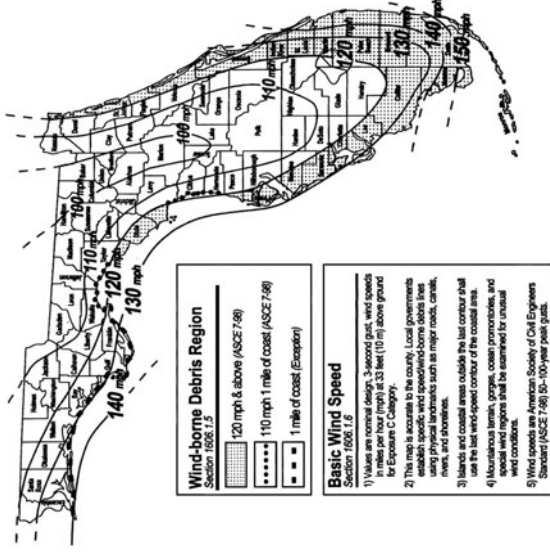
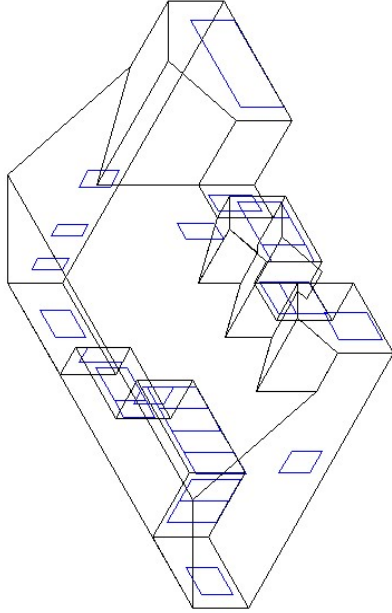
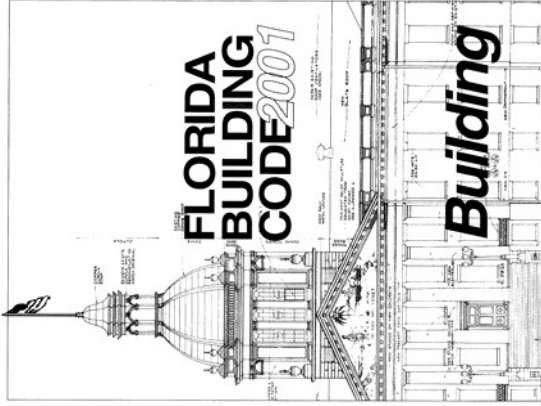


Florida Department of Community Affairs

## Development of Loss Relativities for Wind Resistive Features of Residential Structures



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## 2.0 METHODOLOGY

### 2.1 Approach

The fundamental approach used herein to develop the loss relativities is to analyze individually-modeled buildings at numerous locations in Florida. Each building is modeled with a specific set of wind-resistive features. The HURLOSS methodology has been used to analyze each modeled building for damage and loss.

The loss costs are estimated for a specified set of insurance parameters: Coverage A (building), C (contents), and D (additional living expenses) limits and deductible. This process is repeated for a large combinatorial set of wind-resistive features for a number of Florida locations (latitude-longitude points).

For each location, the loss relativities are produced by dividing by the loss costs for a selected “central” house. Therefore, the relativities at each location are simply normalized fractions that provide a measure of the differences in loss based on wind resistive features.

The approach used in this study is to develop loss relativities for existing construction (non-FBC 2001) and new construction (FBC 2001) separately. This separation recognizes the changes brought about by the new code and the fact that the methods used to verify that the construction features may be different for existing and new construction. However, for practical reasons, we use a common set of locations in Florida (as described in Section 2.3) to analyze the separate loss relativities for existing and new construction.

As illustrated by the figures in Section 1.4, many key wind features focus on the roof details and openings. Verification of the presence or absence of wind resistive

construction features for existing construction, therefore, cannot be practically accomplished without an “inspection”. Most such “inspections” can be done in a 20-40 minute period depending on the size of the house and criteria adopted by the insurer. In the absence of an “inspection”, there is no reasonably accurate way to “rate” an existing residence for purposes of providing loss mitigation credits or discounts. More discussion on this topic appears in Section 3 and Appendix C.

For new construction, the FBC (Section 1606.1.7) requires the that drawings for new construction summarize key design information. This information should be useful for insurance rating purposes. In addition, insurers may wish to or need to perform an inspection of the building or require documentation from the builder.

### 2.2 Florida Building Code Wind Regions, Terrains, and Design Options

Figure 2-1 illustrates the wind speed map for the Florida Building Code (FBC 2001, Figure 1606). The wind speed contours start at 100 mph and go to 150 mph.<sup>1</sup> For buildings located between contours, interpolation is allowable for design. In the absence of interpolation between contours, the building will be designed to the higher of the wind speed contours.

