PRI Construction Materials Technologies LLC

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Laboratory Test Report

Report for: Leonel Aarón Borja Alemán
Aircrete Mexico
Calle 3, Número 7 Parque, Industrial PLATAH
Villa of Tezontepec Hidalgo, 43880

Product Name: Aircrete Cladding 2”
Project No.: 2351T0004
Dates Tested: August 17th – 18th, 2021
Test Methods: ASTM E564 Shear Resistance
Results Summary: Average Maximum Shear Load Resistance 3800lbf

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Purpose: Determine the shear load resistance of Aircrete Mexico’s 2” Aircrete cladding panels installed over 2x4 wooden studs 24” O.C. per the methods outlined in **ASTM E564 Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings.**

Test Methods: Testing was completed as described in ASTM E564-06(2018) *Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings.* The internal horizontal shear displacement was calculated by subtracting the base slip, and the difference between uplift and vertical displacement from the horizontal displacement in accordance with ASTM E564. Two (2) assemblies were tested.

Sampling: The following materials were received by PRI via common carrier. All other materials for testing were procured thru local distribution.

Product	Source	Date	Sampling
Aircrete Cladding 2” Aircrete Adhesive Mortar	Villa of Tezontepec Hidalgo, Mexico	July 9th, 2021	Aircrete Mexico

Cladding Panels: Nominal 48” wide x 24” tall x 2” thick Six (6) per assembly
Nominal 24” wide x 24” tall x 2” thick Four (4) per assembly

Testing Location Testing was conducted at PRI-CMT located in Tampa, FL. Calibration of testing instrumentation was performed by a PRI-CMT representative in compliance with PRI-CMT In-House quality control program governed by ISO/IEC 17025-17.

Assembly Detail: Test assemblies were constructed from nominal 2x4 SYP studs spaced 24” O.C. Studding was secured through the head and sill members and into the vertical intermediates with two (2) 3—1/4” smooth shank framing nails per end. Each test assembly was approximately 96” wide by 96” tall containing eight (8) cladding panels with each row staggered. The first row of panels were set into a 1/2” bed of Aircrete mortar. Panels were attached on the ends with two (2) #10 x 3-1/2” screws located approximately 3/4” from the edges and 8” O.C. The interior of the panels were attached to each vertical intermediate with three (3) #10 x 3-1/2” screws located at the centerline and 3” from the ends. All anchors were counter sunk 1/4” into the cladding panels and sealed with Aircrete mortar. 1/8” thick layers of Aircrete mortar was troweled between each adjacent panel and between each row. A weather resistive barrier was stapled on the studs prior to attaching the cladding panels. See Appendix A for detailed drawings and photographs.

Official List of Witnesses:

Name	**Company**
Tim Efaw	PRI-CMT
Mark Lessig	PRI-CMT
Leonel Aarón Borja Alemán	Aircrete

Test Setup: Shear load application and test setup was in accordance with ASTM E564. Specimen sill plates were bolted and secured to an immobile timber. Evaluation of the sill connection was omitted. Loading was applied at the timber bolted to the top plate at a rate of 400 lb_f/min. Lateral guides were used to limit out-of-plane deflection. Deflection sensors were positioned in accordance with ASTM E564.

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Test Results: Conditions at beginning of testing 85°F with 50% Rh.

Indicated below are deflections and permanent sets at 1200 lb_f, and 2200lb_f, as well as the maximum shear loads obtained from testing. The entire Load-Deflection data for individual specimens are contained in Appendix A.

TABLE 1 – Summary of Shear Loading Specimens 1-2

Specimen		Load (lb_f)[1]		Result
		1200	2200	
Specimen 1	Deflection (in)	0.38	0.89	Report
	Permanent Set (in)	0.01	0.09	
	Maximum Load (lb_f)	**3600**		
Specimen 2	Deflection (in)	0.90	3.03	Report
	Permanent Set (in)	0.25	1.16	
	Maximum Load (lb_f)	**4000**		
Average Maximum Load (lb_f)		**3800**		Report

Note(s): 1. An initial pre-load of 300lb_f, was applied first. See Appendix for entire load-deflection data.

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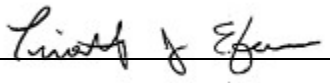
Statement of Attestation:
Testing was conducted in accordance with the methods designated in ASTM E564 Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings as described herein. The laboratory test results presented in this report are representative of the specimens supplied.

