**Structural Technical Advisory Committee – Comment**

**6th Edition (2017) Florida Building Code, Existing Building**

S/R – Comment #1

**6th Edition (2017) FBC, Existing Building Section 707.3.2**

**Proposed revision**

**Submitted by: Lisa Pate, FRSA**

**706.3.2 Roof diaphragms resisting wind loads in high-wind regions.**   
Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building and where reroofing is a substantial improvement (see definition Chapter 2, section 202 General Definition, B) located where the ultimate design wind speed, V*ult*, is greater than 115 mph, as defined in Section 1609 (the HVHZ shall comply with Section 1620) of the *Florida Building Code, Building*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *Florida Building Code, Building*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *Florida Building Code, Building*.

\* new language

**[B] SUBSTANTIAL IMPROVEMENT.**Any *repair,*reconstruction, rehabilitation, alteration, *addition*or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or *repair*is started. If the structure has sustained *substantial damage,* any repairs are considered substantial improvement regardless of the actual *repair*work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the *building official*and that is the minimum necessary to ensure safe living conditions; or

2. Any *alteration*of a historic structure, provided that the *alteration*will not preclude the structure’s continued designation as a historic structure.

**Reason:** This section as written requires a simple roof covering replacement to be the trigger mechanism for a complete structural evaluation and possible retrofitting of the roof diaphragm. The burden that this places on the building owner is substantial. Many buildings that were built in compliance with the building code at the time of their construction, cannot meet these requirements without complete replacement of the roof deck (diaphragm). In many cases, it would be more economical to demolished an otherwise perfectly functional building. On many other buildings, the cost for retrofitting the deck will be substantially more expensive than the roof covering replacement. Many building owners may decide to forgo replacement due to these extensive costs. In other cases, they may decide to add an additional roof covering over their existing roof covering (recover), which will eliminate the opportunity to inspect and repair any type of deficiencies with the deck. 

A thorough review of the process of adopting this section shows that the substantial financial ramifications of its implementation have never been evaluated.

This suggested change will limit the application of this section to buildings undergoing an alteration (roof covering replacement) that is considered a "substantial improvement" based on the value of the structure.

**See also Attachment #1**

**TAC Recommendation:** Commissioner Compton entered a motion for a negative roll call for comment #1. Commissioner Schock seconded the motion. The vote was 0 in favor and 11 opposed outcome is NAR.

**Commission Action:** Commissioner Schock entered a motion for purpose of a negative roll call. Commissioner Compton seconded the motion. The vote was 1 in favor and 24 against with outcome of NAR.

S/R – Comment #2

**6th Edition (2017) FBC, Existing Building Section 707.3.2**

**Proposed revision**

**Submitted by: Lisa Pate, FRSA**

**707.3.2 Roof diaphragms resisting wind loads in high-wind regions.**

Where ~~roofing materials are removed from~~ more than ~~50~~ 25 percent of the roof diaphragm ~~or section~~ ~~of~~ is replaced or repaired on a building located where the ultimate design wind speed, V*ult*, is greater than 115 mph, as defined in Section 1609 (the HVHZ shall comply with Section 1620) of the *Florida Building Code, Building*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *Florida Building Code, Building*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *Florida Building Code, Building*.

**Reason:** This section as written requires a simple roof covering replacement to be the trigger mechanism for a complete structural evaluation and possible retrofitting of the roof diaphragm. The burden that this places on the building owner is substantial. Many buildings that were built in compliance with the building code at the time of their construction, cannot meet these requirements without complete replacement of the roof deck (diaphragm). In many cases, it would be more economical to demolished an otherwise perfectly functional building. On many other buildings, the cost for retrofitting the deck will be substantially more expensive than the roof covering replacement. Many building owners may decide to forgo replacement due to these extensive costs. In other cases, they may decide to add an additional roof covering over their existing roof covering (recover), which will eliminate the opportunity to inspect and repair any type of deficiencies with the deck.

A thorough review of the process of adopting this section shows that the substantial financial ramifications of its implementation have never been evaluated.

