

SWARTZ
CONSULTING ENGINEERS LLC

Project Number:	SCE 26-03004
Project Name:	2500) Steel Wood Swing Door Opaqu
Date:	7/20/2026
Page:	1 of 10

Product Evaluation Report: Method 1D Revision 1: Door Skin Specification

Project Number: SCE 26-03004

Product Name: Contours (S-2500) Steel Wood Swing Door Opaque ISW&OSW

Product Dimensions: 74 x 98

Design Pressure: +45 psf / -45 psf

Impact: Yes - HVHZ

Product Dimensions: 74 x 82

Design Pressure: +60 psf / -60 psf

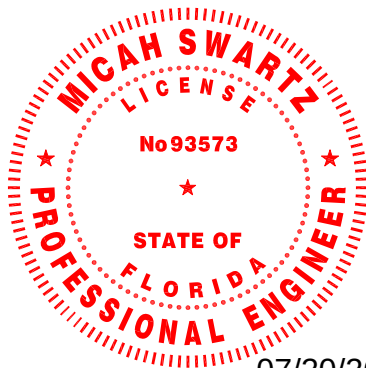
Impact: Yes - HVHZ

Installation Instructions: D1000226

Method: 1-D (Engineering Evaluation)

Category: Exterior Doors

Subcategory: Swinging Exterior Door Assemblies



07/20/26

Prepared for:

Jeld-Wen Windows & Doors
3737 Lakeport Blvd.
Klamath Falls, OR

Prepared by:

Swartz Consulting Engineers LLC

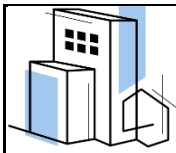
Micah Swartz, PE

Florida License No. PE 93573

Florida Registry No. 38420

This item has been digitally signed and sealed by Micah Swartz, P.E. on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



Scope:

This is a product evaluation report issued by Micah Swartz, P.E. (FL# 93573) for Jeld-Wen Windows & Doors based on Method 1D of the State of Florida Product Approval, Florida Department of Business and Professional Regulation - Florida Building Commission.

This product has been evaluated for use in locations adhering to the current Florida Building Code.

See Installation Instructions D1000226, signed and sealed by Micah Swartz, P.E. (FL# 93573) for specific use paramaters including size and design pressure limitations.

Reference Standards:

Current edition of the Florida Building Code, Building

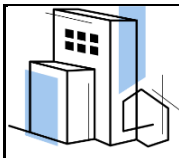
ANSI/AWC NDS - National Design Specification (NDS) for Wood Construction

ANSI S100 North American Specification for the Design of Cold-Formed Steel Structural Members

ICC-ES Report ESR-1976 ITW Buildex TEKS Self-Drilling Fasteners

ICC-ES Report ESR-2196 Hilti Self Drilling Screws to connect cold-formed steel

NOA 24-0102.06 Tapcon Concrete and Masonry Anchors with Advanced Threadform Technology



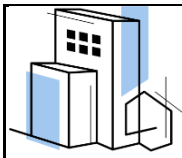
Limits of Use:

- (1) Product anchors shall be as listed and spaced on installation instructions. Anchors shall be embedded into the substrate the full embedment depth beyond stucco or wall cladding.
- (2) Site conditions that deviate from the details of drawing D1000226 must be verified and designed by a licensed engineer or registered architect.

Certification of Independence:

In accordance with Rule 61G20-3 Florida Administrative Code, Swartz Consulting Engineers LLC hereby certifies the following:

- (1) Swartz Consulting Engineers LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested or labeled by the agency.
- (2) Swartz Consulting Engineers LLC is not owned, operated or controlled by any company manufacturing or distributing products it tests or labels.
- (3) Micah Swartz, P.E. does not have, nor will acquire, a financial interest in any company manufacturing or distributing products for which the reports are being issued.
- (4) Micah Swartz, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.



