

## Why ES-1? A Quick Reference Guide

**Q.** What is ANSI?

**A.** The American National Standard Institute (ANSI) is a non-profit organization that administers and coordinates a voluntary standardization system.

**Q.** What is SPRI?

**A.** SPRI, (Single-Ply Roofing Industry) is a non-profit trade association representing the sheet membrane and component supplier to the commercial roofing industry. SPRI is an official ANSI canvasser and has worked with representatives of the roofing industry to develop a number of consensus standards.

**Q.** What is FMGlobal?

**A.** FMGlobal provides commercial and industrial property insurance and engineering-driven risk management solutions.

**Q.** What are ICC & the IBC?

**A.** The International Code Council (ICC) is a non-profit organization that works to develop a single set of comprehensive and coordinated national model construction codes. The International Building Code (IBC) provides a consensus standard for construction codes.

**Q.** How and when did all these organizations get involved in setting roofing industry standards?

**A.** Prior to 1980 there were no roofing edge standards by which manufacturers could hold themselves to. FM Global then created a system of standards and approvals to use on FM Global insured properties. The design community adopted this system because there were no other available standards at the time.

In 1998 SPRI developed a series of three tests for judging the quality and durability of fascia and coping. These tests then allow for ES-1 approval. In 2002 the IBC wrote the ES-1 guidelines into their 2003 code. Many states have adopted the 2003 IBC, and the list is continually growing. Currently, SPRI and FM Approvals are working together to develop the next generation of the standard.

**Q.** What is the ANSI/SPRI ES-1 standard?

**A.** It is a reference for those who design, specify or install edge materials used with low slope roofing systems. It addresses copings and horizontal roof edges. The following factors are considered when designing a roof edge

- Structural integrity of the substrate that anchors the edge (e.g. nailers)
- Wind resistance of the edge detail
- Materials specifications

**Q.** What factors are used in ANSI/SPRI ES-1 to determine the loads on a roof edge?

**A.** The key elements considered are:

- Wind Speed
- Building Occupancy
- Building Height
- Location of the edge device on Roof
- Building Location

Three tests prescribed in ES-1 are used to determine if a roof edge will withstand the determined load.

RE-1: This tests the roof edge termination for mechanically attached and ballasted roofing systems. The RE-1 test evaluates the perimeter attachment to ensure that it meets a minimum holding power of 100 lbs./ft. The membrane is

pulled at a 45 angle to the roof deck to simulate a billowing membrane. Failure is defined as any event that allows the membrane to come free of the edge termination or the termination to come free.

RE-2: This is a pull-off test for metal edge flashing. It evaluates the strength of the metal edge flashing to ensure that the fascia system meets or exceeds the building's calculated design wind pressure. A load is applied to the fascia metal, simulating wind load on the fascia. The calculation used is: force at failure X face area = blow-off resistance. The results must meet or exceed the calculated design wind pressure of the building.

RE-3: This test is a pull-off test for metal wall coping. It evaluates the strength of the metal coping cap to ensure that it meets or exceeds the building's calculated design wind pressure. A load is applied to the coping cap, simulating wind load. Simultaneous up and out forces are used. The calculations used to determine the blow-off resistance for the top, face leg and backleg are: force at failure X surface area = blow-off resistance. The results must meet or exceed the calculated design wind pressure of the building.

**Q.** How does the code actually read?

**A.** The 2003 IBC, 1504.5: "Edge securement for low-slope roofs. Low-slope membrane roof systems metal edge securement, except gutters, installed in accordance with Section 1507, shall be designed in accordance with ANSI/SPRI ES-1, except the basic wind speed shall be determined from Figure 1609."

(Note: The Figure 1609 wind speed map varies from the wind speed map in ANSI/SPRI ES-1 1998 in the hurricane coastal regions as the map in Figure 1609 was updated in 2003)

The ANSI/SPRI ES-1 document can be downloaded in its entirety for free from SPRI ([www.spri.org/publications](http://www.spri.org/publications))

**Q.** Which areas have adopted the 2003 IBC?

**A.** The majority of the United States has adopted some version of the IBC. Many states and municipalities have already or are scheduled to adopt the 2003 version of the IBC ([www.iccsafe.org/government/adoption.html](http://www.iccsafe.org/government/adoption.html))

**Q.** Who is involved in ES-1 testing and what products have been tested?

**A.** There are a variety of sources available for ES-1 tested products. Most companies producing pre-manufactured roof edge systems have had some or all of their standard products tested in accordance with the ES-1 standard. The NRCA has done testing - go to <http://www.nrca.net/rp/technical/details/itslisting.aspx> for more details.

**Q.** What does this mean for me? Do you have any recommendations in light of recent developments?

**A.** It is important to frequently check your local requirements because additional states, counties and municipalities are in the process of adopting the 2003 IBC. Roofs with Edges designed and installed to meet ES-1 provide wind securement in the most vulnerable area of the roof, the edge.