This suggested change will replace the current trigger mechanism with one more appropriate for the structural section in which it appears. It uses a similar approach to that used in section 706.1.1 which states: (Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12 month period unless the entire existing roofing system or roof section is replaced to conform to the requirements of this code). As with 706.1.1 it uses the repair or replacement of the diaphragm (as opposed to the roof covering replacement) as the trigger.

**See also Attachment #1**

**TAC Recommendation:** Commissioner Schock entered a motion for a negative roll call for comment #2. Mr. Lavrich seconded the motion. The vote was 2 in favor and 9 opposed outcome is NAR

**Commission Action:** Commissioner Schock entered a motion for purpose of negative roll call. Commissioner Compton seconded the motion. The vote was 2 in favor and 23 against with outcome of NAR.

S – Comment #3

**6th Edition (2017) FBC, Residential**

**Proposed revision**

**Submitted by: T. Eric Stafford**

**6th Edition (2017) Florida Building Code, Residential**

**Structural Correlation Issues**

**Item 1**

**R301.2.1.1 Wind limitations and wind design required.** The prescriptive provisions of this code for wood construction, cold-formed steel light-frame construction, and masonry construction shall not apply to the design of buildings where the ultimate design wind speed, Vult, from Figure R301.2(4) equals or exceeds 115 miles per hour (51 m/s. The prescriptive provisions of this code include the sizing and attachment requirements specified in Sections R502, R503, R505 R602, R603, R606, R802, and R804.  
  
**Exceptions:**   
  
1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R401, R402, R404 and R608.   
  
2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R610.   
  
3. Roof sheathing shall be installed in accordance with Section R803.

**Reason:** A clarification to coordinate with Mod S6606. Mod S6606, which was approved as modified, added new language to clarify that the prescriptive framing/construction requirements in the code do not apply. A list of specific section numbers was added to state specifically which sections of the code the prescriptive provisions refer to. However, Section R505 (cold-form steel floor framing) was inadvertently omitted. Exception 3 clarifies that the roof sheathing attachment provisions in Section R803 apply even though they are prescriptive requirements.

**TAC Recommendation:** Commissioner Compton entered a motion to approve the comment. Commissioner Schock seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action:** See Item 3.

**Item 2**

**R703.3.2 Fasteners.** Exterior wall coverings shall be securely fastened with aluminum, galvanized, stainless steel or rust-preventative coated nails ~~or staples~~ in accordance with Table R703.3(1) or with other approved corrosion-resistant fasteners in accordance with the wall covering manufacturer’s installation instructions. Nails ~~and staples~~ shall comply with ASTM F 1667. Nails shall be T-head, modified round head, or round head with smooth or deformed shanks. ~~Staples shall have a minimum crown width of~~ ~~7~~~~/~~~~16~~ ~~inch (11.1 mm) outside diameter and be manufactured of minimum 16-gage wire.~~ Where fiberboard, gypsum, or foam plastic sheathing backing is used, nails ~~or staples~~ shall be driven into the studs. Where wood or wood structural panel sheathing is used, fasteners shall be driven into studs unless otherwise permitted to be driven into sheathing in accordance with either the siding manufacturer’s installation instructions or Table R703.3.2.

**Reason:** Correlation with Mod S6733. Mod S6733, which was approved as submitted, deleted the prescriptive attachments for wall coverings that specified stapled connections. Section R703.3.2 is a new section to the based code and was overlooked when submitting the original code change. The above language simply coordinates with the intent of Mod S5733.

**TAC Recommendation:** Commissioner Compton entered a motion to approve the comment. Mr. Lavrich seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action:** See Item 3.

**Item 3**

**TABLE R301.2(2) COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD) (psf)a, b, c, d, e, f**

*(table values not shown for brevity)*

*(no change to Notes a through e)*

f. Table values have been multiplied by 0.6 to convert component and cladding pressures to ASD.

