

John E. Scates, Professional Engineer

October 19, 2023

C.H.I. Overhead Doors
1485 Sunrise Dr.
Arthur, IL 61911

Re: FL 17096
**Evaluation Report for Residential Sandwich Doors
Models Skyline, Planks, Shaker**

To Whom It May Concern:

At the request of C.H.I. Overhead Doors, I have reviewed the drawings and tests listed below and have concluded that the construction shown on these drawings comply with the structural requirements of the 8th Edition (2023) Florida Building Code. I certify that I meet the requirements of "independence" as detailed in Florida Statutes.

Rational analysis methods have been applied to define psf pressure ratings for each width. Each "static" pressure was evaluated based on its tested size to take the least of the results of bending moment and end load conditions. Each "impact" pressure was evaluated to be the least of the achieved impact psf (with no change or allowance for width variations) and the rationalized static psf. Widths greater than the impact-tested door width were not included on the impact drawings.

This product has been tested and constructed to meet PSF specifications, not MPH. The conversion of MPH to PSF requires site-specific information that is unknown to the manufacturer.

Drawings

These products are for **static** pressure only:

Z3-10-12317	09'-08" through 12'-00"
Z3-18-12317	16'-08" through 22'-06"
Z4-09-12317	06'-00" through 11'-00"
Z5-12-12317	11'-06" through 17'-02"
Z5-18-12317	16'-04" through 22'-00"
Z6-16-12317	13'-06" through 16'-10"
Z7-10-12317	06'-00" through 11'-04"
Z8-18-12317	17'-04" through 24'-00"
Z9-12-12317	11'-00" through 13'-10"
Z9-16-12317	11'-04" through 17'-02"

Z9-18-12317	14'-00" through 24'-00"
Z11-10-12317	10'-00" through 10'-10"
Z11-12-12317	11'-04" through 13'-04"
Z13-08-12317	08'-00" through 09'-10"
Z13-10-12317	10'-00" through 11'-06"
Z14-10-12317	10'-00" through 14'-00"

These products are for **static and impact** (windborne debris):

Z9i-16-12533	12'-00" through 16'-06"
Z7i-20-12533	14'-08" through 20'-00"
Z11i-10-12533	10'-00" through 10'-02"
Z11i-09-12533	06'-00" through 09'-10"
Z12i-10-12533	09'-04" through 10'-02"

Note: The drawing titles above are simply descriptive, and do not represent any limitation on the sizes and pressures. Each drawing contains a table with additional sizes and psf ratings.

Test Reports

Static Tests:

ATI B5157.01-602-44	ATI 79634.01-602-47
ATI 78895.01-602-47	ATI 79635.01-602-47
ATI 78616.01-602-47	ATI 79636.01-602-47
ATI 78618.01-602-47	ATI 81972.01-602-47
ATI 78622.01-602-47	ATI 81992.01-602-47
ATI 78623.01-602-47	ATI 81994.01-602-47
ATI 78624.01-602-47	ATI 81996.01-602-47
ATI 78625.01-602-47	ATI 82001.01-602-47
ATI 79099.01-602-47	ATI 81973.01-602-47
ATI 79101.01-602-47	
ATI 79103.01-602-47	ATLNC 0211.02-20
ATI 79320.02-602-47	ATLNC 0211.03-20

Impact tests:

ATI 97303.01-602-44
ATI 97306.01-602-44

Additional reports from American Test Lab (ATLNC) (alternate impact window):

ATLNC 0204.02-20
ATLNC 0205.02-20

Test Facility & Procedures

Tests were conducted at three facilities:

- Architectural Testing of Schofield, WI at the Schofield location.
- Architectural Testing using the accredited C.H.I. test facility in Arthur, IL.
- American Test Lab, Inc., North (ATLNC) located in Brevard, NC.

These test facilities were accredited at the time of testing.

Static pressure testing was conducted in accordance with ANSI/DASMA 108-02 and/or ANSI/DASMA 108-05 and ANSI/DASMA 108-17 (ATLNC) and ASTM E330-14 (ATLNC). The testing also complied with the requirements of ASTM E330-02 and ANSI/**DASMA 108-2017**. All these standards are equivalent test procedures to meet the requirements of the FBC for garage doors.

Large Missile impact and cycling tests were conducted in accordance with ANSI/DASMA 115-05 as well as ASTM E1886-05/E1996-09. ATLNC testing was per ANSI/DASMA 115-17. All testing also complied with the requirements of ANSI/**DASMA 115-2017**.

These doors are not intended for the High Velocity Hurricane Zone (HVHZ).

All test reports were signed by a Florida PE.

The designs reflected on the drawings represent the "worst case" construction of the doors if there were slight differences between the DASMA 108 Static and DASMA 115 Impact tested products. The strongest or most reinforced features were incorporated to ensure compliance, as rational engineering analysis.

