

Evaluation of Hi-Rib II Wall Panels - 23-DrJ-0288
October 16, 2023

Mr. Brian Long
Morton Buildings, Inc.
252 W Adams St
P.O. Box 399
Morton, IL 61550-1804

Re: Evaluation of Hi-Rib II Steel Wall Panels

Dear Mr. Long:

DrJ Engineering, LLC (DrJ) has been asked to provide a Florida professional engineering accepted engineering practice review with respect to the Hi-Rib II Roof Panel. This work has been performed pursuant to our areas of expertise. The purpose of the DrJ review is to provide an engineering assessment of the conformance of the Hi-Rib II Wall Panel with the 2023 Florida Building Code (FBC).

Hi-Rib II Steel Wall Panels conform Section 1404.5, Section 1405.11 and Section 2210 of the 2023 FBC. The panels were tested via UL-580: Tests for Uplift Resistance of Roof Assemblies, UL 1897: Standard for Safety, Uplift Tests for Roof Covering Systems and via ASTM E455: Standard Test Method for Static Load Testing of Framed Floor or Roof Diaphragm Constructions for Buildings by Architectural Testing, Inc. Hi-Rib II panels have a coverage width of 36" and have thicknesses of 0.015" and 0.017". On the panel edges and every 12" widthwise, the panel has a $\frac{7}{8}$ " half circle rib. Panels may be installed through each panel's rib to wooden girts using either proprietary #9 x 2" stainless steel screws with a $\frac{7}{16}$ " diameter bonded stainless steel washer placed under the head or 2 $\frac{1}{4}$ " long ring shank nails.

The maximum allowable design wind pressure for these products can be found in Table 1 and Table 2. The design pressure conforms to the requirements of the 2023 FBC.

Table 1. Allowable Design Wind Pressures using #9 x 2" Screws to attach the Panels to the Girts¹

Product Thickness (in)	Girt Spacing (in)	Positive Pressure (psf)	Negative Pressure (psf)
0.015	24	80	
	27	71.1	
	30	64	
	33	58.2	
	36	53.3	
	39	49.2	
0.017	24	100	
	27	88.9	
	30	80	
	33	72.7	
	36	66.7	
	39	61.5	
1. All fasteners must have a minimum penetration into girts of 1 $\frac{1}{8}$ "			



THE QUALTIM FAMILY OF BRANDS
Where building innovation thrives.

Table 2. Allowable Design Wind Pressures using 2¹/₄" Nails to attach the Panels to the Girts¹

Product Thickness (in)	Girt Spacing (in)	Positive Pressure (psf)	Negative Pressure (psf)
0.015 and 0.017	24	55	
	27	48.9	
	30	44	
	33	40	
	36	36.7	
	39	33.8	
1. All fasteners must have a minimum penetration into girts of 1 3/8"			

The results of the ASTM E455 diaphragm testing can be found in Table 3.

Table 3. Diaphragm Shear Loads

Product Thickness (in)	Fastener	Insulation	Allowable Shear Strength (lb/ft)	Average Shear Stiffness G (lb/in)
0.015	#9 x 3" Screws through rib and #9 x 2" Screws through flat	1/2" Thermax	96	2,012
	#9 x 2" Screws through rib and #9 x 1" Screws through flat	None	104	2,624
	2 ¹ / ₄ " Nails through rib 1 ¹ / ₂ " and Nails through flat		85	1,756
0.017	#9 x 3" Screws through rib and #9 x 2" Screws through flat	1/2" Thermax	102	1,960
	#9 x 2" Screws through rib and #9 x 1" Screws through flat	None	122	2,940
	2 ¹ / ₄ " Nails through rib and 1 ¹ / ₂ " Nails through flat		89	1,647

These panels may be used on Risk Category I, II, III and IV buildings. This panel is not available for use in High-Velocity Hurricane Zones (HVHZ).

If there are any additional questions or concerns, we will gladly provide a Florida professional engineering¹ and ANAB ISO/IEC 17065 accredited² approved agency response. Pursuant to the 2023 FBC Section 1707.1³ we would sincerely appreciate knowing the specific sections of the adopted building code and/or professional engineering law that this engineering evaluation does not comply with so that we can cure any non-compliance. From specifics, we can then delineate a path forward for everyone involved to cure any violations, as this will serve everyone's free and fair market competition's best interests.

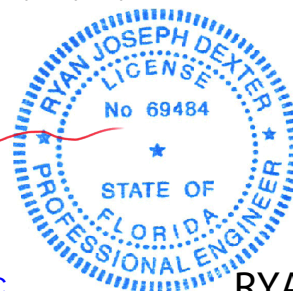
Our goal with the foregoing analysis is to provide both the accepted engineering analysis and regulatory compliance substance to support a systematic path to approval. Please contact us if we can help further in any way. If your request is time-sensitive, please contact Jill Zimmerman at (920) 988-7165. Thank you very much.

Respectfully yours,

Larry Wainright
Vice President Product Certification
608-310-6742

Ryan Dexter, P.E.
Florida P.E. No. 69484
Vice President
608-310-6744

DrJ Engineering, LLC
Certificate of Authorization #29766



RYAN J DEXTER

Digitally signed by RYAN J DEXTER
DN: c=US, o=Florida,
dnQualifier=A01410D0000017AED
3489CE0000A494, cn=RYAN J
DEXTER
Date: 2023.10.16 15:28:26 -0400

- ¹ APPROVED SOURCE. An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses. https://up.codes/viewer/florida/fl-building-code-2023/chapter/2/definitions#approved_source
- ² APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been approved by the building official. https://up.codes/viewer/florida/fl-building-code-2023/chapter/2/definitions#approved_agency
- ³ In the absence of approved rules or other approved standards, the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies. The cost of all tests and other investigations required under the provisions of this code shall be borne by the owner or the owner's authorized agent.