

Exam 3: Cat Risk Management Insurance Fundamentals

Part C – Module Title: Number of Stories (Building Height)

Study Note

Learning Objective:

Explain why number of stories is an important indicator of hurricane damage.

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Number of stories is one of the primary risk characteristics that model vendors use to differentiate hurricane vulnerability. Model vendors group the number of stories together into bands to differentiate the vulnerability of a low-rise structure from a mid-rise or high-rise structure.

Wind speed increases with altitude. Winds near the earth's surface are reduced due to surface friction, as winds interact with the terrain, landscape and infrastructure. At higher altitudes, wind speeds increase due to the lack of surface friction.

Despite the higher wind speeds at higher altitudes, a mid-rise or high-rise structure will generally result in less hurricane damage than a low-rise structure. The main reason for this is that mid-rise and high-rise structures are engineered, while some low-rise structures may be permitted to be constructed without direct oversight from an engineer.

Under certain guidelines, low-rise structures may be permitted to be constructed with a series of prescriptive standards. Prescriptive standards provide a set of building requirements that a contractor must follow. Examples include the nailing pattern in a roof deck or the type of connections used for attaching the roof to the wall frame. These are acceptable standards, but do not require the direct involvement of an engineer in the design and construction process.

Mid-rise and high-rise structures are too large to meet the guidelines of prescriptive standards and are required to be designed and constructed with direct involvement from a licensed professional engineer. The engineer will provide detailed building plans for the contractor that are specific to the structure that will be constructed. The engineer is often directly involved in the inspection of the building once it has been constructed to ensure it was built according to his or her plans.

Due to the direct involvement of the engineer during the design and construction process, mid-rise and high-rise structures often result in less hurricane damage, when compared to low-rise structures. Even though the taller structures are subject to higher wind loads, these structures are specifically designed to resist these loads. Non-engineered low-rise construction standards are much less rigorous, and therefore more likely to sustain damage when exposed to the same hazard.