TEST REPORT

REPORT NUMBER: 102024155COQ-001
ORIGINAL ISSUE DATE: February 25, 2015

EVALUATION CENTER

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

RENDERED TO

CENTURY ALUMINUM RAILINGS
A DIVISION OF BEAVER HOME IMPROVEMENTS
9685 AGUR STREET
SUMMERLAND, BC V0H1Z2
CANADA

PRODUCT EVALUATED:
8 ft. Component Picket System

EVALUATION PROPERTY:
Load Requirements

Report of 8 ft. Component Picket System for compliance with the applicable requirements of the following criteria:

- **2010 *National Building Code of Canada***
  - **Section 9.8.8.2, 9.8.8.3, 9.8.8.5, and 9.8.8.6**
- **2012 *Ontario Building Code***
  - **Section 9.8.8.2, 9.8.8.3, 9.8.8.5, and 9.8.8.6**
- **2006 *Alberta Building Code***
  - **Section 9.8.8.2, 9.8.8.3, 9.8.8.5, and 9.8.8.6**
- **2012 *British Columbia Building Code***
  - **Section 9.8.8.2, 9.8.8.3, 9.8.8.5, and 9.8.8.6**

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1 Table of Contents

2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted a test program on a railing system submitted by Century Aluminum Railings – A Division of Beaver Home Improvements. The evaluation was carried out to determine whether their 8 ft. Component Picket System 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*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design of Guards to Not Facilitate Climbing*
- 2012 Ontario Building Code (OBC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Guards Designed Not to Facilitate Climbing*
- 2006 Alberta Building Code (ABC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design to Prevent Climbing*
- 2012 British Columbia Building Code (BCBC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design of Guards to Not Facilitate Climbing*

This evaluation was conducted in the month of February 2015.

3 Test Samples

3.1. SAMPLE SELECTION

The client submitted various railing components to assemble one (1) 8 ft. guard rail system to the Evaluation Center on February 19, 2015 (Coquitlam ID# VAN1502191013-001). Components submitted were posts with caps, pickets, top and bottom rails, picket spacers, and fasteners.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The assembled railing system was identified as the following:

Table 1. Railing Details

Railing	Posts and Base	Picket	Rails	Other
8 ft. Component Picket System	2-1/2” x 2-1/2” (6063-T54 aluminum) with 4” x 4” x 1/4" base (6005A-T6 aluminum)	5/8” x 5/8” 6063-T54 aluminum	Top and bottom rail 6063-T54 aluminum	2 support legs spaced equally under bottom rail; 6063-T54 aluminum

Note: The installation of the guardrail to the deck was not within the scope of this report, and is subject to evaluation and approval by the building official. Four 3/8 in. grade 5 bolts and washers on each post were used to install the specimen for testing.

4 Testing and Evaluation Methods

The evaluation was conducted in accordance with the testing procedures of ASTM E935-13e1, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.* 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 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

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 300 mm x 300 mm located at any point in the element or elements so as to engage 3 balusters.

3) The minimum specified load applied vertically at the top of every required *guard* shall be 1.5 kN/m.

4) None of the loads specified above need be considered to act simultaneously.

Notes:

1. A safety factor of 1.67-2.24 was applied to the above loads.

4.2 2010 NBC/2012 OBC/2006 ABC/2012 BCBC: SECTION 9.8.8.3 *HEIGHT OF GUARDS*

1) All guards shall be not less than 1070 mm high.

4.3 2010 NBC/2012 OBC/2006 ABC/2012 BCBC: SECTION 9.8.8.5 *OPENINGS IN GUARDS*

1) Openings through any guard shall be of a size that will prevent the passage of a spherical object having a diameter of 100 mm unless it can be shown that the location and size of openings that exceed this limit do not present a hazard.

4.4 2010 NBC/2012 OBC/2006 ABC/2012 BCBC: SECTION 9.8.8.6 *DESIGN OF GUARDS TO NOT FACILITATE CLIMBING*

1) Guards except those in industrial occupancies and where it can be shown that the location and size of openings do not present a hazard, shall be designed so that no member, attachment or opening facilitates climbing.

2) Guards shall be deemed to comply with Sentence (1) where all elements protruding from the vertical and located within the area between 140 mm and 900 mm above the floor or walking surface protected by the guard conform to one of the following clauses:
a) they are located more than 450mm horizontally and 20 mm vertically, or
b) they provide not more than 15 mm horizontal offset,
c) they do not provide a toe-space more than 45mm horizontally and 20 mm vertically, or
d) they present more than a 2-in-1 slope on the offset.

4.5 IN-FILL LOAD TEST

A load of 0.83 kN (187 lbf) was applied using a 300 mm x 300 mm square block on the center of the railing system normal to the in-fill so as to engage 3 glass balusters. After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and visible cracks in any component.