#### 2.2.1 Wind-Borne Debris Region

The FBC introduces a Wind-Borne Debris Region where all openings that are not protected with shutters or impact resistant glass

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<sup>1</sup> It is possible that some engineers could interpolate to slightly less than 100 mph in the region inside the 100 mph contour since ASCE 7-98 allows interpolation between basic wind contours.

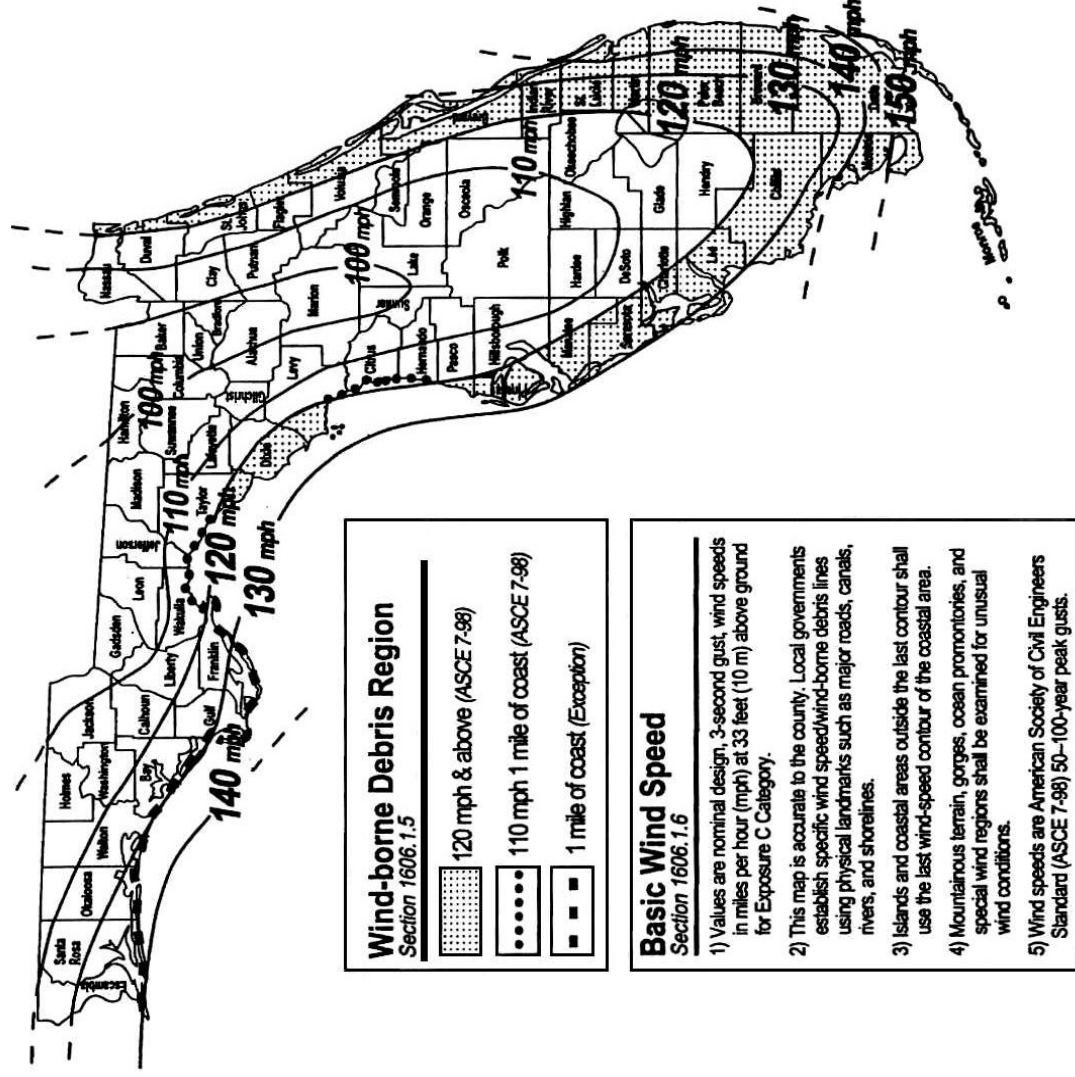


FIGURE 1606  
STATE OF FLORIDA  
WIND-BORNE DEBRIS REGION & BASIC WIND SPEED

Figure 2-1. Wind Regions in Florida Building Code

are considered to be open. This means a designer has the option of designing the structure as an enclosed building or as a partially enclosed building where the design assumes that wind entering the building adds to the load on the structure.

The Wind-Borne Debris Region (FBC, Section 1606.1.5) includes all areas where the basic wind speed is 120 mph or greater (shaded area of Fig. 2-1) except for the eastern border of Franklin County to the Florida-Alabama line

where the region includes areas only within 1 mile of the coast. It also includes areas of Citrus, Hernandes, and Levy Counties that are within 1 mile of the coast (see Fig. 2-1).

## 2.2.2 Terrain Exposure Category

The Florida Building Code has adopted the Exposure Category (terrain) definitions of ASCE-7 with a few important exceptions (see FBC, Sections 1606.1.8 and 1619.3):