Design Summary:

The table below summarizes the product: Contours (S-2500) Steel Wood Swing Door Opaque ISW&OSW and their corresponding performance levels as established by testing.

Table 1: Summary of Test Results

Series/Model	Test Report Number	Standards Tested	Size (W x H)	Performance
Contours (S-2500) Steel Wood Swing Door Opaque ISW&OSW	NCTL 210-3801-1 (02/03/12) & I9525.02- 301-47 (02/25/21)	TAS 201-94 TAS 202-94 TAS 203-94	74 x 98	+45 psf / -45 psf
Contours (S-2500) Steel Wood Swing Door Opaque ISW&OSW	NCTL 210-3801-2 (02/04/12) & I9525.01- 301-47 (03/17/21)	TAS 201-94 TAS 202-94 TAS 203-94	74 x 82	+60 psf / -60 psf

Note: Test reports NCTL 210-3801-2 & NCTL 210-3801-1 have been signed and sealed by Gerard J. Ferrara, P.E. (FL Lic. No. 11985) and test reports I9525.01-301-47 & I9525.02-301-47 are signed and sealed by Tyler Westerling, P.E. (FL Lic. No. 72012)

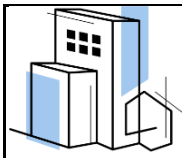
Note: Door skin to conform to ASTM A653 Grade DDS Type A. See specification for allowable mechanical properties.

As Tested Design:

Screw Information:

Screw Size: 8 Screw Embed: 1 in Edge Distance: 3/4 in (minimum)
qty: 1 Spacing: 18.5 in O.C. (Thru Frame)

Wood Screw Lateral: 106 lbs Per ft. Capacity: 69 plf



Alternative Fasteners:

Screw Information:

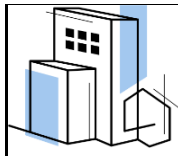
Screw Size: 8 Screw Embed: 1.5 in Edge Distance: 3/4 in (minimum)
qty: 1 Spacing: 18.5 in O.C. (Thru Frame)

Wood Screw Lateral: 106 lbs Per ft. Capacity: 69 plf Unity: 1.00

Tapcon Information:

Tapcon Size: 3/16 Embedment: 1-1/4 in (minimum) Edge Distance: 2-1/2 in (minimum)
qty: 1 Spacing: 18.5 in O.C.

Tapcon Lateral (Concrete): 155 lbs Per ft. Capacity: 100 plf Unity: 0.68
Tapcon Lateral (CMU): 135 lbs Per ft. Capacity: 88 plf Unity: 0.78



Subject: As Tested - Wood Screw Lateral Design - Single Shear

Input:
Calculation:

Screw Information:

Screw Size: Root Diameter: in
Screw Embed:

Main Member Type: G: F_{em} : psi thickness (t_m): in

Side Member Type: G: F_{es} : psi thickness (t_s): in

Lateral Design Factors - Table 12.3.1A (NDS)

D:	0.131	in	Diameter
F_{yb} :	100	ksi	Dowel Bending Yield Strength
F_{em} :	3,350	psi	Main Member dowel bearing strength
F_{es} :	3,350	psi	Side Member dowel bearing strength
l_m :	1	in	Main Member dowel bearing length
l_s :	1.25	in	Side Member dowel bearing length
R_d :	2.2		Reduction term - Table 12.3.1B (NDS)
R_e :	1		$= F_{em}/F_{es}$
R_t :	0.8		$= l_m/l_s$
k_1 :	0.377		See Table
k_2 :	1.242		See Table

Reference Lateral Design Values - Table 12.3.1A (NDS)

Z_{Im} : lbs $Z_{Im} = \frac{D l_m F_{em}}{R_d}$ (EQ 12.3 - 1)

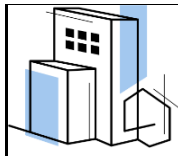
Z_{II} : lbs $Z_{II} = \frac{k_1 D l_s F_{es}}{R_d}$ (EQ 12.3 - 3)

Z_{III} : lbs $Z_{III} = \frac{k_2 D l_m F_{em}}{(1 + 2R_e) R_d}$ (EQ 12.3 - 4)

Z_{IV} : lbs $Z_{IV} = \frac{D^2}{R_d} \sqrt{\frac{2F_{em}F_{yb}}{3(1 + R_e)}}$ (EQ 12.3 - 6)

Z_{MIN} : lbs

Note: Side member is part of the Jeld-Wen assembly and verified during testing. Modes Z_{Is} and Z_{IIs} are not applicable to the calculation.