4.6 UNIFORM LOAD TEST

The top rail of the guardrail system was subjected to two separate tests where a maximum equivalent uniform load of 0.83 kN/m (57 plf) was applied horizontally and 2.50 kN/m (171 plf) was applied vertically. The loads were 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.

4.7 CONCENTRATED LOAD TEST

The top rail of the guardrail system was subjected to three separate tests where a concentrated load was applied at the following locations:

- 1.67 kN (375 lbs) horizontally at the centre of the guardrail,
- 2.24 kN (503 lbs) horizontally at the top rail adjacent to the post connection to verify the connection capacity, and
- 1.67 kN (375 lbs) horizontally at the top of the post.

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

Section	Property	Result	Requirement	Pass/Fail
9.8.8.2	In-fill Load	187 lbs	187 lbs	Pass
	Vertical Uniform Load	171 lbs/ft	171 lbs/ft	Pass
	Horizontal Uniform Load	57 lbs/ft	57 lbs/ft	Pass
	Mid-span Concentrated Load	375 lbs	375 lbs	Pass
	Adjacent to Post Connection Concentrated Load	503 lbs	503 lbs	Pass
	Top of Post	375 lbs	375 lbs	Pass
	Top of Post Ultimate Failure	561 lbs	As Reported	As Reported
9.8.8.3	Height of Guards	1070 mm	≥ 1070 mm	Pass
9.8.8.5	Openings in Guards	Between pickets: 98 mm Under bottom rail: 64 mm	< 100 mm	Pass
9.8.8.6	Design to Not Facilitate Climbing	No elements protruding from the vertical between 140 mm and 900 mm	No elements from the vertical between 140 mm and 900 mm that facilitate climbing	Pass

6 Conclusion

The Century Aluminum Railings 8 ft. Component Picket System identified and evaluated in this test report has complied with the load requirements 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*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design of Guards to Not Facilitate Climbing*
- 2012 Ontario Building Code (OBC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Guards Designed Not to Facilitate Climbing*
- 2006 Alberta Building Code (ABC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design to Prevent Climbing*
- 2012 British Columbia Building Code (BCBC)
  - Section 9.8.8.2, *Loads On Guards*
  - Section 9.8.8.3, *Height of Guards*
  - Section 9.8.8.5, *Openings in Guards*
  - Section 9.8.8.6, *Design of Guards to Not Facilitate Climbing*

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

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. G. LUNGU # 28490 ENGINEER
FEB 26, 2015

PROFESSIONAL ENGINEER ALBERTA DAN G. LUNGU
FEB 26, 2015

LICENSED PROFESSIONAL ENGINEER K. S. KOONER 100155568 PROVINCE OF ONTARIO
02/26/15

APPENDIX A: Test Data (3 pages)

Company	Century Aluminum Railings	Technician(s)	Chris Chang
Project No.	G102024155	Reviewer	Dan Lungu / Kal Kooner
Models	8 ft. Component Picket System	Start/End Date	February 24-25, 2015
Product Name	Same as above	Sample ID	VAN1502191013-001
Standard	**2010 NBC/2012 OBC/2012 BCBC, Section 9.8.8.2, 9.8.8.3, 9.8.8.5, 9.8.8.6**		

Test Data Package

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Test:	**Loads on Guards**			Project:	G102024155
Date:	24-Feb-15			Eng/Tech:	Chris Chang
Client:	Century Aluminum Railings			Reviewer:	Kal Kooner
Product:	**8 ft. Component Picket System**				Dan Lungu
Post Spacing:	8.25 ft	2.51 m			
Height of Guard:	42 in	1070 mm			
Opening in Guard:	3.875 in	98 mm			

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, Section 9.8.8.2
2012 British Columbia Building Code, 9.8.8.2 Loads on Guards

Safety Factor: 2.24 (based on a resistance factor Ø = 0.67 for connection-fasteners)
1.67 (based on a resistance factor Ø = 0.9 for aluminum-ductile)

Equipment: Artech 5000 lbf Load Cell (Intertek ID# P60690, cal due November 2015)
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# P60005, cal due May 2015)

