DS 2023-044

Petition for Declaratory Statement Before the Florida Building Commission

Company: Jax Apex Technology, Inc.
Address: 9000 Regency Square Blvd
Jacksonville, FL 32221

Name: Jeffrey P. Arneson
Title: Head of Engineering
Telephone: 904-821-5200 #317
E-Mail: jeff@apextechnology.com

Statute(s), Agency Rule(s), Agency Order(s), and/or Code Section(s) on which the Declaratory Statement is Sought:

2023 Florida Building Code, Residential
Portions of Chapters 3, and 8

Background:

Jax Apex Technology is a structural engineering company that services high volume home builders throughout Florida. We are currently updating our residential base plan designs to the 2023 Building Code. These base plans are wood framed single family detached dwellings and multifamily townhomes. Structural roof framing assemblies consist of either wood framed trusses or rafters supporting wood structural panel roof decks. We engineer the structural building assembly to resist loads as determined using ASCE 7. Due to the volume of homes that we assume responsible charge over, we are seeking clarity on the application of Sections R301.2.1.1., and R803.2.2 Specifically, it is not clear whether performance-based calculations using ASCE 7 or prescriptive Table 803.2.2 governs roof deck thickness.

Section 301: Building Planning:

R301.2.1.1Wind design required.

In regions where the ultimate design wind speed, V_{ult}, from Figure R301.2(4) equals or exceeds 115 miles per hour (51 m/s), the design of concrete, masonry, wood, and steel buildings for wind loads shall be in accordance with one or more of the following methods:

1. 1.AWC *Wood Frame Construction Manual* (WFCM).
2. 2.Concrete and masonry walls are permitted to be designed in accordance with ICC *Standard for Residential Construction in High-Wind Regions* (ICC 600).
3. 3.ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7).
4. 4.AISI *Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings* (AISI S230).
5. 5.*Florida Building Code, Building*; or
6. 6.The MAF *Guide to Concrete Masonry Residential Construction in High Wind Areas* shall be permitted for applicable concrete masonry buildings for a basic wind speed of 130 mph (58 m/s) or less in Exposure B and 110 mph (49 m/s) or less in Exposure C in accordance with Figure R301.2(4) as converted in accordance with R301.2.1.3.

Exceptions:

1. 1.Footings and foundations shall comply with Chapter 4.
2. 2.Exterior windows and doors shall comply with Section R609.
3. 3.For structural insulated panels, the provisions of this code apply in accordance with the limitations of Section R610.
4. 4.Exterior wall coverings and soffits shall comply with Chapter 7.
5. 5.Roof sheathing shall be attached in accordance with Section R803.
6. 6.Roof coverings shall comply with Chapter 9.
7. 7.For concrete construction, the provisions of this code apply in accordance with the limitations of Section R608.2.

The elements of design not addressed by the methods in Items 1 through 6 shall be in accordance with the provisions of this code.

Section 803: Roof Sheathing:

R803.2.2Allowable spans.

The minimum thickness and span rating for wood structural panel roof sheathing shall not exceed the values set forth in FBC Residential Table R803.2.2.

TABLE R803.2.2
MINIMUM ROOF SHEATHING THICKNESS

Rafter/Truss Spacing24 in. o.c.	WIND SPEED							
	115 mph	120 mph	130 mph	140 mph	150 mph	160 mph	170 mph	180 mph
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure B	7/16(24/16)	7/16(24/16)	7/16(24/16)	7/16(24/16)	15/32(32/16)	19/32(40/20)	19/32(40/20)	19/32(40/20)
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure C	7/16(24/16)	7/16(24/16)	15/32(32/16)	19/32(40/20)	19/32(40/20)	19/32(40/20)	19/32(40/20)	23/32(48/24)
Minimum Sheathing Thickness, inches (Panel Span Rating) Exposure D	15/32(32/16)	19/32(40/20)	19/32(40/20)	19/32(40/20)	19/32(40/20)	19/32(40/20)	23/32(48/24)	23/32(48/24)

Currently, Apex performs calculations to determine roof deck thickness by applying ASCE 7 wind loads using the properties of wood structural panel provided in APA Technical Bulletin Q225G. Except for Table R803.2.2, our calculated results meet or exceed the performance requirements of the 8th Edition Florida Building Code, Building and Residential. Results of our calculations for a detached 2-story single family home with long dimension installed perpendicular to roof framing are exampled in Table 1 Below:

Table 1: Apex Performance-Based Design of Roof Deck Thickness (MRH = 25')

Wind Speed (mph)	Exposure Category	Roof Deck Thickness (inches)
140	C	7/16 (24/16)
150	C	7/16 (24/16)

Question: Exception #5 of R301.2.1.1 (highlighted within this petition) only applies to the attachment of the roof deck. As you can see from Table 1, Performance-based design generally results in roof deck thicknesses that are less than those prescribed in Table R803.2.2. Is Apex correct to interpret Section R301.2.1.1 as allowing performance-based design of roof deck thickness?

DocuSigned by: JEFFREY P. ARNESON LICENSE No 58544 STATE OF FLORIDA PROFESSIONAL ENGINEER
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Jeffrey P. Arneson
Head of Engineering
Jax Apex Technology, Inc.