "unreliable condition," and I recommend correction and further evaluation by a professional.

So, that's **Step #1.** Check the roof covering. Let's go to Step #2.

Step #2. Check the fasteners.

There is good fastening and bad fastening. During a typical home inspection, checking the fasteners from the roof surface will be almost impossible (and it's not required). However, there are a few things that every inspector should know:



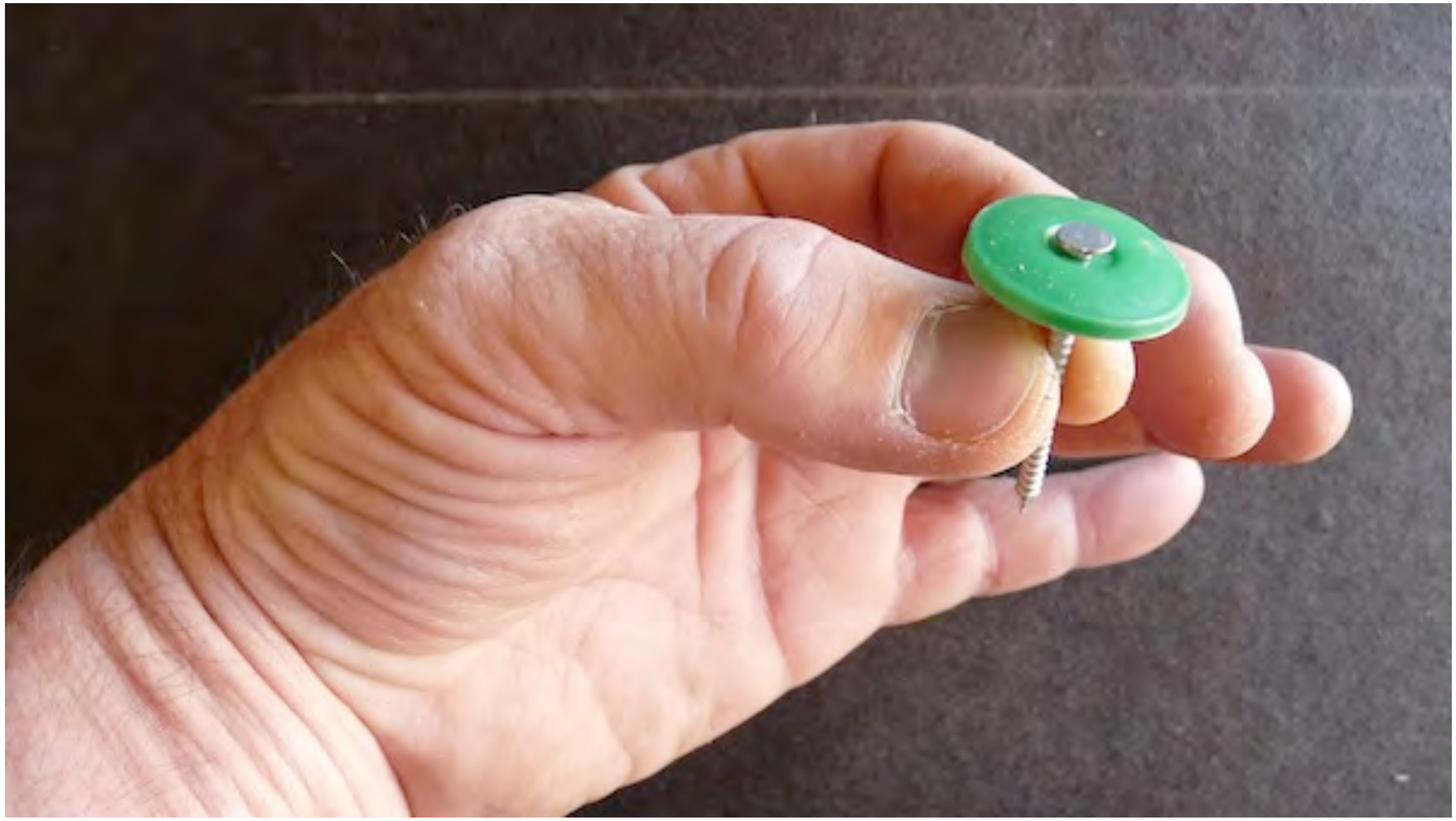
In general, roofing nails for asphalt shingles should be driven straight, flush and snug to the surface of asphalt shingles.

To avoid the complete loss of a shingle, the roofing fasteners should not be over-driven (meaning that the head damages or tears the shingle).

Attention to fastening quality is equally important for other roofing materials such as tile and metal.

Fasteners for asphalt shingles should be nails – corrosion resistant - galvanized steel, stainless steel, aluminum or copper.

The nails must be corrosion resistant to keep them from rusting away and leaving holes for water to seep through or wind to blow off shingles because of the lack of attachment.



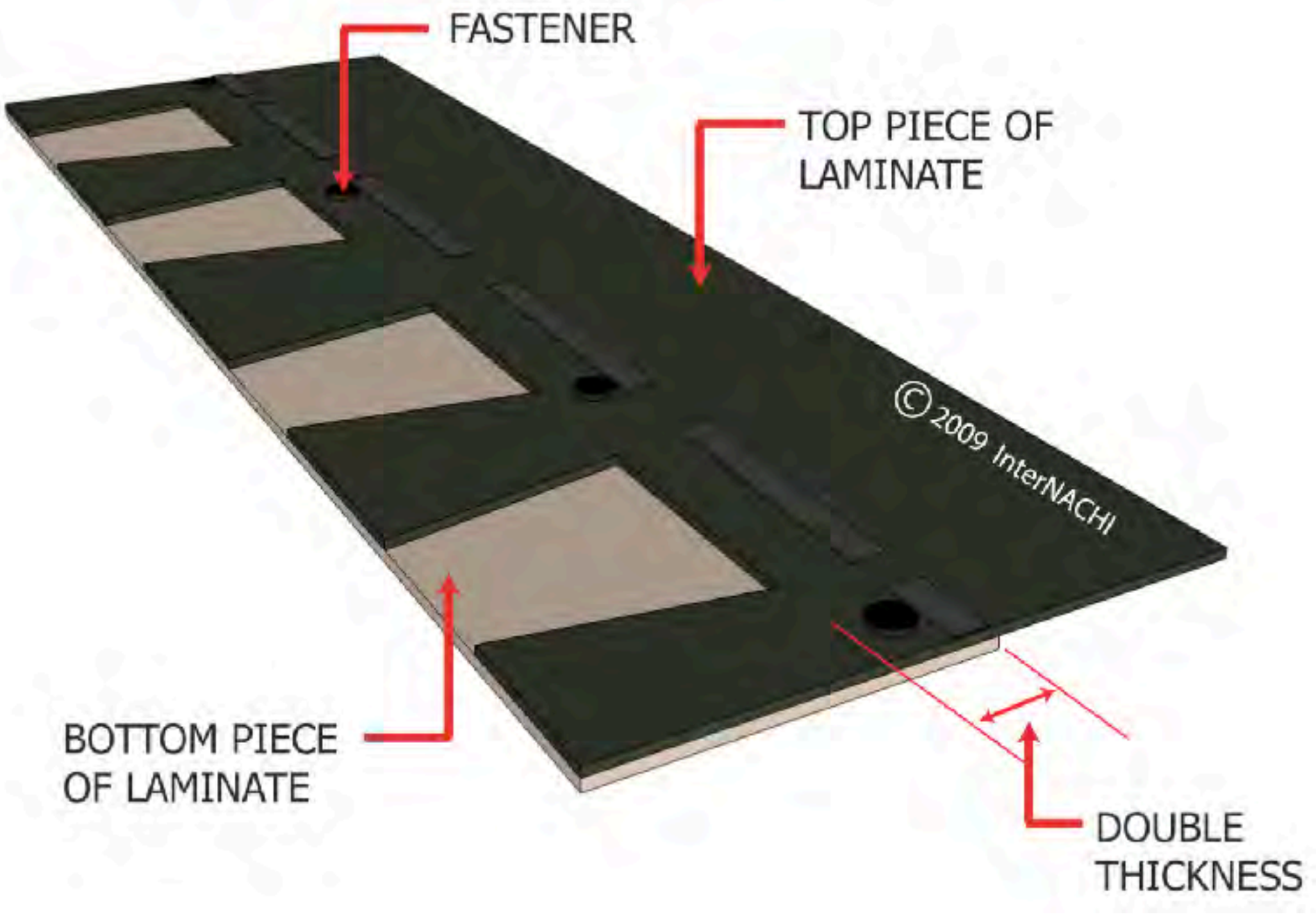
They should have a minimum nominal shank diameter of 12-gauge (0.015”) with a minimum head diameter of 3/8-inch.