Subject: As Tested - Wood Screw Lateral Design - Single Shear Cont.

Adjusted Lateral Design Values

$$Z' = Z * C_D * C_M * C_t * C_g * C_{\Delta} - \text{As per table 11.3.1 NDS}$$

C_D :	1.6	Load Duration Factor - Table 2.3.2 (NDS)
C_M :	1.0	Wet Service Factor - Table 11.3.3 (NDS)
C_t :	1.0	Temperature Factor - Table 11.3.4 (NDS)
C_g :	1.0	Group Action Factor - Section 11.3.6 (NDS)
C_{Δ} :	1.0	Geometry Factor - Section 12.5.1.1 (NDS)

$$Z': \boxed{132} \text{ lbs}$$

Fastener Bending Across Shim Space

Ω :	1.67	
L:	0.25	in Maximum Shim Gap
D:	0.131	in Diameter
F_{yb} :	100	ksi Dowel Bending Yield Strength

$$\frac{F_{yb}}{\Omega} = \frac{M}{S} = \frac{16ZL}{\pi D^3} \Leftrightarrow Z = \frac{F_{yb} \pi D^3}{16 \Omega L}$$

$$\text{Where } M = \frac{ZL}{2} \text{ (Guided Bending)}$$

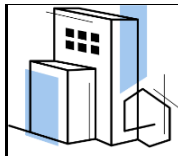
$$Z_n/\Omega: \boxed{106} \text{ lbs}$$

Bearing on Masonry Strap

Ω :	3.00	
F_u :	33	ksi Tensile Strength of strap
t:	20	GA
t:	0.036	in thickness of strap
D:	0.131	in

$$\frac{P_{nv}}{\Omega} = 2.7 * t * D * F_u - (EQ. J4.3.1 - 4, AISI S100)$$

$$P_{nv}/\Omega: \boxed{140} \text{ lbs}$$



Subject: Wood Screw Lateral Design - Single Shear

Input:
Calculation:

Screw Information:

Screw Size: Root Diameter: in
Screw Embed: in

Main Member Type: G: F_{em} : psi thickness (t_m): in

Side Member Type: G: F_{es} : psi thickness (t_s): in

Lateral Design Factors - Table 12.3.1A (NDS)

D:	0.131 in	Diameter
F_{yb} :	100 ksi	Dowel Bending Yield Strength
F_{em} :	3,350 psi	Main Member dowel bearing strength
F_{es} :	3,350 psi	Side Member dowel bearing strength
l_m :	1.5 in	Main Member dowel bearing length
l_s :	1.25 in	Side Member dowel bearing length
R_d :	2.2	Reduction term - Table 12.3.1B (NDS)
R_e :	1	$= F_{em}/F_{es}$
R_t :	1.2	$= l_m/l_s$
k_1 :	0.459	See Table
k_2 :	1.111	See Table

Reference Lateral Design Values - Table 12.3.1A (NDS)

Z_{Im} : lbs $Z_{Im} = \frac{D l_m F_{em}}{R_d}$ (EQ 12.3 - 1)

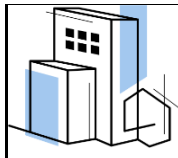
Z_{II} : lbs $Z_{II} = \frac{k_1 D l_s F_{es}}{R_d}$ (EQ 12.3 - 3)

Z_{III} : lbs $Z_{III} = \frac{k_2 D l_m F_{em}}{(1 + 2R_e) R_d}$ (EQ 12.3 - 4)

Z_{IV} : lbs $Z_{IV} = \frac{D^2}{R_d} \sqrt{\frac{2 F_{em} F_{yb}}{3(1 + R_e)}}$ (EQ 12.3 - 6)

Z_{MIN} : lbs

Note: Side member is part of the Jeld-Wen assembly and verified during testing. Modes Z_{Is} and Z_{IIs} are not applicable to the calculation.



