

# VISTA RAILING SYSTEMS INC. TEST REPORT

## SCOPE OF WORK

REPORT OF 6 FT. FASCIA BRACKET ALUMINUM RAILING SYSTEM – 1-1/2 IN. PICKET TESTED  
IN ACCORDANCE WITH ASTM E935-21, *STANDARD TEST METHODS FOR PERFORMANCE OF  
PERMANENT METAL RAILING SYSTEMS AND RAILS FOR BUILDINGS*

## REPORT NUMBER

105224861COQ-002B

## TEST DATES

03/29/23

## ISSUE DATE

04/26/23

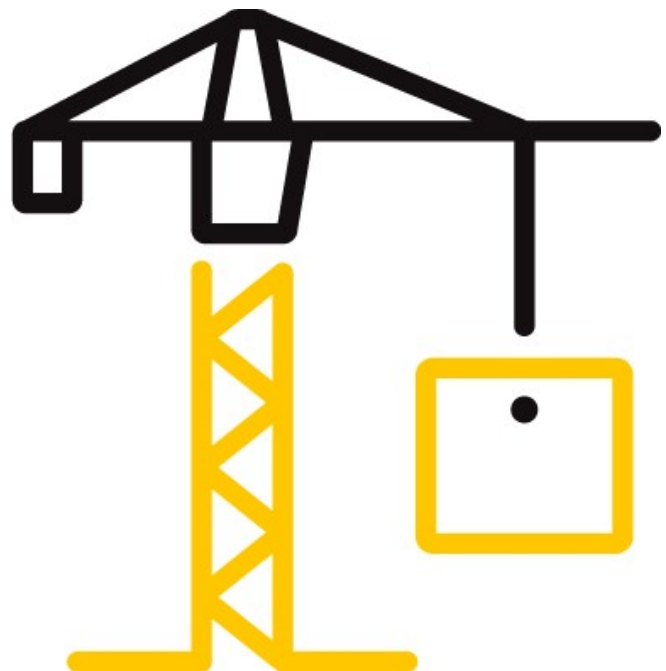
## PAGES

22

## DOCUMENT CONTROL NUMBER

GFT-OP-10c (09/29/20)

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## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### REPORT ISSUED TO

#### VISTA RAILING SYSTEMS INC.

23282 River Road

Maple Ridge, BC, V2W 1B6

Canada

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Vista Railing Systems Inc., 23282 River Road, Maple Ridge, BC, V2W 1B6, Canada to perform testing on the 6 ft. Fascia Bracket Aluminum Railing System – 1-1/2 in. Picket in accordance with ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*. The scope of the testing as requested by Vista Railing Systems Inc., was to assess the ability of the guard systems to resist the load requirements of Section 1607.9.1 of the 2021 IBC and R301.5 of the 2021 IRC for “one- and two-family dwellings.” Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada on March 29, 2023.

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

For INTERTEK B&C:

<b>COMPLETED</b>		<b>REVIEWED</b>	
<b>BY:</b>	Jason Komorski	<b>BY:</b>	Baldeep Sandhu
	Technician –		Manager –
<b>TITLE:</b>	Building & Construction	<b>TITLE:</b>	Building & Construction
			
<b>SIGNATURE:</b>		<b>SIGNATURE:</b>	
<b>DATE:</b>	04/26/23	<b>DATE:</b>	04/26/23

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## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 2

#### SUMMARY OF TEST RESULTS

SYSTEM DESCRIPTION	TEST	PASS/FAIL
6 ft. Fascia Bracket Aluminum Railing System – 1-1/2 in. Picket	In-fill Load	Pass
	Horizontal – Mid-Span Concentrated Load	Pass
	Horizontal – Adjacent to Post Concentrated Load	Pass
	Horizontal – Top of Post Concentrated Load	Pass

Refer to Appendix B for photos of testing.

