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EXCELL RAILING SYSTEMS LTD.
TEST REPORT

SCOPE OF WORK
REPORT OF EXCELL RAILING SYSTEMS LTD. PICKET AND GLASS PANEL ALUMINUM RAILING SYSTEMS (SURFACE MOUNT) FOR COMPLIANCE WITH THE APPLICABLE REQUIREMENTS OF THE FOLLOWING:

- 2018 INTERNATIONAL BUILDING CODE (IBC), SECTION 1607.8.1 *HANDRAILS AND GUARDS*

REPORT NUMBER
104528755COQ-001

TEST DATES
12/15/20 – 12/16/20

ISSUE DATE
12/21/20

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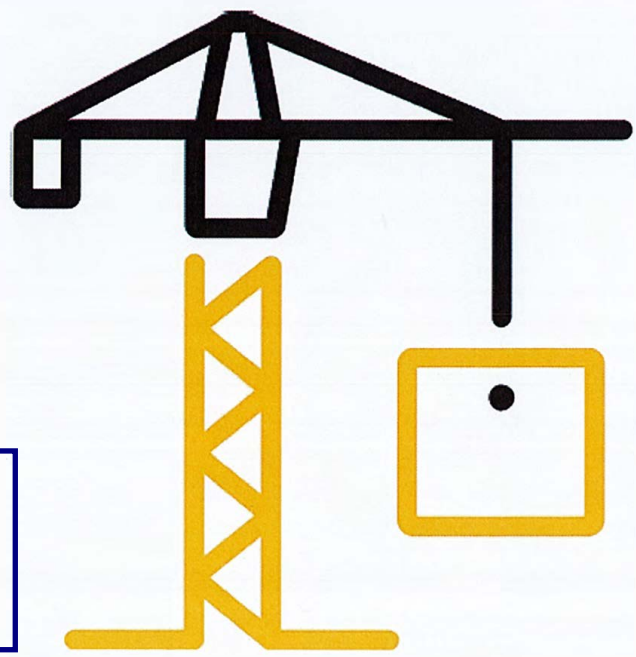

THIS REPORT HAS BEEN EDITED BY EXCELL RAILING SYSTEMS. FOR A COPY OF THE ORIGINAL REPORT CONTACT EXCELL RAILING SYSTEMS.

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TEST REPORT FOR EXCELL RAILING SYSTEMS LTD.
Report No.: 104528755COQ-001
Date: 12/21/20

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 the 2015 IBC, on their aluminum railing systems. Results obtained are tested values and were secured by using the designated Building Codes. Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada from December 15-16, 2020.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

COMPLETED BY:	Chris Chang	**REVIEWED BY:**	Baldeep Sandhu
TITLE:	Senior Tech – Building & Construction	**TITLE:**	Manager – Building & Construction
SIGNATURE:		**SIGNATURE:**	
DATE:	12/21/20	**DATE:**	12/21/20

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SECTION 2
SUMMARY OF TEST RESULTS

SYSTEM DESCRIPTION	TEST	PASS/FAIL
6 ft. x 42 in. Picket Aluminum Railing System – Surface Mount	In-fill Load	Pass
	Uniform Load	Pass
	Mid-Span Concentrated Load	Pass
	Adjacent to Post Concentrated Load	Pass
	Top of Post	Pass
5 ft. x 42 in. Glass Panel Aluminum Railing System – Fascia Mount	In-fill Load	Pass
	Uniform Load	Pass
	Mid-Span Concentrated Load	Pass
	Adjacent to Post Concentrated Load	Pass
	Top of Post	Pass

Refer to Appendix B for photos of testing.

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SECTION 3
TEST METHOD

The specimens were evaluated in accordance with selected sections of the following:

2015 International Building Code (IBC), *Section 1607.8.1, Handrails and Guards*

SECTION 4
MATERIAL SOURCE

The client submitted the railing systems to the Evaluation Center on December 15, 2020 (Coquitlam ID# VAN2012151058-001). The samples were received in good condition and were suitable for testing unless noted otherwise. The samples were 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	10/22/21
P60554	T&D Temperature and Humidity Logger	TR-72Ui	09/10/21
P60444	Extech Stopwatch	365515	02/05/21
P60494	Stanley Tape Measure	FatMax	09/08/21

SECTION 6
LIST OF OFFICIAL OBSERVERS

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

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:

2018 IBC: SECTION 1607.8.1 HANDRAILS AND GUARDS

1) Handrails and guards shall be designed to resist a linear load of 50 pounds per linear foot (plf) (0.73 kN/m) applied in any direction along the handrail or top rail.

2) Handrails and guards shall be designed to resist a concentrated load of 200 pounds (0.89 kN), applied in any direction at any point on the handrail or top rail and to transfer the load through the supports to the structure to produce the maximum load effect on the element being considered.

3) Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds (0.22 kN) on an area not to exceed 12 in. by 12 in. (305 mm by 305 mm) including openings and space between rails and located so as to produce the maximum load effect.

Notes: A live load factor of 2.5 was applied to the above loads. A live load factor of 4.0 was applied to the glass in-fill load test.

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IN-FILL LOAD TEST

For the picket railing system, a load of 125 lbs was applied using a 1 square foot block normal to the in-fill. A load of 200 lbs was used for the glass railing system. 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 guardrail system was subjected to a maximum equivalent uniform load of 125 plf applied horizontally to the top rail. The load was applied using quarter point loading. After release of the load, the system was evaluated for failure, any evidence of disengagements and/or visible cracking from any component.

CONCENTRATED LOAD TEST

The top rail of the guardrail system was subjected to three (3) separate 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.

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SECTION 8
TEST SPECIMEN DESCRIPTION

The samples were identified as the following:

TABLE 1. RAILING CONFIGURATIONS						
PART NAME	PART NUMBER	QTY	PART DIMENSIONS			REPORTED MATERIAL
			LENGTH	WIDTH	HEIGHT	
6 FT. x 42 IN. PICKET ALUMINUM RAILING SYSTEM						
Base Plate	PST172	2	4.00 in.	4.00 in.	0.375 in.	Aluminum
Post		2	1.75 in.	1.75 in.	39.75 in.	Aluminum
Top Rail	XLSQWP	1	79.38 in.	2.00 in.	2.00 in.	Aluminum
Bottom Rail	WPBOTRAI	1	70.00 in.	1.25 in.	0.625 in.	Aluminum
Infill	PKT58	15	38.56 in.	0.625 in.	0.625 in.	Aluminum
5 FT. X 42 IN. GLASS PANEL ALUMINUM RAILING SYSTEM						
Base Plate	PST172	2	4.00 in.	4.00 in.	0.375 in.	Aluminum
Post		2	1.75 in.	1.75 in.	39.75 in.	Aluminum
Top Rail	XLSQCM	1	63.5 in.	2.00 in.	1.938 in.	Aluminum
Bottom Rail	CMPBOTRAI	1	58.0 in.	1.31 in.	1.188 in.	Aluminum
Infill	N/A	1	54.25 in.	37.88 in.	6mm	Glass

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

Note 2: 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 assemblies were 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

The Excell Railing Systems Ltd. aluminum railing systems identified and evaluated in this report have met the load requirements of the 2015 International Building Code (IBC), *Section 1607.8.1, Handrails and Guards.*