Subject: Wood Screw Lateral Design - Single Shear Cont.

Adjusted Lateral Design Values

$$Z' = Z * C_D * C_M * C_t * C_g * C_{\Delta} - \text{As per table 11.3.1 NDS}$$

C_D :	1.6	Load Duration Factor - Table 2.3.2 (NDS)
C_M :	1.0	Wet Service Factor - Table 11.3.3 (NDS)
C_t :	1.0	Temperature Factor - Table 11.3.4 (NDS)
C_g :	1.0	Group Action Factor - Section 11.3.6 (NDS)
C_{Δ} :	1.0	Geometry Factor - Section 12.5.1.1 (NDS)

$$Z': \boxed{132} \text{ lbs}$$

Fastener Bending Across Shim Space

Ω :	1.67	
L:	0.25	in Maximum Shim Gap
D:	0.131	in Diameter
F_{yb} :	100	ksi Dowel Bending Yield Strength

$$\frac{F_{yb}}{\Omega} = \frac{M}{S} = \frac{16ZL}{\pi D^3} \Leftrightarrow Z = \frac{F_{yb} \pi D^3}{16 \Omega L}$$

$$\text{Where } M = \frac{ZL}{2} \text{ (Guided Bending)}$$

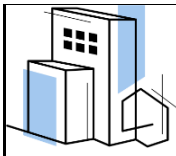
$$Z_n/\Omega: \boxed{106} \text{ lbs}$$

Bearing on Masonry Strap

Ω :	3.00	
F_u :	33	ksi Tensile Strength of strap
t:	20	GA
t:	0.036	in thickness of strap
D:	0.131	in

$$\frac{P_{nv}}{\Omega} = 2.7 * t * D * F_u - (EQ. J4.3.1 - 4, AISI S100)$$

$$P_{nv}/\Omega: \boxed{140} \text{ lbs}$$



Subject: Tapcon Lateral Design

Input:
Calculation:

Tapcon Size:

Size:
D: in Nominal Diameter
D_{sh}: in Shank Diameter

Fastener Shear Capacity - 3,000 psi Concrete

P_{nv}/Ω: lbs See Table 1B of NOA 24-0102.06

Fastener Shear Capacity - Medium-Weight CMU

P_{nv}/Ω: lbs See Table 3 of NOA 24-0102.06

Note:

- Critical anchor spacing is 16D
- Minimum Anchor Embedment is 1-1/4"
- Minimum Edge Distance is 2-1/4"

Fastener Bending Across Shim Space

L: in Maximum Shim Gap
D_{sh}: in Shank Diameter of Tapcon
F_{yb}: ksi Yield Strength of Tapcon

Ω:

$$\frac{F_{yb}}{\Omega} = \frac{M}{S} = \frac{16P_n L}{\pi D^3} \Leftrightarrow P_n = \frac{F_{yb} \pi D^3}{16 \Omega L}$$

Where $M = \frac{P_n L}{2}$ (Guided Bending)

P_n/Ω: lbs

Bearing Strength of Masonry Straps - AISI S100

Size: Tapcon Size
D_{sh}: in Shank Diameter of Tapcon Screw
F_u: ksi Tensile Strength of Masonry Strap
t: GA
t: in Thickness of Masonry Strap

Ω:

$$\frac{P_{nv}}{\Omega} = 2.7 * t * D * F_u - (EQ. J4.3.1 - 3, AISI S100)$$

P_{nv}/Ω: lbs