



## TEST REPORT

Date	2025-10-17
Report Number	0093-41-1-6040
Client	Engage Building Products Inc.
Address	101-4441 76th Ave SE, Calgary, AB T2C 2G8

### SUBJECT

Summary conclusion and application of test results derived from ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*, completed for installations of Lap Siding.

### TEST SUMMARY

Eight (8) representative wall assemblies have been tested in accordance with ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*, at Engage Building Products Inc. in Calgary, Alberta.

### TESTING PROCEDURE

The FastPlank Systems Lap Siding cladding specimen was tested in accordance with ASTM E330/E330M-14 to evaluate structural performance under uniform static air pressure. The assembly walls were securely mounted in a sealed test chamber, and deflection measurement devices were positioned on the panels and support members as specified in the attachments. A uniform static air pressure equal to the target load was applied in the negative pressure direction and maintained for 10 seconds. Deflection was recorded during peak loading, and permanent deformation was assessed 1 to 5 minutes after unloading. The test load began at 15 psf and was increased in increments of 15 psf until ultimate failure of the specimen or framing. The specimen was monitored for structural deformation, fastener integrity, and overall performance, with results evaluated against the standard's allowable limits.

### PRODUCT DESCRIPTION

FastPlank Systems Lap Siding are aluminum cladding planks with fastening clips and trim accessories, serving as an exterior cladding. Planks are extruded 3/64" thick aluminum with a V-Notch™ profile, available in widths of 6" and lengths of 16'. The plank exterior surface is typically finished with a powder-coat paint in a variety of colors.

### ASSEMBLY DESCRIPTION

The framed walls were 60" wide and 120" tall using SPF No.2 dimensional lumber or 1-5/8" x 6" 33 ksi 18 ga. or 50ksi 16ga steel studs at 16" O.C. A variation of sheathing, and Z-girt were used as specimen substrates, per Table 1 details. Sheathing materials including 7/16" OSB, 5/8" Plywood, 1/2" Ext. Drywall or 7/16" OSB with 2" rigid insulation were fastened with #8 x 1½" screws, spaced at 8" O.C. Clips were placed vertically, fastened using #10 - 1-1/2" screws into wood, #10-#16 – 3/4" screws into steel studs, per Table 1 details.

Lap Siding planks were installed with a starter track at the base of the wall, and side and top trim on other sides to secure the panels. Planks were locked into pre-mounted clips, and with V-Notch™ interlocking between planks, ensuring a tight interlock throughout installation.



**Table 1: Test Assembly Configurations for FastPlank Lap Siding Planks.**

Test Series	Configuration <sup>1,2,3</sup>	Fastener Substrate	Framing <sup>3</sup>	Fastener	Sheathing
LS-01	Clips @ 16" O.C. straight	Studs	2"x6" SPF No. 2 @ 16" O.C.	#10 - 1-1/2" screw	7/16" OSB
LS-02	Clips @ 32" O.C. staggered	Studs	2"x6" SPF No. 2 @ 16" O.C.	#10 - 1-1/2" screw	1/2" Ext. Drywall
LS-03	Clips @ 32" O.C. staggered	Steel Z-girt	2"x6" SPF No. 2 @ 16" O.C. w/ vertical 18 ga. 33 ksi 1.5" x 2" steel z-girt	#10 – 16 x 3/4" Tek screw into Steel z-girt #10—1-1/2" screw into wood @ 16" O.C.	7/16" OSB + 2" rigid insulation
LS-04	Clips @ 32" O.C. staggered	Sheathing	2"x6" SPF No.2 @ 16" O.C.	#10 – 1-1/2" screw	7/16" OSB
LS-05	Clips @ 32" O.C. staggered	Sheathing	2"x4" SPF No.2 @ 16" O.C.	#10 – 1-1/2" screw	5/8" Plywood
LS-06	Clips @ 32" O.C. staggered	Studs	2"x6" SPF No.2 @ 16" O.C.	#10 – 1-1/2" screw	7/16" OSB
LS-07	Clips @ 32" O.C. staggered	Studs	1-5/8" x 6" 33 ksi 18 ga. Steel stud @ 16" O.C.	#10 – 1-1/2" Tek screw into steel	1/2" Ext. Drywall
LS-08	Clips @ 32" O.C. staggered	Studs	1-5/8" x 6" 50 ksi 16 ga. Steel stud @ 16" O.C.	#10 – 1-1/2" Tek screw into steel	1/2" Ext. Drywall

1. A straight configuration consists of clips aligned along each plank separation with clips at each plank spaced as dimensioned.
2. A staggered configuration consists of clips aligned along every plank separation with the clip starting locations alternating between the first and second plank to create a staggered appearance. Clips at each plank spaced as dimensioned.
3. Test wall frames are 5' x 10', unless noted otherwise.

**Table 2: FastPlank Lap Siding Planks ASTM E330 Testing Results**

Test	Load Data					Allowable Deflection at Deflection Service Load <sup>2</sup>				
	Max Load (psf)	Avg. Max Load (psf)	Deviation from Ave.	< 15% Variance	Allowable Deflection Service Load (ASD) (psf) <sup>1</sup>	L/180 Limit (in.)	Measured Deflection (in.) <sup>2</sup>	L/60 Limit (in.)	Measured Deflection (in.) <sup>2</sup>	Measure < Limit
						Wall		Panel		
LS-01-1	202	215	-6.29%	OKAY	71	0.667	0.247	0.267	0.182	OKAY
LS-01-2	229		6.11%	OKAY	80	0.667	0.295	0.267	0.142	OKAY
LS-01-3	215		-0.20%	OKAY	75	0.667	0.205	0.267	0.194	OKAY
LS-02-1	160	175	-8.92%	OKAY	56	0.667	0.159	0.267	0.185	OKAY
LS-02-2	185		5.59%	OKAY	65	0.667	0.168	0.267	0.245	OKAY
LS-02-3	180		2.74%	OKAY	63	0.667	0.183	0.267	0.211	OKAY
LS-03-1	163	163	-0.14%	OKAY	57	0.667	0.105	0.267	0.209	OKAY
LS-03-2	173		5.92%	OKAY	61	0.667	0.141	0.267	0.390	EXCEEDS
LS-03-3	154		-6.15%	OKAY	54	0.667	0.095	0.267	0.236	OKAY
LS-04-1	85	85	-0.28%	OKAY	30	0.667	0.082	0.267	0.108	OKAY
LS-04-2	90		5.79%	OKAY	32	0.667	0.103	0.267	0.223	OKAY
LS-04-3	80		-5.86%	OKAY	28	0.667	0.073	0.267	0.285	EXCEEDS
LS-05-1	198	200	-0.95%	OKAY	69	0.667	0.449	0.267	0.240	OKAY
LS-05-2	200		0.10%	OKAY	70	0.667	0.395	0.267	0.300	EXCEEDS
LS-05-3	202		0.85%	OKAY	71	0.667	0.440	0.267	0.327	EXCEEDS



LS-06-1	211	198	6.16%	OKAY	74	0.667	0.217	0.267	0.229	OKAY
LS-06-2	186		-6.34%	OKAY	65	0.667	0.193	0.267	0.198	OKAY
LS-06-3	198		-0.20%	OKAY	69	0.667	0.213	0.267	0.204	OKAY
LS-07-1	145	132	9.29%	OKAY	51	0.667	0.269	0.267	0.127	OKAY
LS-07-2	109		-18.82%	EXCEEDS	38	0.667	0.074	0.267	0.114	OKAY
LS-07-3	142		7.20%	OKAY	50	0.667	0.120	0.267	0.129	OKAY
LS-08-1	151	168	-10.42%	OKAY	53	0.667	0.280	0.267	0.053	OKAY
LS-08-2	189		12.00%	OKAY	66	0.667	0.162	0.267	0.127	OKAY
LS-08-3	163		-2.91%	OKAY	57	0.667	0.166	0.267	0.170	OKAY

1. Allowable deflection service load determined using test load divided by a safety factor of 2, and multiplied by 0.7 in accordance with IBC Table 1604.3 *Deflection Limits* and ASCE 7-22 Chapter 30, *Wind Loads: Components and Cladding*.
2. A linear trendline was created for each data set and used to calculate the wall/plank deflection at the allowable deflection service load of the test series.

**Table 3: FastPlank Lap Siding Planks Failure Modes**

Test	Max Load (psf)	Failure Modes
LS-01-1	202	Planks disengaged
LS-01-2	229	Planks disengaged
LS-01-3	215	Planks disengaged
LS-02-1	160	Planks disengaged
LS-02-2	185	Planks let go from Z-girt
LS-02-3	180	Stud pull out
LS-03-1	163	Planks let go from Z-girt
LS-03-2	173	Stud pull out
LS-03-3	154	Stud pull out
LS-04-1	85	Stud pull out
LS-04-2	90	Sheathing pull out
LS-04-3	80	Planks disengaged
LS-05-1	198	Tape failed
LS-05-2	200	Planks disengaged
LS-05-3	202	Tape failed
LS-06-1	211	Planks disengaged
LS-06-2	186	Planks disengaged
LS-06-3	198	Planks disengaged
LS-07-1	145	Planks disengaged
LS-07-2	109	Not specified
LS-07-3	142	Planks disengaged
LS-08-1	151	Stud bent
LS-08-2	189	Planks disengaged
LS-08-3	163	Planks disengaged

**Table 4: FastPlank Lap Siding Planks Allowable Design Load**

Test	Allowable Design Load (ASD) (psf) <sup>1</sup>
LS-01	108



LS-02	87
LS-03	59
LS-04	37
LS-05	83
LS-06	99
LS-07	55
LS-08	84

1. Allowable design load is lesser of:
  - i. Average max test load divided by safety factor of 2.
  - ii. Test load divided by 0.7 when panel reaches service deflection limit.
  - iii. If data set has samples that exceed 15% tolerance, lowest result divided by safety factor of 2.

## CONCLUSION

This test report includes 24 of 24 scheduled ASTM E330/E330M-14 tests.


The listed tested assemblies have been tested in conformance with the criteria of ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*).


The testing results in Table 3 have been evaluated by engineering design methodology in general accordance with ASCE7-22 and Table 2 has been prepared in a format with design information that is suitable to publish in engineering code compliance report documents based on the IBC and NBCC Codes.

The testing has considered negative wind pressure direction only.

## SIGNED

This report has been prepared and reviewed on behalf of BOCA by:

  
\_\_\_\_\_  
Craig Gao, Eng. Tech.

  
\_\_\_\_\_  
Chris Bowness, P.Eng., P.E.

2025-10-17  
\_\_\_\_\_  
Date

2025-10-17  
\_\_\_\_\_  
Date



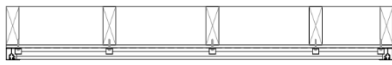
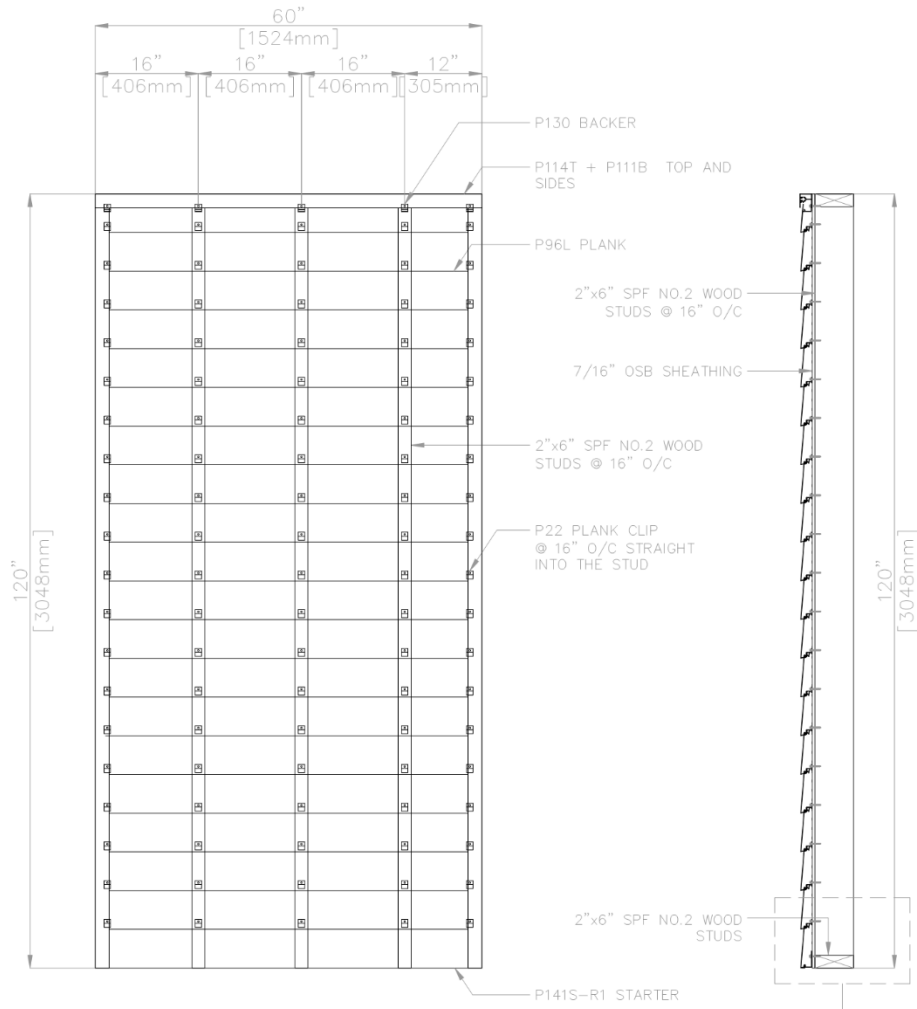
-END OF REPORT-



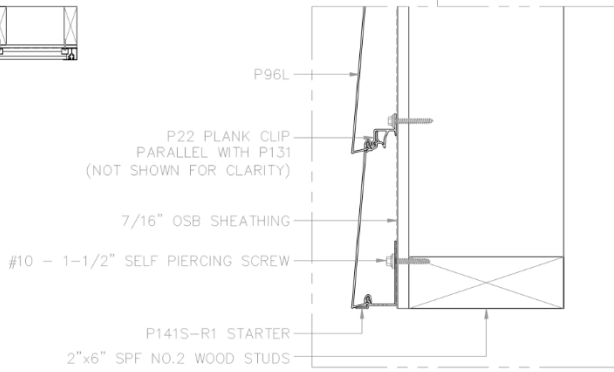
**ATTACHMENTS:**

1. Test Assembly Drawings	Pg. 6 – 13
2. LS-01-1 Test Results	Pg. 14 – 15
3. LS-01-2 Test Results	Pg. 16 – 17
4. LS-01-3 Test Results	Pg. 18 – 19
5. LS-02-1 Test Results	Pg. 20 – 21
6. LS-02-2 Test Results	Pg. 22 – 23
7. LS-02-3 Test Results	Pg. 24 – 25
8. LS-03-1 Test Results	Pg. 26 – 27
9. LS-03-2 Test Results	Pg. 28 – 29
10. LS-03-3 Test Results	Pg. 30 – 31
11. LS-04-1 Test Results	Pg. 32 – 33
12. LS-04-2 Test Results	Pg. 34 – 35
13. LS-04-3 Test Results	Pg. 36 – 37
14. LS-05-1 Test Results	Pg. 38 – 39
15. LS-05-2 Test Results	Pg. 40 – 41
16. LS-05-3 Test Results	Pg. 42 – 43
17. LS-06-1 Test Results	Pg. 44 – 45
18. LS-06-2 Test Results	Pg. 46 – 47
19. LS-06-3 Test Results	Pg. 48 – 49
20. LS-07-1 Test Results	Pg. 50 – 51
21. LS-07-2 Test Results	Pg. 52 – 53
22. LS-07-3 Test Results	Pg. 54 – 55
23. LS-08-1 Test Results	Pg. 56 – 57
24. LS-08-2 Test Results	Pg. 58 – 59
25. LS-08-3 Test Results	Pg. 60 – 61

# LP1 TEST WALL



2"x6" SPF WOOD STUDS @ 16" O/C W/ 7/16" OSB  
 #10 - 1-1/2" SELF PIERCING SCREW  
 CLIPS @ 16" O.C. INTO STUDS



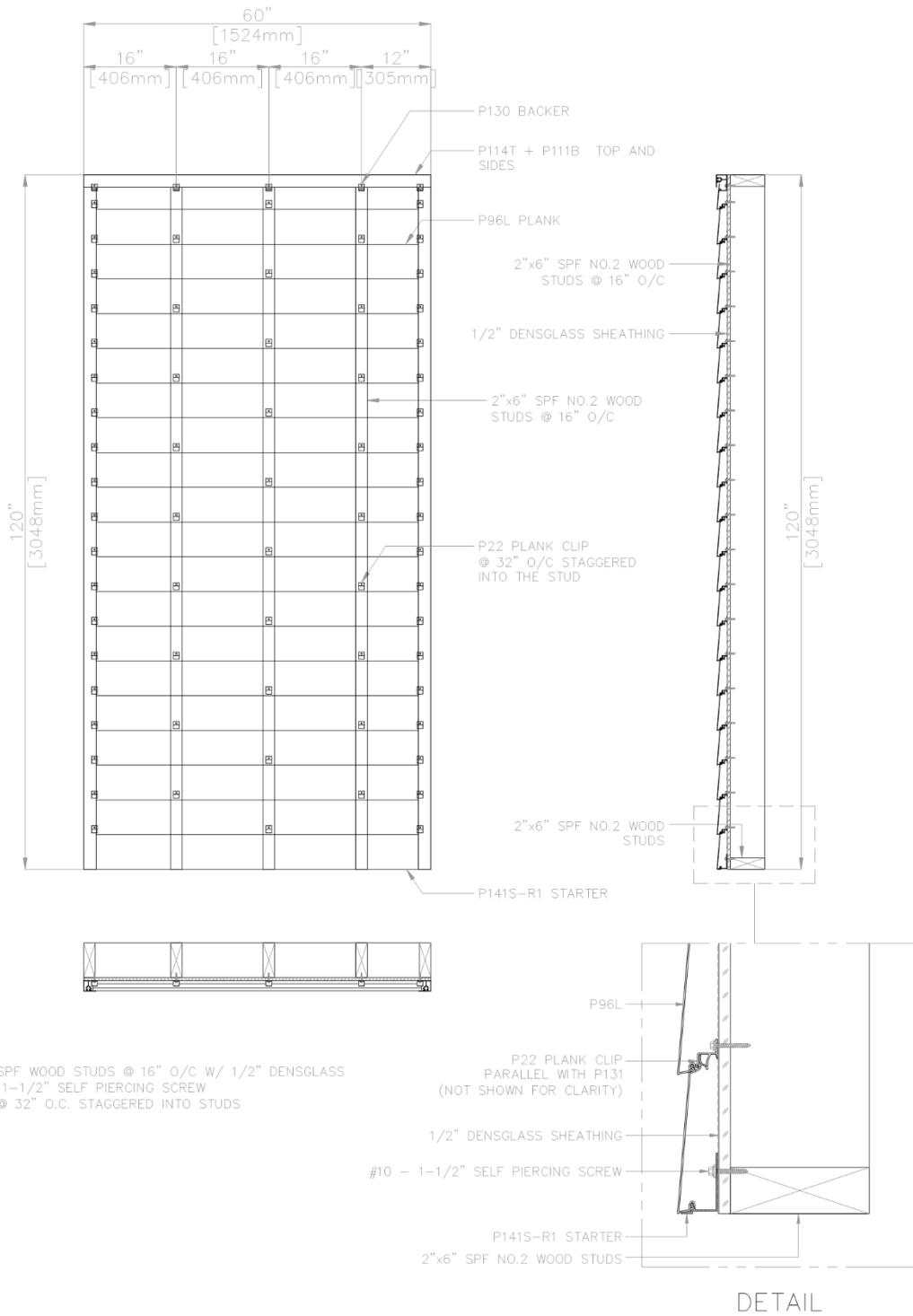
DETAIL

DESCRIPTION			
ASTM E330 ASSEMBLY 1 FOR LAP SIDING			
SCALE	NTS	DRAWING NUMBER	
DATE	09JUL2025	LS1.0	
DRWN BY	JB		
CHK BY	AS		



Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP2 TEST WALL

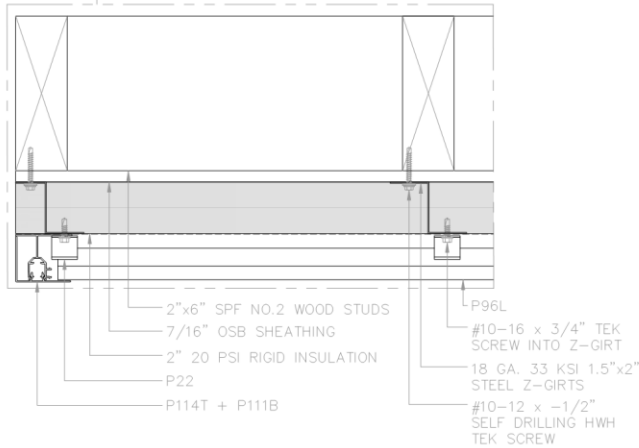
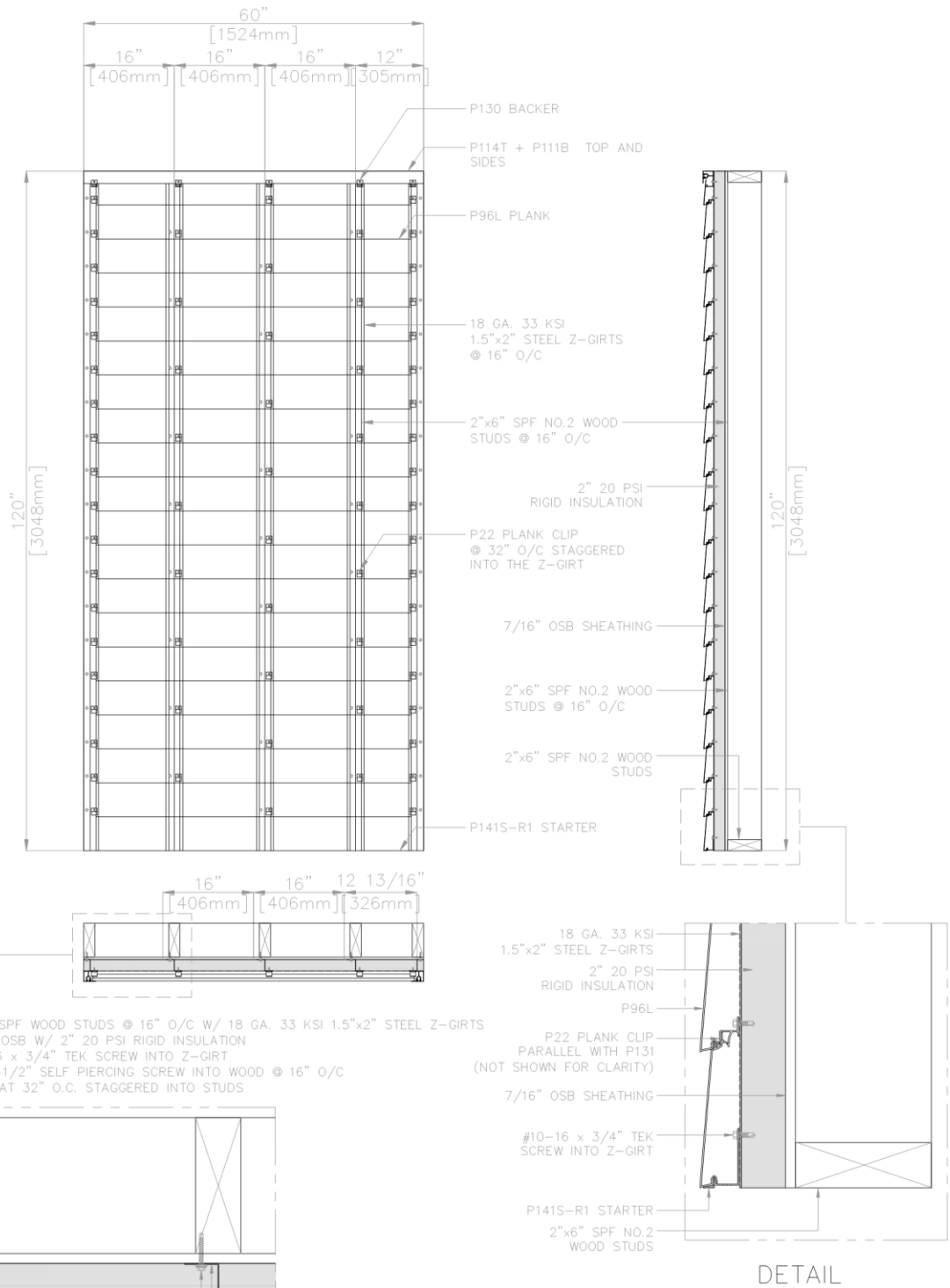


DESCRIPTION			
ASTM E330 ASSEMBLY 2 FOR LAP SIDING			
SCALE	NTS	DRAWING NUMBER	
DATE	09JUL2025	LS2.0	
DRWN BY	JB		
CHK BY	AS		



Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP3 TEST WALL

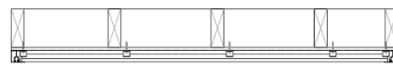
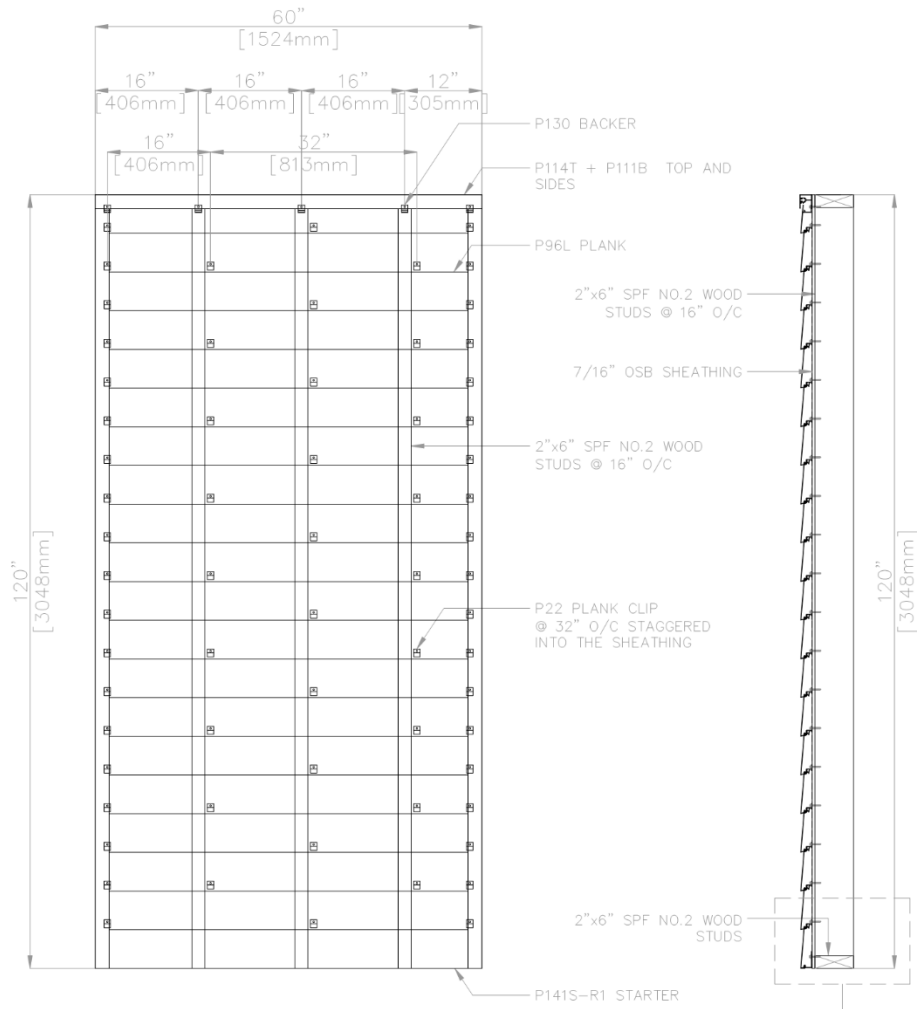


DESCRIPTION			
ASTM E330 ASSEMBLY 3 FOR LAP SIDING			
SCALE	NTS	DRAWING NUMBER	
DATE	09JUL2025	LS3.0	
DRWN BY	JB		
CHK BY	AS		

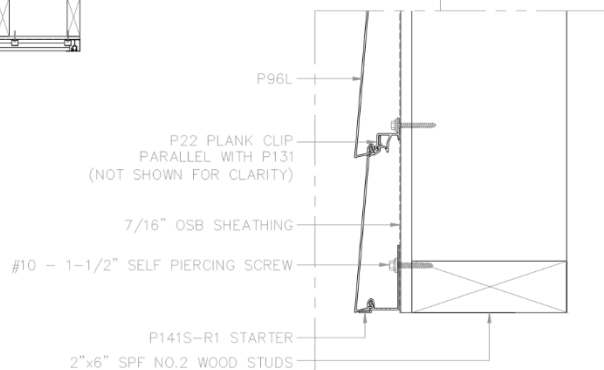


Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP4 TEST WALL



2"x6" SPF WOOD STUDS @ 16" O/C W/ 7/16" OSB  
 #10 - 1-1/2" SELF PIERCING SCREW  
 CLIPS @ 32" O.C. STAGGERED INTO SHEATHING

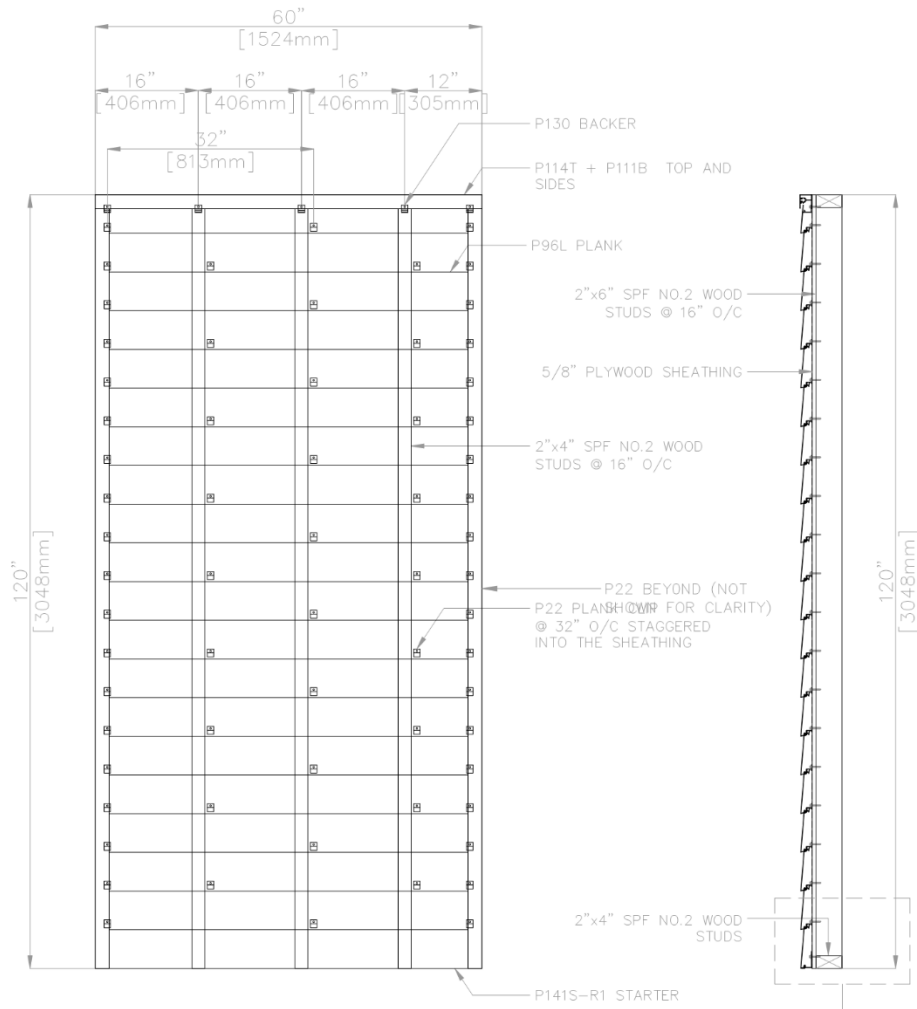


TYPICAL DETAIL

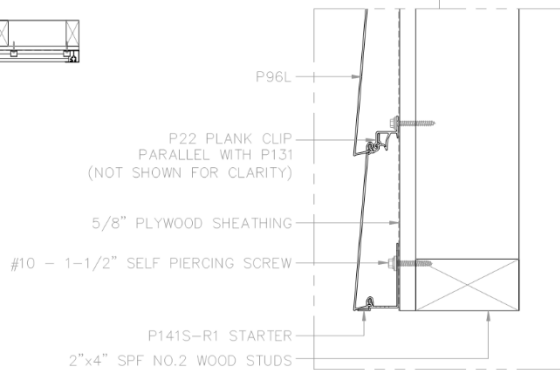
DESCRIPTION			
ASTM E330 ASSEMBLY 4 FOR LAP SIDING			
	SCALE	NTS	DRAWING NUMBER
	DATE	09JUL2025	LS4.0
	DRWN BY	JB	
	CHK BY	AS	

Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP5 TEST WALL



2"x4" SPF WOOD STUDS @ 16" O/C W/ 5/8" PLYWOOD  
 #10 - 1-1/2" SELF PIERCING SCREW  
 CLIPS @ 32" O.C. STAGGERED INTO SHEATHING

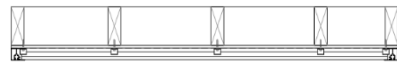
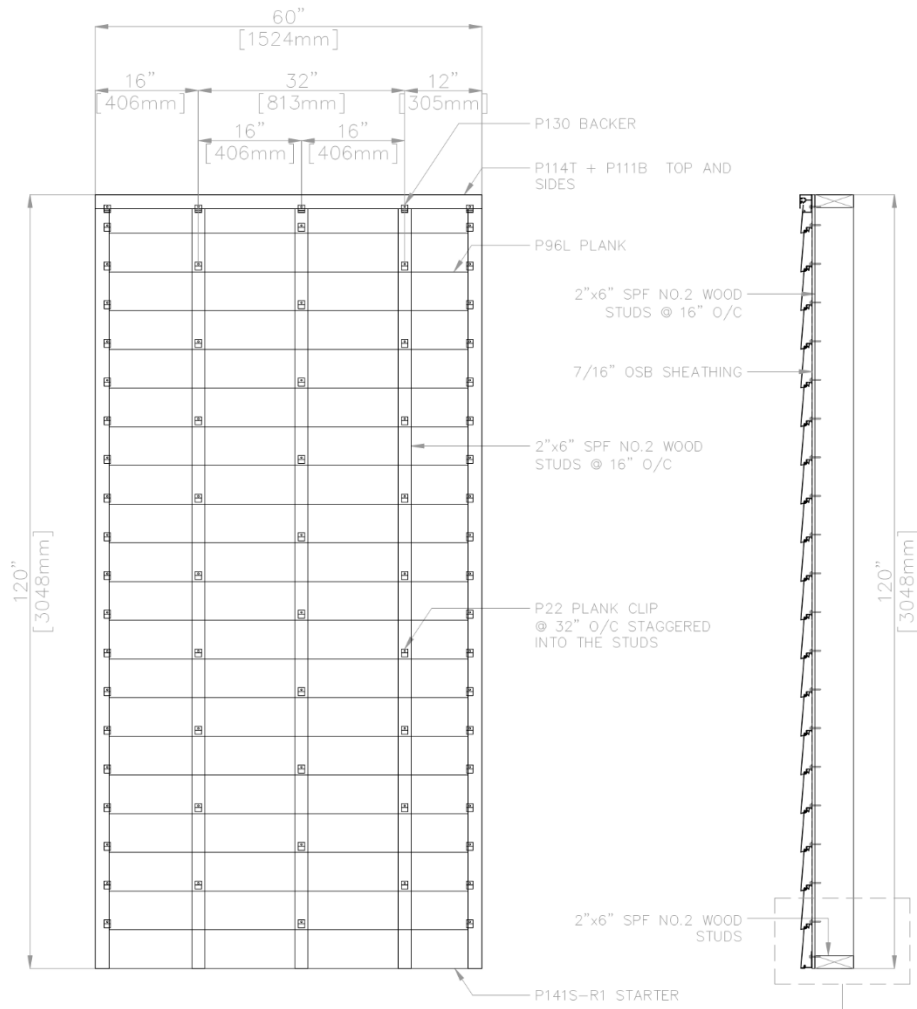


DETAIL

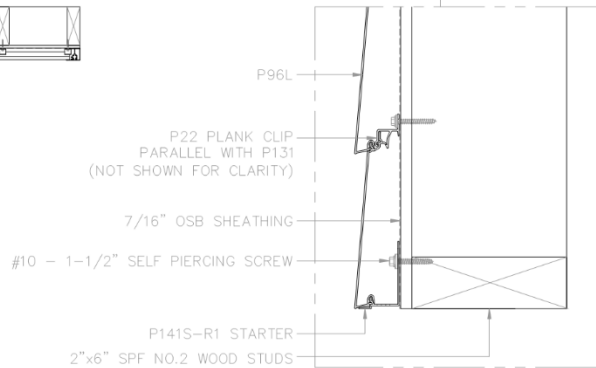
DESCRIPTION			
ASTM E330 ASSEMBLY 5 FOR LAP SIDING			
	SCALE	NTS	DRAWING NUMBER
	DATE	09JUL2025	LS5.0
	DRWN BY	JB	
	CHK BY	AS	

Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP6 TEST WALL



2"x6" SPF WOOD STUDS @ 16" O/C W/ 7/16" OSB  
 #10 - 1-1/2" SELF PIERCING SCREW  
 CLIPS @ 32" O.C. STAGGERED INTO STUDS

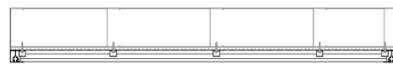
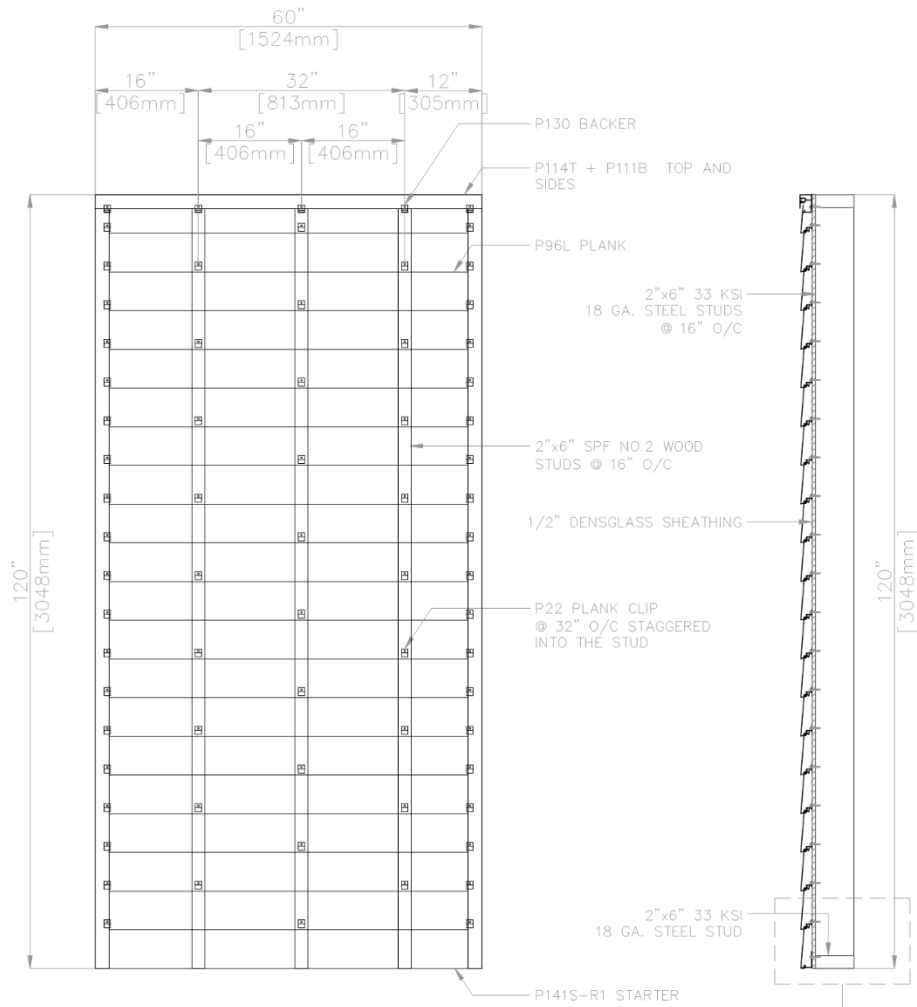