The nailing of hips, ridges and some roof accessories may require the use of longer nails, because the fasteners may have to go through more layers of roofing and other material.

For full-width shingles, a minimum of **four** nails should be used per shingle.

Six nails may be required by building codes in some high-wind areas.

LAMINATED STRIP SHINGLE



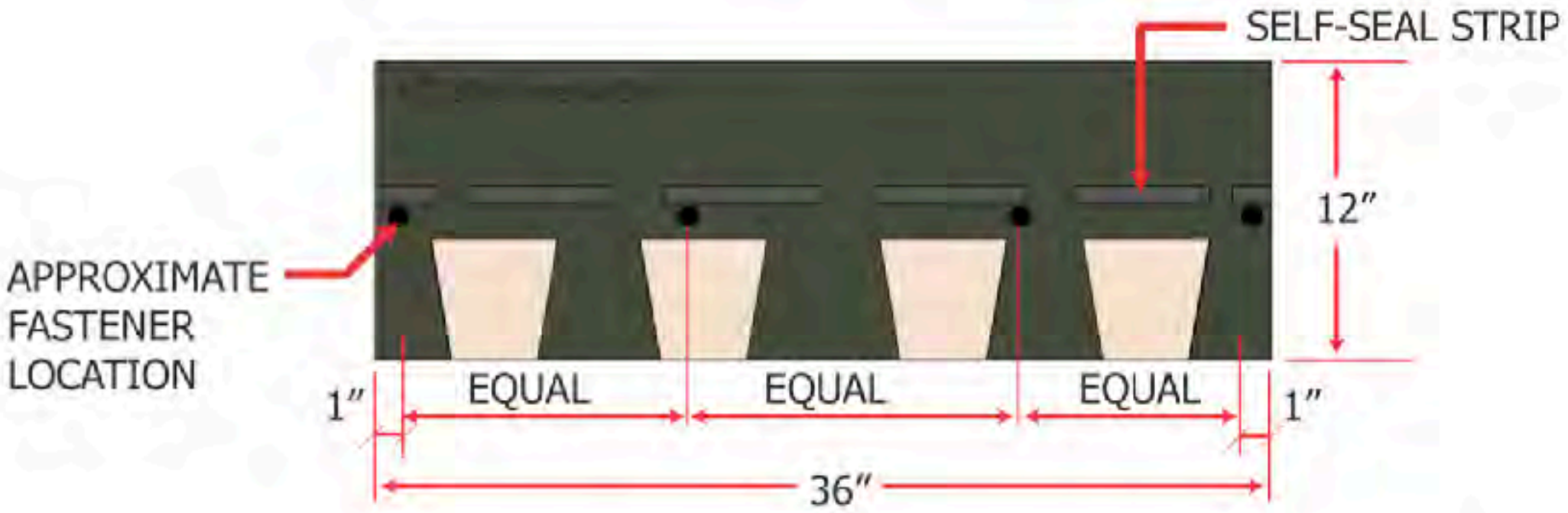
Check out the illustration. You can see where the approximate locations of shingle fasteners are.

FASTENERS PER SHINGLE

MINIMUM 4 FASTENERS PER SHINGLE

MINIMUM 6 FASTENERS PER SHINGLE
USED IN HIGH-WIND AREAS

LAMINATED STRIP SHINGLES



Fasteners should not appear in the 5-inch area of exposure of the shingle.

Typical exposure for standard-size strip shingles is 5 inches (125 mm) and for metric size strip shingles is 5 and 5⁄8 inches (143 mm).

I often find roofing nails that have been misplaced or installed in the wrong location, and they are exposed – with the nail head in the field of the exposure area of the shingle. I report it as a “potential water entry point” and recommend “correction and further evaluation.”

Nails should never be visibly exposed or weathered.

Home inspectors are not required to determine conformance with the manufacturer's installation recommendations or compliance with local building codes and regulations.

However, there are many standards and building practices that could be checked during a typical home inspection.

For example, most (if not all) asphalt composition shingle manufacturers will void the warranty if shingles are installed on a roof with a slope less than a 2:12 slope. Asphalt shingles should **not** be installed on a roof slope 2:12 or less, unless some waterproofing design details are applied.

Roof Slopes

Flat

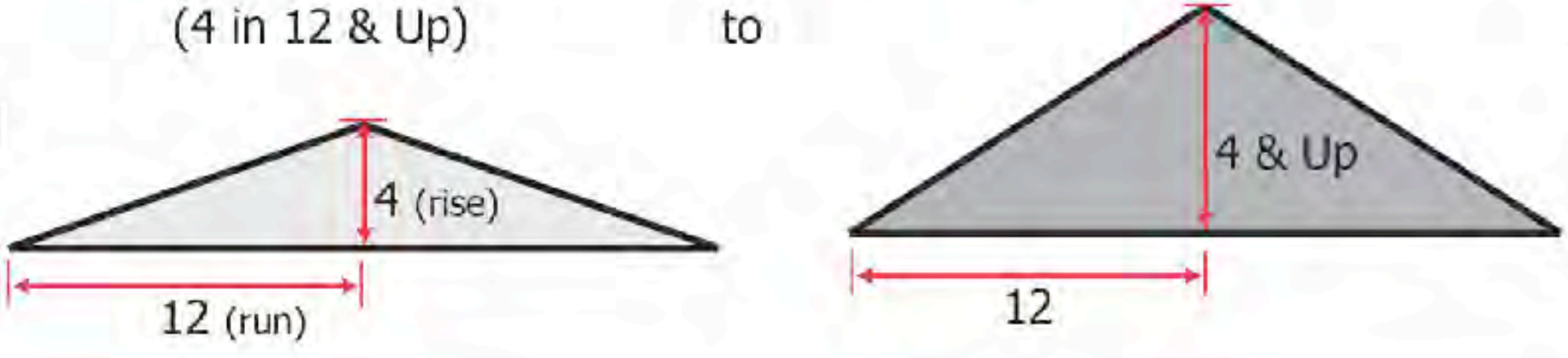
(0 in 12 to 2 in 12) to

Low

(2 in 12 to 4 in 12) to

Conventional

(4 in 12 & Up) to



Home inspectors should know:

- The importance of roof **slope minimums** for the various roof coverings;
- **Underlayment** installations are related to slope, roof type, and weather conditions. They are not readily visible for existing homes, but can be inspecting during a construction period of time; and
- **Life expectancies** are valuable information for an inspector to refer to when inspecting the roof.