Signed: 

Timothy Efaw
Manager

Date: September 10th, 2021

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	09/10/2021	11	

Appendix Follows…

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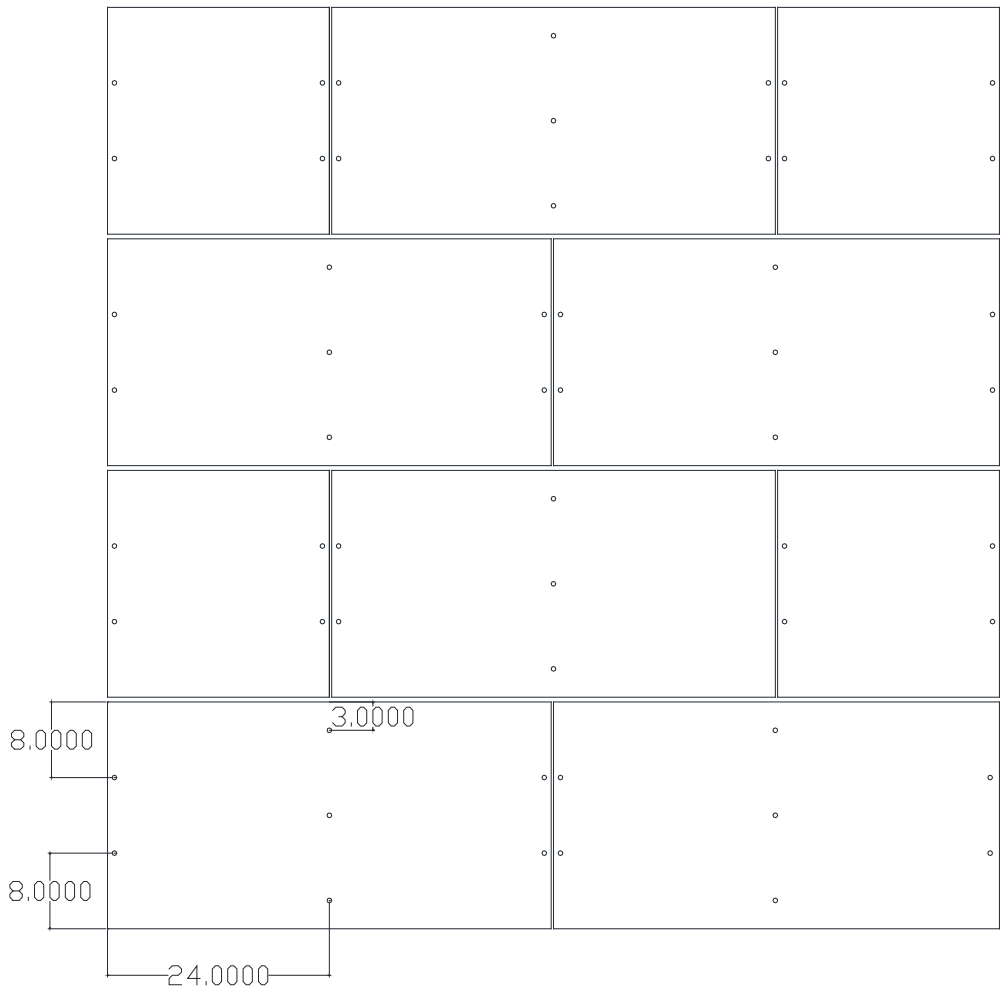
Assembly Sketch with Fastener Pattern



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Deflection Data – Specimens 1-2

Data:

Property	Specimen 1	Specimen 2	Average
Peak Load (lbf)	3600	4000	3800

Load	Specimen 1	Specimen 2	Average
0	-	-	-
300	-	-	-
0	-	-	-
400	0.16	0.23	0.19
600	0.26	0.52	0.39
800	0.32	0.52	0.42
1000	0.35	0.69	0.52
1200	0.38	0.90	0.64
0	0.01	0.25	0.12
1400	0.40	1.33	0.87
1600	0.44	1.78	1.11
1800	0.47	2.83	1.65
2000	0.84	2.97	1.91
2200	0.89	3.03	1.96
0	0.09	1.16	0.62
2400	0.96	3.02	1.99
2600	0.99	3.08	2.04
2800	1.04	3.11	2.07
3000	1.09	3.16	2.12
3200	1.17	3.18	2.17
3400	1.22	3.23	2.22
3600	1.27	3.29	2.28
3800	Fail	3.32	3.32
4000	-	3.39	3.39
4200	-	Fail	-