**Reason:** The component and cladding loads specified in Table R301.2(2) are departure from the previous two editions. In the 2010 FBCR and the 5th Edition (2014) FBCR the loads in the table were shown as strength design-level or “ultimate” loads and were permitted to be multiplied by 0.6 to convert to an ASD level. During the development of the 2010 FBCR and the 5th Edition (2014) FBCR, the base code (IRC) had not been updated to account for the new strength design-level wind speeds in ASCE 7. However, the base code for the 6th Edition (2017) FBCR (2015 IRC) has been updated. The decision was made to put the strength design-level wind speeds in the column headings but tabulate ASD-level design wind pressures. This has the potential to be confusing particularly in Florida where this simplified table used an alternate approach. The new proposed note does not change anything from a technical standpoint. It is simply an additional pointer that the loads have already been converted to ASD.

**TAC Recommendation:** Commissioner Compton entered a motion to approve the comment. Mr. Lavrich seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action:** Commissioner Schock entered a motion to approve the comments on Items 1, 2 and 3. Commissioner Schiffer seconded the motion. The motion passed unanimously with a vote of 23 to 0 with three Commissioners out of the room at the time of the vote.

S – Comment #4

**6th Edition (2017) FBC, Building**

**JDB Code Services, Inc.**

February 8, 2017

**To:** Florida Building Commission

**From:** Joseph D. Belcher

**Subject:** Correction of References to Correlate the Update to TMS 402 and 602-2016 for the April 2017 Rule Development Workshop

As requested, I am submitting the following reference corrections to incorporate section changes in the FBC 6th Edition (2017) to correlate the update to the TMS 402 and 602-2016 Editions. There are no changes to the provisions previously approved. However, the lead sentence of Section 2122.8.2 is modified as suggested by Mr. Daniel Lavrich of the Structural TAC.

**Text is as contained in Florida Supplement to the 2015 IBC *Chapters 1-35* ICC EDIT VERSION. Changes to correct references are shown in red text.**

***Section 2107. Add Section 2107.6 as follows:***

**2107.6** TMS 402/ACI 530/ASCE 5, Section **~~8.1.6.3, Development of bars in tension and compression~~. 6.1.5.1 Development of bar reinforcement in tension or compressiom.** Modify Section **~~8.1.6.3~~**  **6.1.5.1** as follows:

**~~8.1.6.3~~** **6.1.5.1**The required development length of reinforcing bars shall be determined by Equation (**8- 12** **6-1**), but shall not be less than ~~12 in. (305 mm)~~ 40 db and need not be greater than 72 db.

Equation ~~8-12~~ **6-1** from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

γ = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

γ = ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

γ = ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

**(S6829 AS)**

2108.4 TMS 402/ACI 530/ASCE 5, Section **~~9.3.3.3 Development of bars in tension and compression~~. 6.1.5.1 Development of bar reinforcement in tension or compression.** Modify Section **~~9.3.3.3~~**  **6.1.5.1** as follows:

**~~9.3.3.3~~ 6.1.5.1 The required development length of reinforcing bars shall be** determined by Equation (**~~9- 16~~** **6-1**), but shall not be less than ~~12 in. (305 mm)~~ 40dband need not be greater than 72 db.

Equation **~~9-16~~** **6-1** from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

γ = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

γ = ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

γ = ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

**(S6835 AS)**

***Change Section 2122.8.2 to read as shown:***

**2122.8.2** Vertical alignment of ~~vertical~~ cells to be grouted shall ~~be sufficient provided vertical alignment sufficient to~~ maintain clear, unobstructed, continuous, vertical cores measuring not less than 2 ½ inches by 3 inches (51 mm by 76 mm) for fine aggregate grout and 3 inches by 3 inches for coarse aggregate grout as defined by ASTM C 476. The architect or engineer may specify other grout space sizes which shall be permitted provided they comply with TMS 402/ ACI 530/ ASCE 5 Section **1.20~~19~~** **3.2.1**and TMS 602/ ACI 530.1/ ASCE 6 Section 3.5C

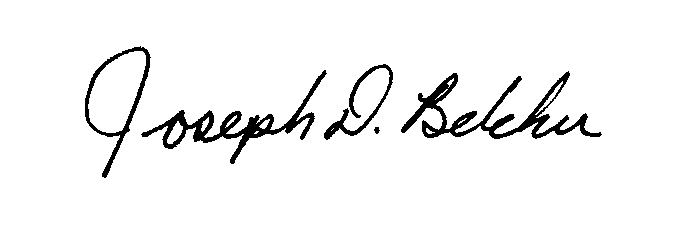
**2122.8.3** Placing of mortar and masonry units shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 3.3.