Glazing

The impact drawings include an impact window option "by C.H.I.". The full description of the as-tested product is abbreviated on the drawings since it is factory assembled. Details:

1/4" thick polycarbonate (Makrolon) riveted to the exterior face of the door using 3/16" bulbed rivets. The polycarbonate overlaps the exterior skin by 1-1/4" per side. The daylight opening is 16-3/4" x 10-1/4" (with 12 rivets) or 38" x 10-1/4" (with 28 rivets).

Installation Instructions

The drawings provide installation instructions peculiar to windload reinforcement

These drawings highlight the unique construction details related to windload reinforcement. They do not represent the complete construction details. In some instances, C.H.I. Overhead Doors may provide additional hardware, such as double end hinges, that must be used even if not part of the windload reinforcement package.

Anchorage Requirements:

Attachment drawings provided by C.H.I. Overhead Doors detail how to fasten back jambs equivalent in strength to southern pine or spruce pine fir to the structure. Fasteners used to secure the back jambs must be long enough to achieve the minimum embedment as specified.

The direct mounting of door track on top of drywall or other non-structural material is outside of the scope of C.H.I. Overhead Doors wind load evaluations. Residential garage door track generally has small metal pads that contact the drywall. The loads generated during high wind events may be concentrated by these pads and damage the drywall. Therefore, C.H.I. Overhead Doors promotes the use of back jambs to effectively absorb and redistribute wind loads.

The wood species of the 2x6 is specified as Southern Pine (aka Southern Yellow Pine) on the door drawings.

Mounting of 2x6 wood "Back Jamb" or "bucks" to the building structure as a surface to secure the track brackets are detailed on these C.H.I. attachment drawings, depending upon the type of wall construction:

BJA-101 using Concrete Anchors

BJA-102 using Lag Screws

If mounting of the track directly to building jambs is desired, more fasteners and track brackets may be necessary in addition to those shown on the drawings to obtain sufficient track attachment. These C.H.I. attachment drawings provide guidelines:

BJA-103 Steel Attachment Detail

BJA-104 CMU Filled Attachment Detail

BJA-105 Concrete Attachment Detail

BJA-106 Attachment Detail for Wood

This Evaluation Report does not address design of the wall/jambs themselves. These attachment drawings only illustrate common means to attach the jambs to the wall. Walls and Jambs should be designed (by others) to withstand the loads imposed by door onto the building.

Model Descriptions

All doors in this evaluation are 2" thick overall. In each family of doors, the weakest or thinnest skin product was tested to prove the entire family line. A "P" in the model indicates that a painted exterior "plank" appearance is also available.

These door model variations are approved for each family of the drawings:

Polystyrene models:

2127, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with short panel windows
 2147, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with long panel windows
 2157, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with oversized windows
 2327, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with short panel windows
 2347, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with long panel windows
 2357, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with oversized windows
 5157, insulated double skin door- 27ga / 27ga skins, **Carriage House** FLUSH with oversized windows

Polyurethane models:

2128, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with short panel windows
 2148, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with long panel windows
 2158, insulated double skin door- 27ga / 27ga skins, **Skyline** FLUSH with oversized windows
 2328, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with short panel windows
 2348, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with long panel windows
 2358, insulated double skin door- 27ga / 27ga skins, **Planks** micro-grooved with oversized windows
 2518, insulated double skin door- 27ga / 27ga skins, **Shaker** emboss with oversized windows
 5158, insulated double skin door- 27ga / 27ga skins, **Carriage House** FLUSH with oversized windows

Additional Limitations

The drawings cited above are an explicit part of this evaluation report. The text of this report does not attempt to address all design details but relies upon the illustrations and text of these drawings and instructions as well.

Each door should be chosen based on the "psf" requirement determined for a specific installation or locale.

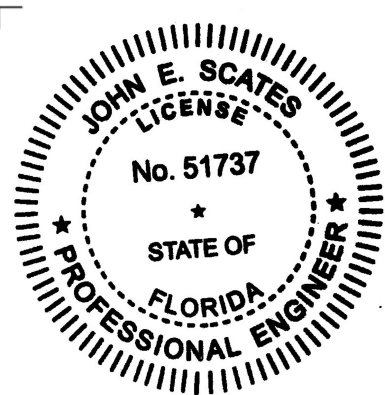
The horizontal track may be reinforced with an angle as needed to support the door weight. The construction of the horizontal track, including the track thickness and additional support when needed, is determined by C.H.I. Overhead Doors and does not affect this windload evaluation.

The rated pressures may not be achieved unless the door is held closed during the wind event. Both vertical tracks must be engaged with a lock (right and left side), or alternately an electric drawbar operator attached to the door prior to the wind event.

Certain doors have been tested to Large Missile Impact requirements of the wind-borne debris regions, designated with an "i" in the drawing name. In addition, steel doors not tested for wind-borne debris may qualify for use in wind-borne debris regions according the FBC if they do not contain glazing.

These products are *not* intended for the Florida High Velocity Hurricane Zone (HVHZ).

Digitally signed by John E Scates
Date: 2023.10.19 11:08:10 -05'00'



John E. Scates, P.E.
Florida PE # 51737

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