

EXCELL RAILING SYSTEMS LTD. TEST REPORT

SCOPE OF WORK

REPORT OF 6 FT. ALUMINUM SQUARE PICKET RAILING SYSTEM TESTED IN ACCORDANCE WITH LOAD REQUIREMENTS OF THE FOLLOWING:

- 2018 INTERNATIONAL BUILDING CODE (IBC)
 - SECTION 1607.8.1 HANDRAILS AND GUARDS
- 2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
 - R301.5 LIVE LOAD

REPORT NUMBER

104346056COQ-002

TEST DATES

06/09/20

ISSUE DATE

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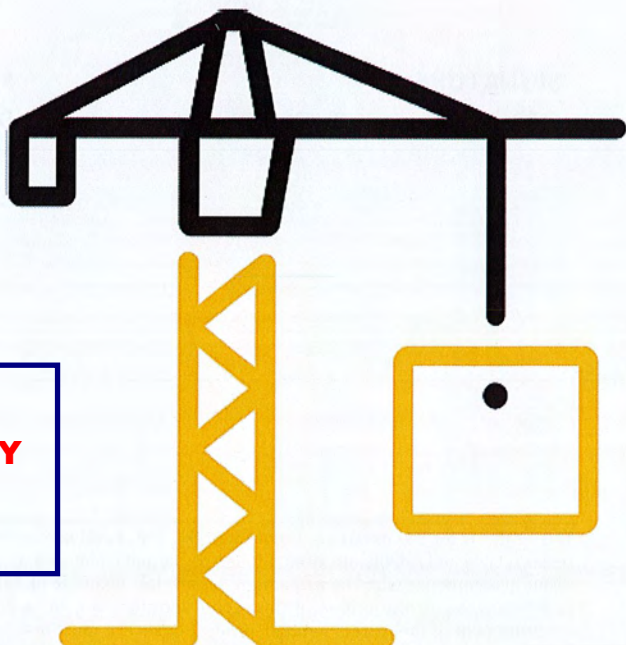
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TEST REPORT FOR EXCELL RAILING SYSTEMS LTD.

Report No.: 104346056COQ-002

Date: 06/09/20

REPORT ISSUED TO

EXCELL RAILING SYSTEMS LTD.

#306 – 12886 Anvil Way
Surrey, BC, V3W 8E7
Canada

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Excell Railing Systems Ltd., #306 – 12886 Anvil Way, Surrey, BC, V3W 8E7, Canada to perform testing in accordance with the load requirements of 2018 International Building Code (IBC) and 2018 International Residential Code (IRC) on their aluminum railing system. Results obtained are tested values and were secured by using the designated standards. 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	REVIEWED BY:	Baldeep Sandhu
TITLE:	Senior Tech – Building & Construction	TITLE:	Manager – Building & Construction
SIGNATURE:		SIGNATURE:	
DATE:	06/09/20	DATE:	06/09/20

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SECTION 2

SUMMARY OF TEST RESULTS

SYSTEM DESCRIPTION	TEST	PASS/FAIL
6 ft. Aluminum Square Picket Railing System	In-fill Load	Pass
	Uniform 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.

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SECTION 3

TEST METHOD

The specimen was evaluated in accordance with selected sections of the following:

2018 International Building Code (IBC)

- Section 1607.8.1 *Handrails and Guards*

2018 International Residential Code (IRC)

- R301.5 *Live Load*

SECTION 4

MATERIAL SOURCE

The client submitted the railing system to the Evaluation Center on June 4, 2020 (Coquitlam ID# VAN2006091009-001). The sample was received in good condition and was suitable for testing unless noted otherwise. The sample was not independently selected for testing.

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	09/19/20
P60610	T&D Temperature and Humidity Logger	TR-72Ui	04/20/21
P60444	Extech Stopwatch	365515	02/05/21
P60005	Mitutoyo 8 in. Digital Caliper	CD-8	06/04/21

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Frank Gadea-Lopez	Intertek B&C
Chris Chang	Intertek B&C

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

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SECTION 7

TESTING PROCEDURE

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. The following tests were conducted:

IN-FILL LOAD TEST

The in-fill load test was conducted in accordance with Section 1607.8.1.2 *Intermediate Rails* of the 2018 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2018 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.

UNIFORM LOAD TEST

The uniform load test was conducted in accordance with Section 1607.8.1 *Handrails and Guards* of the 2018 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2018 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 a uniform load of 125 plf applied horizontally. The load was applied using quarter point loads. After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and visible cracks in any component.

CONCENTRATED LOAD TEST

The concentrated load tests were conducted in accordance with Section 1607.8.1.1 *Concentrated Load* of the 2018 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2018 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.

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SECTION 8

TEST SPECIMEN DESCRIPTION

The sample was identified as the following:

Table 1. Railing Configuration ¹					
Railing	Post	Post Spacing	Mounting Plate	Rails	In-fill
6 ft. Aluminum Square Picket Railing System – Surface Mount	2-1/2 in. x 2-1/2 in.	74-1/2 in. (single bay)	4 in. x 4 in. x 3/8 in.	42 in. high	5/8 in. x 5/8 in. square picket

For a detailed drawing of the test sample, refer to Appendix C.

Note 1: The supporting structure attachment was outside the scope of this evaluation, and is subject to evaluation and approval by the Engineer of Record and Authority Having Jurisdiction (AHJ). The guard assembly was attached to a rigid test support using steel plates with four (4) 3/8 in. Grade 5 bolts on each post.

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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 Excell Railing Systems Ltd. on their aluminum square picket railing system. The scope of the testing as requested by Excell Railing Systems Ltd. was to assess the ability of the guard system to resist the Loads on Guards as prescribed in the following building code articles:

2018 International Building Code (IBC)

- Section 1607.8.1 *Handrails and Guards*

2018 International Residential Code (IRC)

- R301.5 *Live Load*

The Excell Railing Systems Ltd. railing system 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.