The fact that a system is near, at or beyond the end of the normal useful life is not by itself a material defect.

Check out the following table about roof coverings, slopes and service life.

Roof Covering Types	Minimum Roof Pitch[a]	Weight[b] (lbs per sf)	Service Life[c] (yrs)
Composition Shingle	2:12	2 to 4	15 to 30
Wood Shingle	3:12	3 to 4	15 to 30
Metal (standing seam)	1/4:12	1 to 3	20 to 50+
Concrete/Clay Tile	2 and 1/2:12	9 to 25	50+
Slate	4:12	9+	50 to 100
Built-up Roof	1/4:12	6	12 to 30
Synthetic Membrane Roof	1/4:12	1	20+

a. A minimum roof pitch of 4:12 is allowable with normal use of single-layer roofing underlayment. However, a minimum 2:12 roof pitch is permissible for composition shingles provided that 15# tarred felt underlayment is doubled and cemented together, or a self-adhering polymer modified bitumen sheet can be used. Similarly, a 2 and 1/2:12 roof pitch is permissible with concrete/clay tile provided that 30# tarred felt or mineral surfaced roll roofing material is doubled and cemented together, or a self-adhering polymer modified bitumen sheet can be used.

Step #3: Determine if the roof is solidly sheathed.

This is a little difficult, and can get technical and exhaustive. But for us home inspectors, what we really need to know are two things:

1. the application of the asphalt shingles requires a solid surface, and
2. if the roof is *not* solidly sheathed, the asphalt shingles will *not* provide the proper, correct protection from the weather.

The roof covering is only as strong as the substrate to which it is attached.

During an inspection of the roof, before the underlayment and roofing go on, you can check for proper installation of the roof sheathing.

Timing the inspection is critical, because the underlayment is sometimes installed by the framing contractor immediately after putting on the roof sheathing,

Asphalt shingles are typically applied onto two types of decking materials:

(1) wood panels (which can be plywood or oriented strand board or OSB), and
(2) wood planks or wood boards.

You may come across other types of roof deck material (like metal, concrete, gypsum, cementitious wood fiber, or other non-wood materials).

In each situation (no matter what) **the roof needs a nailable substrate** that provides adequate support. Now there's proper thickness, design loads (including wind uplift), span of supporting framing members that are important, but we're not going to get into those details.

Nearly all sheathing problems are due to improper installation.

So, here are 5 quick inspection tips for checking the roof deck sheathing.

1. Sheathing should be fastened with a minimum of 8d common nails (or deformed shank nails) spaced at most 6 inches on center at supported panel ends and edges. At intermediate support areas, the fasteners should be at 12 inches on center.
2. There should be a 1/8-inch space at the panel ends and edges. A 16d common nail could be used as a gauge.
3. The long dimension should be perpendicular to the supports. Each piece should be continuous over at least two spans. The panel should be at least 24-inches wide.
4. Panel spacer-type edge clips (H clips) could be installed and recommended by some manufacturers.
5. End joints of each adjacent piece of decking should be staggered.

Plywood panels should be laid with the face grain perpendicular to the rafter boards. The panels should be installed over two or more spans, with the long dimension or strength axis oriented across the rafter boards or truss cords. In the above image, the contractor is laying down the plywood panel with the face grain perpendicular to the trusses. Staggering panels by at least two supports is recommended.

During the installation of OSB, the rough surface side should be facing up. This rough side is a screened or skid-resistant coated side.

The four most common sheathing attachment mistakes include:

1. Using the wrong size fasteners,
2. Missing the framing members when installing fasteners,
3. Overdriving nails, and
4. Using too many or too few fasteners.

Alight, that 3 steps!
Let's go to **Step #4**.

Step #4: Check the slope and underlayment.

Inspecting the underlayment is all but impossible at an existing roof. However, there are a few essential concepts about underlayment that should be understood by all inspectors in order to evaluate the past performance of the roof covering that you're inspecting.

Underlayment does three things:

(1) it provides protection from weather for a limited time until the roof covering is installed;
(2) it provides a secondary weatherproofing barrier under the shingles; and
(3) it separates the roof covering and the substrate.

Underlayment must be installed under an asphalt shingle roof system.

Underlayment is also necessary to:

- comply with local building codes;
- maintain a fire rating for the roof assembly; and
- meet requirements for the manufacturer's warranty.

You can classify underlayment in three ways:

1. As a single layer of underlayment;
2. As a single layer of self-adhering underlayment; and
3. As a double layer of underlayment.

A water and ice-dam protection membrane (or sometimes called an ice and water shield) is a particular type of underlayment.

It provides additional protection along the eaves, at penetrations, elevation changes, and in valleys where a lot of water or ice dams could occur.

This type of underlayment is usually just a single layer of polymer-modified bitumen underlayment that is sticky or self-adhering.

For areas that have an average temperature in January of 30℉ or less, a water and ice-dam protection membrane is a recommended best practice (recommended by NRCA).

Underlayment is installed in relation to roof slopes.

For roof slopes at 4:12 or greater, there should be a minimum single-layer of underlayment applied horizontally in shingle fashion.

For roof slopes between 2:12 and 4:12, a single layer of self-adhering polymer-modified bitumen underlayment or a minimum double-layer underlayment should be installed.

Low-slope roof covering systems are designed as **WATERPROOF** roof systems, and they use roof coverings designed for slopes as low as 1⁄4:12.

Low-slope roofs are commonly known as “flat roofs”, but an actual **FLAT** roof surface is a design mistake.

