

TEST REPORT

Intertek

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EVALUATION CENTER

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

RENDERED TO

**EXCELL RAILING SYSTEMS LTD.
#306 – 12886 ANVIL WAY
SURREY, BC V3W 8E7**

**PRODUCT EVALUATED: Excell Picket and Glass Railing Systems
EVALUATION PROPERTY: Load Requirements**

**Report of Excell Picket and Glass Railing Systems for
compliance with the applicable requirements of the following
criteria: 2005 National Building Code of Canada, Section 4.1.5.15
Loads on Guards**

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

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2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted a test program for Excell Railing Systems Ltd. on two face mounted aluminum railing systems. The evaluation was carried out to determine whether the railing systems would meet the loads specified in the 2005 National Building Code of Canada, Section 4.1.5.15 *Loads on Guards*. This evaluation was conducted in the month of March 2009.

3 Test Samples

3.1. SAMPLE SELECTION

The client submitted one (1) aluminum face mounted picket railing sample and one (1) face mounted aluminum glass in-fill railing sample to the Evaluation Center on March 16, 2009. Samples were not independently selected for testing and cannot be used for Intertek Certification.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The samples were identified as the following:

- 6 ft. Excell Welded Picket Railing System, which consists of the following:

Post:	1.72 in. x 1.72 in. 6061-T6 extruded aluminum post
Base Plate:	2 in. x 2 in. x 5 in. x 1/4 in. 6061-T6 fascia mounted angle bars (2) each with 2 mounting holes
Top Rails:	42 in. high, 6063-T5 aluminum rail (1-piece round profile)
Picket Insert:	5/8 in. x 5/8 in. 6063-T5 aluminum spaced 4-1/2 in. o/c
Connections:	Connection details are provided in Appendix B.

- 5 ft. Excell Glass In-fill Railing System, which consists of the following:

Post:	1.72 in. x 1.72 in. 6061-T6 extruded aluminum post
Base Plate:	2 in. x 2 in. x 5 in. x 1/4 in. 6061-T6 fascia mounted angle bars (2) each with 2 mounting holes
Top Rails:	42 in. high, 6063-T5 aluminum rail (1-piece round profile)
Panel Insert:	6 mm, tempered glass panel measuring 54 in. wide x 38 in. high
Connections:	Connection details are provided in Appendix C.

Note: Post to sub-structure fastener evaluation is beyond the scope of this report. Four 3/8 inch Grade 5 bolts were used to install deck mount posts.

4 Testing and Evaluation Methods

The test specimen was 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 4.1.5.15 of the 2005 National Building Code, the following tests were conducted:

4.1. 2005 NBC: SECTION 4.1.5.15 LOADS ON GUARDS REQUIREMENTS

- 1) The minimum specified horizontal load applied inward or outward at the top of every required *guard* shall be:
 - (c) 0.75 kN/m or a concentrated load of 1.0 kN applied at any point, whichever governs, for locations other than described in Clauses (a) and (b) [refer to Notes below].
- 2) Individual elements within the *guard*, including solid panels and pickets, shall be designed for a concentrated load of 0.5 kN applied over an area of 100 mm x 100 mm located at any point in the element or elements so as to produce the most critical effect.
- 3) The loads required in Sentence (2) need not be considered to act simultaneously with the loads provided for in Sentences (1) and (4).
- 4) The minimum specified load applied vertically at the top of every required *guard* shall be 1.5 kN/m and need not be considered to act simultaneously with the horizontal load provided for in Sentence (1).

Notes:

1. Clauses (a) and (b) refer to means of egress and equipment access walkways and therefore are not applicable.
2. A live load factor of 1.5 is applicable to the above loads.

4.2. IN-FILL LOAD TEST

A load of 0.75 kN (169 lbf) was applied using a 100 mm x 100 mm square block normal to the in-fill so as to produce the most critical effect. 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.

4.3. UNIFORM LOAD TEST

The top rail of the guardrail system was subjected to two separate tests where a maximum equivalent uniform load of 1.125 kN/m (77 plf) was applied horizontally and 2.25 kN/m (154 plf) was applied vertically. The horizontal and vertical loads were applied using third point loading. The third point loads applied were calculated to impose an equivalent moment to the uniform loads specified. After release of the load, the system was evaluated for failure, any evidence of disengagements and/or visible cracking from any component.

4.4. CONCENTRATED LOAD TEST

The top rail of the guardrail system was subjected to three separate tests where a concentrated load of 1.5 kN (337 lbs) was applied:

- Horizontally at the centre of the guardrail.
- Horizontally at the top rail adjacent to the rail post connection to verify the connection capacity

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS


The product test results are shown in Table 1 below (a complete set of test data is provided in Appendix A).


