

12 Tips On Roof Edges

Roof Edges can be a major locus of failure in low-slope roofs. Our experts offer a dozen design tips to ensure that your covered - all the way to the edge.

Faced with a constant barrage of wind and rain, roof edges are often the first line of defense for low-slope roof systems.

Roof edges also are the site of most roof failures, according to a study of 145 windstorm claims by Factory Mutual Insurance Co., Johnston, R.I., which found that 59% of roof failures could be attributed to perimeter failure.

Here are a dozen tips that will help your Building Team avoid edge-related roof failures, especially in high-wind areas.

1. Allow for thermal expansion and contraction. Since temperature change causes metal to expand or contract, the roof edge should incorporate slotted fastener holes and snap-on covers that allow for thermal expansion and contraction, says Bob LeClare, a VP with W. P. Hickman Co., an Asheville, N.C.-based roof edge manufacturer. When Building Teams fail to plan for thermal movement, says LeClare, "You get some really ugly results." One of the most common problems: "oil canning," where flat metal sheets start to bend. Other problems caused by thermal expansion and contraction: split roof membranes, opening up at splices, and even disengagement and roof failure, says LeClare.

2. Specify the proper gauge. In many cases, the metal specified for the roof edge is too light, leading to oil canning. A stronger, heavy gauge metal (see chart) can prevent this problem. "Probably the most frequent mistake I see in roof edging is incorrect specification of metal gauges," says Sal Verrastro, specification writer with Spillman Farmer Architects, Bethlehem, Pa. Verrastro says this is especially important when specs call for welded



edges. He also notes that some of the heavier-gauge metals are not available in a wide spectrum of colors, so be sure to consider that when specifying materials and colors.

3. Make sure your roof edge is up to code. The 2003 version of the International Building Code states that low-slope roof edging shall be designed in accordance with ANSI/SPRI ES-1. Not all pre-manufactured roof edges meet this standard, and even fewer field-formed systems are up to IBC 2003 code. "In most cases, the edge is not anchored securely, there are not enough cleats used, and spacing of cleats is too wide," says Verrastro. (For more on IBC, visit www.iccsafe.org.)

4. Never install dissimilar materials together. When certain metals come into contact, they can create a chemical

Improper specification and installation of cleats and fasteners can result in failure of roof edging systems, especially in high-wind regions. That was the case at this strip retail center in Punta Gorda, FL following Hurricane Charley in August 2004.

reaction that can lead to corrosion. For example, using a galvanized cleat on a copper roof can produce unsightly corrosion that can eventually lead to failure of the metal edge. Similarly, certain metal fasteners can react with ACQ-treated (alkaline copper quaternary) wood.

5. Use cleats effectively. Cleats are the glue that bind the roof edge to the roof surface. They need to be properly installed to meet the required wind pressures for the building. The roof edge metal must then be hooked over the cleat and locked in place. Pre-manufactured roof edge systems with a



Many paints will not hold up to the extreme UV exposure roof edges endure. An old roof edge (top) at Conrad Hall at Michigan State University was replaced with a new system (bottom).

combined cleat/water dam and mating cover can solve this problem. Be aware that some roof edge systems do not use cleats. Also, make sure the cleats are at least as thick as the fascia.

6. Use the proper fasteners. Installing the wrong fasteners opens the way to a host of problems. One common mistake installers make is to use roofing nails with insufficient pullout resistance to secure edges, rather than ring-shank and noncorrosive nails, or even screws. Other common fastener mistakes: not using enough fasteners, spacing fasteners too far apart, and not placing fasteners where they are needed. Be sure to use the proper fastener for your specific substrate, whether it is wood, metal, or concrete.

7. Specify a long-lasting finish. Many paints will not hold up to the extreme UV exposure roof edges endure. This can result in fading or chalking over time. Roof edge metal that is field painted, especially mill aluminum or standard spangle galvanized, is often not properly prepared to assure good paint adhesion. Roofing experts recommend using a PVDF (polyvinylidene fluoride)

baked-on architectural paint, such as Kynar 500 or Hylar 5000. It's common for manufacturers to specify a factory finish that's warranted for up to 20 years.

8. Make sure the edge provides adequate coverage. The face of the roof edge should extend at least one inch below the nailing strip (a wood strip that is used as a base for nailing or fastening roofing material) to assure correct flashing. More coverage is highly recommended at a rough wall or where driven rain is common. Having the nailing strip's edge visible below or behind the roof edge is also an aesthetic concern.

"If you don't have adequate flashing, the nailer starts buckling and water infiltrates," says Kevin Gough, VP with Alan Kunsman Roofing, Freemansburg, Pa. Gough says he has seen a number of cases where the architect has specified an edge with inadequate flashing. "Water gets into the gaps, and it's just not functional," says Gough.

9. Review warranties carefully. Check to see if your roof manufacturer's warranty covers the roof edge. Pre-manufactured roof-edge systems typically include at least a five-year warranty; some offer up to 25 years of

protection. "Using pre-manufactured edging provides you with a warranty for the edge, too, and that's important protection," says spec writer Verrastro.

10. Consider the local environment. Projects in coastal areas should never use bare aluminum or galvanized systems, as they will quickly deteriorate. On the other hand, roof-edge systems are sometimes over-specified. It's important to strike a balance between functionality and what is most cost effective for the owner.

11. Look for new shapes and sizes. In the past, you could have any roof-edge shape you wanted, as long as it was basically straight. Today, many new options are available, such as true-welded radii, arcs, bullnose shapes, and custom designs. Architects now have more freedom to create profiles that are part of their design. In many cases, the manufacturer will test an unusual shape to ensure it meets wind-uplift code requirements.

12. Installation is critical. This cannot be emphasized enough. "You can have the greatest product, the best warranty, the most attractive roof edging in the world, but it's only scrap metal if it's not installed properly," says Alan Kinsman Roofing's Gough.



Charlotte County South Annex: Enhanced attachment of nailers and metal work would have likely allowed this roof to fare much better. Photo courtesy of RICOWI