Recommendations

Evaluation that results in criticism of design and construction should of course include recommendations for improvements.

Valley Truss Connections

- ☑ If any party seeks to demonstrate that valley truss connections made with two nails or single screw have adequate design capacity, such party should have load testing performed (by independent testing agency) so that accurate values of failure load (and allowable capacity) can be obtained.

Cost of load testing by qualified testing agency should be quite modest, especially considering the relatively large potential cost savings (avoidance) if testing shows favorable results. However, even if testing shows unfavorable results, resulting in the need for extensive remedial work, the eventual savings from preventing severe damage during a hurricane will be well worth the effort for homeowners.

Before plans for remedial work are developed, the following additional engineering evaluation should be performed;

1. Determine extent of houses for which Exposure Category C is applicable. Remedial work should be focused on such houses (if any) first.
2. Determine if published research exists to show that Zone 2 pressures are not required along valley lines. If so, design uplift force for some connections could be reduced, which might reduce number of connections to be upgraded.

Further Structural Analysis

Defects such as inadequate valley truss connections are often an indication of additional deficiencies with design and construction ("tip of the iceberg").

- ☑ Further structural analysis should be performed to evaluate complete wind resistance capacity of as-designed and as-built houses.

Further structural analysis would have to be obtained by homeowners from qualified professional engineer licensed in South Carolina.

Brief review of limited building design plan details obtained for this report indicates that overall design for wind resistance (for houses that were built according to available design plans) is most likely adequate, at least for houses where Exposure Category B is applicable. Plans specify various necessary details, such as tiedown connectors for main roof trusses and header beams supporting roof trusses. Interior shearwalls are also specified.