June 5, 2019

TO: Mo Madani

FROM: Daniel L. Lavrich, P.E.

RE: Water Intrusion Issues

I believe that any leakage of any significance during a minimal storm such as Hurricane Irma should be unacceptable. The fact that fenestrations are only tested to 15% of design pressure capped at 12 psf should be self-evident that the Code Standard as it exists is insufficient to provide adequate protection from water intrusion. The cap of 12 psf relates to a wind speed of about 68 mph., which is far less than the design wind speed anywhere in the State of Florida. (See the 2005 AAMA Document previously submitted, copy attached)

We in Florida are not the only ones studying these issues. ASCE/SEI is currently in the process of finalizing and publishing a document entitled “Prestandard for Performance-based Wind Design” edited by Donald R. Scott, P.E. This document devotes an entire chapter to “Building Envelope Systems Criteria” which includes buildings located in hurricane-prone regions including weatherproofing performance of fenestrations not breached by impact. Although this document will address the issues of water infiltration, it will likely not set mandatory Code required infiltration limits. It will be a Standard, not a Code. Setting of specific criteria is the responsibility of Building Code Bodies such as the Florida Building Code and Florida Building Commission and as such should be adequately addressed in the Code. It is this task that we have undertaken as a Workgroup, to evaluate this criteria and modify as necessary. Failure to do so would be irresponsible on the part of the Workgroup and the Florida Building Commission.

It is my strong belief and conviction that the current standard for water intrusion testing of 15% of design pressure is far too low for the following reasons:

- The testing is for a brand new assembly installed and tested in a laboratory environment.
- There are no provisions or requirements for in situ testing after installation.
- There is no safety factor included as there is for structural performance (150%). As such there is no consideration for even the most minimal wear and tear for minimal age.
- The requirement for 15% of design pressure results in a wind velocity that is considerably lower than the design wind velocity anywhere in the State of Florida. This means that water intrusion can be “expected” during even the most minimal wind events with brand new assemblies installed in the best of fashion. (ie: compared to laboratory conditions with brand new assemblies.)
- There is no justification for the selection of 15% of design pressure to be used as a standard. When asking this question we continue to get an answer of “Well, that’s what has always been used" with no justification for such selection. No one seems to know where it came from.
- How can this criteria continue to be justified and used in the Florida Building Code?

Why is it that an automobile travelling at 80 mph through a heavy rainstorm experiences no water intrusion at all, but windows and doors in a building experiencing an 80 mph rainstorm leak significantly?

Why is it that cruise ships with exterior windows and sliding glass doors experience no leakage whatsoever during heavy seas and driving rainstorms of tropical storm or hurricane intensity?

Perhaps the answer to the two questions listed above is a matter of resolve in setting the design criteria and the performance expectations. Don’t tell me that it can’t be done! I believe that it can be done! The balance of economy vs. performance and benefits is a matter that can be reasonably evaluated and determined.

Although it may be impractical to require that no water intrusion takes place for pressures up to 100% of design pressure, it seems evident that 15% is not adequate.

I believe that the Public has a reasonable expectation that building envelopes will not only resist the structural effects of such storms, but also will resist a reasonable amount of water intrusion during such events.

I sincerely hope that the Workgroup seriously consider these issues and proceed accordingly to determine a reasonable modification to the water intrusion criteria presently in effect. Please don’t sweep it under the table. Don’t let the lobbyists and interest groups control our Building Code.

If it is the intention of the Florida Building Code to provide design requirements for fenestrations relating to water intrusion that allow water intrusion during high wind events such as Tropical Storms and Hurricanes at levels far below wind design limits, then I believe that the Public should be advised of that fact.

WE CAN DO BETTER! THE PUBLIC DESERVES BETTER!

DANIEL L. LAVRICH, P.E., S.I., SECB, F.ASCE, F.SEI