Table 1. Test Results				
System Description	System Height (inches)	Maximum Post to Post Center Spacing (inches)	Test	Compliance
6 ft. Excell Welded Picket Railing System	42	72	In-fill load	Complied
			Uniform Load	Complied
			Mid-span Concentrated Load	Complied
			Adjacent to Post Concentrated Load	Complied
5 ft. Excell Glass In-fill Railing System	42	60	In-fill load	Complied
			Uniform Load	Complied
			Mid-span Concentrated Load	Complied
			Adjacent to Post Concentrated Load	Complied


6 Conclusion

The Excell Welded Picket and Glass In-fill Railing Systems identified in this test report have complied with the loads specified in Section 4.1.5.15 *Loads on Guards* of the 2005 National Building Code of Canada.

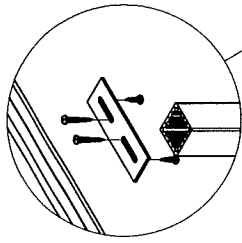
INTERTEK TESTING SERVICES NA LTD.

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Project Leader / Test Engineer, Construction Products

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EXCELL WELDED PICKET SYSTEM WITH 1.72" FASCIA POSTS



POST MOUNT PLATE FASTENED
TO 1.72" FASCIA POST WITH
2x #10x1 1/2" PH SS SCREWS
AND TO TOP RAIL WITH
2x #10x1 1/2" PH SS SCREWS

Intertek Testing Services
ETL SEMKO

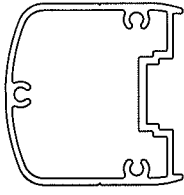
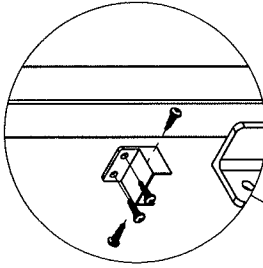
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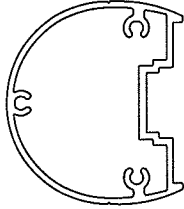
PROJECT #: 3174887

