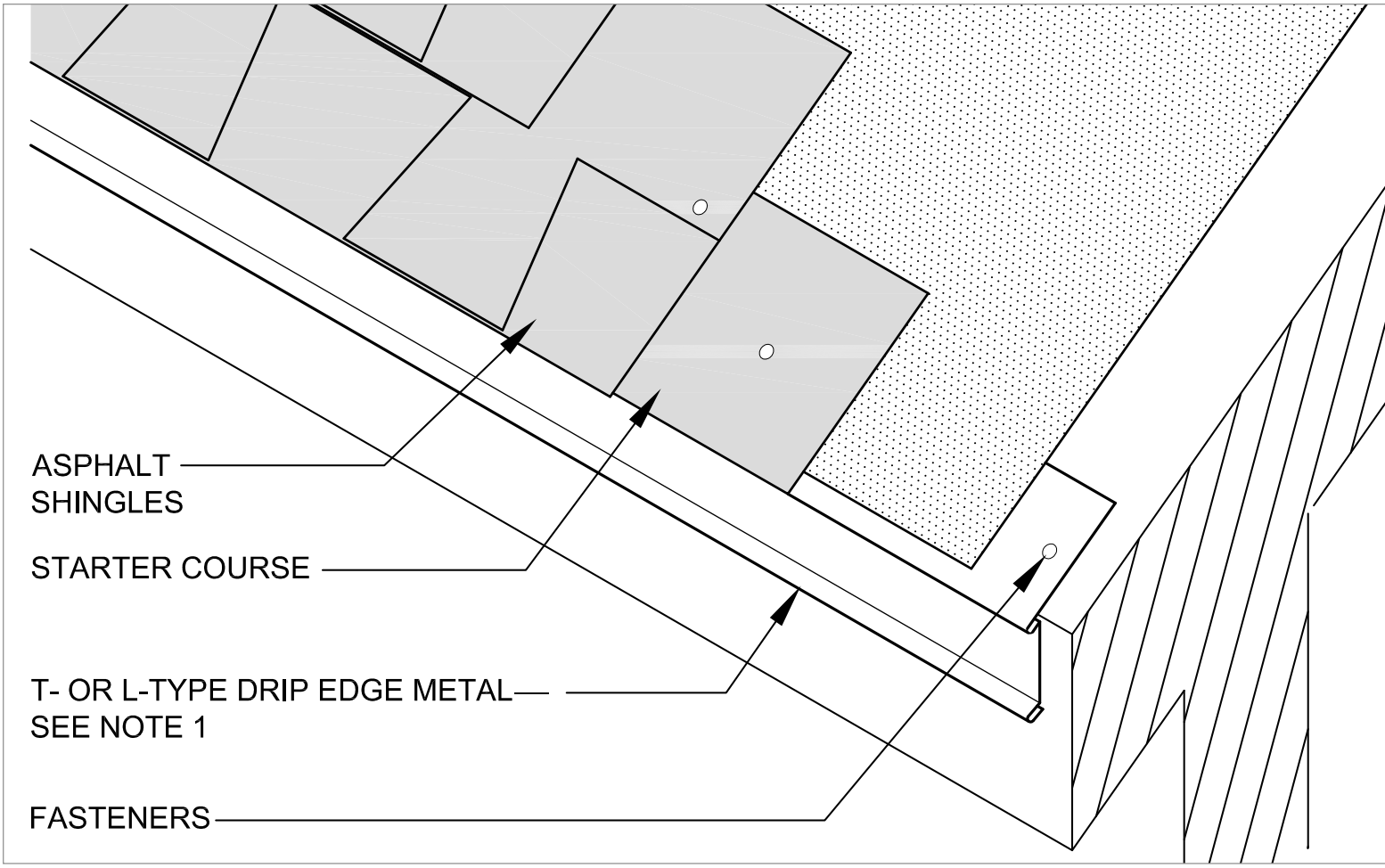

On the edge

Drip edge requirements and guidelines vary for steep-slope roof assemblies

by Mark S. Graham

Metal drip edges are used at rakes and eave edges of steep-slope roof assemblies as a means of properly terminating roof systems' edges. Requirements and guidelines for metal drip edge usage vary, and you should be aware of the differing information. Following is a brief review of metal drip edge requirements in the *International Building Code,® 2018 Edition* and *International Residential Code,® 2018 Edition*, as well as NRCA's recommendations.

IBC requirement

In IBC 2018's Section 1507.2-Asphalt Shingles, specific requirements for metal drip edges are provided in Section 1507.2.8.3.

A drip edge is required to be provided at the eaves and rakes of asphalt shingle roof systems. A drip edge's flange should extend back onto the roof surface a minimum of 2 inches. Underlayment should be installed over a drip edge flange at eaves and under drip edge flanges at rakes. The vertical face of a drip edge should be a minimum of 1½ inches and extend at least ¼ of an inch below a roof deck's bottomside surface. Adjacent segments of drip edge shall be lapped a minimum of 2 inches. Drip edges shall be attached at a maximum 12 inches

on-center fastening pattern.

IBC does not provide specific requirements for drip edge usage on clay and concrete tile, metal panel and shingle, roll roofing, slate, or wood shake and shingle roof systems.

IRC requirement

In IRC 2018's Section R905.2-Asphalt Shingles, specific requirements for metal drip edges are provided in Section R905.2.8.5.

A drip edge is required to be provided at the eaves and rakes of asphalt shingle roof systems. The specific requirements for drip edges are similar to those contained in IBC 2018 except the residential code also requires a drip edge to be fastened with the same fasteners required for asphalt shingle installation.