TYPICAL DETAIL

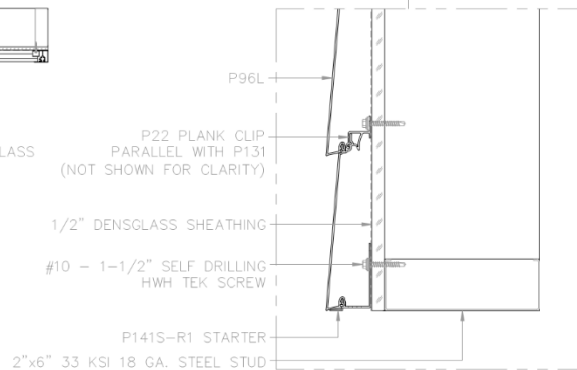
DESCRIPTION			
ASTM E330 ASSEMBLY 6 FOR LAP SIDING			
	SCALE	NTS	DRAWING NUMBER
	DATE	09JUL2025	LS6.0
	DRWN BY	JB	
CHK BY	AS		

Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP7 TEST WALL



2"x6" 18 GA. 33 KSI STEEL STUDS @ 16" O/C W/ 1/2" DENSGLOSS  
 #10 - 1-1/2" SELF DRILLING HWH TEK SCREW  
 CLIPS @ 32" O.C. STAGGERED INTO STUDS

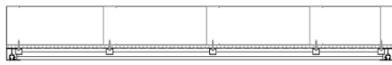
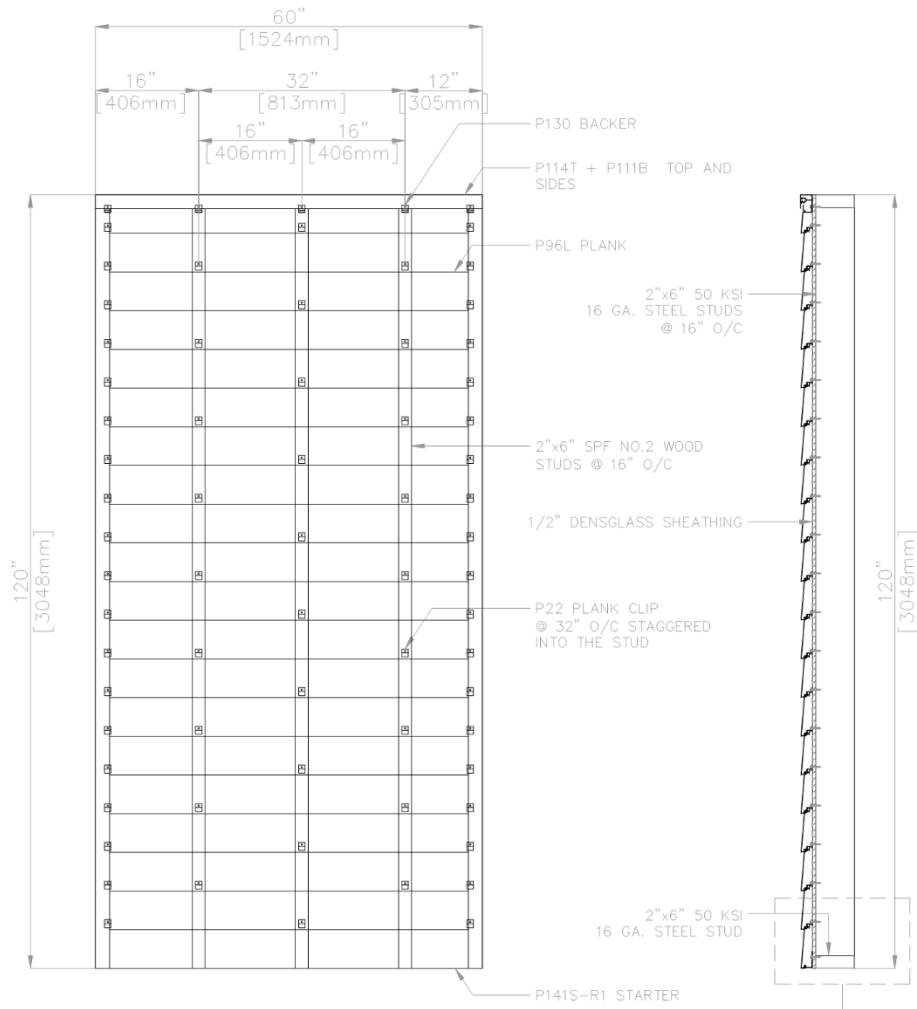


DETAIL

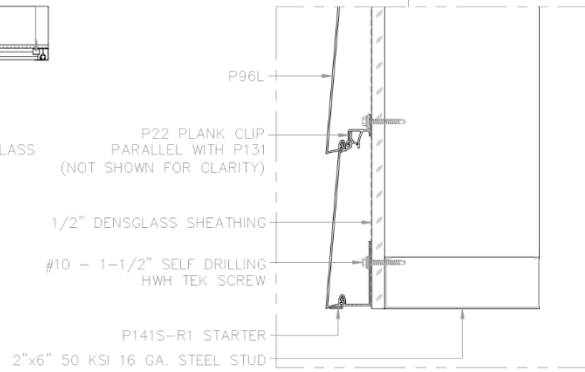
DESCRIPTION			
ASTM E330 ASSEMBLY 7 FOR LAP SIDING			
	SCALE	NTS	DRAWING NUMBER
	DATE	09JUL2025	LS7.0
	DRWN BY	JB	
	CHK BY	AS	

Copyright © 2023 EasyTrim Reveals®. All rights reserved.

# LP8 TEST WALL



2"x6" 16 GA. 50 KSI STEEL STUDS @ 16" O/C W/ 1/2" DENSGLOSS  
 #10 - 1-1/2" SELF DRILLING HWH TEK SCREW  
 CLIPS @ 32" O.C. STAGGERED INTO STUDS



DETAIL

DESCRIPTION			
ASTM E330 ASSEMBLY 8 FOR LAP SIDING			
	SCALE	NTS	DRAWING NUMBER
	DATE	09JUL2025	LS8.0
	DRWN BY	JB	
	CHK BY	AS	

Copyright © 2023 EasyTrim Reveals®. All rights reserved.



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 9/3/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-01-1**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**

Configuration: 16" O.C. studs, Clips @ 16" O.C. into stud  
 Framing: 2x6 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 7/16" OSB  
 Air Seal: Tape used to air seal panel gaps, tape will not influence test results

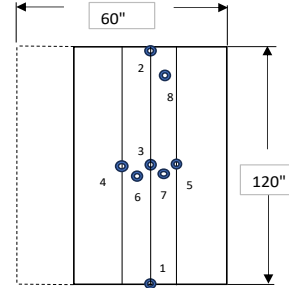
**Equipment:**

**Pressure Chamber**  
 Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

**Deflection Gauges (Phidget potentiometers)**

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**  
 (not to scale)  
 Gauge 1: Stud  
 Gauge 2: Stud  
 Gauge 3: Stud  
 Gauge 4: Stud  
 Gauge 5: Stud  
 Gauge 6: Plank  
 Gauge 7: Plank  
 Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:		
Start:	14:55	Temp: 22.3
Finish:	-	%RH: 51

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

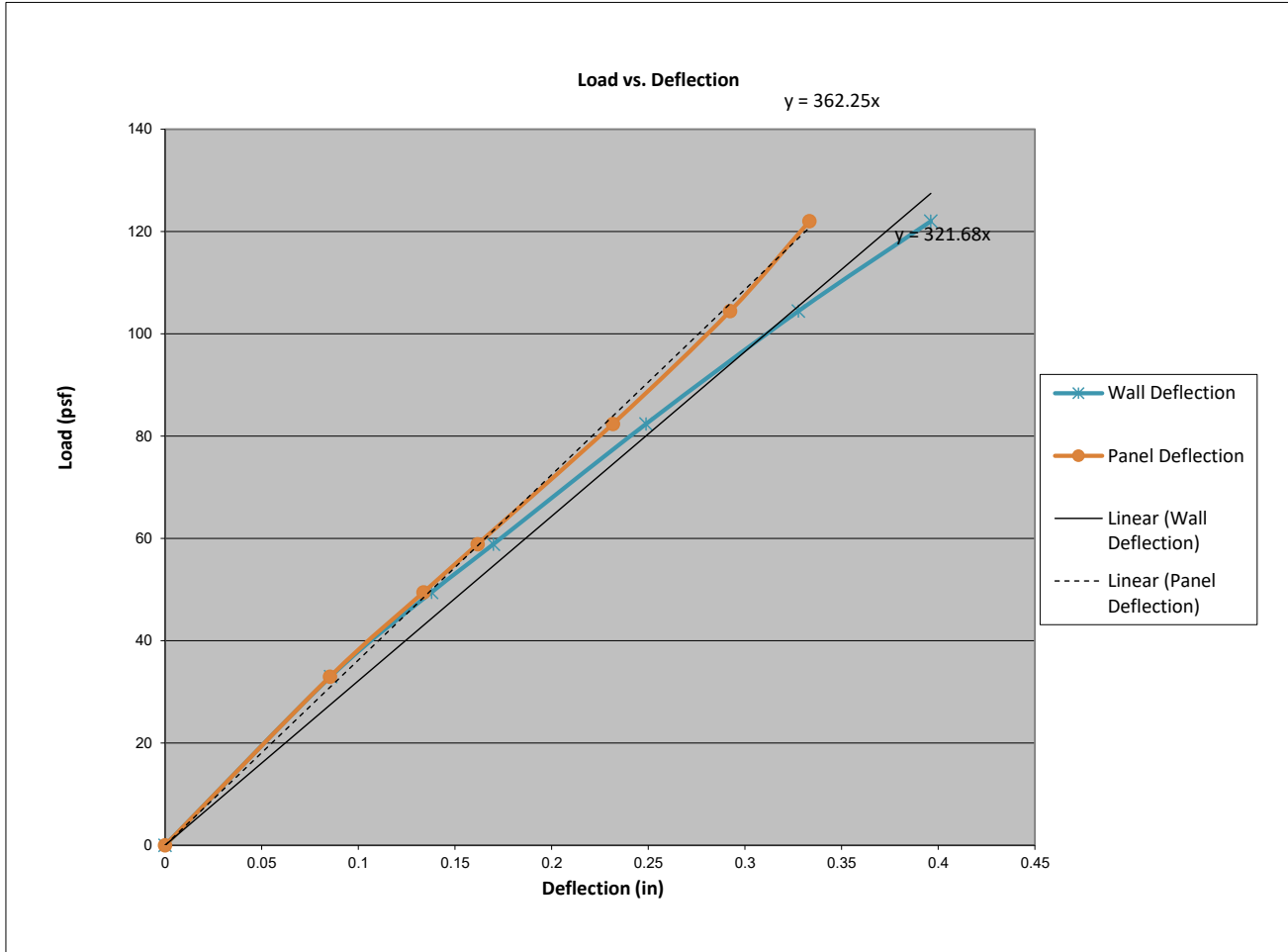
Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	33.0	10 sec.	0.061	0.071	0.194	0.144	0.117	0.237	0.229	0.111	
0		1-5mins	0.008	0.009	0.010	0.009	0.009	0.009	0.011	0.007	
45	49.5	10 sec.	0.108	0.133	0.328	0.247	0.200	0.392	0.011	0.186	
0		1-5mins	0.019	0.025	0.023	0.021	0.019	0.024	0.011	0.020	
60	58.9	10 sec.	0.139	0.170	0.412	0.310	0.251	0.486	0.011	0.230	
0		1-5mins	0.026	0.036	0.032	0.029	0.025	0.033	0.011	0.029	
75	82.4	10 sec.	0.222	0.271	0.621	0.485	0.380	0.727	0.011	0.335	
0		1-5mins	0.046	0.074	0.059	0.059	0.043	0.064	0.011	0.057	
100	104.4	10 sec.	0.311	0.383	0.840	0.672	0.512	0.967	0.011	0.444	
0		1-5mins	0.065	0.117	0.088	0.090	0.062	0.096	0.011	0.089	
120	122.0	10 sec.	0.379	0.458	1.013	0.815	0.616	1.148	0.011	0.526	
0		1-5mins	0.081	0.152	0.115	0.118	0.077	0.124	0.011	0.114	
130	134.0	10 sec.	0.434	0.502	1.139	0.914	0.690	1.275	0.011	0.582	
0		1-5mins	0.095	0.169	0.132	0.135	0.089	0.144	0.011	0.129	
150	162.0	10 sec.	0.557	0.590	1.425	1.128	0.861	1.557	0.011	0.701	
0		1-5mins	0.123	0.196	0.166	0.163	0.110	0.178	0.011	0.150	
200	202.3	10 sec.	0.668	0.525	1.733	1.346	1.036	1.837	1.705	0.708	
0		1-5mins	0.077	0.047	0.099	0.088	0.072	0.107	0.097	0.046	

Mode of Failure	
Max Load (psf)	202.3
The Planks were disengaged with each other on horizontal joint.	



**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-01-1	
Max Load	202.3	psf
Allowable Design Load (ASD) = Max Load / 2	101.1	psf
Deflection Service Load (ASD) = Allowable * 0.7	70.8	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.2466	in
Panel Deflection @ Deflection Service Load (ASD)	0.1825	in
Max Load @ Wall Deflection Limit	191	psf
Max Load @ Panel Deflection Limit	103	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
33.0	0.086	0.085
49.5	0.138	0.134
58.9	0.170	0.162
82.4	0.249	0.232
104.4	0.328	0.292
122.0	0.396	0.333
134.0	0.446	0.361



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

**Test:** Transverse Load - Negative Wind Load  
**Client:** Engage Building Products  
**Date:** 9/5/2025  
**Product:** Lap Siding  
**Test Method(s):** ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

**Test#:** LS-01-2

**Project#:** 0093  
**Technician(s):** Ali  
**Reviewer:** Chris  
**Location:** 101-4441 76 Ave. SE Calgary AB T2C2G8

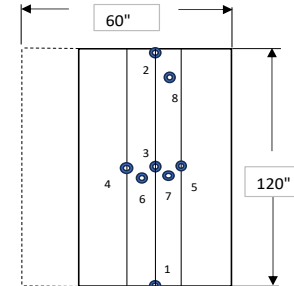
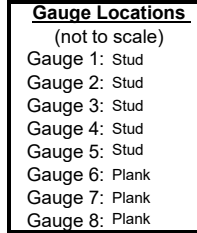
**Installation:**

**Configuration:** 16" O.C. studs, Clips @ 16" O.C. into stud  
**Framing:** 2x6 SPF Wood Stud  
**Fastener:** #10-1-1/2 Self Piercing Screw  
**Sheathing:** 7/16" OSB  
**Air Seal:** Tape used to air seal panel gaps, tape will not influence test results

**Equipment:**

**Pressure Chamber**  
 Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

**Deflection Gauges (Phidget potentiometers)**  
 Sensor 1: S/N - F29B  
 Sensor 2: S/N - 9BFA  
 Sensor 3: S/N - 87CE  
 Sensor 4: S/N - F16B  
 Sensor 5: S/N - F14E  
 Sensor 6: S/N - F28I  
 Sensor 7: S/N - F174  
 Sensor 8: S/N - F282



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:		
Start:	13:59	Temp: 21.1
Finish:	-	%RH: 43

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	16	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	36.6	10 sec.	0.083	0.078	0.224	0.175	0.137	0.273	0.244	0.108	
0		1-5mins	0.015	0.012	0.021	0.019	0.015	0.021	0.019	0.014	
45	47.8	10 sec.	0.125	0.113	0.329	0.256	0.202	0.388	0.348	0.154	
0		1-5mins	0.023	0.019	0.031	0.027	0.021	0.031	0.027	0.02	
60	66.7	10 sec.	0.18	0.147	0.345	0.358	0.279	0.534	0.478	0.196	
0		1-5mins	0.032	0.023	0.039	0.034	0.027	0.04	0.033	0.026	
75	82.5	10 sec.	0.239	0.183	0.59	0.463	0.361	0.678	0.608	0.244	
0		1-5mins	0.044	0.031	0.052	0.045	0.036	0.053	0.045	0.035	
100	107	10 sec.	0.33	0.238	0.796	0.628	0.486	0.894	0.803	0.315	
0		1-5mins	0.064	0.043	0.072	0.062	0.052	0.072	0.066	0.047	
120	134	10 sec.	0.438	0.302	1.051	0.831	0.641	1.148	1.035	0.404	
0		1-5mins	0.084	0.057	0.098	0.083	0.076	0.095	0.095	0.066	
150	160	10 sec.	0.532	0.364	1.292	1.023	0.781	1.387	1.249	0.481	
0		1-5mins	0.109	0.068	0.123	0.104	0.093	0.118	0.117	0.082	
190	210	10 sec.	0.757	0.482	1.769	1.406	1.058	1.7	1.615	0.608	
0		1-5mins	0.15	0.086	0.166	0.145	0.117	0.119	0.152	0.099	
230	229	10 sec.	0.83	0.54	1.983	1.578	1.174	2.153	1.831	0.685	
0		1-5mins	0.176	0.1	0.191	0.164	0.13	0.28	0.176	0.118	

Mode of Failure	
Max Load (psf)	229.0
The Planks were disengaged with each other on horizontal joint.	

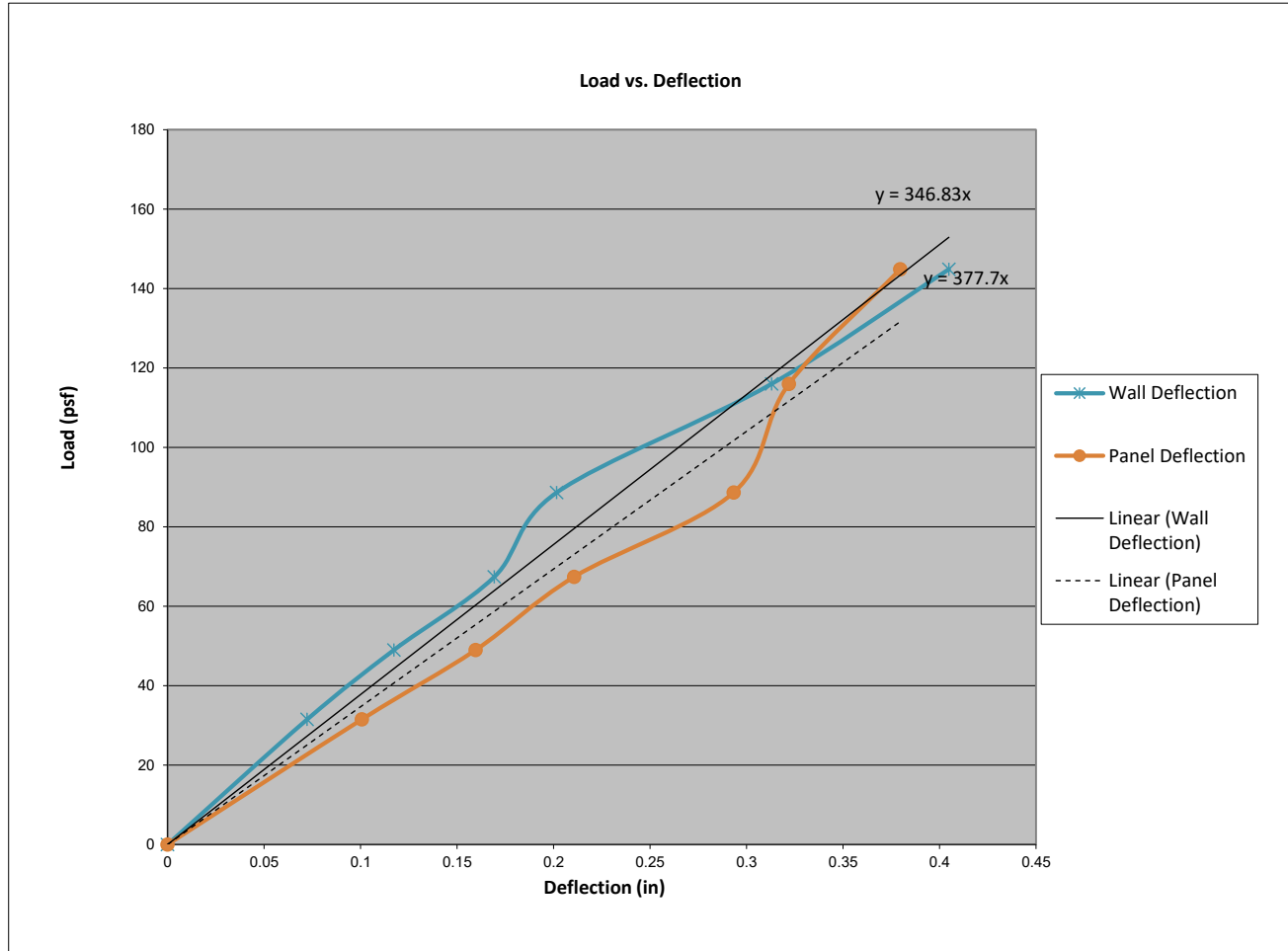






**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-01-3	
Max Load	215.0	psf
Allowable Design Load (ASD) = Max Load / 2	107.5	psf
Deflection Service Load (ASD) = Allowable * 0.7	75.3	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.2050	in
Panel Deflection @ Deflection Service Load (ASD)	0.1936	in
Max Load @ Wall Deflection Limit	215	psf
Max Load @ Panel Deflection Limit	104	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
31.5	0.072	0.101
49.0	0.117	0.160
67.4	0.169	0.211
88.6	0.202	0.293
116.0	0.313	0.322
144.9	0.405	0.380
181.0	0.513	0.446