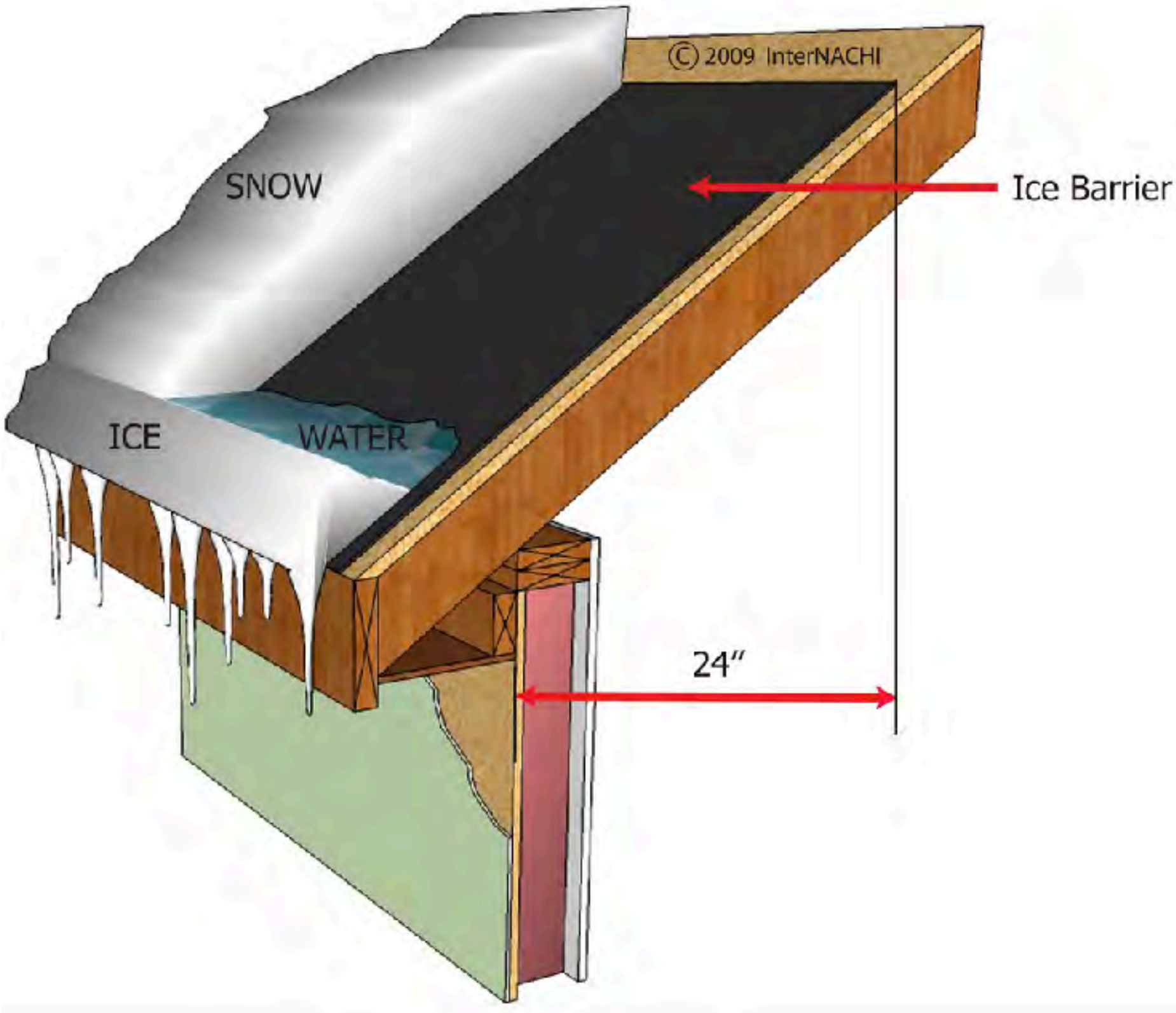
Inspection Tip: If you ever find a flat roof that is actually flat – with no slope – that’s a roof with a problem.

There should always be SOME slope to a roof.

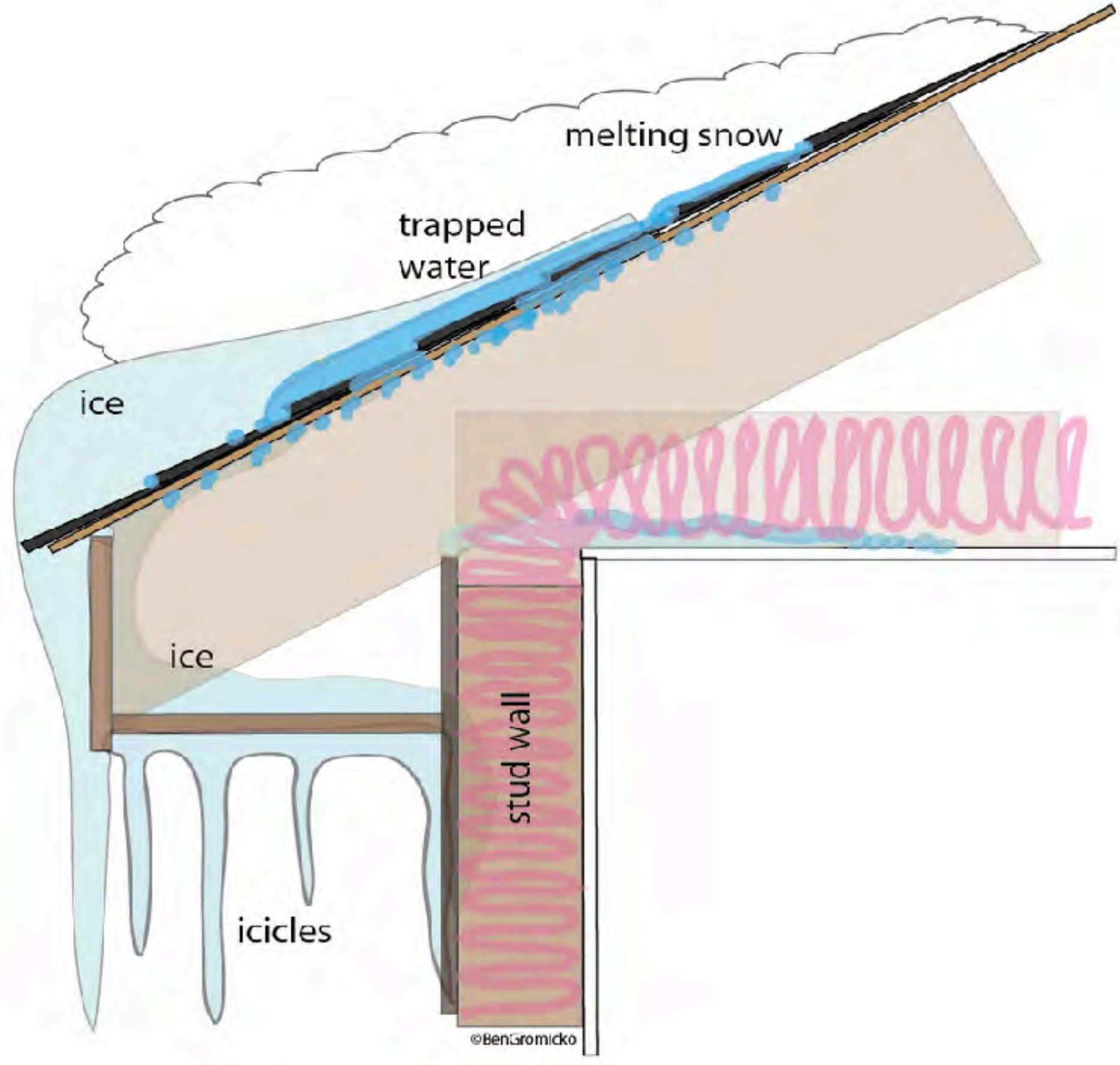
Step #5: Check the ice barrier.

There is a phrase used when describing self-adhering underlayment. The phrase is “a point at least 24 inches inside the exterior wall line of the building.” What this means can be easily seen in this illustration.

Ice Barrier



In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that is made up of at least two layers of underlayment cemented together or a self-adhering polymer modified bitumen sheet, should be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches inside the exterior wall line of the building.


melting snow
trapped
water
ice
ice
stud wall
icicles
©BenGromicko

Ice dams can form along an eave. Therefore, the underlayment must be modified to prevent ice dams from forcing water under the roof covering. Beyond the 24-inch point, such special underlayment is considered unnecessary because the warmth of the interior will prevent ice dams from forming above the heated space. Similar attention is needed for roof coverings of roll roofing, slate, wood shingles and wood shakes – not just asphalt shingles.

For slopes less than 4:12 and in locations with heavy snow fall, a best practice would be to extend the underlayment a minimum of 36 inches from the inside of the exterior wall line of a building. (NRCA recommendation)

Alright! That was 5 steps of the inspection. We're halfway there. Let's go to **Step #6**.

Step #6: Check the drip edge.

