



# TECHNICAL BREIF # 2021-01

## Evaluation Of Roofs After High Wind Events

This Technical Bulletin is provided to address some misconceptions about concrete and clay roofing tile roofs when inspected, repaired or assessed as a result of a high wind event.

First and foremost, the TRI Alliance does not perform formal consumer field evaluations/assessments of roof installations. Trained and licensed roofing professionals can provide the required forensic inspections to determine the actual condition of a roof after a weather or wind event. The trained professional will need to perform a full assessment after the weather or wind event to determine if the roof's condition is in compliance with any and all applicable code(s).

### Code Development

The development of and updates to building codes in order to meet wind uplift design requirements has been an ongoing process, in which the TRI Alliance has reviewed these updates after each code cycle to address the new revisions that might impact concrete and clay roofing tiles. TRI Alliance's code approved installation guides include the necessary information for meeting these code requirements.

Unfortunately, misinterpretations of codes typically as a result of insufficient information or misunderstanding in some cases, has led to confusion in the marketplace. One example is a claim that if the nose of the tile is lifted over 2" the entire roof is not code compliant and must be replaced. This is not representative of testing protocols in the code language. To better understand, a brief history on the code development for fastener uplift resistance is provided. It should be noted that broken tiles on the roof does not necessarily indicate evidence of wind uplift of tiles. Rather, in a high wind event, tiles are typically broken by impact from airborne debris.

The TRI Alliance worked collaboratively with building officials to establish minimum requirements for installation of concrete and clay roofing tiles to comply with the various codes. These minimum requirements and additional code and product information are included in TRI Alliance's code approved installation guides adopted by all TRI Alliance producing members. Please download a copy at <https://tileroofing.org/industry/installation-guides/>

### TRI Alliance Industry Research

After Hurricane Andrew in 1994, the tile roofing industry worked in partnership with the various building officials in the development of specific code language and test protocols to help improve performance of roofing tiles in high wind designated areas such as Florida. Those efforts led to the formal building codes in place today. TRI Alliance's industry-based and code approved installation guides summarize these efforts in the various tables to provide the engineered wind uplift forces and resistance values for various tested fastening options. This information helps the design professional and roofing community meet the required codes for specific code designated design wind speeds. All this information was based upon extensive research performed in 1988 at the Redland Research Centre in the UK, one of the few full-scale wind tunnel research centers in the world capable of achieving wind speeds in excess of 130 MPH for roofing materials.

This research quantified actual wind performance of roofing tiles on a steep slope roof design resulting in specific uplift resistance values for various fastening options. In addition, the TRI Alliance performed product specific uplift resistance testing in laboratory-controlled testing facilities on newly constructed plywood roof decks to generate the full table of values for mechanical fastening methods utilizing specific nails, screws and/or clips.

The laboratory wind tunnel testing conducted by the TRI Alliance concluded that wind forces that lift of the nose-end of an individual tile more than 2" would likely have sufficient force to continue lifting the tile until failure of the fastening system. The mechanical fastening values found in the TRI Alliance's installation manuals are in accordance with the code referenced test standards.

### Summary

The code standards provide specific installation conditions and rate of uplift load application at specific attachment points on a roof tile. They do not prescribe, validate or support a process of prying the tile to reach a 2" threshold. Lifting one or more tiles 2" does not determine whether or not the tile or roof is compliant to the building codes.

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