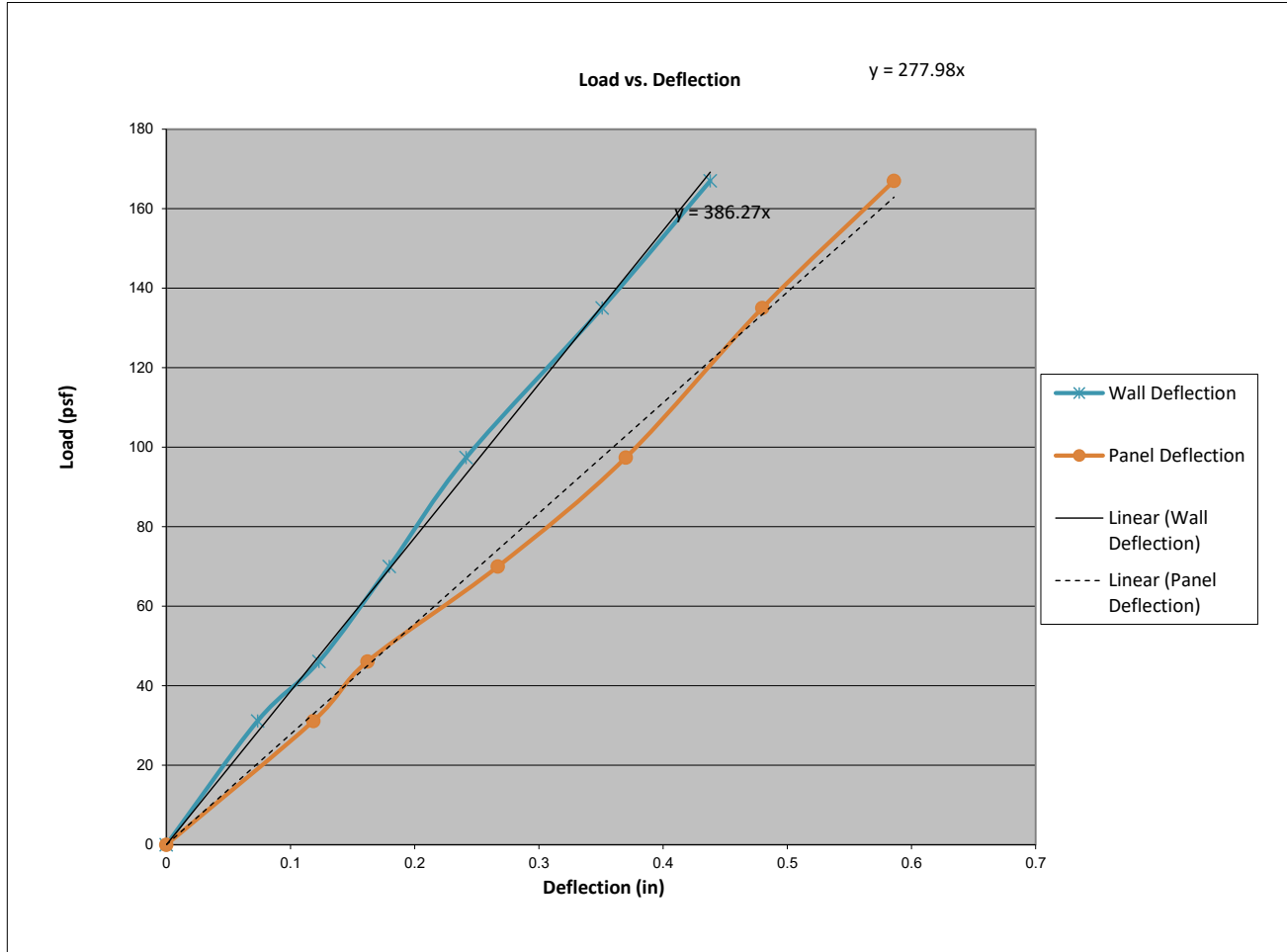






**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-02-2	
Max Load	185.0	psf
Allowable Design Load (ASD) = Max Load / 2	92.5	psf
Deflection Service Load (ASD) = Allowable * 0.7	64.8	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.1678	in
Panel Deflection @ Deflection Service Load (ASD)	0.2450	in
Max Load @ Wall Deflection Limit	185	psf
Max Load @ Panel Deflection Limit	70	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
31.2	0.074	0.119
46.1	0.123	0.162
70.0	0.180	0.267
97.4	0.242	0.370
135.0	0.351	0.480
167.0	0.438	0.586
185.0	0.481	0.756



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 10/6/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-02-3**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
 Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 1/2" Drywall  
 Air Seal: N/A

**Equipment:**

Pressure Chamber

Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

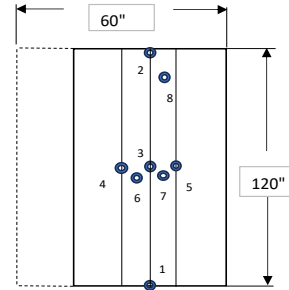
Deflection Gauges (Phidget potentiometers)

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**

(not to scale)

- Gauge 1: Stud
- Gauge 2: Stud
- Gauge 3: Stud
- Gauge 4: Stud
- Gauge 5: Stud
- Gauge 6: Plank
- Gauge 7: Plank
- Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:			
Start:	11:58	Temp:	19.8
Finish:	12:20	%RH	32

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	38.5	10 sec.	0.122	0.154	0.305	0.194	0.244	0.391	0.385	0.229	
0		1-5mins	0.012	0.025	0.019	0.020	0.016	0.023	0.017	0.024	
45	50.7	10 sec.	0.169	0.199	0.400	0.256	0.326	0.511	0.504	0.284	
0		1-5mins	0.019	0.035	0.027	0.029	0.026	0.035	0.027	0.038	
65	68.2	10 sec.	0.247	0.263	0.550	0.352	0.457	0.694	0.698	0.364	
0		1-5mins	0.032	0.056	0.044	0.044	0.044	0.053	0.048	0.062	
85	93.9	10 sec.	0.378	0.352	0.768	0.494	0.638	0.945	0.953	0.466	
0		1-5mins	0.061	0.084	0.069	0.064	0.066	0.078	0.072	0.082	
105	110.6	10 sec.	0.485	0.416	0.938	0.605	0.775	1.132	1.146	0.536	
0		1-5mins	0.085	0.102	0.091	0.078	0.080	0.098	0.093	0.094	
125	136.8	10 sec.	0.609	0.508	1.169	0.758	0.960	1.389	1.415	0.637	
0		1-5mins	0.114	0.132	0.119	0.097	0.096	0.100	0.121	0.118	
150	160.3	10 sec.	0.753	0.603	1.394	0.906	1.140	1.643	1.669	0.731	
0		1-5mins	0.158	0.167	0.155	0.120	0.128	0.165	0.162	0.153	
180	179.8	10 sec.	0.891	0.770	1.617	1.093	1.349	1.943	1.980	0.879	
0		1-5mins	0.205	0.239	0.200	0.161	0.177	0.233	0.230	0.216	

Mode of Failure	
Max Load (psf)	179.8
Planks were pull out of studs	





# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 10/1/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-03-1**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
 Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 SPF Wood Stud w/ 18ga 33ksi 1.5"x2" Steel Z Girts  
 Fastener: #10 1-1/2 Self Piercing Screw into wood, #10-16x3/4 TEK Screw into Z-Girt  
 Sheathing: 7/16" OSB w/ 2" 20 PSI rigid Insulation  
 Air Seal: N/A

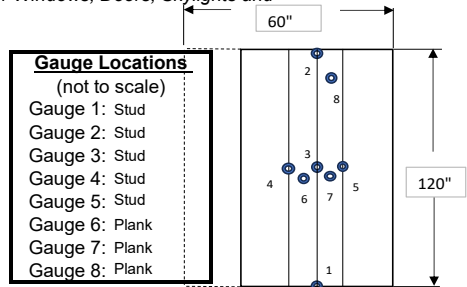
**Equipment:**

Pressure Chamber

Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

Deflection Gauges (Phidget potentiometers)

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:			
Start:	14:15	Temp:	20.6
Finish:	14:38	%RH	37

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins									
Zero Deflection Gauges											
30	31.7	10 sec.	0.044	0.000	0.056	0.009	0.001	0.190	0.159	0.077	
0		1-5mins	0.005	0.000	0.002	0.004	0.000	0.007	0.005	0.004	
45	46.8	10 sec.	0.086	0.000	0.119	0.054	0.027	0.313	0.264	0.126	
0		1-5mins	0.011	0.000	0.004	0.005	0.001	0.012	0.013	0.010	
65	68.6	10 sec.	0.162	0.053	0.234	0.143	0.089	0.512	0.446	0.212	
0		1-5mins	0.021	0.060	0.006	0.005	0.001	0.024	0.019	0.017	
85	92.7	10 sec.	0.244	0.110	0.370	0.005	0.140	0.740	0.650	0.311	
0		1-5mins	0.028	0.144	0.006	0.005	0.140	0.039	0.031	0.028	
105	113.1	10 sec.	0.287	0.117	0.479	0.005	0.140	0.928	0.828	0.396	
0		1-5mins	0.017	0.145	0.005	0.005	0.140	0.053	0.041	0.035	
125	132.4	10 sec.	0.338	0.114	0.593	0.005	0.140	1.124	1.021	0.472	
0		1-5mins	0.011	0.154	0.004	0.005	0.140	0.071	0.058	0.045	
145	163.0	10 sec.	0.446	0.068	0.782	0.005	0.140	1.482	1.326	0.608	
0		1-5mins	0.030	0.154	0.005	0.005	0.140	0.119	0.099	0.092	

Mode of Failure	
Max Load (psf)	163.0
Planks were let go from z-girts	





# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 10/7/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

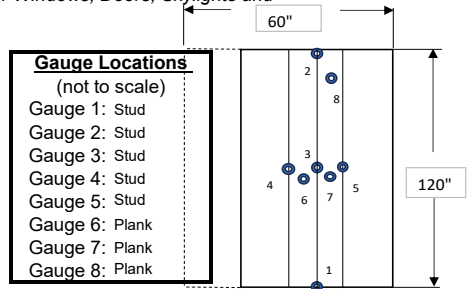
Test#: **LS-03-2**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
 Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 SPF Wood Stud w/ 18ga 33ksi 1.5"x2" Steel Z Girts  
 Fastener: #10 1-1/2 Self Piercing Screw into wood, #10-16x3/4 TEK Screw into Z-Girt  
 Sheathing: 7/16" OSB w/ 2" 20 PSI rigid Insulation  
 Air Seal: N/A

**Equipment:**

Pressure Chamber	Deflection Gauges (Phidget potentiometers)
Motor: Core Sensors Model: CS10 - 2400	Sensor 1: S/N - F29B
Press. Controller: S/N - G205141344	Sensor 2: S/N - 9BFA
Pressure Sensors:	Sensor 3: S/N - 87CE
+/- 2 kPa: p/n 1136	Sensor 4: S/N - F16B
+/- 7 kPa: p/n 1137	Sensor 5: S/N - F14E
50 kPa: p/n 1138	Sensor 6: S/N - F28I
Phidget: S/N - 5015249240311	Sensor 7: S/N - F174
	Sensor 8: S/N - F282



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:			
Start:	11:00	Temp:	23.8
Finish:	11:24	%RH	29

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

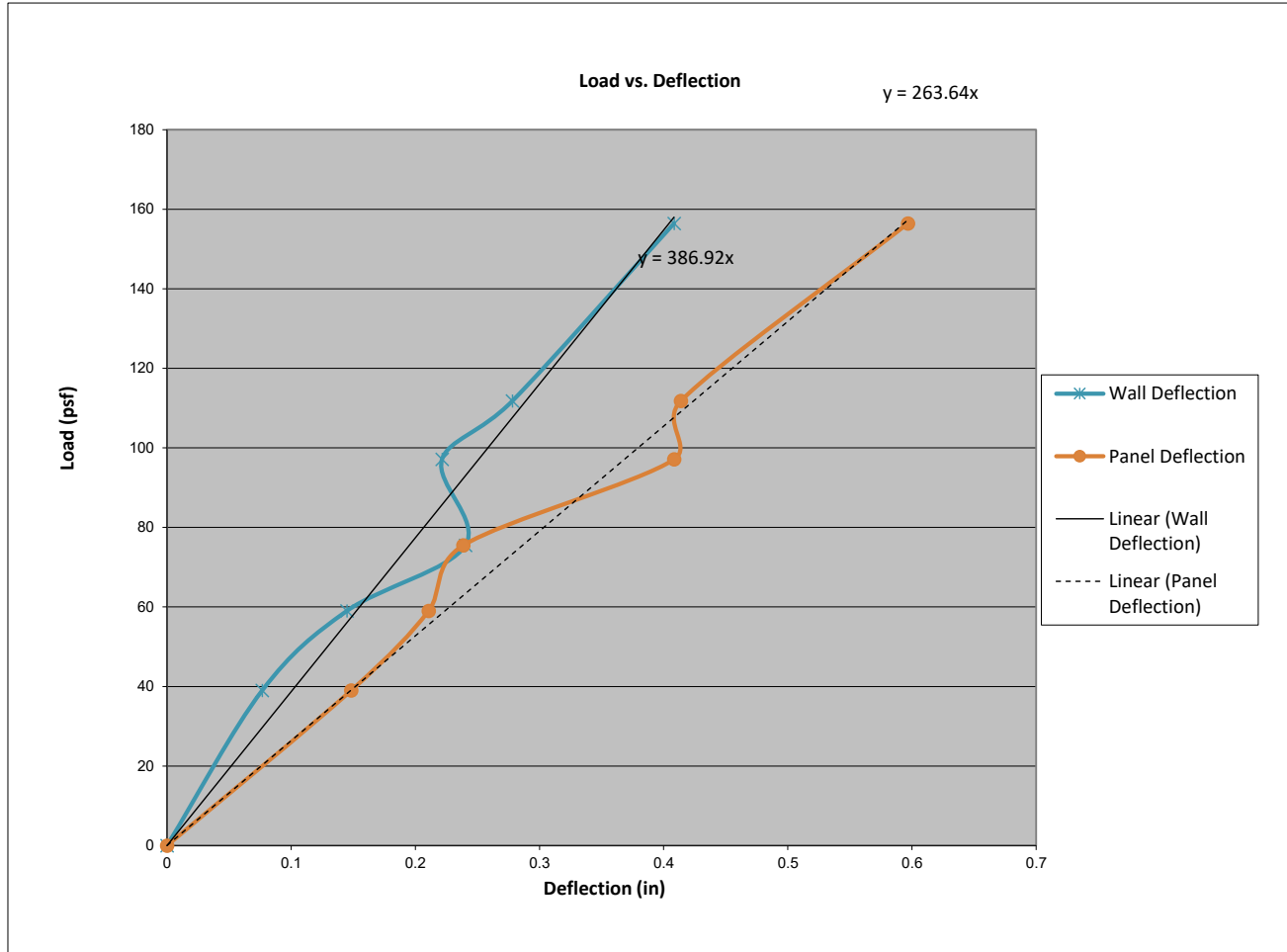
Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	17.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins									Zero Deflection Gauges
30	39.0	10 sec.	0.024	0.024	0.122	0.072	0.108	0.231	0.267	0.143	
0		1-5mins	0.019	0.001	0.005	0.004	0.005	0.015	0.015	0.004	
50	59.0	10 sec.	0.089	0.042	0.263	0.135	0.233	0.393	0.449	0.227	
0		1-5mins	0.025	0.002	0.000	0.012	0.006	0.028	0.028	0.007	
70	75.5	10 sec.	0.147	0.059	0.454	0.195	0.381	0.535	0.629	0.290	
0		1-5mins	0.027	0.004	0.007	0.016	0.007	0.035	0.037	0.010	
85	97.1	10 sec.	0.221	0.084	0.471	0.268	0.383	0.728	0.837	0.393	
0		1-5mins	0.030	0.005	0.008	0.020	0.007	0.059	0.055	0.012	
110	111.8	10 sec.	0.241	0.096	0.575	0.304	0.461	0.792	0.929	0.475	
0		1-5mins	0.004	0.002	0.008	5.000	0.008	0.014	0.019	0.006	
145	156.4	10 sec.	0.396	0.152	0.873	0.464	0.710	1.180	1.378	0.675	
0		1-5mins	0.007	0.006	0.016	0.011	0.023	0.063	0.070	0.030	
180	173.2	10 sec.	0.222	0.089	0.419	0.155	0.677	1.855	1.966	0.746	
0		1-5mins	0.001	0.009	0.050	0.045	0.017	0.752	0.695	0.010	

Mode of Failure	
Max Load (psf)	173.2
Planks were pull out of girts	



**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-03-2	
Max Load	173.2	psf
Allowable Design Load (ASD) = Max Load / 2	86.6	psf
Deflection Service Load (ASD) = Allowable * 0.7	60.6	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.1413	in
Panel Deflection @ Deflection Service Load (ASD)	0.3897	in
Max Load @ Wall Deflection Limit	173	psf
Max Load @ Panel Deflection Limit	41	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
39.0	0.077	0.148
59.0	0.145	0.211
75.5	0.240	0.239
97.1	0.222	0.409
111.8	0.278	0.414
156.4	0.408	0.597
173.2	0.262	1.494



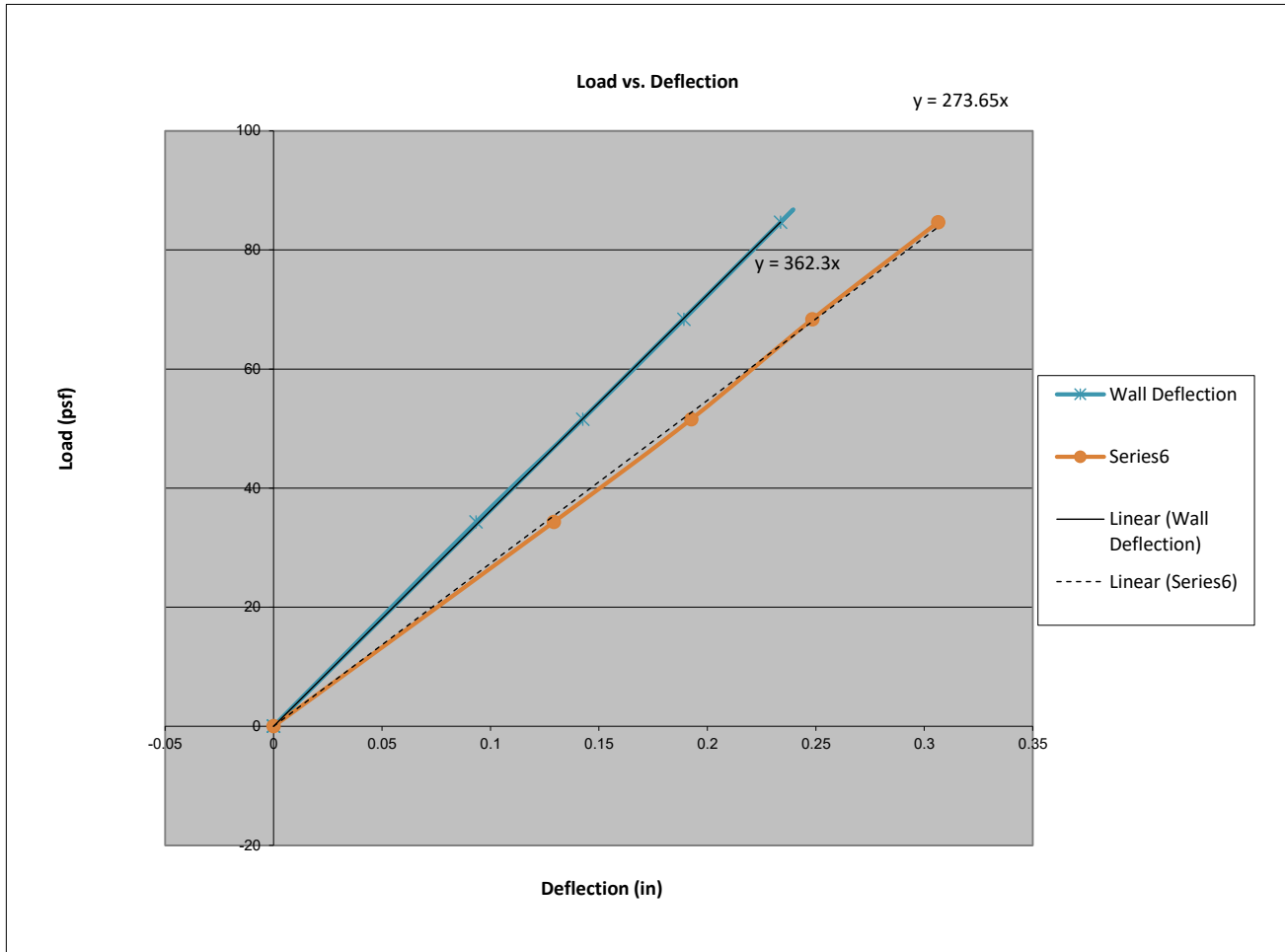






**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-04-1	
Max Load	84.7	psf
Allowable Design Load (ASD) = Max Load / 2	42.3	psf
Deflection Service Load (ASD) = Allowable * 0.7	29.6	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.0818	in
Panel Deflection @ Deflection Service Load (ASD)	0.1083	in
Max Load @ Wall Deflection Limit	85	psf
Max Load @ Panel Deflection Limit	73	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
34.3	0.093	0.129
51.6	0.143	0.193
68.4	0.189	0.248
84.7	0.234	0.306



