

# DESIGN ADVISORY

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Design Advisory Bulletin

TO: Sales Reps, Distributors, and Authorized Applicators

## Warranty Offerings vs. Performance-Based Design

Very often, warranty wind speed offerings become a deciding factor when choosing a roof system among various manufacturers. The manufacturer with the fewest enhancements is frequently selected due to cost, as well as the belief that the assembly offers performance equal to those with additional enhancements.

Even though roof assemblies are formally tested to predict their wind performance, enhancements are incorporated to further aid the assembly in sustaining its level of performance over a number of years. As an example, the FM 1-90 is a static test that subjects the assembly to an increasing pressure that reaches 90 psf (lbs/ft<sup>2</sup>) after only six minutes. Those six minutes do not equate to warranty durations of 10, 15, or 20 years. Even a more severe test, like FM 1-150, only lasts for approximately 10 minutes.

Therefore, enhancements are usually incorporated to safeguard against normal “wear and tear” from foot traffic, daily wind gusts, snow load, heavy rainfall, and possible hailstorms. Depending on warranty duration, wind speed coverage, and factors associated with project location, typical enhancements to an adhered assembly include increasing the number of fasteners, utilizing insulation with higher compressive strength, or incorporating a cover board. **When enhancements are waived by manufacturers, safety factors are diminished, the risk of damages significantly increases, and the potential for warranty dispute is imminent.**

In the North American market, building codes have traditionally dictated the use of design standards in a given location. These codes may address wind and fire performance, as well as other safety measures that assure sustained performance based on building occupancy and importance (i.e. hospitals, fire stations, and schools). While codes do not mandate warranties, they set minimum design standards as a threshold to be followed by designers. Manufacturers, in an effort to meet these design standards, subject their products to testing for use as a basis for design. Whether it is wind- or fire-

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related, testing has always been the basis for product performance, rather than a written statement with numerous “fine print” stipulations.

When enhancements are ignored, an assembly can be expected to perform at a much lower level than what was assumed. In order to fully comprehend the warranty coverage and the building owner’s obligation in the event of a problem, the warranty language, including the fine print, must be reviewed closely and well in advance of the project. A warranty with high wind coverage that allows the use of “metal by others” will not necessarily cover the metal in the event of a failure. A warranty that does not specifically address fastening density and fastener types for metal may disclaim responsibility due to failure of the metal component system. A warranty with high wind speed might deny coverage if the failure was due to facer delamination resulting from roof traffic, which could have been avoided by incorporating insulation board with a higher compressive strength.

It is no mystery why greater wind performance is sacrificed when nothing is added to the system. Taking no actions or not implementing safety measures serves no one’s best interest, and, in the long run, could end up being very costly.

While enhancements to the basis of design are essential to achieving greater performance, they must always be governed by the design parameters set forth for the structure. **Under no circumstances should those parameters be exceeded.** For example, an excessive increase in membrane fasteners may improve wind uplift performance, but could stress the deck attachment to the purlins, resulting in a structural failure.

For your next project, please take into account the above stated conditions when discussing extended warranties with your clients. Our design team will be available to assist you with any project-specific conditions.

Sincerely,



Samir Ibrahim  
Director of Design Services