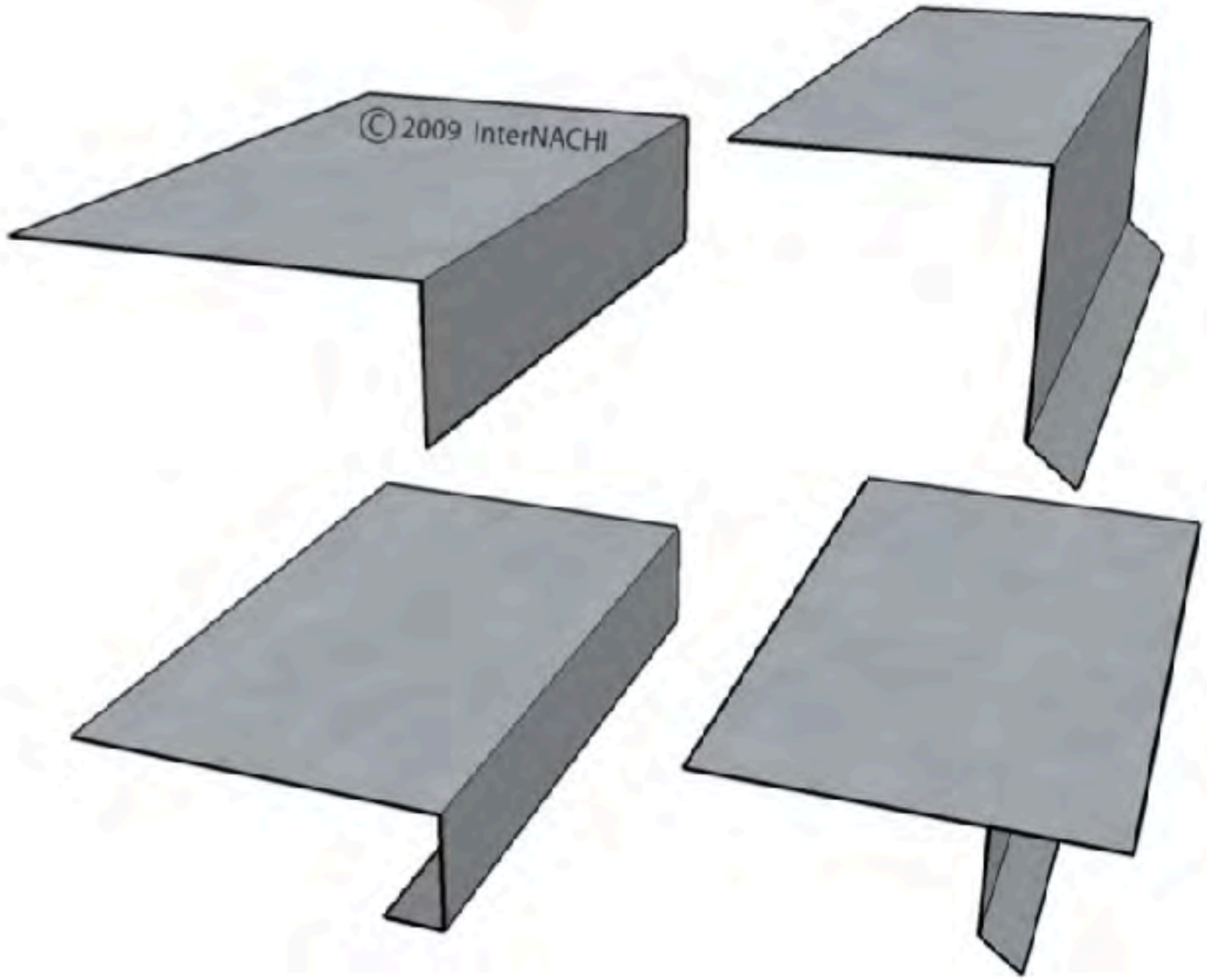
Drip edge metal should be installed at the rake and eaves. It provides a means of terminating the underlayment and asphalt shingles nicely.

It provides an efficient method of shedding water.

Inspection Tip: I always take a picture of the drip edge area.

I take the picture as I go up the ladder (at the top of the ladder). Sometimes there's no drip edge. Sometimes there's major structural damage. And a secondary benefit of looking there is to count the ply's or measure the thickness of the decking.

Most codes require drip edge metal to be installed. It is most commonly installed for asphalt shingles.



There are two configurations for drip edges (Type L and Type T). Bottom right is a T. Top right is an L. But that's not really important.

What's important to know about the drip edge is the following five things:

1. the installation and material of drip edges usually depends on local practices;
2. the drip edge at the rake goes over the underlayment;
3. the drip edge at the eaves goes under the underlayment;
4. drip edge should be fastened every 12 inches normally, and could be every 6 inches for high-wind areas; and
5. a recommended best practice at the eaves is to have the bottom edge of the underlayment extend 1⁄4 to 3/8 of an inch beyond and overhang the edge of the metal drip edge (Asphalt Roofing Manufacturer's Association).

Step #7: Check for an offset pattern.

There are a few offset patterns in the shingle installation to look for:

1. One common to the application of square-end, three-tab strip shingles is the “6-inch pattern,” which will cause the cutouts to align in every other course. The consecutive shingle course is offset by 6 inches.
2. A more random visual effect can be made by using an offset pattern called the “5-inch method,” which is achieved by removing about 5 inches (5-5/8”) from each consecutive course.

Racking (or vertical installation of shingles) is generally not recommended for asphalt shingles. There are some exceptions for some manufacturers. Each manufacturer has their own guideline about offsetting.

STEP #8: Check the roof valley flashing.

A valley is created at the intersection of two down-sloping roof planes.

The valley is vulnerable to water intrusion because of the high volume of water and the lower slope along the valley line.

For example, where two 4:12 roof planes make a valley, the valley is about a 3:12 – it's lower in slope than the two planes. So, it's more vulnerable to water problems.

Inspection Tip: Use the valley. I like to climb upon the roof at the valley area – because the valley has a lower slope than the rest of the roof. Ideally, I'll be able to position my ladder at inside the corner where the bottom of the valley is.

Remember, the Standards of Practice do not require a home inspector to walk upon any roof surface. Don't.

For asphalt shingle roofs, there are three basic types of valleys:

(1) open,

(2) closed-cut, and

(3) woven.

OPEN valleys.