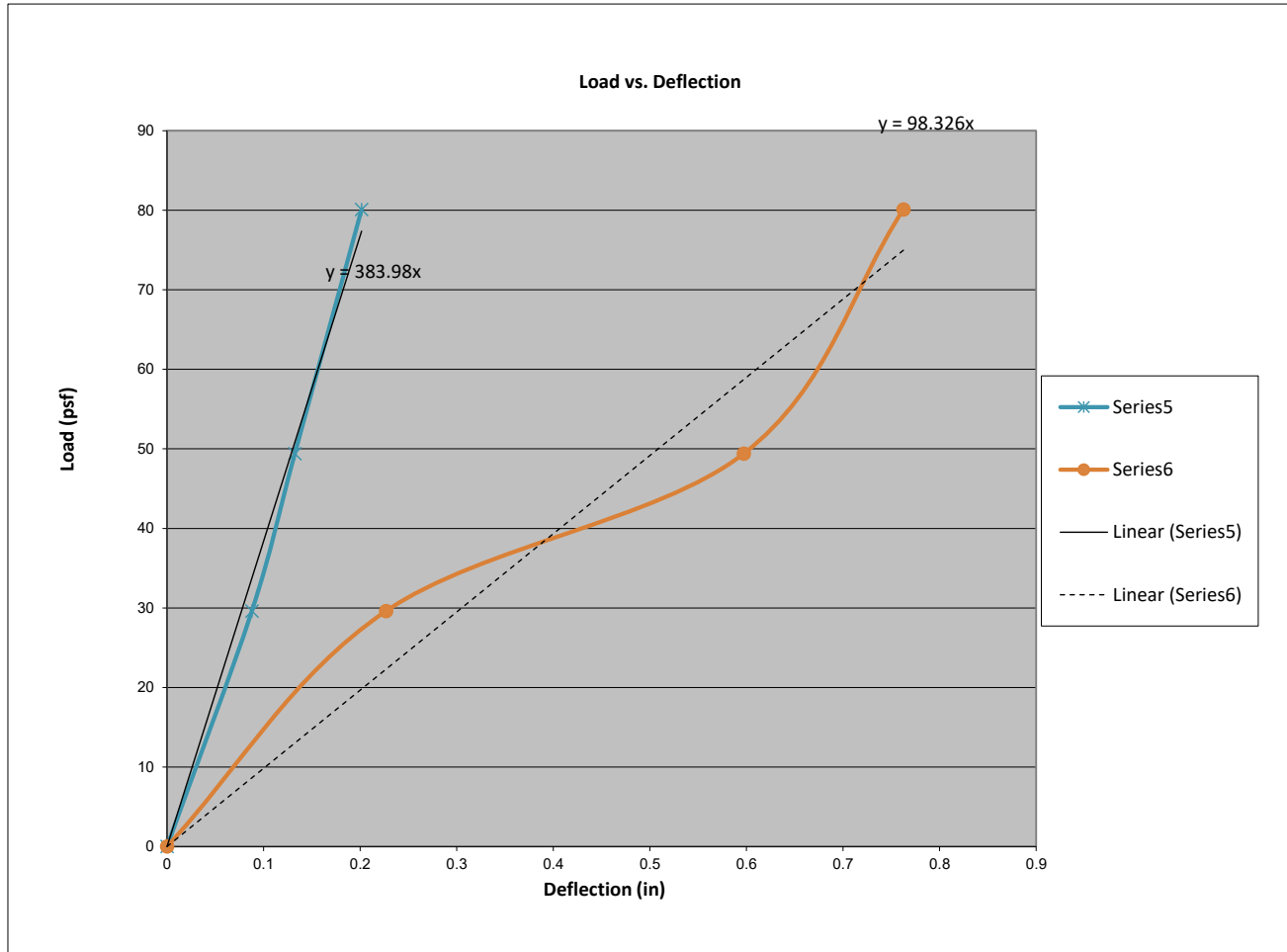






**BOCA ENGINEERING CO. | SPAR**  
STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-04-3	
Max Load	80.1	psf
Allowable Design Load (ASD) = Max Load / 2	40.1	psf
Deflection Service Load (ASD) = Allowable * 0.7	28.0	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.0730	in
Panel Deflection @ Deflection Service Load (ASD)	0.2851	in
Max Load @ Wall Deflection Limit	80	psf
Max Load @ Panel Deflection Limit	26	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
29.6	0.088	0.227
49.4	0.132	0.597
80.1	0.202	0.763



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 7/17/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-05-1**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**

Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into sheathing  
 Framing: 2x4 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 5/8" Plywood  
 Air Seal: N/A

**Equipment:**

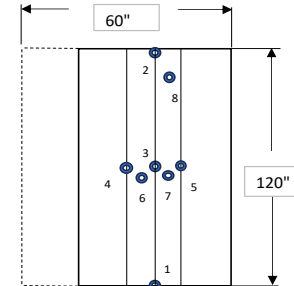
Pressure Chamber

Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

Deflection Gauges (Phidget potentiometers)

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**  
 (not to scale)  
 Gauge 1: Stud  
 Gauge 2: Stud  
 Gauge 3: Stud  
 Gauge 4: Stud  
 Gauge 5: Stud  
 Gauge 6: Plank  
 Gauge 7: Plank  
 Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:			
Start:	13:45	Temp:	21.4
Finish:	14:30	%RH	50

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	30.9	10 sec.	0.139	0.096	0.353	0.223	0.280	0.340	0.420	0.140	
0		1-5mins	0.009	0.007	0.011	0.007	0.009	0.008	0.011	0.005	
45	51.8	10 sec.	0.256	0.169	0.622	0.392	0.481	0.593	0.729	0.254	
0		1-5mins	0.022	0.019	0.029	0.020	0.025	0.027	0.026	0.020	
60	67.2	10 sec.	0.341	0.220	0.815	0.515	0.625	0.780	0.964	0.333	
0		1-5mins	0.030	0.024	0.036	0.024	0.031	0.033	0.036	0.027	
75	81.1	10 sec.	0.415	0.268	0.992	0.628	0.756	0.948	1.172	0.408	
0		1-5mins	0.035	0.030	0.040	0.029	0.035	0.038	0.040	0.033	
90	93.2	10 sec.	0.472	0.308	1.146	0.725	0.870	1.094	1.352	0.469	
0		1-5mins	0.044	0.036	0.051	0.037	0.043	0.047	0.050	0.040	
115	116.6	10 sec.	0.561	0.388	1.461	0.923	1.096	1.383	1.724	0.595	
0		1-5mins	0.050	0.043	0.059	0.042	0.052	0.053	0.063	0.055	
130	133.2	10 sec.	0.616	0.437	1.663	1.049	1.241	1.566	1.969	0.678	
0		1-5mins	0.059	0.048	0.068	0.049	0.063	0.061	0.079	0.064	
145	146.2	10 sec.	0.665	0.477	1.841	1.160	1.372	1.731	2.184	0.748	
0		1-5mins	0.066	0.050	0.080	0.058	0.071	0.071	0.102	0.077	
160	163.3	10 sec.	0.730	0.532	2.094	1.315	1.550	1.960	2.492	0.837	
0		1-5mins	0.077	0.055	0.102	0.072	0.089	0.091	0.148	0.092	
180	175.0	10 sec.	0.781	0.575	2.272	1.427	1.686	2.130	2.729	0.908	
0		1-5mins	0.090	0.060	0.125	0.085	0.108	0.113	0.195	0.109	
190	191.2	10 sec.	0.870	0.585	2.500	1.526	1.872	2.356	3.072	0.964	
0		1-5mins	0.072	0.033	0.121	0.081	0.095	0.127	0.204	0.070	
210	198.0	10 sec.	0.892	0.588	2.578	1.576	1.928	2.428	3.179	0.993	
0		1-5mins	0.086	0.039	0.143	0.093	0.113	0.154	0.253	0.085	

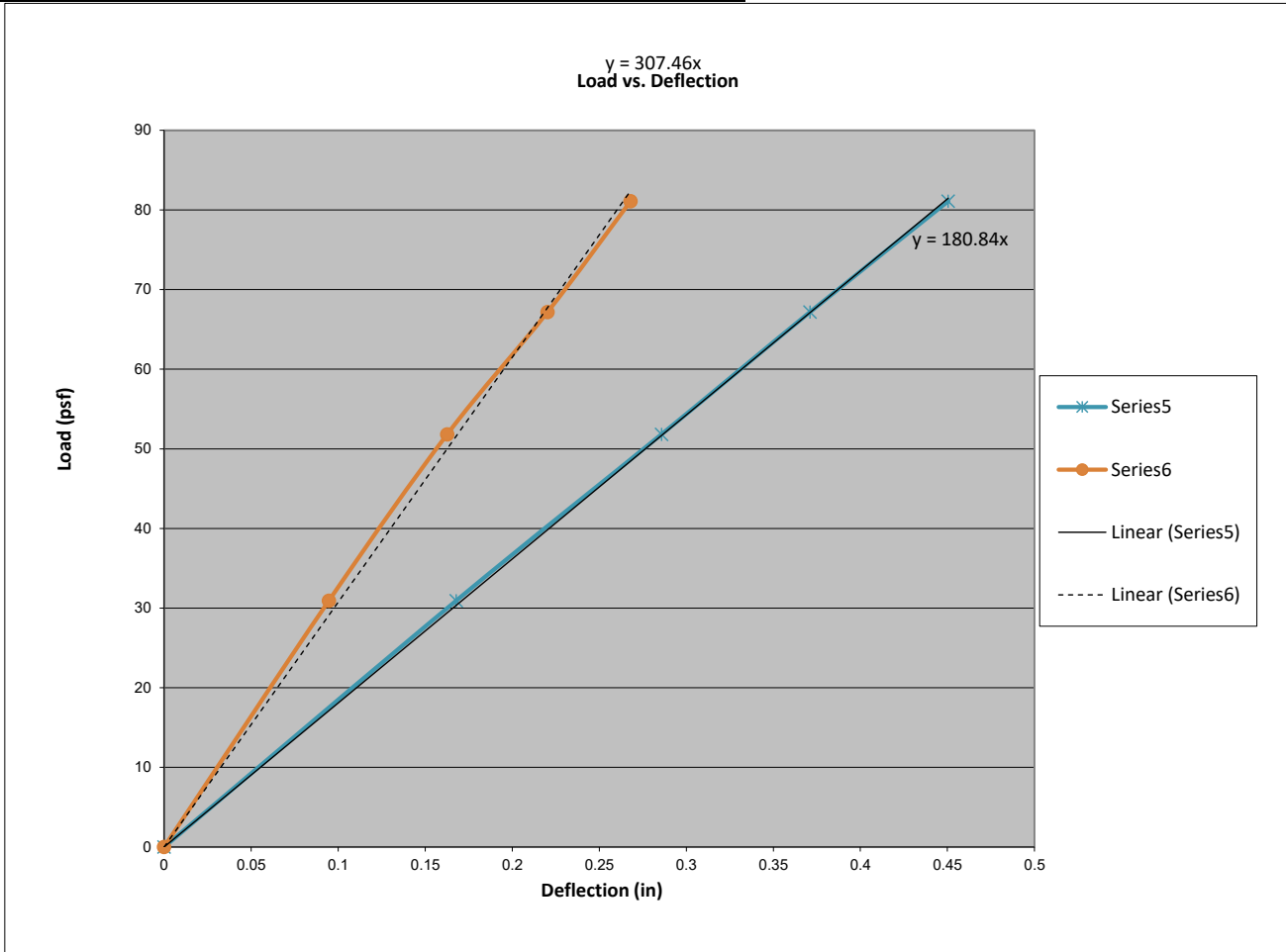
Mode of Failure		
Max Load (psf)	198.0	Wall did not fail. The tape failed while going to pressures above 200 PSF



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-05-1	
Max Load	198.0	psf
Allowable Design Load (ASD) = Max Load / 2	99.0	psf
Deflection Service Load (ASD) = Allowable * 0.7	69.3	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.4486	in
Panel Deflection @ Deflection Service Load (ASD)	0.2395	in
Max Load @ Wall Deflection Limit	103	psf
Max Load @ Panel Deflection Limit	77	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
30.9	0.168	0.095
51.8	0.286	0.163
67.2	0.371	0.220
81.1	0.451	0.268
93.2	0.524	0.309
116.6	0.686	0.394
133.2	0.791	0.450
146.2	0.887	0.500
163.3	1.022	0.573
175.0	1.117	0.635
191.2	1.459	0.528
198.0	1.287	0.776



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 7/21/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-05-2**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
 Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into sheathing  
 Framing: 2x4 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 5/8" Plywood  
 Air Seal: N/A

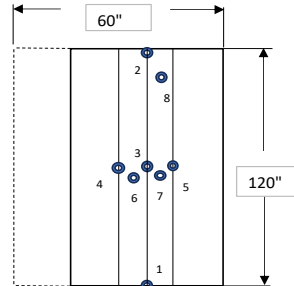
**Equipment:**  
**Pressure Chamber**  
 Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

**Deflection Gauges (Phidget potentiometers)**

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**  
 (not to scale)

- Gauge 1: Stud
- Gauge 2: Stud
- Gauge 3: Stud
- Gauge 4: Stud
- Gauge 5: Stud
- Gauge 6: Plank
- Gauge 7: Plank
- Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:			
Start:	15:00	Temp:	21.8
Finish:	15:31	%RH	51

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	20.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	38.6	10 sec.	0.157	0.135	0.407	0.247	0.311	0.445	0.460	0.169	
0		1-5mins	0.001	0.004	0.001	0.001	0.000	0.000	0.000	0.004	
45	51.9	10 sec.	0.210	0.184	0.561	0.340	0.428	0.594	0.630	0.227	
0		1-5mins	0.001	0.004	0.001	0.001	0.000	0.002	0.000	0.005	
60	66.6	10 sec.	0.268	0.237	0.733	0.445	0.557	0.764	0.817	0.289	
0		1-5mins	0.004	0.001	0.006	0.005	0.006	0.007	0.007	0.005	
85	88.6	10 sec.	0.352	0.310	0.995	0.603	0.757	1.028	1.098	0.392	
0		1-5mins	0.008	0.004	0.014	0.011	0.012	0.013	0.016	0.004	
110	111.8	10 sec.	0.449	0.376	1.291	0.774	0.982	1.318	1.412	0.484	
0		1-5mins	0.014	0.010	0.024	0.018	0.020	0.024	0.027	0.013	
135	136.0	10 sec.	0.544	0.443	1.604	0.957	1.213	1.629	1.739	0.587	
0		1-5mins	0.018	0.014	0.036	0.030	0.028	0.046	0.046	0.027	
165	164.0	10 sec.	0.671	0.527	2.029	1.198	1.525	2.088	2.187	0.713	
0		1-5mins	0.029	0.022	0.070	0.052	0.058	0.109	0.094	0.045	
180	180.9	10 sec.	0.759	0.584	2.302	1.357	1.734	2.462	2.492	0.801	
0		1-5mins	0.053	0.038	0.123	0.082	0.094	0.212	0.165	0.074	
200	200.1	10 sec.	0.872	0.658	2.666	1.573	1.122	2.950	2.894	0.912	
0		1-5mins	0.084	0.058	0.204	0.125	1.122	0.369	0.282	0.098	

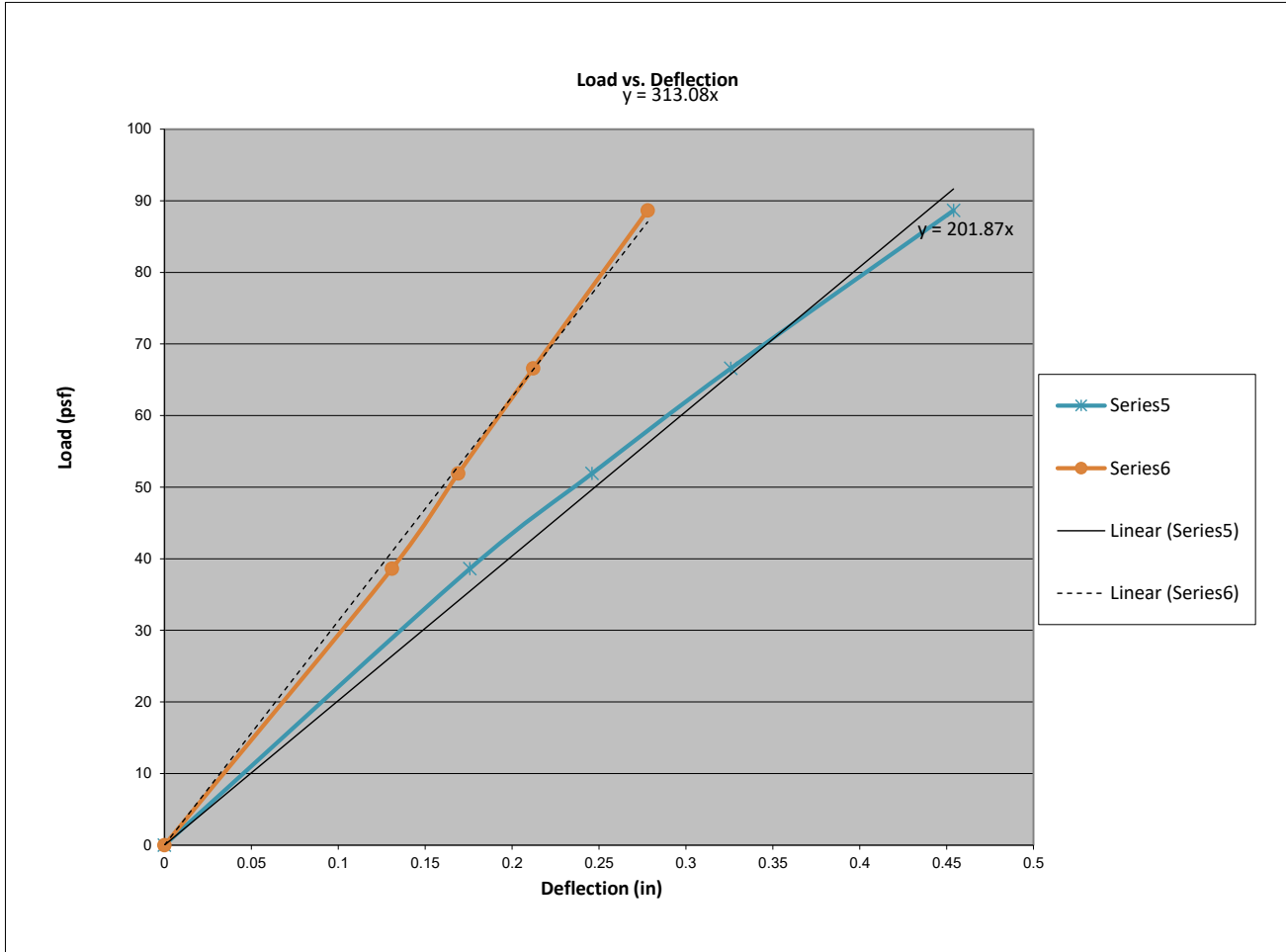
Mode of Failure	
Max Load (psf)	200.1
The Planks were pull completely out of the clips that were attached to plywood at 210 PSF	