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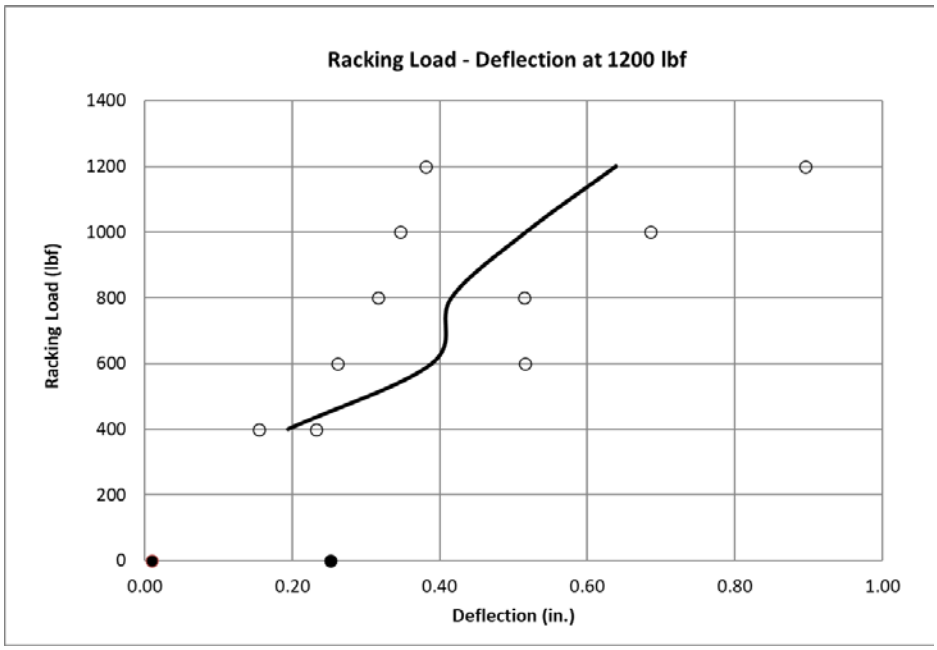
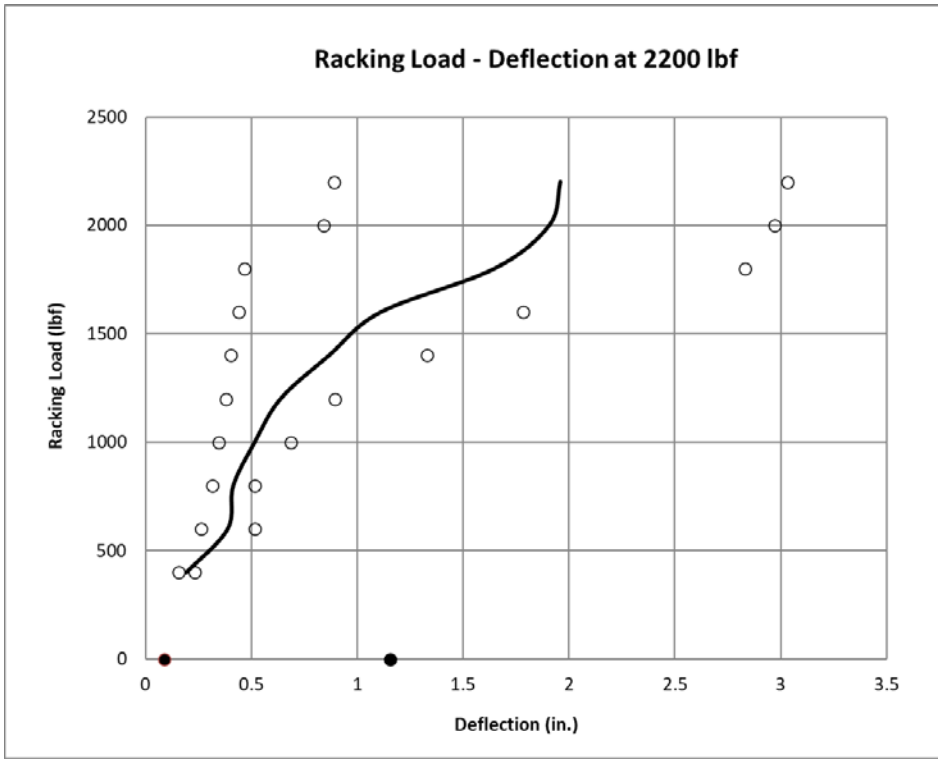
Load-Deflection Charts – Specimens 1-2





