specified in this standard, which are also appropriately constructed and maintained, should have a high probability of surviving hurricanes of the intensity shown in Tables C26.5-4 and C26.5-5 without serious structural damage.

Tables C26.5-2 through C26.5-5 are intended to help users of the standard to better understand design wind speeds as used in this standard in the context of wind speeds reported by weather forecasters and the news media, who commonly use the Saffir–Simpson Hurricane Scale. The Exposure C gust wind speed values given in Table C26.5-2 through C26.5-5 that are associated with a given sustained wind speed should be used as a guide only. The gust wind speeds associated with a given sustained wind speed may vary with storm size and intensity as suggested in Applied Research Associates (2001) and Vickery et al. (2009), in addition to the choice of a gust factor model.

Serviceability Wind Speeds. For applications of serviceability, design using maximum likely events, or other applications, it may be desired to use wind speeds associated with mean recurrence intervals other than those given in Figs. 26.5-1A to 26.5-1C. To accomplish this, previous editions of ASCE provided tables in the commentary with factors that enabled the user to adjust the basic design wind speed (previously having a return period of 50 years in the nonhurricane-prone region) to wind speeds associated with other return periods. Separate tables were given for the contiguous United States and Alaska. The standard indicated that the adjustment of the hurricane wind speeds to other return periods was approximate.

For applications of serviceability, design using maximum likely events, or other applications, Appendix C presents maps of peak gust wind speeds at 33 ft (10 m) above ground in Exposure C conditions for return periods of 10, 25, 50, and 100 years.

The probability P_n that the wind speed associated with a certain annual probability P_a will be equaled or exceeded at least once during an exposure period of n years is given by

$$P_n = 1 - (1 - P_a)^n \qquad \text{(C26.5-7)}$$

As an example, if a wind speed is based upon $P_a = 0.02$ (50-year mean recurrence interval), there exists a probability of 0.40 that this speed will be equaled or exceeded during a 25-year period, and a 0.64 probability of being equaled or exceeded in a 50-year period.

Similarly, if a wind speed is based upon $P_a = 0.00143$ (700-year mean recurrence interval), there exists a 3.5% probability that this speed will be equaled or exceeded during a 25-year period, and a 6.9% probability of being equaled or exceeded in a 50-year period.

Some products have been evaluated and test methods have been developed based on design wind speeds that are consistent with the unfactored load effects typically used in Allowable Stress Design. Table C26.5-6 provides conversion from the strength design-based design wind speeds used in the ASCE 7-10 design wind speed maps and the ASCE 7-05 design wind speeds used in these product evaluation reports and test methods. A column of values is also provided to allow coordination with ASCE 7-93 design wind speeds.

C26.5.2 Special Wind Regions

Although the wind speed map of Fig. 26.5-1 is valid for most regions of the country, there are special regions in which wind speed anomalies are known to exist. Some of these special regions are noted in Fig. 26.5-1. Winds blowing over mountain ranges or through gorges or river valleys in these special regions can develop speeds that are substantially higher than the values indicated on the map. When selecting basic wind speeds in these special regions, use of regional climatic data and consultation with a wind engineer or meteorologist is advised.

It is also possible that anomalies in wind speeds exist on a micrometeorological scale. For example, wind speed-up over hills and escarpments is addressed in Section 26.8. Wind speeds over complex terrain may be better determined by wind-tunnel studies as described in Chapter 31. Adjustments of wind speeds should be made at the micrometeorological scale on the basis of wind engineering or meteorological advice and used in accordance with the provisions of Section 26.5.3 when such adjustments are warranted. Due to the complexity of mountainous terrain and valley gorges in Hawaii, there are topographic wind speed-up effects that cannot be addressed solely by Fig. 26.8-1 (Applied Research Associates 2001). In the Hawaii Special Wind Region, research and analysis have established that there are special K_{zt} topographic effect adjustments (Chock et al. 2005).

C26.5.3 Estimation of Basic Wind Speeds from Regional Climatic Data

When using regional climatic data in accordance with the provisions of Section 26.5.3 and in lieu of the basic wind speeds given in Fig. 26.5-1, the user is cautioned that the gust factors, velocity pressure exposure coefficients, gust effect factors, pressure coefficients, and force coefficients of this standard are