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-05-2	
Max Load	200.1	psf
Allowable Design Load (ASD) = Max Load / 2	100.1	psf
Deflection Service Load (ASD) = Allowable * 0.7	70.0	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.3946	in
Panel Deflection @ Deflection Service Load (ASD)	0.2999	in
Max Load @ Wall Deflection Limit	118	psf
Max Load @ Panel Deflection Limit	62	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
38.6	0.176	0.131
51.9	0.246	0.169
66.6	0.326	0.212
88.6	0.454	0.278
111.8	0.603	0.349
136.0	0.765	0.426
164.0	0.985	0.554
180.9	1.126	0.679
200.1	1.022	1.135



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 7/22/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-05-3**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
 Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into sheathing  
 Framing: 2x4 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 5/8" Plywood  
 Air Seal: N/A

**Equipment:**

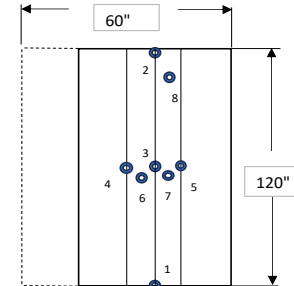
Pressure Chamber

Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

Deflection Gauges (Phidget potentiometers)

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**  
 (not to scale)  
 Gauge 1: Stud  
 Gauge 2: Stud  
 Gauge 3: Stud  
 Gauge 4: Stud  
 Gauge 5: Stud  
 Gauge 6: Plank  
 Gauge 7: Plank  
 Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:			
Start:	14:05	Temp:	20.3
Finish:	11:17	%RH	51

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	20.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	31.1	10 sec.	0.189	0.126	0.372	0.222	0.310	0.380	0.425	0.204	
0		1-5mins	0.026	0.022	0.033	0.021	0.027	0.028	0.027	0.022	
45	45.7	10 sec.	0.283	0.192	0.574	0.341	0.026	0.580	0.655	0.021	
0		1-5mins	0.039	0.038	0.052	0.031	0.026	0.042	0.051	0.021	
60	60.9	10 sec.	0.375	0.252	0.778	0.461	0.026	0.782	0.892	0.021	
0		1-5mins	0.057	0.054	0.079	0.044	0.026	0.061	0.080	0.021	
75	77.2	10 sec.	0.449	0.312	0.985	0.589	0.026	0.997	1.135	0.021	
0		1-5mins	0.070	0.072	0.101	0.056	0.026	0.078	0.106	0.021	
90	94.2	10 sec.	0.517	0.376	1.203	0.725	0.026	1.209	1.383	0.021	
0		1-5mins	0.075	0.098	0.122	0.075	0.026	0.090	0.125	0.021	
115	108.8	10 sec.	0.571	0.430	1.385	0.839	0.026	1.386	1.596	0.021	
0		1-5mins	0.084	0.102	0.132	0.084	0.026	0.109	0.145	0.021	
125	124.1	10 sec.	0.631	0.488	1.584	0.962	0.026	1.583	1.822	0.021	
0		1-5mins	0.095	0.110	0.145	0.090	0.026	0.125	0.170	0.021	
135	138.5	10 sec.	0.689	0.547	1.784	1.081	0.026	1.780	2.054	0.021	
0		1-5mins	0.101	0.126	0.162	0.099	0.026	0.139	0.190	0.021	
145	145.3	10 sec.	0.719	0.572	1.874	1.140	0.026	1.879	2.169	0.021	
0		1-5mins	0.104	0.129	0.172	0.106	0.026	0.152	0.207	0.021	
160	160.0	10 sec.	0.766	0.623	2.134	1.316	1.672	2.342	2.551	1.618	
0		1-5mins	0.110	0.145	0.175	0.110	0.106	0.170	0.215	0.061	
180	185.0	10 sec.	0.833	0.677	2.396	1.472	1.867	2.588	2.799	1.685	
0		1-5mins	0.120	0.165	0.190	0.125	0.130	0.195	0.230	0.075	
200	201.6	10 sec.	0.918	0.772	2.694	1.663	2.091	2.999	3.196	1.885	
0		1-5mins	0.137	0.175	0.205	0.136	0.155	0.208	0.254	0.104	

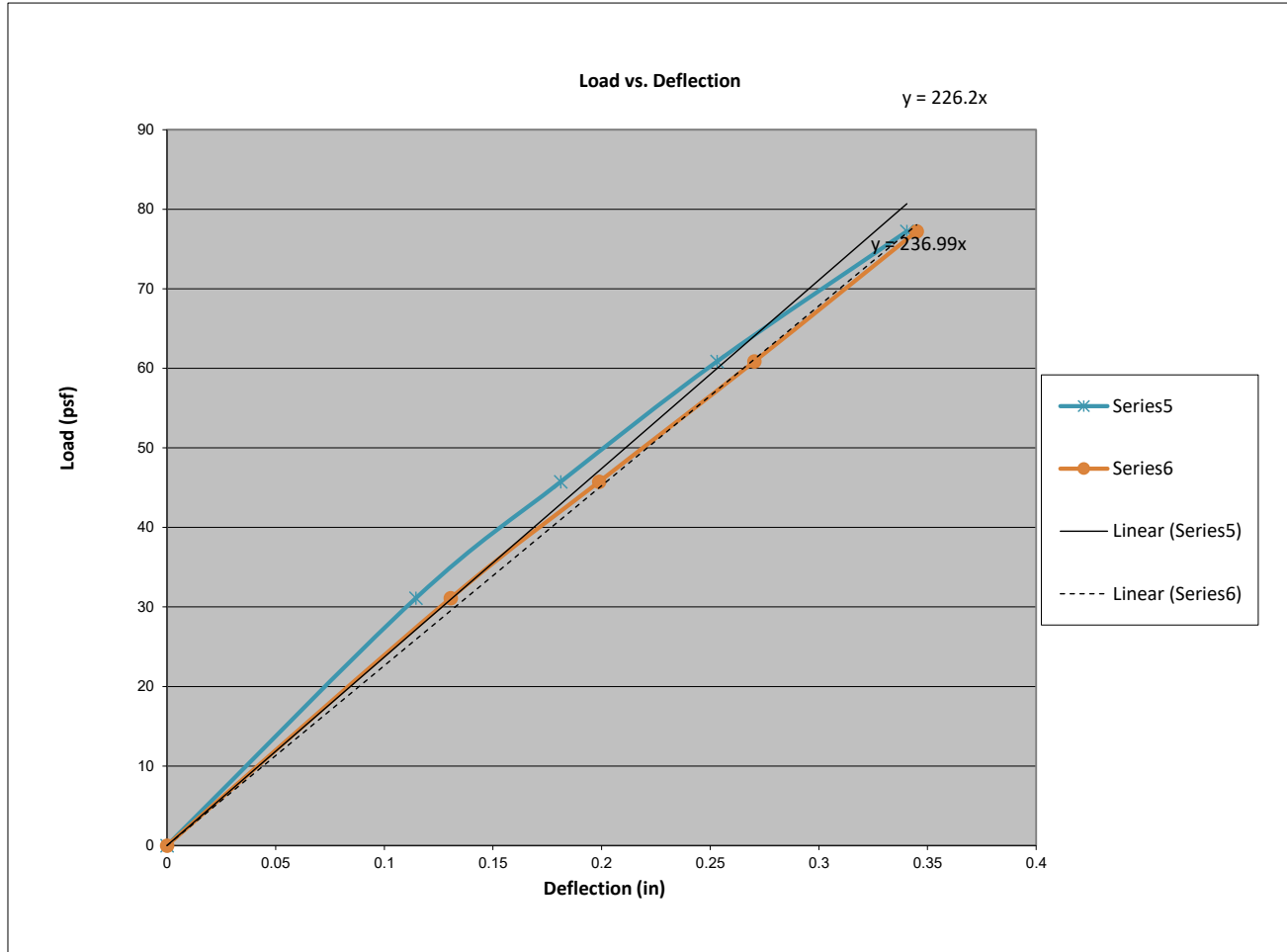
Mode of Failure		
Max Load (psf)	201.6	The tape failed but wall did not fail while going to pressures at 220 PSF



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-05-3	
Max Load	201.6	psf
Allowable Design Load (ASD) = Max Load / 2	100.8	psf
Deflection Service Load (ASD) = Allowable * 0.7	70.6	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.4401	in
Panel Deflection @ Deflection Service Load (ASD)	0.3268	in
Max Load @ Wall Deflection Limit	107	psf
Max Load @ Panel Deflection Limit	58	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
31.1	0.115	0.131
45.7	0.181	0.199
60.9	0.253	0.270
77.2	0.341	0.345
94.2	0.438	0.412
108.8	0.521	0.470
124.1	0.610	0.533
138.5	0.697	0.602
145.3	0.739	0.639
160.0	0.894	0.858
185.0	1.641	0.298
201.6	1.162	1.091



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 9/22/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-06-1**

Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**

Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 SPF Wood Stud  
 Fastener: #10-1-1/2 Self Piercing Screw  
 Sheathing: 7/16" OSB  
 Air Seal: N/A

**Equipment:**

Pressure Chamber

Motor: Core Sensors Model: CS10 - 2400  
 Press. Controller: S/N - G205141344  
 Pressure Sensors:  
 +/- 2 kPa: p/n 1136  
 +/- 7 kPa: p/n 1137  
 50 kPa: p/n 1138  
 Phidget: S/N - 5015249240311

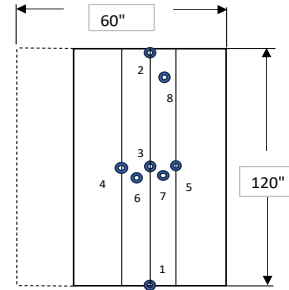
Deflection Gauges (Phidget potentiometers)

Sensor 1:	S/N - F29B
Sensor 2:	S/N - 9BFA
Sensor 3:	S/N - 87CE
Sensor 4:	S/N - F16B
Sensor 5:	S/N - F14E
Sensor 6:	S/N - F28I
Sensor 7:	S/N - F174
Sensor 8:	S/N - F282

**Gauge Locations**

(not to scale)

- Gauge 1: Stud
- Gauge 2: Stud
- Gauge 3: Stud
- Gauge 4: Stud
- Gauge 5: Stud
- Gauge 6: Plank
- Gauge 7: Plank
- Gauge 8: Plank



	Description	Taken [✓]
Photo 1:	Before test, back of wall	✓
Photo 2:	Before test, front of wall	✓
Photo 3:	After test, back of wall	✓
Photo 4:	After test, front of wall	✓
Photo 5:		

Time/Temp/RH:		
Start:	13:38	Temp: 21.5
Finish:	14:01	%RH: 35

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

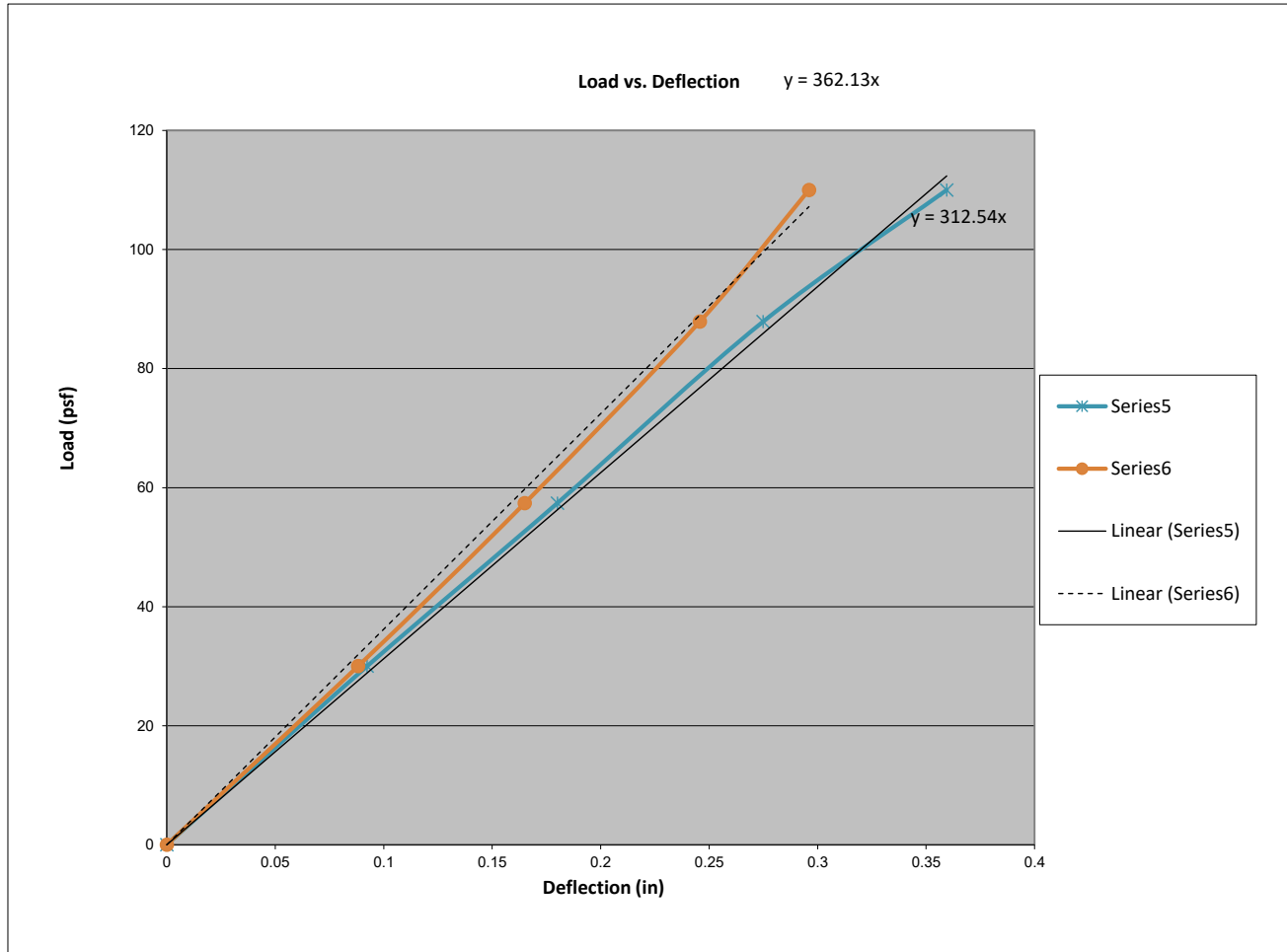
Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	30.0	10 sec.	0.092	0.062	0.206	0.129	0.173	0.265	0.250	0.179	
0		1-5mins	0.011	0.012	0.021	0.018	0.018	0.021	0.024	0.013	
45	57.4	10 sec.	0.207	0.149	0.438	0.274	0.362	0.544	0.502	0.341	
0		1-5mins	0.029	0.035	0.043	0.035	0.041	0.044	0.044	0.039	
85	87.9	10 sec.	0.350	0.245	0.696	0.440	0.581	0.854	0.782	0.497	
0		1-5mins	0.052	0.060	0.068	0.050	0.067	0.067	0.065	0.061	
105	110.0	10 sec.	0.459	0.312	0.907	0.574	0.754	1.088	0.994	0.616	
0		1-5mins	0.072	0.079	0.091	0.067	0.088	0.089	0.087	0.082	
150	152.0	10 sec.	0.615	0.418	1.232	0.783	1.024	1.468	1.323	0.830	
0		1-5mins	0.092	0.100	0.119	0.083	0.116	0.123	0.117	0.186	
170	178.6	10 sec.	0.736	0.518	1.497	0.940	1.235	1.774	1.581	0.958	
0		1-5mins	0.119	0.135	0.151	0.104	0.148	0.174	0.161	0.194	
200	211.0	10 sec.	0.912	0.592	1.787	0.208	1.494	0.172	1.895	1.153	

Mode of Failure	
Max Load (psf)	211.0
Plank were disengaged from each other	



**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-06-1	
Max Load	211.0	psf
Allowable Design Load (ASD) = Max Load / 2	105.5	psf
Deflection Service Load (ASD) = Allowable * 0.7	73.9	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.2174	in
Panel Deflection @ Deflection Service Load (ASD)	0.2288	in
Max Load @ Wall Deflection Limit	211	psf
Max Load @ Panel Deflection Limit	86	psf



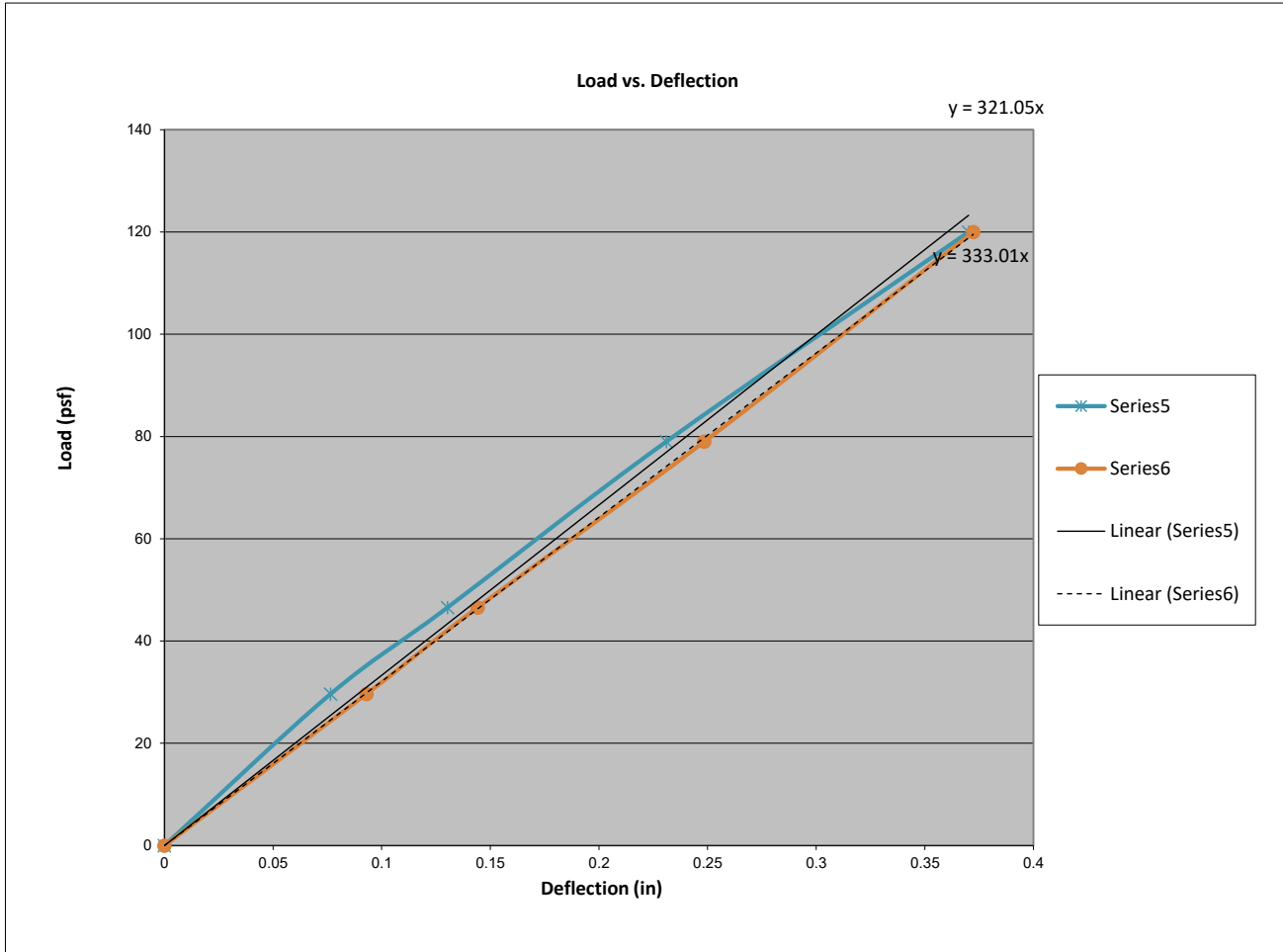
Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
30.0	0.092	0.088
57.4	0.180	0.165
87.9	0.275	0.246
110.0	0.360	0.296
152.0	0.497	0.383
178.6	0.597	0.454
211.0	0.411	-0.130