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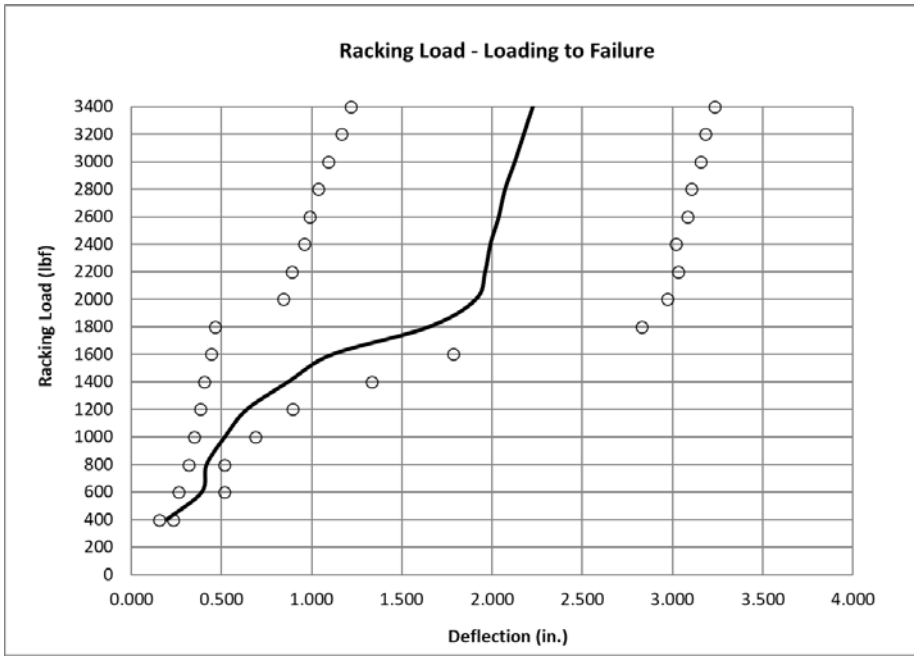

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Photographs
Assembly 1 in Test Apparatus (Typical)

Load Cell

Deflection Gauge (x3)

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Specimen 1 Failure (Stud Fastener Withdrawal)

Specimen 2 Failure (Corner Rupture)

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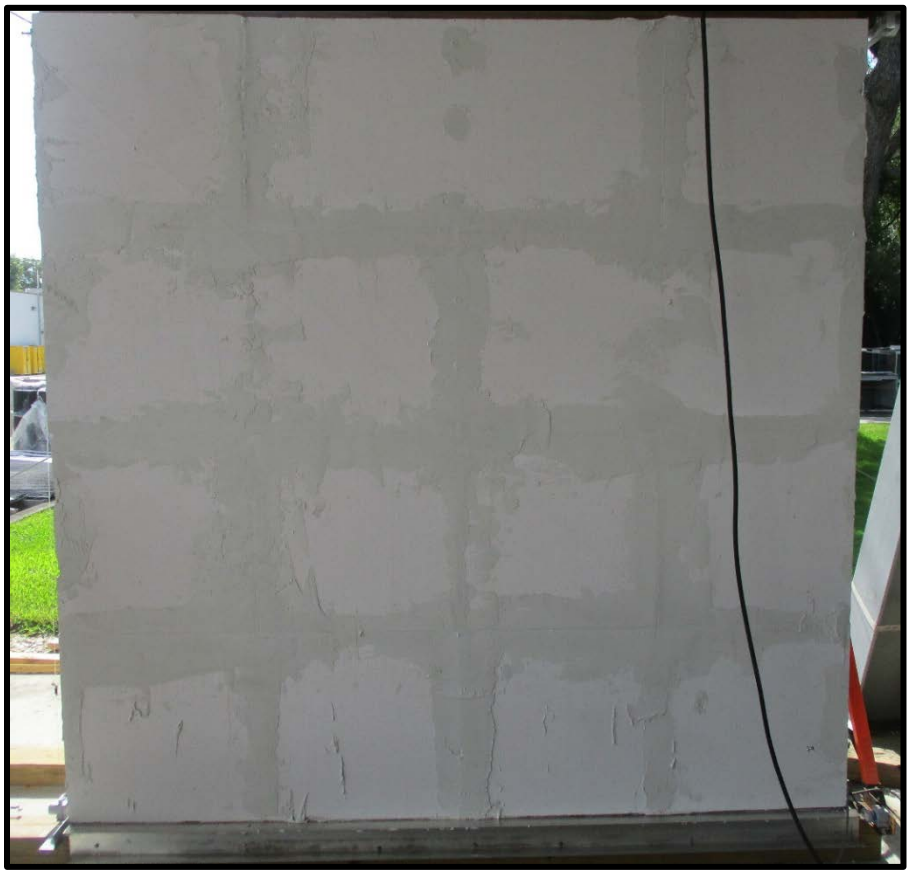
Assembly 2 After Testing - Damage Occurred on End Panels Only at Anchor Locations (Typical)



End of Report