**2122.8.4 Grout placement.** Grout placement shall be in accordance with TMS 402/ ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6.

**2122.8.5** **Confinement.** Confine grout to the areas indicated on the Project Drawings. Use material to confine grout that permits bond between masonry units and mortar.

**2122.8.6** Unless otherwise required, mix grout other than self-consolidating grout to a consistency that has a slump between 8 and 11 in. (203 and 279 mm). Self-consolidating grout shall comply with TMS 602/ ACI 530.1/ ASCE 6.

**2122.8.7** Grout shall be placed before any initial set has occurred, but in no case more than 1-1/2 hours after the mix-designed water has been added.



Joseph D. Belcher, CBO

Code Consultant

.

**TAC Recommendation:** Mr. Lavrich entered a motion to approve the comment. Commissioner Compton seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action:** Commissioner Schock entered a motion to approve the comment. Commissioner Schiffer seconded the motion. The motion passed unanimously with a vote of 25 to 0.

S – Comment #5

**Item 1**

**6th Edition (2017) FBC, Building**

**Proposed revision**

**Submitted by: T. Eric Stafford**

**6th Edition (2017) Florida Building Code, Building**

**Structural Correlation Issues**

**1609.1.2 Protection of openings.** In *wind-borne debris regions*, glazed openings in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of, ANSI/DASMA 115 (for garage doors and rolling doors) or TAS 201, 202 and 203, AAMA 506. ASTM E 1996 and ASTM E 1886 referenced herein, or an *approved* impact-resistant standard as follows:

1 -4: (no change)

**Exceptions:**

1. Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and maximum span between lines of fasteners of 44 inches (1118 mm) shall be permitted for opening protection in Group R-3 or R-4 occupancy buildings with a mean roof height of 33 feet or less where Vult is 180 mph or less. Panels shall be precut to overlap the wall such that they extend a minimum of 2 inches (50.8 mm) beyond the lines of fasteners and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the attachment method and secured with corrosion-resistant attachment hardware permanently installed on the building. Attachments shall be designed to resist the component and cladding loads determined in accordance with ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building.  As an alternative ~~At a minimum~~, panels shall be fastened at 16 inches (406.4 mm) o.c. along the edges of the opposing long sides of the panel. For wood frame construction, fasteners shall be located on the wall such that they are embedded into the wall framing members, nominally a minimum of 1 inch (25.4 mm) from the edge of the opening and 2 inches (50.8 mm) inward from the panel edge. Permanently installed anchors used for buildings with wood frame wall construction shall have the threaded portion that will be embedded into the wall framing based on ¼ inch (6.35 mm) lag-screws and shall be long enough to penetrate through the exterior wall covering with sufficient embedment length to provide an allowable minimum 300 lbs ASD design withdrawal capacity. For concrete or masonry wall construction, fasteners shall be located on the wall a minimum of 1.5 inches (37.9 mm) from the edge of the opening and 2 inches (50.8 mm) inward of the panel edge. Permanently installed anchors in Concrete or masonry wall construction shall have an allowable minimum 300 lbs ASD design withdrawal capacity and an allowable minimum 525 lbs ASD design shear capacity with a 1.5 inch edge distance. Hex nuts, washered wing-nuts, or bolts used to attach the wood structural panels to the anchors shall be minimum ¼ inch hardware and shall be installed with or have integral washers with a minimum 1 inch outside diameter. Vibration resistant alternative attachments designed to resist the component and cladding loads determined in accordance with provisions of Table R301.2(2) or ASCE 7 shall be permitted.