**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-06-2	
Max Load	186.2	psf
Allowable Design Load (ASD) = Max Load / 2	93.1	psf
Deflection Service Load (ASD) = Allowable * 0.7	65.2	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.1931	in
Panel Deflection @ Deflection Service Load (ASD)	0.1981	in
Max Load @ Wall Deflection Limit	186	psf
Max Load @ Panel Deflection Limit	88	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
29.7	0.077	0.093
46.6	0.130	0.144
79.0	0.231	0.249
120.0	0.370	0.372
161.0	0.477	0.481
186.2	0.547	0.564

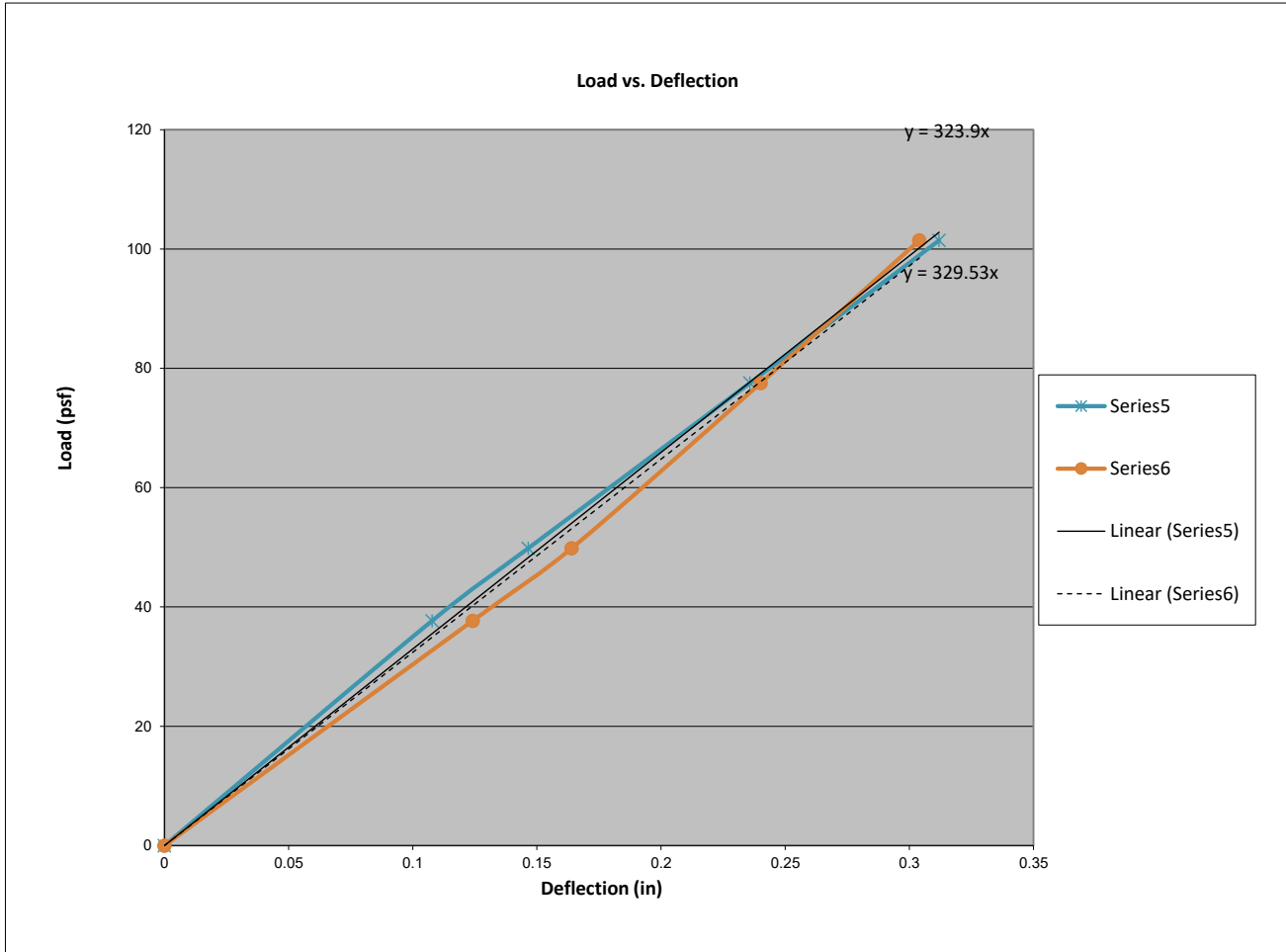




# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test#:	<b>LS-06-3</b>	
Max Load	198.0	psf
Allowable Design Load (ASD) = Max Load / 2	99.0	psf
Deflection Service Load (ASD) = Allowable * 0.7	69.3	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.2127	in
Panel Deflection @ Deflection Service Load (ASD)	0.2044	in
Max Load @ Wall Deflection Limit	198	psf
Max Load @ Panel Deflection Limit	90	psf



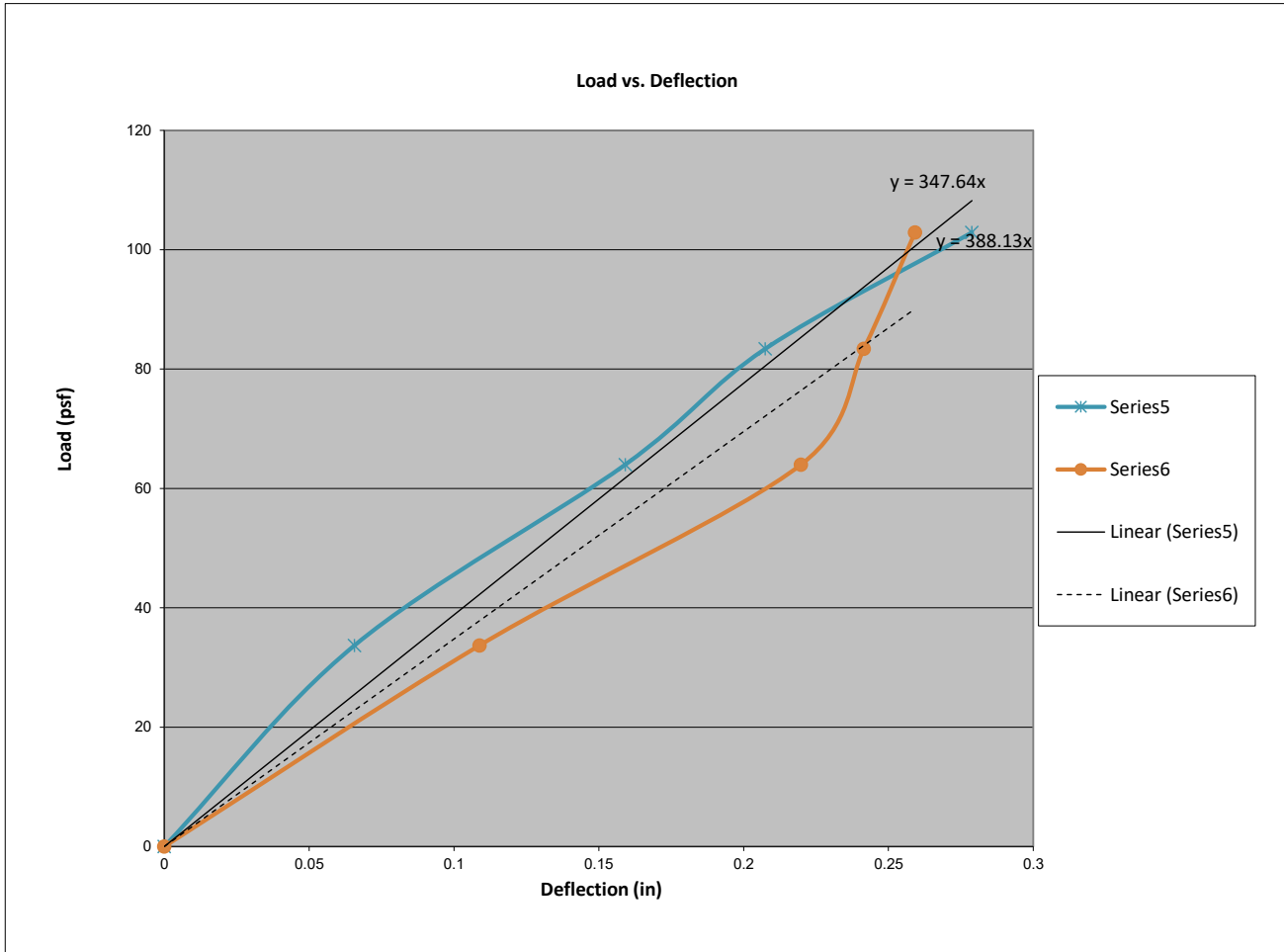
Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
37.7	0.108	0.124
49.8	0.147	0.164
77.6	0.236	0.240
101.5	0.312	0.304
126.7	0.391	0.363
146.7	0.453	0.422
166.0	0.497	0.488





**BOCA ENGINEERING CO. | SPAR**  
**STRUCTURAL & CIVIL CONSULTANTS**

Test#:	LS-07-1	
Max Load	145.0	psf
Allowable Design Load (ASD) = Max Load / 2	72.5	psf
Deflection Service Load (ASD) = Allowable * 0.7	50.8	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.2694	in
Panel Deflection @ Deflection Service Load (ASD)	0.1269	in
Max Load @ Wall Deflection Limit	126	psf
Max Load @ Panel Deflection Limit	107	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
33.7	0.066	0.109
64.0	0.159	0.220
83.4	0.208	0.242
102.9	0.279	0.259
124.5	0.722	0.261
145.0	0.898	0.328



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

**Test:** Transverse Load - Negative Wind Load  
**Client:** Engage Building Products  
**Date:** 9/18/2025  
**Product:** Lap Siding  
**Test Method(s):** ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

**Test#:** LS-07-2

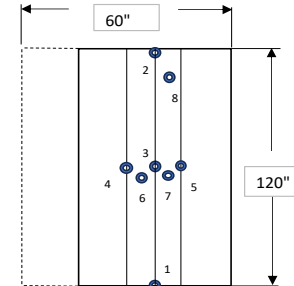
**Project#:** 0093  
**Technician(s):** Ali  
**Reviewer:** Chris  
**Location:** 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
**Configuration:** 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
**Framing:** 2x6 18ga 33ksi Steel Studs  
**Fastener:** #10-1-1/2 Self Drilling HWH TEK Screw  
**Sheathing:** 1/2" Drywall  
**Air Seal:** Tape used to air seal gaps and will not influence test results

**Equipment:**

Pressure Chamber		Deflection Gauges (Phidget potentiometers)	
Motor: Core Sensors Model: CS10 - 2400	Sensor 1:	S/N - F29B	
Press. Controller: S/N - G205141344	Sensor 2:	S/N - 9BFA	
Pressure Sensors:	Sensor 3:	S/N - 87CE	
+/- 2 kPa: p/n 1136	Sensor 4:	S/N - F16B	
+/- 7 kPa: p/n 1137	Sensor 5:	S/N - F14E	
50 kPa: p/n 1138	Sensor 6:	S/N - F28I	
Phidget: S/N - 5015249240311	Sensor 7:	S/N - F174	
	Sensor 8:	S/N - F282	

**Gauge Locations**  
 (not to scale)  
 Gauge 1: Stud  
 Gauge 2: Stud  
 Gauge 3: Stud  
 Gauge 4: Stud  
 Gauge 5: Stud  
 Gauge 6: Plank  
 Gauge 7: Plank  
 Gauge 8: Plank



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:		
Start:	9:17	Temp: 21.5
Finish:	-	%RH: 43

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

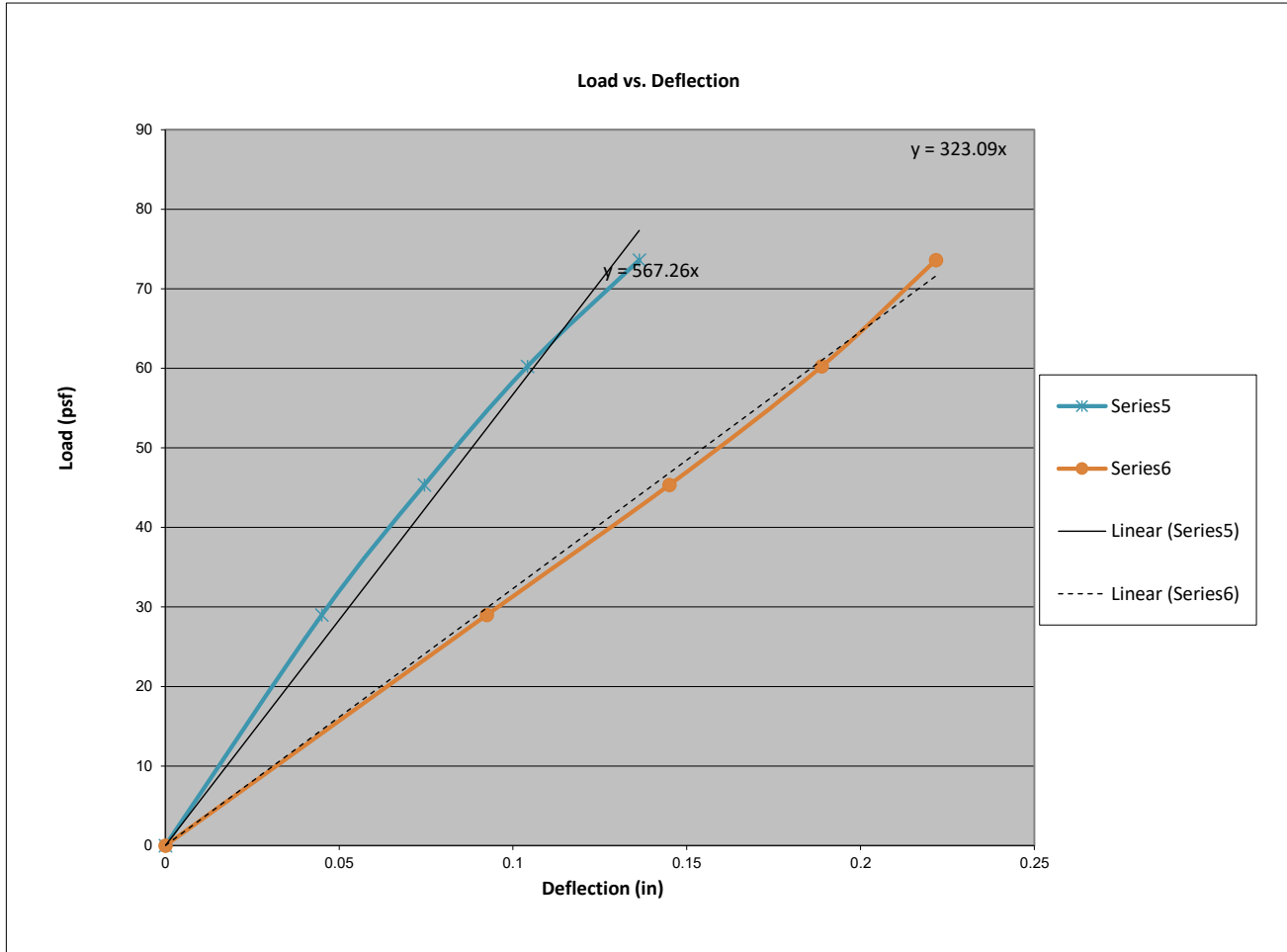
Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	29.0	10 sec.	0.070	0.056	0.140	0.080	0.104	0.183	0.218	0.109	
0		1-5mins	0.010	0.006	0.016	0.008	0.013	0.012	0.019	0.006	
45	45.3	10 sec.	0.114	0.087	0.228	0.128	0.169	0.299	0.341	0.161	
0		1-5mins	0.018	0.009	0.023	0.012	0.020	0.020	0.028	0.010	
60	60.2	10 sec.	0.164	0.115	0.323	0.177	0.231	0.404	0.461	0.212	
0		1-5mins	0.027	0.014	0.031	0.017	0.028	0.027	0.037	0.014	
75	73.6	10 sec.	0.211	0.143	0.423	0.227	0.290	0.496	0.574	0.253	
0		1-5mins	0.034	0.017	0.038	0.022	0.036	0.033	0.048	0.019	
90	91.1	10 sec.	0.274	0.182	0.550	0.293	0.368	0.622	0.718	0.321	
0		1-5mins	0.041	0.023	0.046	0.027	0.043	0.039	0.059	0.025	
105	109.4	10 sec.	0.346	0.224	0.700	0.370	0.458	0.773	0.877	0.389	
0		1-5mins	0.050	0.029	0.057	0.032	0.053	0.050	0.074	0.035	

Mode of Failure	
Max Load (psf)	109.4
	N/A



**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-07-2	
Max Load	109.4	psf
Allowable Design Load (ASD) = Max Load / 2	54.7	psf
Deflection Service Load (ASD) = Allowable * 0.7	38.3	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.0736	in
Panel Deflection @ Deflection Service Load (ASD)	0.1140	in
Max Load @ Wall Deflection Limit	109	psf
Max Load @ Panel Deflection Limit	90	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
29.0	0.045	0.093
45.3	0.075	0.145
60.2	0.104	0.189
73.6	0.136	0.222
91.1	0.176	0.266
109.4	0.224	0.316



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

**Test:** Transverse Load - Negative Wind Load  
**Client:** Engage Building Products  
**Date:** 9/18/2025  
**Product:** Lap Siding  
**Test Method(s):** ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

**Test#:** LS-07-3

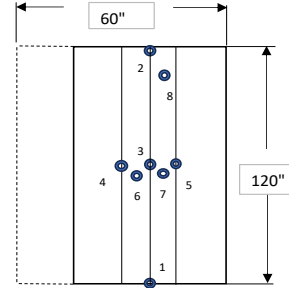
**Project#:** 0093  
**Technician(s):** Ali  
**Reviewer:** Chris  
**Location:** 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
**Configuration:** 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
**Framing:** 2x6 18ga 33ksi Steel Studs  
**Fastener:** #10-1-1/2 Self Drilling HWH TEK Screw  
**Sheathing:** 1/2" Drywall  
**Air Seal:** Tape used to air seal gaps and will not influence test results

**Equipment:**

Pressure Chamber		Deflection Gauges (Phidget potentiometers)	
Motor: Core Sensors Model: CS10 - 2400	Sensor 1:	S/N - F29B	
Press. Controller: S/N - G205141344	Sensor 2:	S/N - 9BFA	
Pressure Sensors:	Sensor 3:	S/N - 87CE	
+/- 2 kPa: p/n 1136	Sensor 4:	S/N - F16B	
+/- 7 kPa: p/n 1137	Sensor 5:	S/N - F14E	
50 kPa: p/n 1138	Sensor 6:	S/N - F28I	
Phidget: S/N - 5015249240311	Sensor 7:	S/N - F174	
	Sensor 8:	S/N - F282	

**Gauge Locations**  
 (not to scale)  
 Gauge 1: Stud  
 Gauge 2: Stud  
 Gauge 3: Stud  
 Gauge 4: Stud  
 Gauge 5: Stud  
 Gauge 6: Plank  
 Gauge 7: Plank  
 Gauge 8: Plank



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:			
Start:	2:10	Temp:	21.5
Finish:	2:24	%RH	43

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	20.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	36.0	10 sec.	0.104	0.056	0.182	0.144	0.120	0.278	0.246	0.096	
0		1-5mins	0.020	0.010	0.018	0.018	0.016	0.023	0.019	0.009	
45	49.0	10 sec.	0.148	0.081	0.262	0.203	0.174	0.383	0.342	0.138	
0		1-5mins	0.028	0.015	0.028	0.026	0.022	0.034	0.030	0.014	
70	73.3	10 sec.	0.234	0.131	0.418	0.307	0.280	0.583	0.516	0.217	
0		1-5mins	0.042	0.025	0.045	0.038	0.036	0.050	0.044	0.027	
85	87.0	10 sec.	0.290	0.161	0.516	0.371	0.345	0.694	0.616	0.267	
0		1-5mins	0.050	0.030	0.055	0.045	0.045	0.061	0.055	0.038	
100	111.0	10 sec.	0.379	0.218	0.696	0.490	0.646	0.889	0.806	0.353	
0		1-5mins	0.061	0.042	0.071	0.058	0.059	0.075	0.072	0.053	
140	142.0	10 sec.	0.476	0.285	0.937	0.613	0.606	1.145	1.011	0.450	
0		1-5mins	0.071	0.054	0.094	0.072	0.072	0.095	0.094	0.076	

Mode of Failure	
Max Load (psf)	142.0
Lap siding got detached from each other.	





# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 9/11/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-08-2**

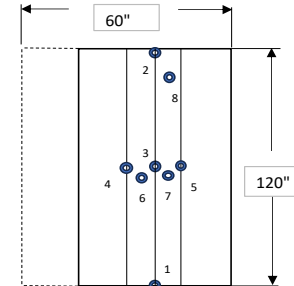
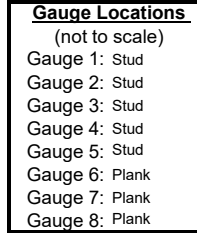
Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**

Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 16ga 50ksi Steel Studs  
 Fastener: #10-1-1/2 Self Drilling HWH TEK Screw  
 Sheathing: 1/2" Drywall  
 Air Seal: Tape used to air seal gaps and will not influence test results

**Equipment:**

Pressure Chamber		Deflection Gauges (Phidget potentiometers)	
Motor: Core Sensors Model: CS10 - 2400	Sensor 1:	S/N - F29B	
Press. Controller: S/N - G205141344	Sensor 2:	S/N - 9BFA	
Pressure Sensors:	Sensor 3:	S/N - 87CE	
+/- 2 kPa: p/n 1136	Sensor 4:	S/N - F16B	
+/- 7 kPa: p/n 1137	Sensor 5:	S/N - F14E	
50 kPa: p/n 1138	Sensor 6:	S/N - F28I	
Phidget: S/N - 5015249240311	Sensor 7:	S/N - F174	
	Sensor 8:	S/N - F282	



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:		
Start:	11:07	Temp: 22.1
Finish:	-	%RH: 49

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

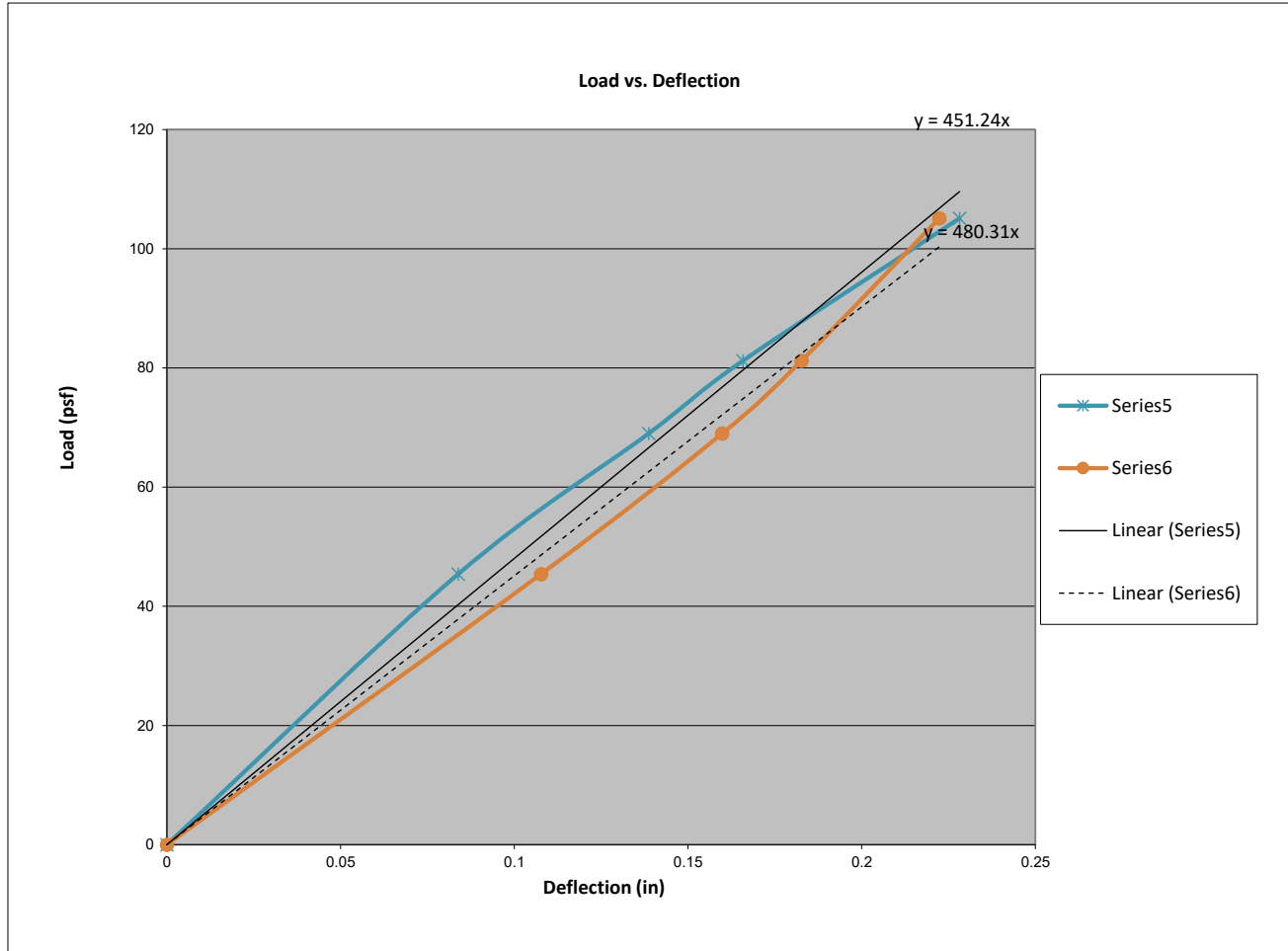
Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	17.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
45	45.4	10 sec.	0.096	0.065	0.211	0.144	0.138	0.264	0.280	0.133	
0		1-5mins	0.019	0.008	0.023	0.013	0.015	0.014	0.016	0.007	
65	69.0	10 sec.	0.161	0.105	0.353	0.236	0.226	0.422	0.441	0.176	
0		1-5mins	0.033	0.014	0.038	0.025	0.025	0.026	0.030	0.014	
80	81.2	10 sec.	0.194	0.127	0.428	0.282	0.269	0.495	0.523	0.210	
0		1-5mins	0.039	0.018	0.044	0.032	0.032	0.033	0.035	0.017	
100	105.1	10 sec.	0.258	0.173	0.592	0.381	0.358	0.652	0.680	0.278	
0		1-5mins	0.050	0.027	0.059	0.044	0.043	0.045	0.048	0.024	
125	130.0	10 sec.	0.338	0.226	0.813	0.503	0.461	0.820	0.851	0.358	
0		1-5mins	0.064	0.037	0.079	0.061	0.057	0.062	0.066	0.038	
150	149.0	10 sec.	0.425	0.275	1.109	0.637	0.548	0.973	1.005	0.418	
0		1-5mins	0.081	0.048	0.114	0.077	0.073	0.084	0.092	0.053	
175	169.0	10 sec.	0.514	0.312	1.439	0.766	0.615	1.171	1.145	0.425	
0		1-5mins	0.044	0.020	0.065	0.043	0.044	0.054	0.055	0.026	
200	189.0	10 sec.	0.635	0.401	2.052	0.990	0.799	1.861	1.750	0.491	
0		1-5mins	0.049	0.029	0.106	0.061	0.067	0.262	0.230	0.042	

Mode of Failure		
Max Load (psf)	189.0	The planks were disengaged from clips fastened to the studs ☐



**BOCA ENGINEERING CO. | SPAR**  
 STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-08-2	
Max Load	189.0	psf
Allowable Design Load (ASD) = Max Load / 2	94.5	psf
Deflection Service Load (ASD) = Allowable * 0.7	66.2	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.1618	in
Panel Deflection @ Deflection Service Load (ASD)	0.1273	in
Max Load @ Wall Deflection Limit	189	psf
Max Load @ Panel Deflection Limit	139	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
45.4	0.084	0.108
69.0	0.139	0.160
81.2	0.166	0.183
105.1	0.228	0.222
130.0	0.310	0.243
149.0	0.415	0.224
169.0	0.527	0.218



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test: **Transverse Load - Negative Wind Load**  
 Client: Engage Building Products  
 Date: 9/10/2025  
 Product: **Lap Siding**  
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

Test#: **LS-08-1**

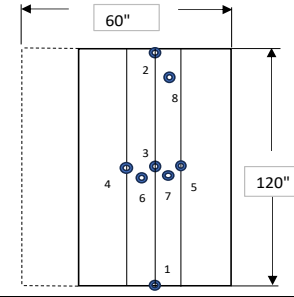
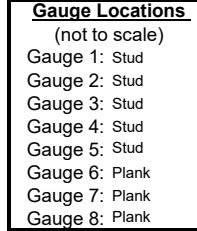
Project#: 0093  
 Technician(s): Ali  
 Reviewer: Chris  
 Location: 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**

Configuration: 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
 Framing: 2x6 16ga 50ksi Steel Studs  
 Fastener: #10-1-1/2 Self Drilling HWH TEK Screw  
 Sheathing: 1/2" Drywall  
 Air Seal: Tape used to air seal gaps and will not influence test results

**Equipment:**

Pressure Chamber	Deflection Gauges (Phidget potentiometers)
Motor: Core Sensors Model: CS10 - 2400	Sensor 1: S/N - F29B
Press. Controller: S/N - G205141344	Sensor 2: S/N - 9BFA
Pressure Sensors:	Sensor 3: S/N - 87CE
+/- 2 kPa: p/n 1136	Sensor 4: S/N - F16B
+/- 7 kPa: p/n 1137	Sensor 5: S/N - F14E
50 kPa: p/n 1138	Sensor 6: S/N - F281
Phidget: S/N - 5015249240311	Sensor 7: S/N - F174
	Sensor 8: S/N - F282



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:		
Start:	11:55	Temp: 22.1
Finish:	-	%RH: 46

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	16.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	32.2	10 sec.	0.088	0.085	0.251	0.180	0.167	0.291	0.240	0.109	
0		1-5mins	0.005	0.005	0.006	0.006	0.005	0.008	0.007	0.006	
45	47.0	10 sec.	0.134	0.127	0.414	0.295	0.265	0.427	0.359	0.167	
0		1-5mins	0.011	0.012	0.013	0.012	0.011	0.016	0.017	0.017	
60	67.0	10 sec.	0.207	0.179	0.692	0.479	0.418	0.619	0.547	0.246	
0		1-5mins	0.020	0.021	0.024	0.018	0.020	0.037	0.029	0.030	
75	78.0	10 sec.	0.255	0.212	0.888	0.436	0.525	0.747	0.652	0.319	
0		1-5mins	0.027	0.028	0.033	0.436	0.030	0.050	0.041	0.039	
90	90.0	10 sec.	0.309	0.251	1.141	0.436	0.656	0.871	0.772	0.381	
0		1-5mins	0.032	0.032	0.044	0.436	0.034	0.057	0.050	0.045	
105	105.0	10 sec.	0.397	0.307	1.624	0.436	0.867	1.063	0.955	0.452	
0		1-5mins	0.041	0.036	0.070	0.436	0.045	0.080	0.070	0.051	
120	120.0	10 sec.	0.559	0.330	2.402	1.189	1.156	1.287	1.169	0.569	
0		1-5mins	0.031	0.017	0.085	0.032	0.041	0.067	0.063	0.023	
135	137.0	10 sec.	0.773	0.420	3.635	1.997	1.817	1.789	1.592	0.570	
0		1-5mins	0.079	0.022	0.658	0.110	0.155	0.238	0.224	0.039	
150	151.0	10 sec.	0.813	0.510	3.850	2.021	1.901	1.895	1.682	0.613	
0		1-5mins	0.091	0.025	0.701	0.150	0.190	0.258	0.293	0.045	

Mode of Failure	
Max Load (psf)	151.0
	Studs start to bent





# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

**Test:** Transverse Load - Negative Wind Load  
**Client:** Engage Building Products  
**Date:** 9/15/2025  
**Product:** Lap Siding  
**Test Method(s):** ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

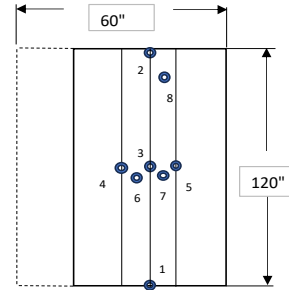
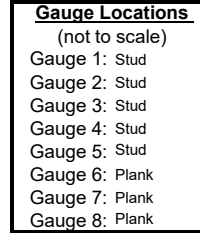
**Test#:** LS-08-3

**Project#:** 0093  
**Technician(s):** Ali  
**Reviewer:** Chris  
**Location:** 101-4441 76 Ave. SE Calgary AB T2C2G8

**Installation:**  
**Configuration:** 16" O.C. studs, Clips @ 32" O.C. Staggered into stud  
**Framing:** 2x6 16ga 50ksi Steel Studs  
**Fastener:** #10-1-1/2 Self Drilling HWH TEK Screw  
**Sheathing:** 1/2" Drywall  
**Air Seal:** Tape used to air seal gaps and will not influence test results

**Equipment:**

Pressure Chamber		Deflection Gauges (Phidget potentiometers)	
Motor: Core Sensors Model: CS10 - 2400	Sensor 1:	S/N - F29B	
Press. Controller: S/N - G205141344	Sensor 2:	S/N - 9BFA	
Pressure Sensors:	Sensor 3:	S/N - 87CE	
+/- 2 kPa: p/n 1136	Sensor 4:	S/N - F16B	
+/- 7 kPa: p/n 1137	Sensor 5:	S/N - F14E	
50 kPa: p/n 1138	Sensor 6:	S/N - F28I	
Phidget: S/N - 5015249240311	Sensor 7:	S/N - F174	
	Sensor 8:	S/N - F282	



Description	Taken [✓]
Photo 1: Before test, back of wall	✓
Photo 2: Before test, front of wall	✓
Photo 3: After test, back of wall	✓
Photo 4: After test, front of wall	✓
Photo 5:	

Time/Temp/RH:		
Start:	10:16	Temp: 22.1
Finish:	-	%RH: 49

Test Assembly		
Width (in)	Length (in)	Panel Anchor Spacing (in)
60.0	120.0	16

Target Load (psf)	Actual Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Gauge 4 (in.)	Gauge 5 (in.)	Gauge 6 (in.)	Gauge 7 (in.)	Gauge 8 (in.)	Observations
0	0.0	immed.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
15	15.0	10 sec.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
0		1-5mins	Zero Deflection Gauges								
30	31.0	10 sec.	0.043	0.057	0.167	0.108	0.143	0.207	0.250	0.121	
0		1-5mins	0.002	0.008	0.016	0.015	0.013	0.018	0.018	0.045	
45	48.0	10 sec.	0.094	0.089	0.271	0.174	0.232	0.330	0.390	0.356	
0		1-5mins	0.004	0.010	0.022	0.020	0.018	0.022	0.025	0.183	
60	69.0	10 sec.	0.153	0.121	0.384	0.261	0.353	0.482	0.546	0.473	
0		1-5mins	0.005	0.015	0.030	0.029	0.025	0.033	0.036	0.190	
75	75.6	10 sec.	0.178	0.135	0.432	0.295	0.388	0.031	0.601	0.503	
0		1-5mins	0.006	0.017	0.035	0.033	0.031	0.031	0.043	0.194	
90	97.0	10 sec.	0.234	0.176	0.575	0.373	0.508	0.031	0.776	0.601	
0		1-5mins	0.010	0.023	0.044	0.043	0.042	0.031	0.056	0.206	
110	113.0	10 sec.	0.241	0.203	0.635	0.441	0.609	0.031	0.874	0.662	
0		1-5mins	0.011	0.027	0.047	0.050	0.050	0.031	0.064	0.216	
130	136.3	10 sec.	0.301	0.259	0.828	0.562	0.783	0.031	1.071	0.789	
0		1-5mins	0.011	0.032	0.052	0.058	0.059	0.031	0.082	0.234	
150	162.8	10 sec.	0.281	0.283	0.817	0.676	0.888	0.031	1.226	1.366	
0		1-5mins	0.009	0.032	0.045	0.064	0.063	0.031	0.113	0.422	

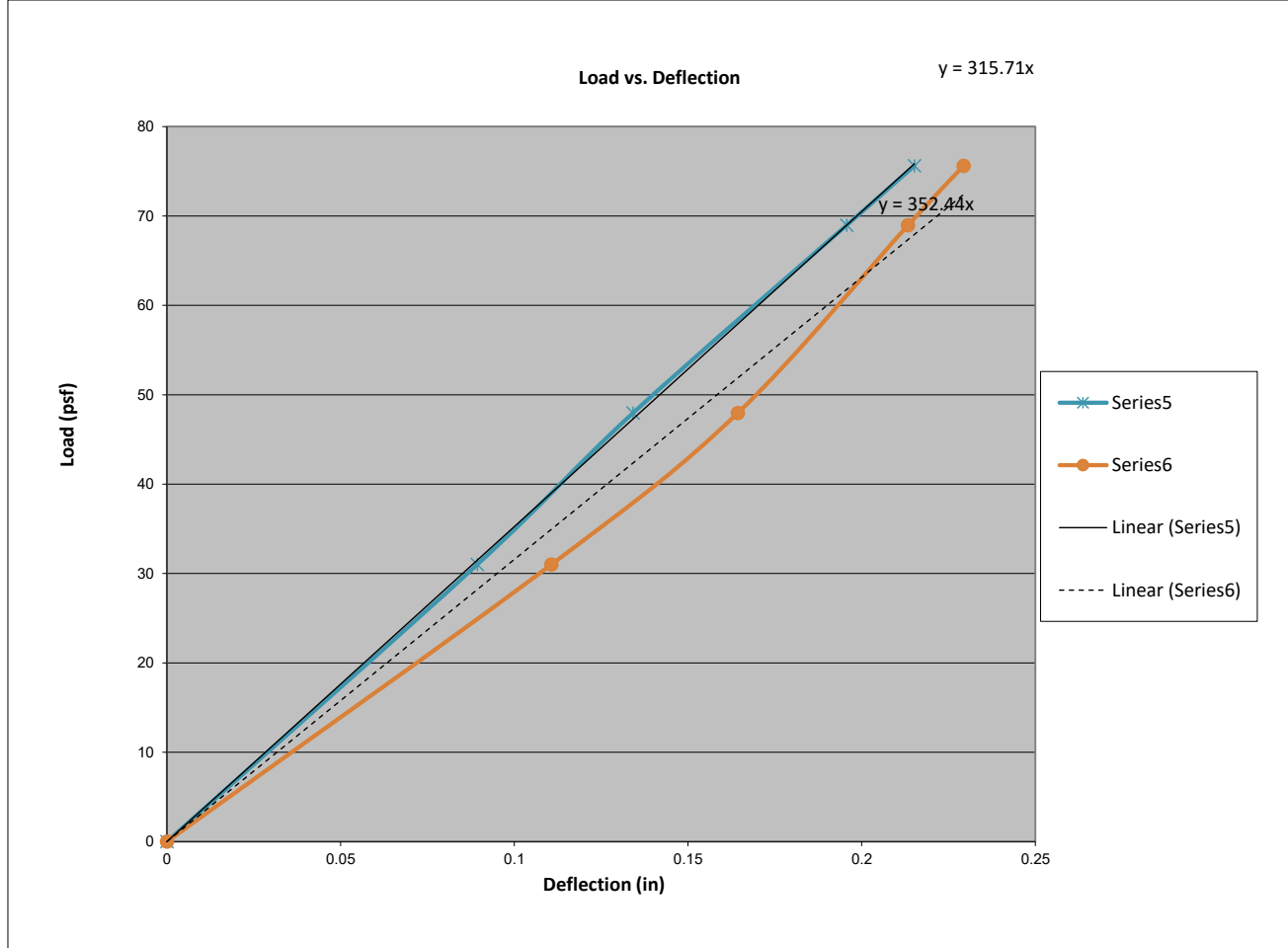
Mode of Failure		
Max Load (psf)	162.8	The planks were disengaged from clips fastened to the studs <input type="checkbox"/>



# BOCA ENGINEERING CO. | SPAR

## STRUCTURAL & CIVIL CONSULTANTS

Test#:	LS-08-3	
Max Load	162.8	psf
Allowable Design Load (ASD) = Max Load / 2	81.4	psf
Deflection Service Load (ASD) = Allowable * 0.7	57.0	psf
Wall Deflection limit = L / 180 of wall height	0.667	in
Panel Deflection limit = L / 60 of panel anchor (clip) span	0.267	in
Wall Deflection @ Deflection Service Load (ASD)	0.1660	in
Panel Deflection @ Deflection Service Load (ASD)	0.1703	in
Max Load @ Wall Deflection Limit	163	psf
Max Load @ Panel Deflection Limit	89	psf



Target Load (psf)	Wall Deflection (= ga 3 - (ga 1 + ga 2)/2) (in)	Panel Deflection (= ga 4 - (ga 3 + ga 5)/2) (in)
0.0	0.000	0.000
31.0	0.089	0.111
48.0	0.134	0.164
69.0	0.196	0.213
75.6	0.215	0.229
97.0	0.280	0.291
113.0	0.340	0.312
136.3	0.444	0.347