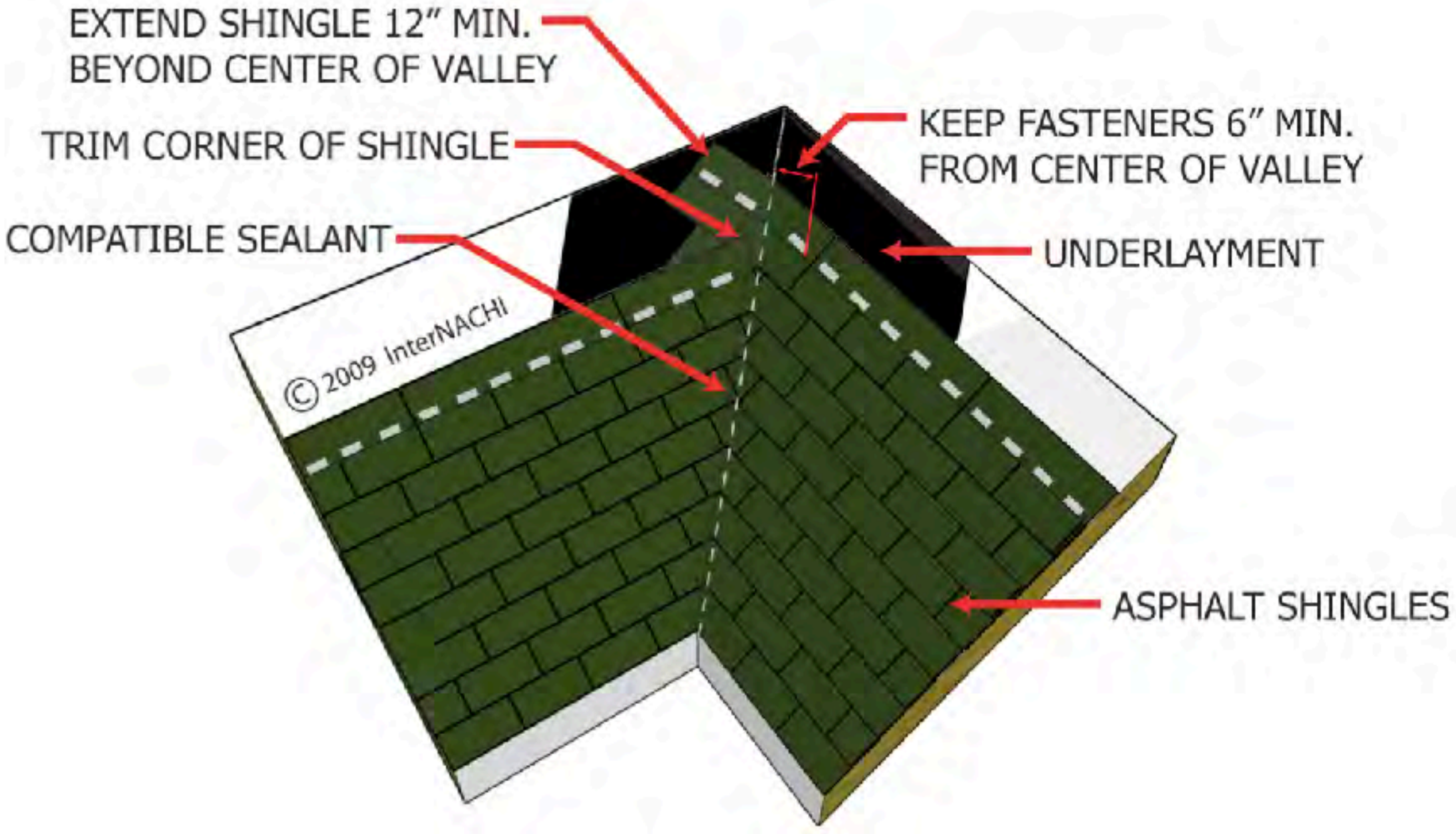
Here's what you need to know about open valleys:

- An open valley is when shingles are lapped onto both sides of the valley flashing metal, leaving an open space between the roof covering materials;
- A minimum 36-inch-wide layer of polymer-modified bitumen membrane or self-adhering underlayment should be in the valley, under the metal flashing;
- The metal valley flashing should be a minimum of 24 inches wide (NRCA); and
- The asphalt shingles should lap onto the flange of the metal flashing at least 4 inches.

Here's what you need to know about a **CLOSED-CUT** valley:

- there are shingles on one side of the valley installed across the valley;
- the shingles from the other side are cut above, 2 inches short of the centerline of the valley;
- no nails should be located within 6 inches of the centerline of the valley;
- the upper corner of each end shingle should be trimmed (or dog-eared) – this helps to divert the water away; and
- a bead of roof cement could be put at the end of the cut shingles.

CUT VALLEY


EXTEND SHINGLE 12" MIN.
BEYOND CENTER OF VALLEY
TRIM CORNER OF SHINGLE
COMPATIBLE SEALANT
KEEP FASTENERS 6" MIN.
FROM CENTER OF VALLEY
UNDERLAYMENT
ASPHALT SHINGLES
© 2009 InterNACHI

A **WOVEN** valley is when shingles are simply woven to form a closed valley.

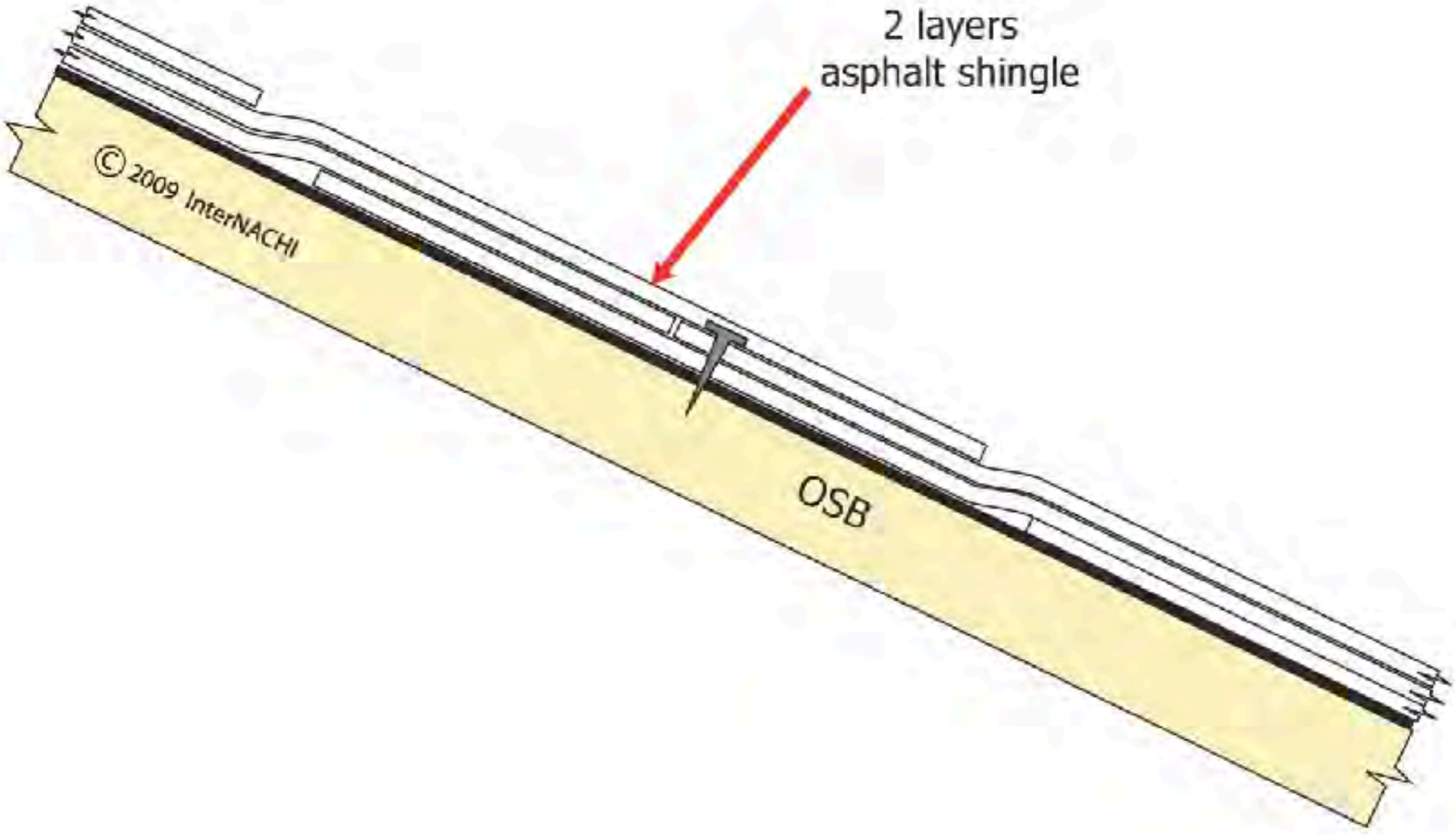
They are usually created with 3-tab shingles and not laminated ones.

