

WAYNE BUILDING PRODUCTS TEST REPORT

SCOPE OF WORK

REPORT OF ARMOURSIDE 6 IN. STEEL SIDING 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*

REPORT NUMBER

104175306COQ-007

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TEST REPORT FOR WAYNE BUILDING PRODUCTS

Report No.: 104175306COQ-007

Date: 02/14/20

REPORT ISSUED TO

WAYNE BUILDING PRODUCTS

12603 – 123 Street

Edmonton, AB T5I 0H9

Canada


SECTION 1


SCOPE

Intertek Building & Construction (B&C) was contracted by Wayne Building Products, 12603 – 123 Street, Edmonton, AB, T5I 0H9, Canada, to perform testing 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*, on their Armourside 6 in. Steel Siding product. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Chris Chang
	Senior Tech.
TITLE:	– Building & Construction
	
SIGNATURE:	
DATE:	02/18/20

REVIEWED BY:	Baldeep Sandhu
	Manager
TITLE:	– Building & Construction
	
SIGNATURE:	
DATE:	02/18/20

TEST REPORT FOR WAYNE BUILDING PRODUCTS

Report No.: 104175306COQ-007

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SECTION 2

SUMMARY OF TEST RESULTS

TABLE 1. TEST RESULTS				
DESCRIPTION	FRAMING	FASTENING	ULTIMATE LOAD (PSF)	AVERAGE ULTIMATE LOAD (PSF)
Armourside 6 in. Steel Siding	Nominal 2x4 SPF Lumber spaced 16 in. o/c with 3/8 in. OSB	11 ga electro-galvanized roofing nail 1-1/2 in. long x 7/16 in. head diameter; fastened at 16" o/c each stud	93.6	107.3
			127.4	
			100.9	

SECTION 3

TEST METHOD

The specimen was evaluated in accordance with the following:

ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Intertek representative, Kevin Binksma, randomly sampled the siding product on December 16, 2019. The sample selection process was conducted at 14525 112 Avenue NW, Edmonton, AB, Canada. The product was selected in accordance with recognized independent sampling procedures, and was received at the Evaluation Center on December 20, 2019 (Coquitlam ID# VAN1912200842-001).

SECTION 5

EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
P60024	Mitutoyo Digital Gauge	C150 1050	05/15/20
02699	Mitutoyo Digital Gauge	C150 1050	05/15/20
02700	Mitutoyo Digital Gauge	C150 1050	05/24/20
P60554	T&D Temperature and Humidity Logger	TR-72Ui	09/04/20
P60623	Extech Digital Stopwatch	365515	09/04/20
2056	36 in. Dwyer Manometer	N/A	N/A

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Kevin Penner	Intertek B&C
Chris Chang	Intertek B&C

SECTION 7

CONDITIONING

Unless stated otherwise, the test specimen materials were held in standard laboratory conditions for at least 48 hours at a temperature of $23 \pm 2^{\circ}\text{C}$ ($73.4 \pm 4^{\circ}\text{F}$) and relative humidity of $50 \pm 5\%$.

TRANSVERSE LOAD

Transverse load was tested in accordance with ASTM E330/E330M-14. Test frames, measuring 8 ft. x 4 ft., were constructed from nominal 2x4 SPF lumber. The studs were spaced 16 in. o/c and sheathed with 3/8 in. OSB. Studs were oriented in the short direction and frames were fastened together using 3-1/2 in. wood screws.

Transverse load testing was conducted in the negative wind load direction. The steel siding panels were installed to the test frames per the manufacturer’s installation instructions.

Assembly details can be found in Table 2 below:

DESCRIPTION	FRAMING	STUD SPACING	SHEATHING	FASTENING
Armourside 6 in. Steel Siding	Nominal 2x4 SPF Lumber	16 in. o/c	3/8" OSB sheathing	11 ga electro-galvanized roofing nail 1-1/2 in. long x 7/16 in. head diameter; fastened at 16" o/c each stud

Testing was conducted using the chamber method for uniformly distributed loading. Each test frame was secured in a horizontal uniformly distributed load testing apparatus. The air within the test chamber was evacuated using a vacuum pump, inducing a uniformly distributed load to the sample. A polyethylene film was used to prevent air leakage through the siding. In order to ensure the maximum load was transferred to the specimen and that the polyethylene film did not prevent movement or failure of the specimen, the polyethylene film was applied loosely with extra folds of material at each corner and at all offsets and recesses. The polyethylene film was placed on the inner face of the siding during construction of the assembly. The test was

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carried out without restriction of any relative movement between the siding material and any part of the test assembly or test apparatus.

