Windborne Debris Protection

Code: 2012 Residential Code  
Section: R301.2.1.2  
Date: December 18, 2012

Question:
Is windborne debris protection required for windows, doors and glazing in exterior walls of coastal dwellings?

Answer:
Yes. See the attached illustrations for requirements.

Question:
For an existing dwelling, are windows that:
1. Replace only a glazing panel and not an entire window sash required to meet the windborne debris protection requirements?
2. Replace only the sash required to meet the windborne debris protection requirements?
3. Replace the window but do not remove the existing window frame required to meet the windborne debris protection requirements?
4. Replace the window including the window frame required to meet the windborne debris protection requirements?

Answer:
1. No. This is considered maintenance and will not require the addition of windborne debris protection unless it was provided prior to the replacement.
2. No. This is considered maintenance and will not require the addition of windborne debris protection unless it was provided prior to the replacement.
3. Yes. This is considered an alteration. The window must meet the current code requirements and the window must be provided with windborne debris protection.
4. Yes. This is considered a renovation. The window must meet the current code requirements and the window must be provided with windborne debris protection.
Question: Will an addition to the dwelling such as a sunroom, bathroom, bedroom, etc. require the entire building to be brought up to current code for windborne debris protection?

Answer: No, the new addition must comply with the current code requirements. The unaffected existing portion of the building may remain as-is, assuming it complied with the code under which it was originally built.
### 130 MPH Design Wind Speed or Less

#### Wood Structural Panel Fastener Schedule

<table>
<thead>
<tr>
<th>Fastener Type</th>
<th>Panel Span 5'4&quot;</th>
<th>4'-0&quot; Panel Span</th>
<th>6'-0&quot; Panel Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8 Wood Screws</td>
<td>16&quot; O.C.</td>
<td>10&quot; O.C.</td>
<td>8&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; End Embedment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#10 Wood Screws</td>
<td>16&quot; O.C.</td>
<td>12&quot; O.C.</td>
<td>9&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; End Embedment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4&quot; Lag Screws</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; End Embedment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fastener Pattern**

**Fastener Notes**:

A. This table is based on 130 MPH maximum wind speed (3 sec. gust) and a 33 foot mean roof height or less. When mean roof height exceeds 33'-0", design plywood fasteners per ASCE 7-05.

B. Fasteners shall be installed at opposing ends of the wood structural panel. Fasteners shall be located a minimum of 12" from the panel edge. Specified fasteners are minimum. Additional fasteners may be required.

C. Fasteners shall be long enough to penetrate through the exterior wall covering a minimum of 2" into the building frame. Fasteners shall be located a minimum of 22" from the edge of concrete block or concrete.

D. Where screws are attached to masonry or masonry/stucco, they shall be attached utilizing vibration-resistant anchors having a minimum ultimate withdrawl capacity of 1500 lbs.

E. Plywood must be onsite, cut to fit openings, and drilled for fasteners prior to issuing the Certificate of Occupancy.

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**NC Dept of Insurance**

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**North Carolina Department of Insurance**

Office of State Fire Marshal

**Wind Borne Debris Protection**

2012 NC Residential Code

Code Section R301.2.1.2

**One or Two Story Dwelling**

Date: 06/09/10
Dwg No. 1 of 5
Scale: N/A
Rev: 1
TABLE

<table>
<thead>
<tr>
<th>FASTENER TYPE</th>
<th>PANEL SPAN ≤4'-0&quot;</th>
<th>4'-0&quot;&lt;PANEL SPAN ≤6'-0&quot;</th>
<th>6'-0&quot;&lt;PANEL SPAN ≤8'-0&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6 WOOD SCREWS</td>
<td>16&quot; O.C.</td>
<td>10&quot; O.C.</td>
<td>8&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; EMBEDMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#8 WOOD SCREWS</td>
<td>16&quot; O.C.</td>
<td>12&quot; O.C.</td>
<td>9&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; EMBEDMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2&quot; LAG SCREWS</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; EMBEDMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FASTENER NOTES:**

A. **THIS TABLE IS BASED ON 130 MPH MAXIMUM WIND SPEED (5 SEC. GUST) AND A 35 FOOT MEAN ROOF HEIGHT OR LESS. WHEN MEAN ROOF HEIGHT EXCEEDS 35 FOOT DESIGN PLYWOOD FASTENERS PER ASCE 7-05.**

B. FASTENERS SHALL BE INSTALLED AT OPPOSING ENDS OF THE WOOD STRUCTURAL PANEL. FASTENERS SHALL BE LOCATED A MINIMUM OF 1" FROM THE PANEL EDGE. SPECIFIED FASTENERS ARE MINIMUM. ADDITIONAL FASTENERS MAY BE REQUIRED.

C. FASTENERS SHALL BE LONG ENOUGH TO PENETRATE THROUGH THE EXTERIOR WALL COVERING A MINIMUM OF 2" INTO THE BUILDING FRAME. FASTENERS SHALL BE LOCATED A MINIMUM OF 2" FROM THE EDGE OF CONCRETE BLOCK OR CONCRETE.

