



SPRI response to RCI-TA-003-2013

“Issues with ANSI/SPRI ES-1”

Date: March 2014

History of ANSI/SPRI ES-1

- Developed as a design guide in response to numerous perimeter edge failures observed following major wind events;
- SPRI used ANSI protocol to turn guide into national standard using a consensus process; and
- A broad cross section of the roofing industry participated in the standard approval process, including (listed alphabetically): FM, NRCA, RCI, SMACNA, and UL.

ANSI/SPRI and the IBC

- ANSI/SPRI ES-1 adopted into International Building Code (IBC) in 2003;
- Chapter 15 paragraph 1504.5 of the 2006 IBC, and every version since, the requirement is for metal edge systems to be “...tested for resistance in accordance with ANSI/SPRI ES-1...” ; and
- The design loads, however, are determined in accordance with Chapter 16 of IBC, and ANSI/SPRI ES-1 calculations are not used to calculate load.

RCI Concern

RCI-TA-003-2013 states that ANSI/SPRI ES-1 “Limits design creativity” and has “Limited applications and flexibility with existing building conditions”.

SPRI Response

- There are a limited number of tested designs, but it is a large number that is growing larger each day as more products are tested to conform to the Code requirement; and
- There are a number of fabricators and test facilities with the ability to quickly perform ES-1 tests even on totally custom designs to ensure safety and adherence to IBC code.

RCI Concern

RCI-TA-003-2013 states “A large portion of the United States is not located within hurricane-prone regions or high-wind zones, and the requirement for the edge metal to meet these standards may be considered somewhat excessive...”.

SPRI Response

- IBC, however, does not require that edge metal be tested to resist hurricane force winds unless that edge metal is to be installed in a hurricane prone area; and
- IBC requires that the edge metal be tested to resist the design loads determined in accordance with Chapter 16. In areas with lower wind speeds those loads will be less, and therefore the edge metal used will likely have lower test resistance results; however, it does still need to have been tested to resist those loads.

RCI Concern

RCI-TA-003-2013 states ANSI/SPRI ES-1 is for “Contractor-certified fabricators/installers only”.

SPRI Response

- The NRCA’s sub-listing program recognizes, in effect, that simply replicating an edge metal profile does not assure that the product was made the same, or more importantly, will perform the same, as what was tested;
- Sub-listed contractors receive fabrication details, and their fabrication facilities are audited to assure that they are producing an edge metal product that is the same as what was tested; and
- This process assures that the building owner receives a product that will perform as well as the Product the NRCA tested.



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(continued)

RCI Concern

RCI-TA-003-2013 states ANSI/SPRI ES-1 “Eliminates engineered design”.

SPRI Response

- Section 104.11 of the International Building Code allows for the use of alternative materials, design and methods of construction and equipment to provide flexibility in dealing with onsite building conditions. However SPRI does not feel the testing requirements in this case are onerous in that the required testing can be completed in a time and cost effective manner;
- Ultimately, it is up to the local code official to determine if the alternative complies with the intent of the code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety; and
- Perimeter edge metal systems typically are composed of several components and fastener types that engage and snap together in varied configurations. As is the case with many other roof systems, the performance of edge metal systems can be difficult to calculate, and testing is the best way to determine load resistance. Furthermore, performing an ES-1 test can frequently be quicker and less costly than using a Professional Engineer review.

RCI Concern

RCI-TA-003-2013 states there have been problems with “Past performance of ‘tested’ / approved systems”.

SPRI Response

- There may be instances where tested assemblies did not perform as expected, but as stated in RCI-TA-003-2013, that likely was due to issues related to field measuring or the as-built conditions;
- Experience has shown that many of the failures were of the wood nailer and not the metal edge system;
- Any product, regardless of whether it has been tested, will not perform as expected if it’s not installed as designed; and
- Numerous reports have shown that perimeter edge failure is much less likely to occur if the metal edge system installed has been shown to resist the wind loads.

Summary

- Perimeter edge metal failure is well documented as a leading cause of low slope roof failures. ANSI/SPRI ES-1 was developed to address that issue;
- The International Code Council recognized that building performance would be improved by requiring that perimeter edge metal be tested according to ANSI/SPRI ES-1, which is why the ES-1 standard has been adopted it into the IBC.
- Roof consultants and the industry as a whole need to be better educated about testing metal edge systems according to ES-1, and to appreciate that systems need only be tested to resist the calculated design load so as to not over design them; and
- The use of edge metal that is tested per ANSI/SPRI ES-1 is currently a Code requirement. To advocate specifying or using a product that does not meet code appears to violate RCI’s Code of Ethics, and would certainly be a disservice to the roofing industry.