Deflection readings were recorded for each test to establish deformation and set characteristics. For all test configurations, three (3) gauges were set on the test specimen. Gauge locations can be found on the data sheets in Appendix A. All deflection measurements were made independent of the test specimens.

The test panels were loaded a minimum of 6 increments. The load was increased to prescribed load increments where the deformation was recorded after holding for 10 seconds each. The load was then released where the deformation was recorded after 1 minute. This sequence of deformation measurements was repeated a minimum of five times until a final ultimate load was attained. A visual examination of the specimens was made after the tests to determine the failure mode.

SECTION 8**TEST SPECIMEN DESCRIPTION**

The sample was identified as Armourside 6 in., a steel siding product. The product is white in color and measures overall dimensions 150-1/4 in. long x 6-13/16 in. wide. The siding product has 3/8 in. wide nail slots spaced every 1-5/8 in. for installation along the tab. Thickness measures 0.4 mm.

SECTION 9**TEST RESULTS**

A summary of the test results is presented in Section 2 of this test report. See Appendices for a full set of test data.

SECTION 10**CONCLUSION**

The Wayne Building Products Armourside 6 in. Steel Siding product identified and evaluated in this report has been tested per ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*.



Total Quality. Assured.

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SECTION 11

APPENDIX A – TEST DATA (4 PAGES)



Total Quality. Assured.

Company	Wayne Building Products	Technician(s)	Kevin Penner
Project No.	G104175306	Reviewer	Baldeep Sandhu
Models	Armourside 6 in. Steel Siding	Start/End Date	January 30 - February 4, 2020
Product Name	Same as above	Sample ID	VAN1912200842-001
Standard	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 Data Package

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Transverse Load Test #1	2
Transverse Load Test #2	3
Transverse Load Test #3	4

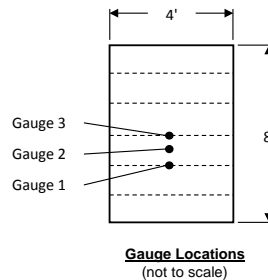
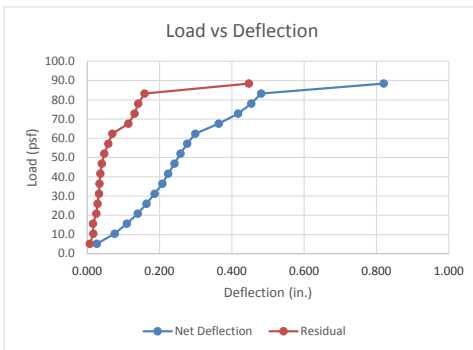
Test: **Transverse Load - Negative Wind Load** **Test #1**
 Client: Wayne Building Products Project#: G104175306
 Date: 30-Jan-20 Technician(s): Kevin Penner
 Product: **Armourside 6 in. Steel Siding** Reviewer: Baldeep Sandhu
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference* Location: Coquitlam, BC, Canada
 Installation: Framing: Nominal 2x4 SPF lumber spaced 16 in. o/c
 Fastener: 1-1/2 in. long x 7/16 in. head diameter 11ga electro-galvanized roofing nail spaced 16 in. o/c each stud
 Sheathing: 3/8 in. OSB
 Equipment: 36" Dwyer Manometer (Intertek ID# 2056)
 #1 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# P60024, cal due May 15, 2020)
 #2 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# 02699, cal due May 15, 2020)
 #3 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# 02700, cal due May 24, 2020)
 T&D TR-72Ui Thermorecorder (Intertek ID# P60554, cal due September 4, 2020)
 Digital Stopwatch (Intertek ID# P60623, cal due September 4, 2020)
 Time/Temp/RH: 8:00AM / 23.0°C / 50.0%