REVIEWED BY: *[Signature]*

BOTTOM MOUNT FASTENED
TO 1.72" FASCIA POST WITH
2x #10x3/4" TEK SCREWS
AND BOTTOM RAIL WITH
2x #10x3/4" TEK SCREWS



EXCELL SQUARE
WELDED PICKET
TOP RAIL



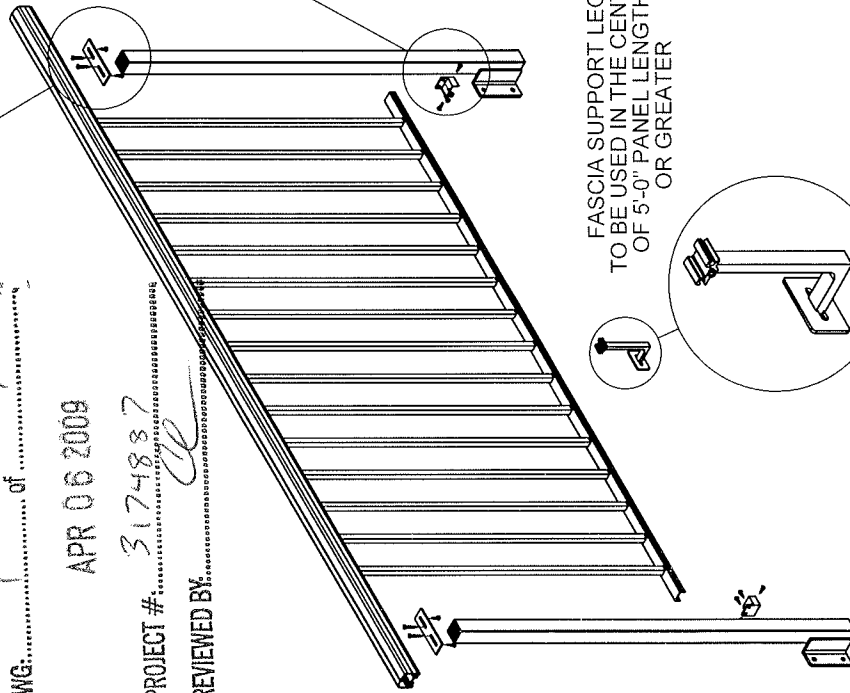
EXCELL ROUND
WELDED PICKET
TOP RAIL



WELDED PICKET
BOTTOM RAIL



5/8" SQUARE
PICKET



PLEASE SEE DRAWING
08-ERS-FPD1 FOR POST
ASSEMBLY DETAILS



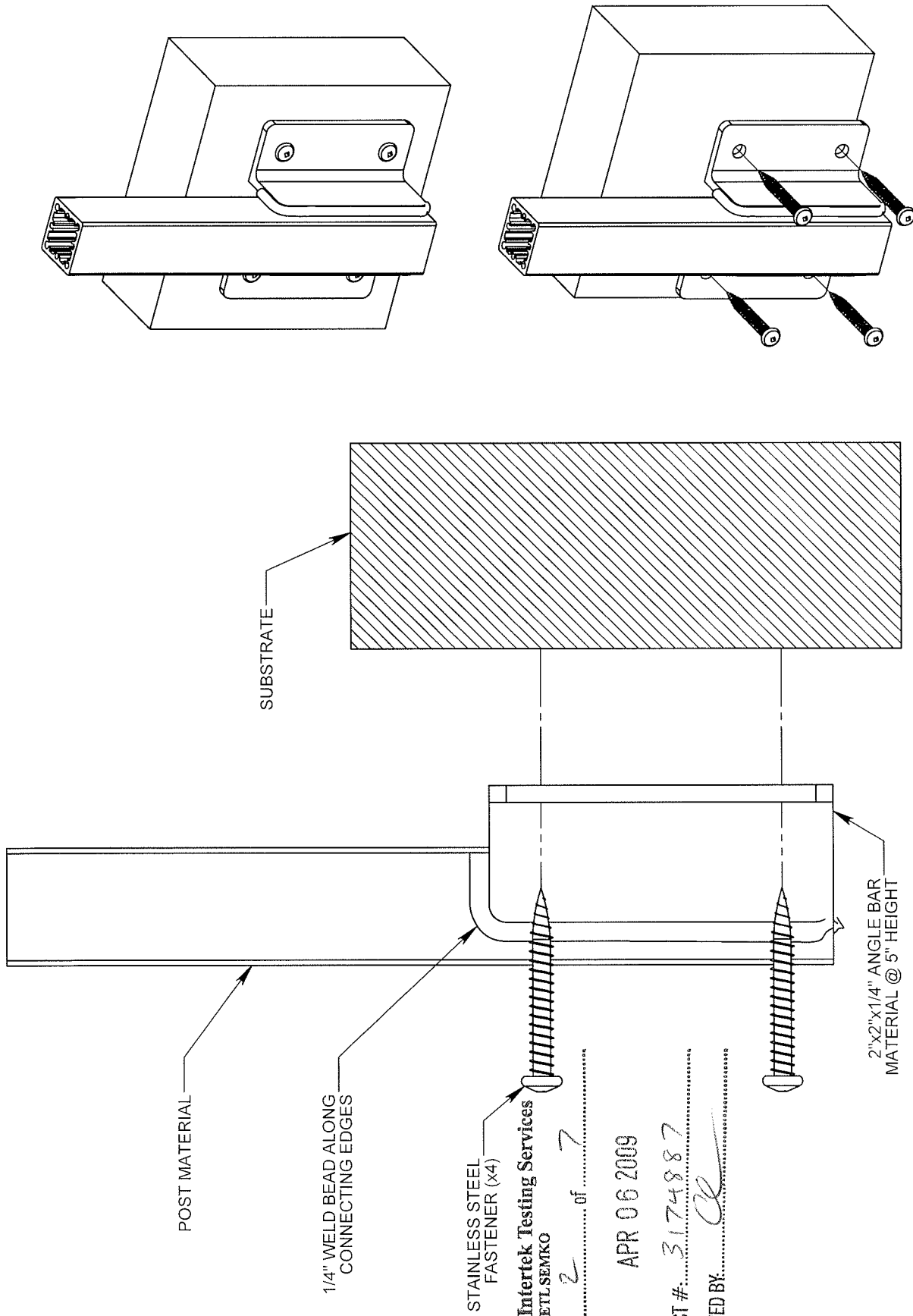
MANUFACTURER OF EXCELL &
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ALL DIMENSIONS ARE SUBJECT TO SITE MEASUREMENTS AND ARE TO BE CONFIRMED BEFORE FABRICATION OF PRODUCT

Drawing Name	Customer
09-ERSL-EWP1FASENG1	Excell Railing Systems Ltd.
Project Name	Excell WP Style 1 with 1.72 Fascia Posts (Engineer Report)
Drawn By	Csaba Bezzegh
Revision No.	Scale
NTS	Last Update
March 31, 2009	
\\jbsrvsales\Drawing Library\Engineering\Railing Assemblies\WP1.72 Posts\WP Style 1\Excell (Fascia)\	



DWG: 2 of 7

APR 06 2009

PROJECT #: 3174887

REVIEWED BY: *CR*



MANUFACTURER OF EXCELL &
DURARAIL PRODUCT LINES



ALL DIMENSIONS ARE SUBJECT TO SITE MEASUREMENTS AND ARE TO BE CONFIRMED BEFORE FABRICATION OF PRODUCT

Authorization Signature	Date of Authorization	Drawing Name	08-ERS-FPD1
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		Project Name	Fascia Post Design
		Drawn By	Csaba Bezzegh
		Revision No.	2
		Scale	NTS
		Date Created	December 10, 2008
		Last Update	April 6, 2009
		\\jsrv\sales\Drawing Library\Engineering\Railing Assemblies\Posts and Base Plates\1.72 Inch Post\Fascia Installation\	