



REPORT NUMBER: 101779576COQ-001B ORIGINAL ISSUE DATE: January 13, 2015

### **EVALUATION CENTER**

INTERTEK TESTING SERVICES NA LTD. 1500 BRIGANTINE DRIVE COQUITLAM, BC V3K 7C1

### **RENDERED TO**

FORTRESS RAILING PRODUCTS 1800 JAY ELL DRIVE SUITE 200 RICHERSON, TX 75081

PRODUCT EVALUATED: AL<sup>13</sup> Aluminum Railing Posts

EVALUATION PROPERTY: Load Requirements

Report of AL<sup>13</sup> Aluminum Railing Posts for compliance with the applicable requirements of the following criteria:

- 2010 National Building Code of Canada
- Section 9.8.8.2, Loads on Guards 2012 Ontario Building Code
- Section 9.8.8.2, Loads on Guards
- 2006 Alberta Building Code
- Section 9.8.8.2, Loads on Guards
- 2012 British Columbia Building Code
  Section 9.8.8.2 Loads on Guards
  - Section 9.8.8.2, Loads on Guards

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

# **1** Table of Contents

1	Tabl	e Of Contents	2	
2	Intro	duction	3	
3	Test	Samples	3	
	3.1.	Sample Selection	3	
	3.2.	Sample And Assembly Description	3	
4 Testing And Evaluation Methods				
	4.1	2010 NBC/2012 OBC/2006 ABC/2012 BCBC: Section 9.8.8.2. Loads On Guards	3	
	4.2	Concentrated Load Test	3	
5	Test	ing And Evaluation Results	5	
	5.1.	Results And Observations	5	
6	Con	clusion	6	
A	ppendix	A Test Data 2 Pag	jes	

January 13, 2015 Page 3 of 6

## 2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted a test program on railing posts submitted by Fortress Railing Products. The evaluation was carried out to determine whether their AL<sup>13</sup> Aluminum Railing Posts would resist the required loads for dwelling units and exterior guards serving not more than 2 dwelling units, as specified in the following Building Codes:

- 2010 National Building Code of Canada (NBC)
  Section 9.8.8.2, Loads On Guards
  - 2012 Ontario Building Code (OBC)
- Section 9.8.8.2, Loads On Guards
- 2006 Alberta Building Code (ABC)
  Section 9.8.8.2, Loads On Guards
- 2012 British Columbia Building Code (BCBC)
  - Section 9.8.8.2, Loads On Guards

This evaluation was conducted in the month of January 2015.

## 3 Test Samples

#### 3.1. SAMPLE SELECTION

The client submitted three (3) posts to the Evaluation Center on November 13, 2014 (Coquitlam ID# VAN1411131031-001). Samples were not independently selected for testing.

#### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The specimens were identified as the AL<sup>13</sup> Aluminum Railing Posts and were tested in the asreceived condition.

### 4 Testing and Evaluation Methods

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. As per Section 9.8.8.2 of the 2010 NBC, 2012 OBC, 2006 ABC, and 2012 BCBC, the following tests were conducted for use within dwelling units and exterior guards serving not more than 2 dwelling units:

#### 4.1 2010 NBC/2012 OBC/2006 ABC/2012 BCBC: SECTION 9.8.8.2. LOADS ON GUARDS

1) The minimum specified horizontal load applied inward or outward at the top of every required guard shall be 0.5 kN/m or a concentrated load of 1.0 kN applied at any point

Notes:

1. A safety factor of 1.67 is applicable to the above loads.

#### 4.2 CONCENTRATED LOAD TEST

Proof and ultimate load tests were conducted on each aluminum railing post per the above requirements. Each post was mounted into a universal reaction frame using four 3/8 in. Grade 5 bolts. The post to sub-structure fastener evaluation was not evaluated in the test report. The test



specimens were loaded horizontally at the level of the top rail (42 in.). Loads were applied at a continuous rate using a hydraulic pump and loading ram until the required proof load of 375 lbs was reached. The load was maintained for a period of one minute prior to being loaded to its maximum load. The ultimate load was measured using a calibrated S-type load cell. Upon completion of the test, each test specimen was inspected for damage and mode of failure. A total of three (3) samples were tested.