Test Assembly	
Width (ft)	Length (ft)
8.0	4.0

Load (in WC)	Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Net Deflection (in.)	
0.5	2.6	imed.	0.000	0.000	0.000	0.000	
1.0	5.2	10 sec.	0.002	0.030	0.006	0.027	
0.5	2.6	1-5mins	0.002	0.009	0.001	0.007	
2.0	10.4	10 sec.	0.011	0.089	0.016	0.076	
0.5	2.6	1-5mins	0.005	0.021	0.004	0.017	
3.0	15.6	10 sec.	0.019	0.131	0.024	0.109	
0.5	2.6	1-5mins	0.004	0.020	0.004	0.016	
4.0	20.8	10 sec.	0.026	0.169	0.033	0.140	
0.5	2.6	1-5mins	0.009	0.033	0.007	0.025	
5.0	26.0	10 sec.	0.030	0.199	0.040	0.164	
0.5	2.6	1-5mins	0.010	0.038	0.009	0.028	
6.0	31.2	10 sec.	0.037	0.229	0.048	0.186	
0.5	2.6	1-5mins	0.012	0.044	0.011	0.032	
7.0	36.4	10 sec.	0.043	0.257	0.056	0.208	
0.5	2.6	1-5mins	0.013	0.047	0.013	0.034	
8.0	41.6	10 sec.	0.048	0.279	0.061	0.224	
0.5	2.6	1-5mins	0.015	0.051	0.014	0.036	
9.0	46.8	10 sec.	0.054	0.302	0.068	0.241	
0.5	2.6	1-5mins	0.016	0.056	0.016	0.040	
10.0	52.0	10 sec.	0.059	0.324	0.074	0.258	
0.5	2.6	1-5mins	0.019	0.065	0.017	0.047	
11.0	57.2	10 sec.	0.064	0.348	0.079	0.277	
0.5	2.6	1-5mins	0.019	0.077	0.019	0.058	
12.0	62.4	10 sec.	0.070	0.376	0.084	0.299	
0.5	2.6	1-5mins	0.021	0.090	0.020	0.069	
13.0	67.6	10 sec.	0.076	0.445	0.087	0.364	
0.5	2.6	1-5mins	0.022	0.135	0.020	0.114	
14.0	72.8	10 sec.	0.083	0.504	0.090	0.417	
0.5	2.6	1-5mins	0.024	0.153	0.021	0.131	
15.0	78.0	10 sec.	0.090	0.546	0.094	0.454	
0.5	2.6	1-5mins	0.025	0.165	0.023	0.141	
16.0	83.2	10 sec.	0.095	0.578	0.099	0.481	
0.5	2.6	1-5mins	0.026	0.183	0.023	0.158	
17.0	88.4	10 sec.	0.100	0.921	0.103	0.820	
0.5	2.6	1-5mins	0.026	0.472	0.024	0.447	
18.0	93.6	10 sec.	Ultimate Failure				

Mode of Failure

Max Load (psf)	93.6	2 fasteners pulled through cladding and 13 fasteners pulled out or became loose
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Gauge Locations
 1 - Back of stud
 2 - Back of poly on cladding
 3 - Back of stud

Test: **Transverse Load - Negative Wind Load**

Test #2

Project#: G104175306

Client: Wayne Building Products

Technician(s): Kevin Penner

Date: 31-Jan-20

Review: Baldeep Sandhu

Product: **Armourside 6 in. Steel Siding**

Location: Coquitlam, BC, Canada

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*

Installation: Framing: Nominal 2x4 SPF lumber spaced 16 in. o/c

Fastener: 1-1/2 in. long x 7/16 in. head diameter 11ga electro-galvanized roofing nail spaced 16 in. o/c each stud

Sheathing: 3/8 in. OSB

Equipment: 36" Dwyer Manometer (Intertek ID# 2056)

#1 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# P60024, cal due May 15, 2020)

#2 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# 02699, cal due May 15, 2020)

#3 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# 02700, cal due May 24, 2020)