D. WHERE SCREWS ARE ATTACHED TO MASONRY OR MASONRY/STUCCO, THEY SHALL BE ATTACHED UTILIZING VIBRATION-RESISTANT ANCHORS HAVING A MINIMUM ULTIMATE WITHDRAWAL CAPACITY OF 1000 LBS.

E. PLYWOOD MUST BE ONSITE CUT TO FIT OPENINGS, AND DRILLED FOR FASTENERS PRIOR TO ISSUING THE CERTIFICATE OF OCCUPANCY.

**NOTE:** THIS DRAWING IS A SCHEMATIC REPRESENTATION OF CODE REQUIREMENTS.

**WIND BORNE DEBRIS PROTECTION**

2012 NC RESIDENTIAL CODE

CODE SECTION R301.2.1.2

**ONE OR TWO STORY DWELLING ON PILES**

**DATE**
06/09/10

**DWG NO.**
3 OF 5

**SCALE**
N/A

**REV**
1
ATTIC STORY:
ANY STORY SITUATED WHOLLY OR PARTLY IN THE ROOF, SO DESIGNATED, ARRANGED, OR BUILT AS TO BE USED FOR STORAGE OR HABITATION. IF AN ATTIC THAT IS ACCESSIBLE BY A FIXED STAIRWAY HAS A SEVEN FOOT CLEAR HEIGHT GREATER THAN 50% OF THE FLOOR AREA OF THE STORY BELOW, THEN THE SPACE SHALL BE CONSIDERED AS A STORY.

TABLE R301.2.12

<table>
<thead>
<tr>
<th>FASTENER TYPE</th>
<th>PANEL SPAN</th>
<th>4'-0&quot; PANEL SPAN</th>
<th>6'-0&quot; PANEL SPAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8 WOOD SCREWS 2&quot; EMBED</td>
<td>16&quot; O.C.</td>
<td>10&quot; O.C.</td>
<td>8&quot; O.C.</td>
</tr>
<tr>
<td>#10 WOOD SCREWS 2&quot; EMBED</td>
<td>16&quot; O.C.</td>
<td>12&quot; O.C.</td>
<td>9&quot; O.C.</td>
</tr>
<tr>
<td>2&quot; LAG SCREWS 2&quot; EMBED</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
<td>16&quot; O.C.</td>
</tr>
</tbody>
</table>
NOTE # 1: The following are options for protecting exterior openings in one or two story dwellings, (see Dwgs 1 and 2) and on the lower two floors of two and a half or three story dwellings (see Dwg. 3 and 4) where these structures are located in windborne debris regions. Dwellings may be founded on shallow foundation or piles:

Option A*: Provide impact-resistant coverings, excluding wood structural panels per Option C, to protect glazed openings as addressed in R301.2.12 of the 2012 NC Residential Code. Attachment of the coverings shall be designed in accordance with either Table R301.2[2]** or ASCE 7.

-OR-

Option B: Provide impact-resistant glazing in openings, as addressed in R301.2.12 of the 2012 NC Residential Code. See Section R612 of the Residential Code for design and anchorage requirements.

-OR-

Option C: Provide 7/16" (min. thickness) wood structural panels to protect glazed opening in one and two story dwellings, as addressed in the Exception under Section R301.2.12 of the 2012 NC Residential Code, with panel attachment to comply with either of the following:

- Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2[2]** of the 2012 NC Residential Code or the provisions of ASCE 7-05 Standard. [Minimum Design Loads for Buildings and Other Structures]. See Figure R301.2[7] for location of component & cladding pressure zones on a dwelling.

- Attachment in accordance with Table R301.2.12 of the 2012 NC Residential Code shall be permitted for dwellings with a mean roof height of 20 feet or less where wind speeds do not exceed 150 miles per hour (see Drawings No. 1-4).

NOTE # 2: The following are options for protecting exterior openings on a floor above the second floor in two and a half or three story dwellings (see Dwg. No. 2) and in two and a half story or three story dwellings on pilings (see Dwg. No. 4) where these structures are located in windborne debris regions:

Option A*: Provide impact-resistant coverings, excluding wood structural panels, at openings, as addressed in R301.2.12 of the 2012 NC Residential Code. Attachment of the coverings shall be designed in accordance with either Table R301.2[2]** or ASCE 7.

-OR-

Option B: Provide impact-resistant glazing to protect openings, as addressed in R301.2.12 of the 2012 NC Residential Code. See Section R612 of the NC Residential Code for design and anchorage requirements. See Section R612 of the 2012 NC Residential Code for design and anchorage requirements.


Table R301.2[1] of the NC Residential Code is based on a mean roof height of 30 feet located in Exposure B (exposures defined in Section R301.2.1.4. For adjustment of mean roof height and exposure category in Table R301.2[2], see Table R301.2[3].
Keywords:
Glazing, hurricane, high wind