## 5 Testing and Evaluation Results

### 5.1. RESULTS AND OBSERVATIONS

The product test results are shown in Table 1 below and a copy of the test data is located in Appendix A.

Table 1. Test Results							
Test Description	Specimen	Required Proof Load	Pass/Fail	Maximum Load	Average Load		
		(lbf)		(lbf)	(lbf)		
	1	375	Pass	761			
AL <sup>13</sup> Aluminum Railing Posts	2	375	Pass	827	777		
	3	375	Pass	744			



# 6 Conclusion

The Fortress Railing Products AL<sup>13</sup> Aluminum Railing Posts identified and evaluated in this test report have complied with the concentrated load requirements on individual posts for guards within dwelling units and in exterior guards serving not more than 2 dwelling units, as specified in the following Building Codes:

- 2010 National Building Code of Canada (NBC)
  Section 9.8.8.2, Loads On Guards
- 2012 Ontario Building Code (OBC)
  - Section 9.8.8.2, Loads On Guards
- 2006 Alberta Building Code (ABC)
  - Section 9.8.8.2, *Loads On Guards*
- 2012 British Columbia Building Code (BCBC)
  - Section 9.8.8.2, Loads On Guards

The product test results are presented in Section 5 of this report.

### INTERTEK TESTING SERVICES NA LTD.

Reported by:

Chris Chang, P.Eng. Engineer, Building Products

Reviewed by:

Dan Lungu, P. Eng. Engineer, Manufactured Housing

Reviewed by:

Kal Kooner, P. Eng. Manager, Building Products



Fortress Railing Products Report No. 101779576COQ-001B

January 13, 2015

APPENDIX A: Test Data (2 pages)





#### Test Data Package Page 1 of 2

Company	Fortress Railing Products	Technician(s)	Kevin Penner/Chris Chang
Project No.	G101779576	Reviewer	Riccardo DeSantis
Models	AL <sup>13</sup> Aluminum Railing Posts	Start/End Date	January 7-9, 2014
Product Name	Same as above	Sample ID	VAN1411131031-001
Standard	2010 NBC/2012 OBC/2006 ABC/2012 BCBC, Section 9.8.8.2		

#### Test Data Package

#### Table of Contents

Sheet	Page	
Table of Contents (This Sheet)		
Load on Posts	2	



Test:	Load on Posts	Project:	G101779576			
Date:	7-Jan-15	Eng/Tech:	Kevin Penner			
Client:	Fortress Railing Products		Blair Hendry			
Product:	AL <sup>13</sup> Aluminum Railing Posts	Reviewer:	Riccardo DeSantis			
Method:	2010 National Building Code of Canada, 9.8.8.2 Loads on Guards					
	2012 Ontario Building Code, 9.8.8.2 Loads on Guards					
	2006 Alberta Building Code, 9.8.8.2 Loads on Guards					
	2012 British Columbia Building Code, 9.8.8.2 Loads on Guards					
Safety Factor:	1.67 (based on a resistance factor $\emptyset = 0.9$ for alu	minum)				
Equipment:	Artech 5000 lbf Load Cell (Intertek ID# P60690, cal due November 201	5)				
	Vaisala Temp/RH Indicator (Intertek ID# 9-0176, cal due July 2015)					
	Stopwatch (Intertek ID# P60624, cal due July 2015)					
	Mitutoyo Digital Caliper (Intertek ID# 1019, cal due May 2015)					
Time/Temp/RH:	8:55AM / 21.0°C / 49.0%					

Required Ultimate Design Load Average Load (lbf) Factored Deflections Direction Test (Inward/Outward) . Proof Load Pass/Fail Load Load (in.) (lbf) 225 225 (lbf) 375 375 (lbf) Top of Post Top of Post Top of Post 1.448 1.159 375 Pass 761.1 375 375 826.9 744.1 Outward Pass 777 1.234 225 375 Pass

Direction	Test	Design Load (Inward/Outward) (kN)	Factored Load	Required Proof Load (kN)	Deflections (mm)	Pass/Fail	Ultimate Load (kN)	Average Load (kN)
	Top of Post	1	1.67	1.67	36.8	Pass	3.39	
Outward	Top of Post	1	1.67	1.67	29.5	Pass	3.68	3.46
	Top of Post	1	1.67	1.67	31.3	Pass	3.31	