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 3

#### TEST METHOD

The guard specimen was evaluated in accordance with the following:

**ASTM E935-21**, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*.

The required test loads were based on the Specified Loads per the following Building Code articles with the Safety Factors applied as indicated in this report.

#### 2021 International Building Code (IBC)

- Section 1607.9.1 *Handrails and Guards* for “one- and two-family dwellings”

#### 2021 International Residential Code (IRC)

- R301.5 *Live Load* for “one- and two-family dwellings”

### SECTION 4

#### MATERIAL SOURCE

The client submitted the railing system to the Evaluation Center on March 21, 2023 (Coquitlam ID# VAN2303211010-001). The sample was received in good condition and was suitable for testing unless noted otherwise. The sample was not independently selected for testing.

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 5 EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with ISO 17025 requirements.

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
P60692	Artech 5k lb S-Type Load Cell	20210-5k	12/12/23
P60554	T&D Temperature and Humidity Indicator	TR-72Ui	10/19/23
P60624	Extech Stopwatch	365515	12/07/23
52650	Mitutoyo 8 in. Digital Caliper	CD-8	06/08/23
P60494	Stanley Tape Measure	FatMax	10/14/23

### SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jason Komorski	Intertek B&C
Chris Chang	Intertek B&C

Note: The above observer(s) witnessed part of the test program.

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 7

#### TESTING PROCEDURE

The evaluation was conducted in accordance with the testing procedures of ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*. The test specimens were loaded at a rate to achieve the specified loads between 10 seconds and 5 minutes. The specified test loads were held for one minute before the load was released. Testing was conducted with reference to the specified load requirements of the following:

#### IN-FILL LOAD TEST

The in-fill load test was conducted in accordance with Section 1607.9.1.2 *Guard Component Loads* of the 2021 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2021 IRC. Testing was conducted with reference to Section 4.5.1 *Loads on Handrail and Guardrail Systems* of ASCE/SEI 7-10, *Minimum Design Loads for Buildings and Other Structures* with a safety factor of 2.5. A load of 125 lbs was applied using a 1 square foot block normal to the in-fill. After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and/or visible cracking from any component.

#### CONCENTRATED LOAD TEST

The concentrated load tests were conducted in accordance with Section 1607.9.1.1 *Concentrated Load* of the 2021 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2021 IRC. Testing was conducted with reference to Section 4.5.1 *Loads on Handrail and Guardrail Systems* of ASCE/SEI 7-10, *Minimum Design Loads for Buildings and Other Structures* with a safety factor of 2.5. The top rail of the guardrail system was subjected to three (3) separate horizontal tests where a concentrated load of 500 lbs was applied:

- horizontally at the mid-span of the top rail,
- horizontally at the top rail adjacent to the post connection to verify the connection capacity, and
- horizontally at the top of the post.

After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and/or visible cracking from any component.

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 8

#### TEST SPECIMEN DESCRIPTION

The sample was identified as the following:

TABLE 1. RAILING CONFIGURATION						
PART NAME	QTY	PART DIMENSIONS				REPORTED MATERIAL
		LENGTH	WIDTH	HEIGHT	NOMINAL THICKNESS	
Post	2	2.00 in.	2.00 in.	39.75 in.	0.11 in.	Aluminum
Fascia Post	2	2.00 in.	2.00 in.	7.25 in.	0.17 in.	Aluminum
Spigot	2	1.72 in.	1.72 in.	6.50 in.	0.17 in.	Aluminum
Baseplate	4	4.00 in.	4.00 in.	0.38 in.	-	Aluminum
Top Rail	1	72.00 in.	2.30 in.	2.60 in.	0.06 in.	Aluminum
Bottom Rail	1	72.00 in.	1.06 in.	1.64 in.	0.06 in.	Aluminum
Top Rail Bracket	2	3.78 in.	2.52 in.	2.40 in.	0.06 in.	Aluminum
Infill - Picket	13	0.63 in.	1.50 in.	37.25 in.	0.04 in.	Aluminum

Note 1: For detailed drawings of the test samples and components, refer to Appendix C.