T&D TR-72Ui Thermorecorder (Intertek ID# P60554, cal due September 4, 2020)

Digital Stopwatch (Intertek ID# P60623, cal due September 4, 2020)

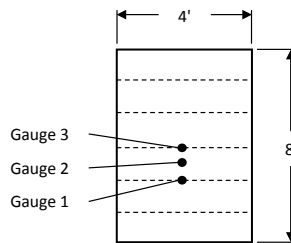
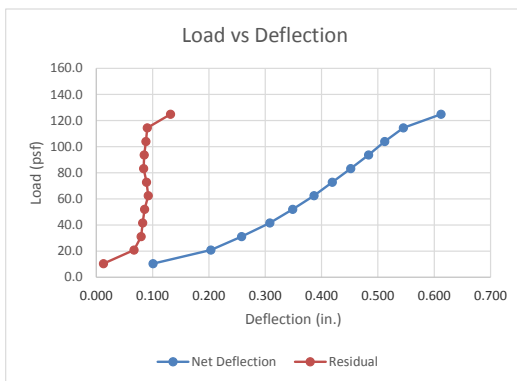
Time/Temp/RH: 8:00AM / 23.0°C / 50.0%

Test Assembly	
Width (ft)	Length (ft)
8.0	4.0

Load (in WC)	Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Net Deflection (in.)
0.5	2.6	immed.	0.000	0.000	0.000	0.000
9.0	46.8	10 sec.	N/A	N/A	N/A	N/A
0.5	2.6	1-5mins	Zero deflection gauges			
2.0	10.4	10 sec.	0.024	0.129	0.032	0.101
0.5	2.6	1-5mins	0.006	0.018	0.004	0.013
4.0	20.8	10 sec.	0.043	0.254	0.057	0.204
0.5	2.6	1-5mins	0.009	0.076	0.008	0.067
6.0	31.2	10 sec.	0.057	0.324	0.074	0.258
0.5	2.6	1-5mins	0.012	0.091	0.011	0.080
8.0	41.6	10 sec.	0.070	0.389	0.090	0.308
0.5	2.6	1-5mins	0.014	0.096	0.014	0.082
10.0	52.0	10 sec.	0.082	0.441	0.103	0.349
0.5	2.6	1-5mins	0.016	0.103	0.018	0.086
12.0	62.4	10 sec.	0.092	0.490	0.115	0.387
0.5	2.6	1-5mins	0.020	0.113	0.021	0.092
14.0	72.8	10 sec.	0.102	0.533	0.126	0.419
0.5	2.6	1-5mins	0.021	0.111	0.023	0.089
16.0	83.2	10 sec.	0.113	0.577	0.138	0.452
0.5	2.6	1-5mins	0.023	0.109	0.026	0.084
18.0	93.6	10 sec.	0.124	0.620	0.150	0.483
0.5	2.6	1-5mins	0.026	0.112	0.028	0.085
20.0	104.0	10 sec.	0.135	0.661	0.162	0.512
0.5	2.6	1-5mins	0.028	0.119	0.032	0.088
22.0	114.4	10 sec.	0.145	0.705	0.174	0.545
0.5	2.6	1-5mins	0.030	0.123	0.035	0.091
24.0	124.8	10 sec.	0.157	0.782	0.184	0.612
0.5	2.6	1-5mins	0.032	0.166	0.036	0.132
26.0	135.3	10 sec.	Ultimate Failure			

Mode of Failure

Max Load (psf)	127.4	5 fasteners pulled through cladding and 7 fasteners pulled out
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Gauge Locations

- 1 - Back of stud
- 2 - Back of poly on cladding
- 3 - Back of stud

Gauge Locations
(not to scale)