2. – 3. (no change)

**Reason:** The new prescriptive option was intended to be an alternative to designing the fastening system in accordance with ASCE 7.

**TAC Recommendation:** Mr. Lavrich entered a motion to approve the text and correct the format. Commissioner Compton seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action:** Commissioner Schock entered a motion to approve the comment with new formatting. Commissioner Schiffer seconded the motion. The motion passed unanimously with a vote of 23 to 0 with three Commissioners out of the room at the time of the vote. The new formatting is as follows:

**1609.1.2 Protection of openings.** In *wind-borne debris regions*, glazed openings in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of, ANSI/DASMA 115 (for garage doors and rolling doors) or TAS 201, 202 and 203, AAMA 506. ASTM E 1996 and ASTM E 1886 referenced herein, or an *approved* impact-resistant standard as follows:

1 -4: (no change)

**Exceptions:**

1. Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and maximum span between lines of fasteners of 44 inches (1118 mm) shall be permitted for opening protection in Group R-3 or R-4 occupancy buildings with a mean roof height of 33 feet or less where Vult is 180 mph or less. Panels shall be precut to overlap the wall such that they extend a minimum of 2 inches (50.8 mm) beyond the lines of fasteners and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the attachment method and secured with corrosion-resistant attachment hardware permanently installed on the building.
   1. Attachments shall be designed to resist the component and cladding loads determined in accordance with ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building.
   2. As an alternative ~~At a minimum~~, panels shall be fastened at 16 inches (406.4 mm) o.c. along the edges of the opposing long sides of the panel.
      1. For wood frame construction, fasteners shall be located on the wall such that they are embedded into the wall framing members, nominally a minimum of 1 inch (25.4 mm) from the edge of the opening and 2 inches (50.8 mm) inward from the panel edge. Permanently installed anchors used for buildings with wood frame wall construction shall have the threaded portion that will be embedded into the wall framing based on ¼ inch (6.35 mm) lag-screws and shall be long enough to penetrate through the exterior wall covering with sufficient embedment length to provide an allowable minimum 300 lbs ASD design withdrawal capacity.
      2. For concrete or masonry wall construction, fasteners shall be located on the wall a minimum of 1.5 inches (37.9 mm) from the edge of the opening and 2 inches (50.8 mm) inward of the panel edge. Permanently installed anchors in Concrete or masonry wall construction shall have an allowable minimum 300 lbs ASD design withdrawal capacity and an allowable minimum 525 lbs ASD design shear capacity with a 1.5 inch edge distance. Hex nuts, washered wing-nuts, or bolts used to attach the wood structural panels to the anchors shall be minimum ¼ inch hardware and shall be installed with or have integral washers with a minimum 1 inch outside diameter.
      3. Vibration resistant alternative attachments designed to resist the component and cladding loads determined in accordance with provisions of Table R301.2(2) or ASCE 7 shall be permitted.

2. – 3. (no change)

S – Comment #6

**Item 2**

**6th Edition (2017) FBC, Residential**

**Proposed revision**

**Submitted by: T. Eric Stafford**

**6th Edition (2017) Florida Building Code, Residential**

**Structural Correlation Issues**

**R301.2.1.2 Protection of openings.** Glazed openings in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein, SSTD 12, TAS 201, 202 and 203 or AAMA 506, as applicable. The applicable wind zones for establishing misile types in ASTM E 1996 are shown in Section R301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115.

1. - 2. (no change)