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23

### SECTION 9

#### TEST RESULTS

A full set of test results is included in Appendix A.

### SECTION 10

#### CONCLUSION

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Vista Railing Systems Inc. on the 6 ft. Fascia Bracket Aluminum Railing System – 1-1/2 in. Picket per ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*. The scope of the testing as requested by Vista Railing Systems Inc. was to assess the ability of the guard systems to resist the loads as prescribed in the following building code articles:

##### **2021 International Building Code (IBC)**

- Section 1607.9.1 *Handrails and Guards* for “one- and two-family dwellings”

##### **2021 International Residential Code (IRC)**

- R301.5 *Live Load* for “one- and two-family dwellings”

The Vista Railing Systems Inc. 6 ft. Fascia Bracket Aluminum Railing System – 1-1/2 in. Picket identified and evaluated in this report has met the load requirements of the above criteria. Overall compliance with the Building Codes must be evaluated and approved by the Engineer of Record and Authority Having Jurisdiction.

The conclusions of this test may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.



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**TEST REPORT FOR VISTA RAILING SYSTEMS INC.**

Report No.: 105224861COQ-002B

Date: 04/26/23

**SECTION 11**

**APPENDIX A – TEST DATA (2 PAGES)**

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23



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Test Data Package Page 1 of 2

Company	Vista Railing System	Technician(s)	Chris Chang, Jason Komorski
Project No.	G105224861	Reviewer	Baldeep Sandhu
Models	Wide Picket	Start/End Date	March 29, 2023
Product Name	Same as above	Sample ID	VAN2303211010-001
Standard	2021 International Building Code (IBC), 2021 International Residential Code (IRC)		

### Test Data Package

### Table of Contents

Sheet	Page
Table of Contents (This Sheet)	1
Wide Picket Aluminum Railing	2

## TEST REPORT FOR VISTA RAILING SYSTEMS INC.

Report No.: 105224861COQ-002B

Date: 04/26/23



Test:	Loads on Guards	Project:	G105224861
Date:	29-Mar-23	Eng/Tech:	Jason Komorski
Client:	Vista Railing Systems Inc.		Chris Chang
Product:	Aluminum Wide Picket Railing System - Fascia Mount	Reviewer:	Baldeep Sandhu
Post Spacing:	6.17 ft                      1.88 m	Location:	Coquitlam, BC, Canada
Height of Guard:	42 in                      1067 mm		
Opening in Guard:	3.85 in                      98 mm		
Method:	2021 International Building Code (IBC) 2021 International Residential Code (IRC)		
Safety Factor:	2.50		
Equipment:	Artech 5000 lbf Load Cell (Intertek ID# P60692, cal due December 8, 2023) T&D TR-72Ui Temperature and Humidity Logger (Intertek ID# P60554, cal due October 19, 2023) Stopwatch (Intertek ID# P60624, cal due December 7, 2023)		
Time/Temp/RH:	8:00/68.8°F/36%		

Direction	Test	Design Load (Inward/Outward) (lbf)	Factored Load	Calculated Moment (lbf-ft)	Equivalent Quarter-Point Load (lbf)	Required Proof Load (lbf)	Pass/Fail
Outward	Individual Elements (over 12 in. x 12 in.) (most critical location)	50	125	-	-	125	Pass
	Midspan Horizontal Concentrated Load	200	500	-	-	500	Pass
	Top Rail Adjacent to Connection Concentrated Load	200	500	-	-	500	Pass
	Top of Post	200	500	-	-	500	Pass

Direction	Test	Design Load (Inward/Outward) (kN)	Factored Load	Calculated Moment (kNm)	Equivalent Quarter-Point Load (kN)	Required Proof Load (kN)	Pass/Fail
Outward	Individual Elements (over 305 mm in. x 305 mm) (most critical location)	0.22	0.56	-	-	0.56	Pass
	Midspan Horizontal Concentrated Load	0.89	2.22	-	-	2.22	Pass
	Top Rail Adjacent to Connection Concentrated Load	0.89	2.22	-	-	2.22	Pass
	Top of Post	0.89	2.22	-	-	2.22	Pass