Step #9. Check the nail penetration into the deck sheathing.

If the thickness of the deck sheathing is more than ¾ inch, the nails must be long enough to penetrate ¾ of an inch INTO it.

If the thickness of the sheathing is ¾ inch or less, the nails for asphalt shingles must be long enough to penetrate THROUGH it – about 1/8 of an inch may extend through the deck sheathing and may be visible for inspection from the attic space.

Inadequate Fastener Penetration



In this illustration, you can see that the roofing nail (fastener) does not penetrate enough into the decking material. That's bad. The double-layer of shingles (in this illustration), caused by a second layer of shingles being installed over a lower layer, requires the use of a nail with a longer length.

Inspection Tip: At a roof over, where you have two layers of asphalt shingles, I like to gently tug on the shingles to see how well they are attached.

Step #10: Check the flashing areas.

There are 4 types of flashing:

1. penetration flashings;
2. vertical surface flashings;
3. skylight flashings; and
4. steep- to low-slope transition flashings (sometimes called headwall flashing).

For **PENETRATION** flashings, you should check the following items:

(1) vent pipes;
(2) exhaust vents;
(3) exhaust fans;
(4) furnace or water heater flue pipes;
(5) electrical stand pipes; and
(6) all other penetrations.

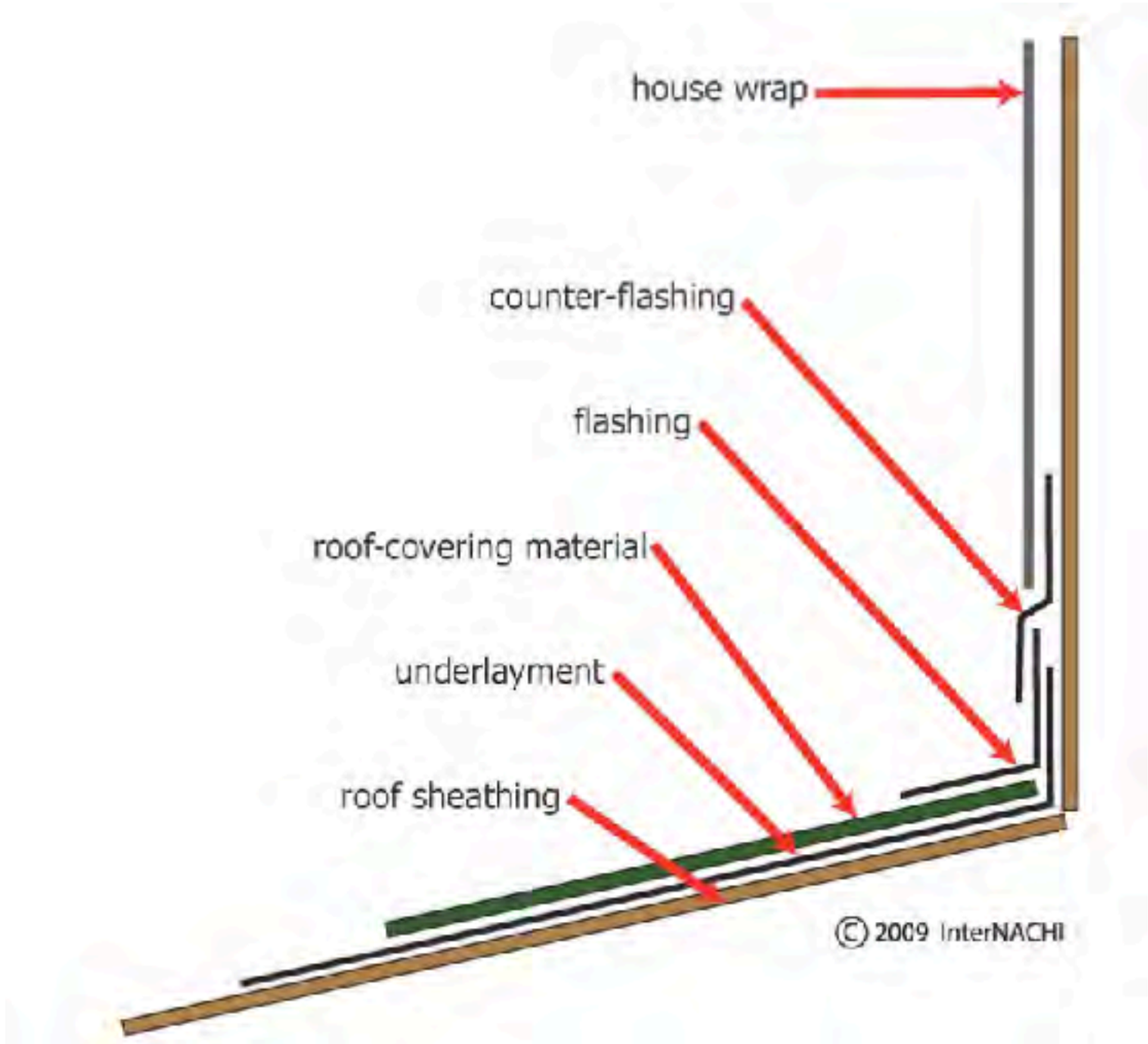
The penetration flashing is usually supplied by a manufacturer or could be made in the field by a contractor.

There are 4 types of **VERTICAL SURFACE** flashings. In your report, you should use these following terms to describe the flashing components that you are inspecting.

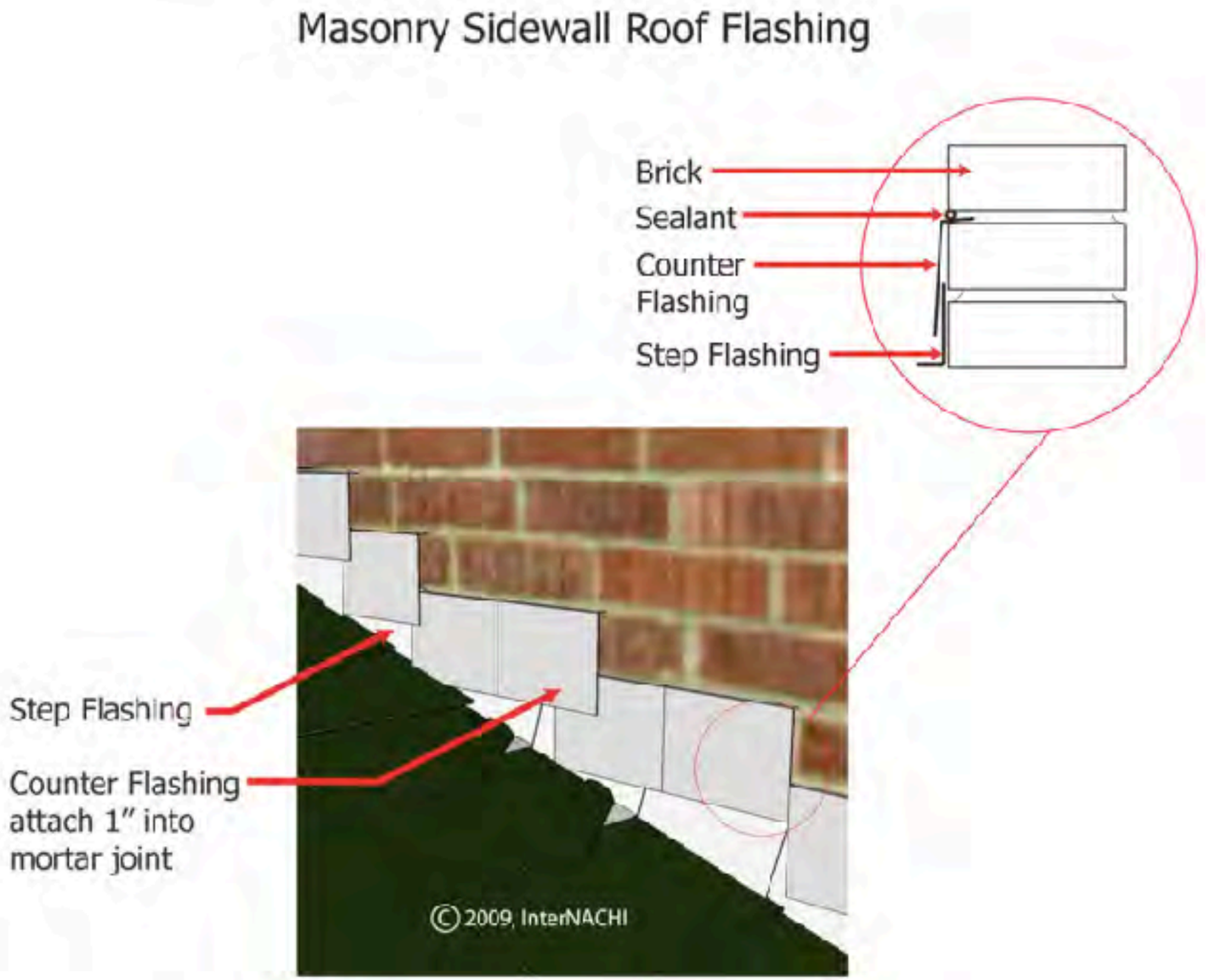
They are:

