



# technical bulletin

## Asphalt Roofing Manufacturers Association

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## *Nail Application of Asphalt Strip Shingles for New and Recover Roofing*

The International Building Code (IBC) and the International Residential Building Code (IRC) require that roofing nails be utilized to fasten asphalt shingles. Proper nailing is essential to good performance. To ensure proper nailing during shingle application it is required that you follow the IBC and IRC nail requirement guidelines. The Asphalt Roofing Manufacturers Association (ARMA) supports these requirements, (several of them referenced below) as well as additional installation recommendations outlined below.

- Nails are required to have a minimum nominal shank diameter of 12 gauge (0.105") and a minimum head diameter of 3/8".
- Nails should be corrosion resistant. Nails are required to be galvanized, steel, stainless steel, aluminum or copper roofing nails. Galvanizing by various processes is the typical means of achieving corrosion resistance. Aluminum roofing nails do not require additional coatings for corrosion resistance.
- Select nails long enough to penetrate 3/4" into the roof deck. If the deck sheathing is less than 3/4" thick, use nails long enough to penetrate the roof deck sheathing and extend at least 1/8" beyond the lower side of the roof deck. In determining nail length, consider the number of layers of shingles, shingle thickness(es), underlayment and flashing (eaves, sidewall and valley, etc.).
  - In some cases, the underside of the deck is exposed to view. In this case, using nails of the recommended length will result in the nail points penetrating through the deck and being exposed to view. Consult the roofing material manufacturer and building code requirements for approved alternatives if visible nail points are considered aesthetically objectionable.
- All nails are to be driven by hand or with a pneumatic nailing tool that has been properly adjusted to correctly drive the nails. Failure to use a properly adjusted pneumatic air system can lead to sealing failures, raised tabs, buckling, and blow-offs.
- For most asphalt shingles, a minimum of four nails is required. For some shingles and for some application circumstances, the required number of nails may be different. The specific recommendations of the shingle manufacturer, as printed on each shingle wrapper, must be followed to ensure the intended performance and compliance to building codes.

### Placing and Driving Nails

Improperly positioned and driven nails can lead to sealing failures, blow-offs, raised tabs, and buckling. The following practices reflect the general recommendations of most shingle manufacturers. However, the recommendations of the specific shingle manufacturer, as printed on each shingle wrapper, must be followed when applying shingles.

Align each shingle carefully. Make sure the cutouts or end joints are more than 2" from any nail or end joint in the underlying course. Start nailing from the end nearest the previously-installed shingle and proceed across. This will help prevent buckling. To help prevent distortion, do not attempt to realign a shingle by shifting the free end after more than one nail is in place.

Critical aspects of nail placement include:

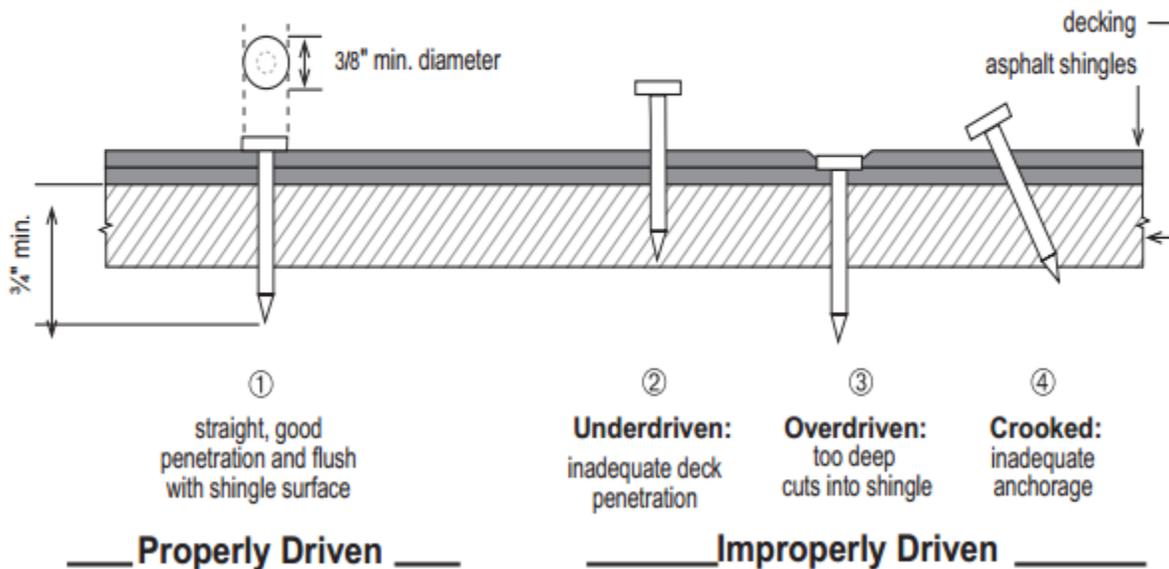
- Never place nails where they will be fully or partially visible after the roof is complete.
- For most shingles with sealant on the top surface, place nails below the sealant strip but above the area that will be visible after the roof is complete.
- Shingles with sealant on the back surface often have a line or lines to indicate the location on the shingle surface where the nails are to be placed.

- No nail head should be closer than 1" from either end of the shingle. Specific recommendations from the shingle manufacturer for positioning the nails across the shingle are included in the manufacturer's installation instructions.
- Do not drive nails into knot holes, cracks or spaces in the roof deck.
- Nails are to be applied so that the entire head bears tightly against the shingle.

Nails are not to be underdriven, overdriven (to break or cut into the shingle) or driven crooked. See Figure 1 for examples of properly and improperly driven nails.

Repair incorrectly applied nails immediately. Underdriven nails can be tapped down. Remove overdriven or crooked nails, repair the hole with asphalt roof cement complying with ASTM D4586, and place another nail nearby. If this is not practical, replace the entire shingle.

**Figure 1: Application of Nails**



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