The residential code does not provide specific requirements for drip edge usage on clay and concrete tile, metal shingle, roll roofing, slate, or wood shake and shingle roof systems.

NRCA guidelines

The use of a drip edge at eaves and rakes provides a means of terminating steep-slope roof systems' underlayment and provides for efficient watershedding.

NRCA recommends the use of drip edges at all eaves and rakes for asphalt shingle roof systems. A metal drip edge is most common for asphalt shingle roof systems; however, other drip edge materials, such as redwood or cedar, sometimes are used in decorative fascia applications.

A metal drip edge typically is fabricated in two configurations, L-type or T-type. The specific configuration and metal material used for a metal drip edge usually varies with local practices. If a specific metal drip edge configuration or material is desired, it should be clearly specified.

A metal drip edge at eaves should be applied directly to a roof deck, and the drip edge's flange should be covered by the underlayment. Alternatively, if a self-adhering polymer-modified bitumen sheet is applied directly to a deck at eaves, a metal drip edge can be applied over it. The metal drip edge's flange can then be stripped in with a 6- to 10-inch strip of self-adhering polymer-modified bitumen sheet.

> "Manufacturers' installation instructions also should be consulted for requirements specific to their products"

At rakes, a metal drip edge should be applied over underlayment beginning at the eaves and continuing up the roof slope. This arrangement provides for metal drip edge laps to be installed shingle fashion to shed water. Adjacent segments of metal drip edge should be lapped a minimum of 2 inches. NRCA suggests fastening metal drip edge at about 12 inches on center, slightly staggered. Spacing may need to be closer in high-wind regions.

At eaves and rakes with L-type metal drip edge, asphalt shingles should extend about ¼ to ¾ of an inch beyond the drip edge's vertical face. For a T-type drip edge, asphalt shingles should be at least flush with or extend up to about ¾ of an inch beyond the drip edge metal.

Asphalt shingle manufacturers' installation instructions also should be consulted for requirements specific to their products.

For clay and concrete tile, metal shingle, slate, and wood shake and shingle roof systems, the use of a metal drip edge should be considered depending on the climate's severity, anticipated rainfall, freeze-thaw cycling and edge framing construction.

When climate or roof edge construction dictates the need for a metal drip edge, the type and minimum thickness of the material should be commensurate with a slate roof system's expected service life.

Additional information about steep-slope roof systems is provided in *The NRCA Roofing Manual: Steep-slope Roof Systems—2017.*

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Construction workers have safety concerns regarding automation

A recent survey has revealed safety is construction workers' top concern when automation increases at job sites, according to www.forconstructionpros.com.

In a poll of 205 U.S. and U.K. construction workers conducted on behalf of Volvo Construction Equipment, 46% of respondents highlighted the increased risk to job-site safety compared with 31% who are concerned about job security. Other concerns include loss of sociability (26%) and not knowing whom to blame if something goes wrong (17%). However, experts say automation potentially can reduce job-site hazards.

Despite their safety concerns, survey respondents identified benefits automated job-site technology can offer. More than half of respondents (54%) believe autonomous machines and artificial intelligence will boost productivity, and 48% believe advanced technology will increase the speed of daily construction tasks. Construction workers between ages 25 and 44 are more likely to believe autonomous machinery can benefit areas such as productivity, speed, safety, quality and fuel efficiency compared with construction workers age 45 and older.

Job security is the second-largest concern construction workers expressed regarding increased job-site automation. Nearly half of survey respondents (48%) believe machine operators are most at risk of losing their jobs; three in five machine operators believe their job could become completely redundant following the rise in computer technology. Other job roles respondents believe would be at risk are engineers (21%), bricklayers (17%) and construction managers (16%). Only one in five construction workers believe no jobs will be affected.

From those who responded as part of a wider survey across all industries, 55% of workers say they would rather lose their jobs to a human than a machine. Artificial intelligence may affect some workers' career choices—72% of U.S. respondents agreed in some capacity they would consider choosing a job that will not be affected by autonomous machinery or artificial intelligence compared with 45% of U.K. respondents. Fifty-eight percent of construction workers are confident artificial intelligence would not do a better job than them.

JLG Industries' access equipment training simulator

Construction industry uses simulators to recruit young workers

To recruit young workers, some construction companies are introducing realistic computer simulators at high schools and community colleges across the U.S., according to www.sfgate.com.

In the absence of opportunities for students to visit real construction job sites, simulators allow students to explore the complexities of operating heavy machines such as bulldozers, cranes and excavators. Professional simulators rely on physics and collision engines to create an immersion experience, and operating the simulated machines requires more than pressing a button. Most simulators have real controls in the proper locations to help users develop muscle memory, and the machine's sounds are accurately reproduced.

Trey Henry, a 17-year-old senior at the Academy for Career Education trade school in Reno, Nev., attends a simulator program at the Nevada chapter of the Associated General Contractors that serves as training for him and scouting for his instructors, who work for local construction companies. To start an excavator simulator, Henry must turn a key, increase the throttle speed, engage the hydraulic lock and buckle his seat belt.

To view a construction and agriculture work-site safety training simulation video, go to www.professionalroofing.net.

"I was on the excavator and digging a trench, and I got stuck a little bit, and it jerks you like you're stuck," Henry says. "You actually feel the chair moving when you pull the dirt."

The excavator simulator has three screens and can be used with a virtual reality headset that produces a 360-degree view. Two pedals operate the tracks, and joysticks move the boom and open the bucket.

Henry has spent about seven hours on the simulator and says his experience has persuaded him to pursue a career working with heavy machinery.