**Exception:** Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and a maximum span between lines of fasteners of 44 inches (1118 mm) shall be permitted for opening protection in buildings with a mean roof height of 33 feet or less in locations where Vult is 180 mph or less. Panels shall be precut to overlap the wall such that they extend a minimum of 2 inches (50.8 mm) beyond the lines of fasteners and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the attachment method and secured with corrosion-resistant attachment hardware permanently installed on the building. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. As an alternative ~~At a minimum~~, panels shall be fastened at 16 inches (406.4 mm) o.c. along the edges of the opposing long sides of the panel. For wood frame construction, fasteners shall be located on the wall such that they are embedded into the wall framing members, nominally a minimum of 1 inch (25.4 mm) from the edge of the opening and 2 inches (50.8 mm) inward from the panel edge. Permanently installed anchors used for buildings with wood frame wall construction shall have the threaded portion that will be embedded into the wall framing based on ¼ inch (6.35 mm) lag-screws and shall be long enough to penetrate through the exterior wall covering with sufficient embedment length to provide an allowable minimum 300 lbs ASD design withdrawal capacity. For concrete or masonry wall construction, fasteners shall be located on the wall a minimum of 1.5 inches (37.9 mm) from the edge of the opening and 2 inches (50.8 mm) inward of the panel edge. Permanently installed anchors in Concrete or masonry wall construction shall have an allowable minimum 300 lbs ASD design withdrawal capacity and an allowable minimum 525 lbs ASD design shear capacity with a 1.5 inch edge distance. Hex nuts, washered wing-nuts, or bolts used to attach the wood structural panels to the anchors shall be minimum ¼ inch hardware and shall be installed with or have integral washers with a minimum 1 inch outside diameter. Vibration resistant alternative attachments designed to resist the component and cladding loads determined in accordance with provisions of Table R301.2(2) or ASCE 7 shall be permitted.

2. - 3. (no change)

**Reason:** The new prescriptive option was intended to be an alternative to designing the fastening system in accordance with ASCE 7 or Table R301.2(2).

**TAC Recommendation:** Mr. Lavrich entered a motion to approve the text and correct the format. Commissioner Compton seconded the motion. The motion passed unanimously with a vote of 11 to 0.

**Commission Action: Commission Action:** Commissioner Schock entered a motion to approve the comment with new formatting. Commissioner Schiffer seconded the motion. The motion passed unanimously with a vote of 23 to 0 with three Commissioners out of the room at the time of the vote. The new formatting is as follows:

**R301.2.1.2 Protection of openings.** Glazed openings in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein, SSTD 12, TAS 201, 202 and 203 or AAMA 506, as applicable. The applicable wind zones for establishing misile types in ASTM E 1996 are shown in Section R301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115.

1. - 2. (no change)

**Exception:** Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and a maximum span between lines of fasteners of 44 inches (1118 mm) shall be permitted for opening protection in buildings with a mean roof height of 33 feet or less in locations where Vult is 180 mph or less. Panels shall be precut to overlap the wall such that they extend a minimum of 2 inches (50.8 mm) beyond the lines of fasteners and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the attachment method and secured with corrosion-resistant attachment hardware permanently installed on the building.

1. Attachments shall be designed to resist the component and cladding loads determined in accordance with ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building.
2. As an alternative ~~At a minimum~~, panels shall be fastened at 16 inches (406.4 mm) o.c. along the edges of the opposing long sides of the panel.
3. For wood frame construction, fasteners shall be located on the wall such that they are embedded into the wall framing members, nominally a minimum of 1 inch (25.4 mm) from the edge of the opening and 2 inches (50.8 mm) inward from the panel edge. Permanently installed anchors used for buildings with wood frame wall construction shall have the threaded portion that will be embedded into the wall framing based on ¼ inch (6.35 mm) lag-screws and shall be long enough to penetrate through the exterior wall covering with sufficient embedment length to provide an allowable minimum 300 lbs ASD design withdrawal capacity.
4. For concrete or masonry wall construction, fasteners shall be located on the wall a minimum of 1.5 inches (37.9 mm) from the edge of the opening and 2 inches (50.8 mm) inward of the panel edge. Permanently installed anchors in Concrete or masonry wall construction shall have an allowable minimum 300 lbs ASD design withdrawal capacity and an allowable minimum 525 lbs ASD design shear capacity with a 1.5 inch edge distance. Hex nuts, washered wing-nuts, or bolts used to attach the wood structural panels to the anchors shall be minimum ¼ inch hardware and shall be installed with or have integral washers with a minimum 1 inch outside diameter.
5. Vibration resistant alternative attachments designed to resist the component and cladding loads determined in accordance with provisions of Table R301.2(2) or ASCE 7 shall be permitted.