Windborne Debris - Impact Resistant Glazing Requirements
(Residential Code Only)


Answer: No. In explanation, Massachusetts has amended the IRC definition of Windborne Debris Region to read:

Areas within hurricane-prone regions located in accordance with one of the following:

1. Within one mile (1.61 km) of the coastal mean high water line where the nominal design wind speed, \( V_{asd} \), is 130 mph (58 m/s) or greater.
2. In areas where the nominal design wind speed, \( V_{asd} \), is 140 mph (63.6 m/s) or greater.

Since Massachusetts has modified the definition by referring to nominal speed, the code user needs to convert \( V_{ult} \) to \( V_{asd} \). Values of \( V_{ult} \) are found in Table R301.2(4), a portion of which is appended below. The highest \( V_{ult} \) identified in the table is 140 mph (see Eastham).

**TABLE 301.2(4) SNOW LOADS AND WIND SPEEDS**

<table>
<thead>
<tr>
<th>City/Town</th>
<th>Ground Snow Load, ( P_g ) (psf)</th>
<th>Minimum Flat Roof Snow Load, ( P_{r1} ) (psf)</th>
<th>Basic Wind Speed, ( V_{ult} ) (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dover</td>
<td>40</td>
<td>35</td>
<td>128</td>
</tr>
<tr>
<td>Dracut</td>
<td>50</td>
<td>30</td>
<td>122</td>
</tr>
<tr>
<td>Dudley</td>
<td>50</td>
<td>35</td>
<td>126</td>
</tr>
<tr>
<td>Dunstable</td>
<td>50</td>
<td>35</td>
<td>121</td>
</tr>
<tr>
<td>Duxbury</td>
<td>30</td>
<td>30</td>
<td>135</td>
</tr>
<tr>
<td>E. Bridgewater</td>
<td>35</td>
<td>30</td>
<td>133</td>
</tr>
<tr>
<td>E. Brookfield</td>
<td>50</td>
<td>35</td>
<td>122</td>
</tr>
<tr>
<td>E. Longmeadow</td>
<td>35</td>
<td>35</td>
<td>121</td>
</tr>
<tr>
<td>Eastham</td>
<td>25</td>
<td>25</td>
<td>140</td>
</tr>
</tbody>
</table>

To convert \( V_{ult} \) to \( V_{asd} \) the code user must refer to Table R301.2.1.3 of the IRC (see table on next page).
As identified in Table 301.2(4) above, Eastham has a $V_{ult}$ of 140 mph. The associated $V_{asd}$ in Table R301.2.1.3 is 108 mph.

According to Section R301.2.1.2 Protection of openings. Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirement of the Large Missile Test of ASTM E 1996 and ASTM E 1886 as modified in Section 301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting stander or ANSI/DASMA 115.

Exception: Wood Structural panels with a thickness of not less than 7/16 inch (11 mm) and a span of not more than 8 feet (2438 mm) shall be permitted for opening protection. Panels shall be precut and attached to the framing surrounding the opening contain the product with glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.5(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.5.4.5 is permitted for buildings with a mean roof height of 45 feet (13,728 mm) or less when the ultimate design wind speed, $V_{ult}$, is 180 mph (9290 kph) or less.

Since Massachusetts modified the definition of Windborne Debris Region, the highest value for $V_{ult}$ anywhere in the commonwealth is 140 mph and converting to $V_{asd}$ reduces this value to 108 mph. Therefore, windborne debris protection is not triggered.

Although recent data, research and modeling have indicated slightly less wind speeds than historically predicted in around the Cape and other high-wind areas, the IRC 2015 increased the geographical area requiring windborne debris protection. Further investigation suggested that new wind speeds in the extended windborne area are actually less than the wind speed that triggered windborne debris requirements in the 2009 IRC. With that consideration, and not finding any historical evidence indicating that windborne debris has been a primary cause of major structural damage in single- and two-family homes, the Board decide to revise windborne debris requirements in the ninth edition code; thereby simplifying design and construction and significantly reducing costs.

However, please note that, due to the nature of buildings designed under the International Building Code (IBC), the definition of Wind-Borne Debris Regions was not revised in the ninth edition base code. Therefore, protection requirements for other building types would apply as specified in the 2015 IBC (portions of which are provided below).
CHAPTER 2 DEFINITIONS

WHEELCHAIR SPACE. A space for a single wheelchair and its occupant.

[B5] WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the coastal mean high water line where the ultimate design wind speed, \(V_{ult}\), is 130 mph (58 m/s) or greater; or
2. In areas where the ultimate design wind speed is 140 mph (63.6 m/s) or greater.

For Risk Category II buildings and structures and Risk Category III buildings and structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3.(1). For Risk Category IV buildings and structures and Risk Category III health care facilities, the wind-borne debris region shall be based on Figure 1609.3(2).

CHAPTER 16 STRUCTURAL DESIGN

1609.1.2 Protection of openings.

In wind-borne debris regions, glazing in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of an approved impact-resistant standard or ASTM E1996 and ASTM E1886 referenced herein as follows:

1. Glazed openings located within 30 feet (9144 mm) of grade shall meet the requirements of the large missile test of ASTM E1996.
2. Glazed openings located more than 30 feet (9144 mm) above grade shall meet the provisions of the small missile test of ASTM E1996.