(1) apron flashing;
(2) step flashing;
(3) cricket or backer flashing; and
(4) counter flashing.

APRON flashing is installed where a roof intersects a head wall. Common locations for an apron flashing is at the front side (or downslope side) of a dormer, chimney, and anywhere there's a transition between a horizontal and a vertical.



STEP flashing is installed where the roof intersects a vertical sidewall. The step flashings are the small individual pieces of metal installed with each shingle course. They “step” with each course.



CRICKET or BACKER flashing is installed when the roof intersects a chimney or a curbed roof penetration.

The cricket diverts water around, while the backer flashing provides a weatherproofing transition material right where the backside of some type of penetration intersects the roof.

An example of a **backer** flashing would be a chimney that is not very wide (say only 20 inches wide), and there's no requirement for a cricket – a backer flashing would be installed on the upslope backside of that stack.

By the way, a recommended best practice is to install a **cricket** when a chimneystack is more than 30 inches wide (NRCA recommends 24 inches wide).

COUNTER FLASHING is flashing material that covers and protects the top edges of all the other types of flashing to prevent water intrusion.

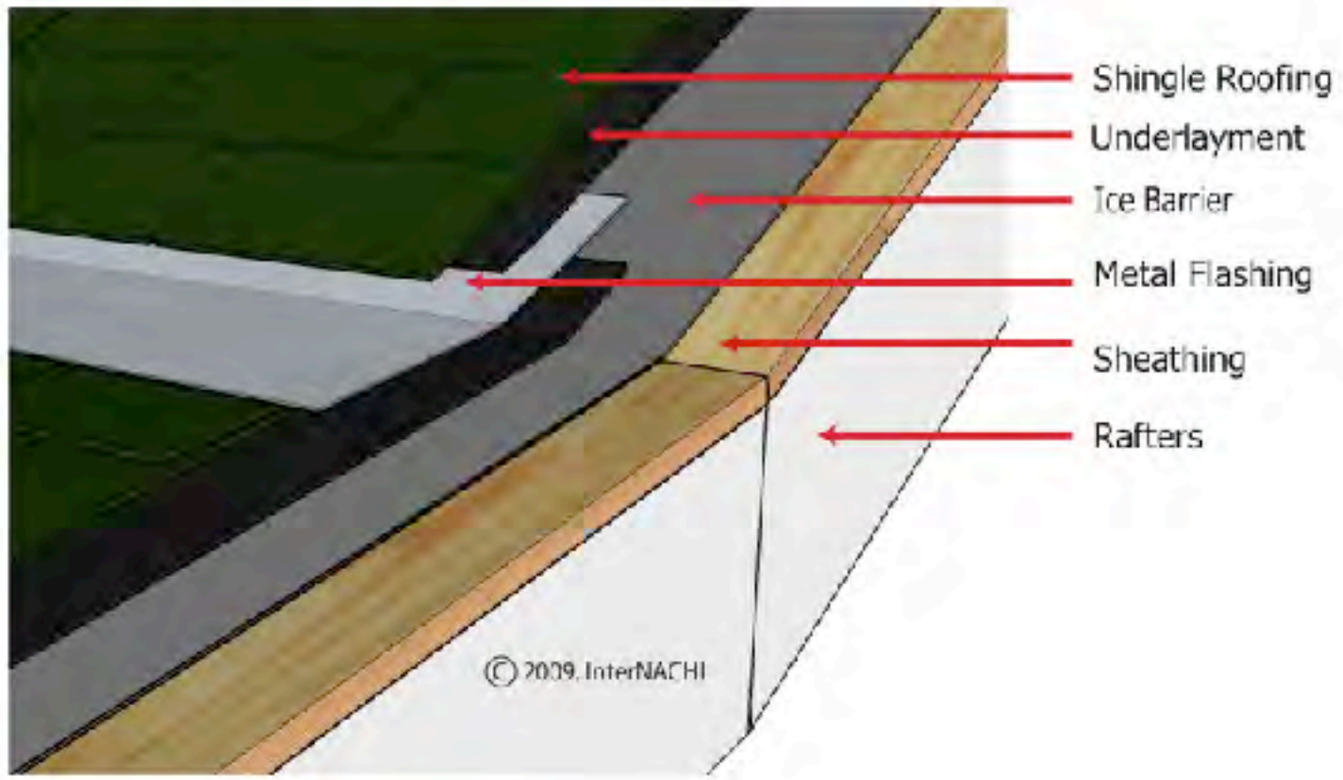
SKYLIGHT FLASHINGS are very much like chimney flashings - with apron, step and backer flashings involved. In most installations, the skylight unit itself acts at the counter flashing.

STEEP- TO LOW-SLOPE TRANSITION FLASHINGS are installed where the sloped shingle roof intersects and drains onto a low-sloped or membrane flat roof.

In many situations, the lowest course of shingles acts as the counter flashing. Ideally, there would be metal flashing installed.

Inspection Tip: Be careful not to step at this intersection or transition area. You could easily damage the roof and flashing materials that are installed there.

Roof Slope Transition - Concave



Congratulations!

In this online class, we learned the 10 steps to performing a roof inspection.

They are:

1. Check the roof covering
2. Check the fasteners
3. Check the deck sheathing
4. Check the slope and underlayment
5. Check the ice barrier
6. Check the drip edge
7. Check for an offset pattern
8. Check the roof valley flashing
9. Check the nail penetration into the deck sheathing
10. Check the flashing areas

nachi.org/mastering-roof-inspections


IMPACT
PROTECTION


IMPACT
PROTECTION


IMPACT
PROTECTION


546

10 Steps to Performing a Roof Inspection Class

Ben Gromicko
InterNACHI
ben@internachi.org

nachi.org/class

nachi.org/newyork