Mode of Failure: N/A



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**TEST REPORT FOR VISTA RAILING SYSTEMS INC.**

Report No.: 105224861COQ-002B

Date: 04/26/23

**SECTION 11**

**APPENDIX B – 6 FT. FASCIA BRACKET ALUMINUM RAILING SYSTEM – 1-1/2 IN. PICKET PHOTOS  
(2 PAGES)**

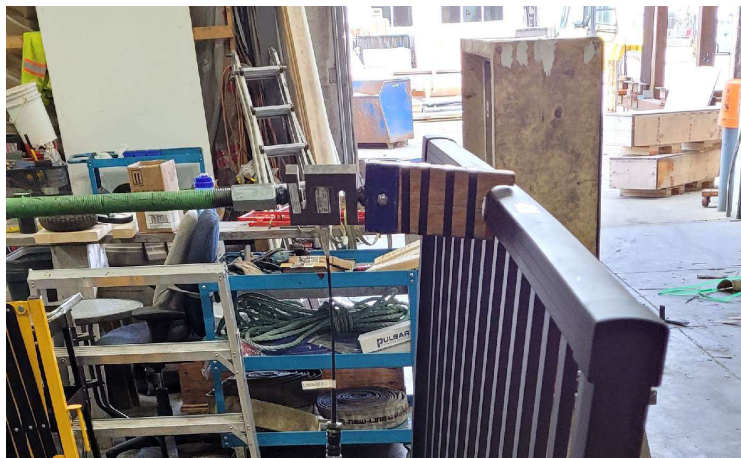
**TEST REPORT FOR VISTA RAILING SYSTEMS INC.**

Report No.: 105224861COQ-002B

Date: 04/26/23



**Figure 1. In-fill Load Test**



**Figure 2. Horizontal – Mid-Span of Top Rail Concentrated Load**

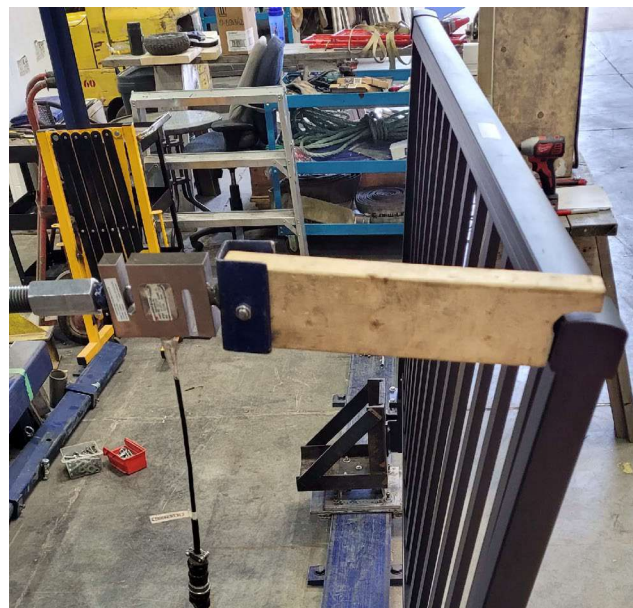
**TEST REPORT FOR VISTA RAILING SYSTEMS INC.**

Report No.: 105224861COQ-002B

Date: 04/26/23



**Figure 3. Horizontal – Top Rail Adjacent to Post Connection Concentrated Load**



**Figure 4. Horizontal – Top of Post Concentrated Load**



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**TEST REPORT FOR VISTA RAILING SYSTEMS INC.**

Report No.: 105224861COQ-002B

Date: 04/26/23

**SECTION 12**

**APPENDIX C – DRAWINGS (6 PAGES)**

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Report No.: 105224861COQ-002B

Date: 04/26/23