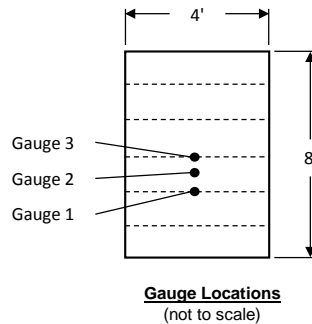
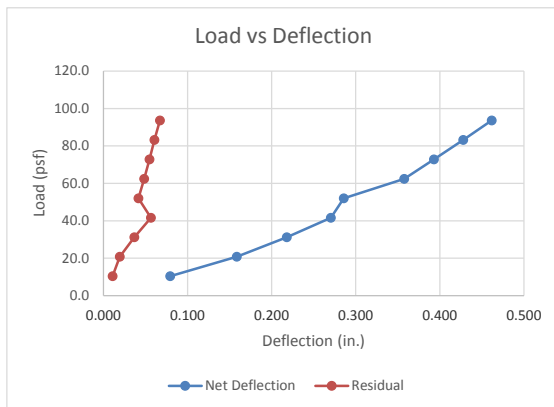
Test: **Transverse Load - Negative Wind Load** Test #3
 Client: Wayne Building Products Project#: G104175306
 Date: 4-Feb-20 Technician(s): Kevin Penner
 Product: **Armourside 6 in. Steel Siding** Reviewer: Baldeep Sandhu
 Test Method(s): ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference* Location: Coquitlam, BC, Canada
 Installation: Framing: Nominal 2x4 SPF lumber spaced 16 in. o/c
 Fastener: 1-1/2 in. long x 7/16 in. head diameter 11ga electro-galvanized roofing nail spaced 16 in. o/c each stud
 Sheathing: 3/8 in. OSB
 Equipment: 36" Dwyer Manometer (Intertek ID# 2056)
 #1 - 2 in. Mitutoyo Digital Deflection Gauge (Intertek ID# P60024, cal due May 15, 2020)
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 T&D TR-72Ui Thermorecorder (Intertek ID# P60554, cal due September 4, 2020)
 Digital Stopwatch (Intertek ID# P60623, cal due September 4, 2020)
 Time/Temp/RH: 8:00AM / 23.0°C / 50.0%

Test Assembly	
Width (ft)	Length (ft)
8.0	4.0

Load (in WC)	Load (psf)	Time	Gauge 1 (in.)	Gauge 2 (in.)	Gauge 3 (in.)	Net Deflection (in.)
0.5	2.6	immed.	0.000	0.000	0.000	0.000
9.0	46.8	10 sec.	N/A	N/A	N/A	N/A
0.5	2.6	1-5mins	Zero deflection gauges			
2.0	10.4	10 sec.	0.015	0.096	0.019	0.079
0.5	2.6	1-5mins	0.004	0.015	0.004	0.011
4.0	20.8	10 sec.	0.030	0.193	0.038	0.159
0.5	2.6	1-5mins	0.008	0.027	0.007	0.019
6.0	31.2	10 sec.	0.042	0.265	0.052	0.218
0.5	2.6	1-5mins	0.011	0.047	0.009	0.037
8.0	41.6	10 sec.	0.054	0.330	0.064	0.270
0.5	2.6	1-5mins	0.014	0.070	0.013	0.056
10.0	52.0	10 sec.	0.067	0.357	0.077	0.286
0.5	2.6	1-5mins	0.018	0.058	0.015	0.042
12.0	62.4	10 sec.	0.080	0.442	0.089	0.358
0.5	2.6	1-5mins	0.021	0.068	0.019	0.048
14.0	72.8	10 sec.	0.093	0.490	0.101	0.393
0.5	2.6	1-5mins	0.023	0.077	0.021	0.055
16.0	83.2	10 sec.	0.109	0.539	0.114	0.428
0.5	2.6	1-5mins	0.028	0.087	0.025	0.061
18.0	93.6	10 sec.	0.121	0.585	0.126	0.462
0.5	2.6	1-5mins	0.031	0.097	0.029	0.067
20.0	104.0	10 sec.	Ultimate Failure			

Mode of Failure

Max Load (psf)	100.9	9 fasteners pulled out and 1 fastener head broke off
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- Gauge Locations**
- 1 - Back of stud
 - 2 - Back of poly on cladding
 - 3 - Back of stud



Total Quality. Assured.

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Coquitlam, BC, V3K7C1

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Date: 02/14/20

SECTION 12 REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	02/18/20	N/A	Original Report Issue