Time/Temp/RH: 8:00AM / 22.0℃ / 49.0%

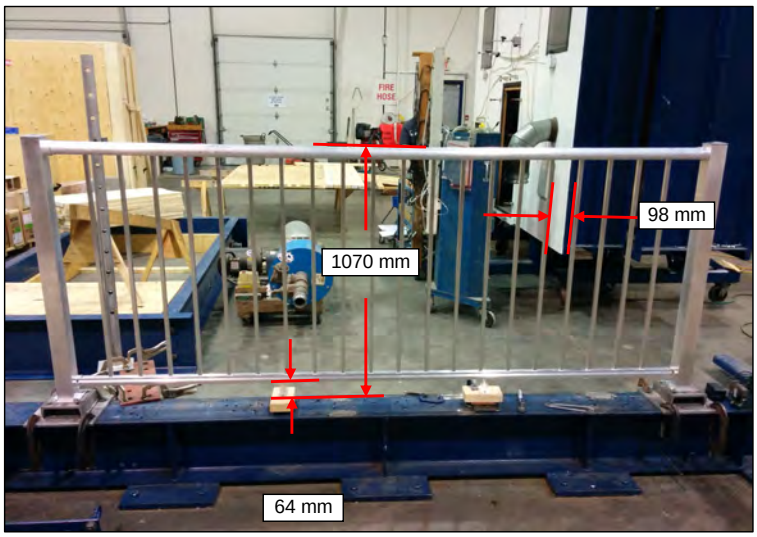
Direction	Test	Design Load (Inward/ Outward) (lbf)	Factored Load	Calculated Moment (lbf-ft)	Equivalent Quarter-Point Load (lbf)	Required Proof Load (lbf)	Deflections (in.)	Pass/Fail
Outward	Individual Elements (over 12 in. x 12 in.)	112	187	-	-	187	1.754	**Pass**
	Vertical Uniform Load (per ft)	103	171	1457	706	1413	0.216	**Pass**
	Horizontal Uniform Load (per ft)	34	57	486	235	471	2.829	**Pass**
	Midspan Horizontal Concentrated Load	225	375	-	-	375	2.869	**Pass**
	Top Rail Adjacent to Alum Connection Concentrated Load	225	503	-	-	503	3.730	**Pass**
	Top of Post	225	375	-	-	375	2.144	**Pass**

Direction	Test	Design Load (Inward/ Outward) (kN)	Factored Load	Calculated Moment (kNm)	Equivalent Quarter-Point Load (kN)	Required Proof Load (kN)	Deflections (mm)	Pass/Fail
Outward	Individual Elements (over 300 mm in. x 300 mm)	0.5	0.83	-	-	0.83	44.5	**Pass**
	Vertical Uniform Load (per m)	1.5	2.50	1.98	3.14	6.29	5.5	**Pass**
	Horizontal Uniform Load (per m)	0.5	0.83	0.66	1.05	2.10	71.8	**Pass**
	Midspan Horizontal Concentrated Load	1	1.67	-	-	1.67	72.9	**Pass**
	Top Rail Adjacent to Alum Connection Concentrated Load	1	2.24	-	-	2.24	94.7	**Pass**
	Top of Post	1	1.67	-	-	1.67	54.4	**Pass**

Test:	**Dimensional Checks**		Project:	G102024155
Date:	24-Feb-15		Eng/Tech:	Chris Chang
Client:	Century Aluminum Railings		Reviewer:	Kal Kooner
Product:	**8 ft. Component Picket System**			Dan Lungu
Post Spacing:	8.25 ft	2.51		m
Height of Guard:	42 in	1070		mm
Opening in Guard:	3.875 in	98		mm
Method:	2010 National Building Code of Canada			
	2012 Ontario Building Code			
	2006 Alberta Building Code			
	2012 British Columbia Building Code			
	9.8.8.3 Height of Guards			
	9.8.8.5 Openings in Guards			
	9.8.8.6 Design of Guards to Not Facilitate Climbing / Guards Designed Not to Facilitate Climbing / *Design to Prevent Climbing*			
Time/Temp./RH:	8:00AM / 22.0℃ / 49.0%			
Equipment:	Vaisala Temp/RH Indicator (Intertek ID# 9-0176, cal due July 2015)			
	Tape Measure (Intertek ID# P60494, cal due August 2015)			

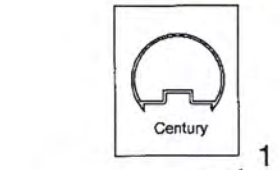
Description		Measured Dimension (mm)	Requirement (mm)	Pass/Fail
9.8.8.3 Height of Guards		1070	≥ 1070	**Pass**
9.8.8.5 Openings in Guards	Between Pickets	98	< 100	**Pass**
	Under Bottom Rail	64	< 100	**Pass**

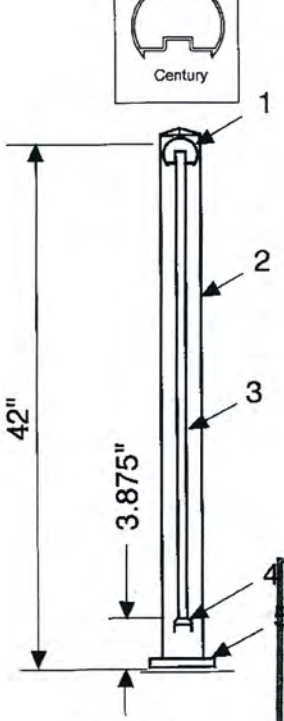
Description	Result	Requirement	Pass/Fail
9.8.8.6 Design of Guards to Not Facilitate Climbing / Guards Designed Not to Facilitate Climbing	No elements protruding from the vertical between 140 mm and 900 mm that facilitate climbing	No elements protruding from the vertical between 140 mm and 900 mm that facilitate climbing	**Pass**



APPENDIX B: Drawings (10 pages)

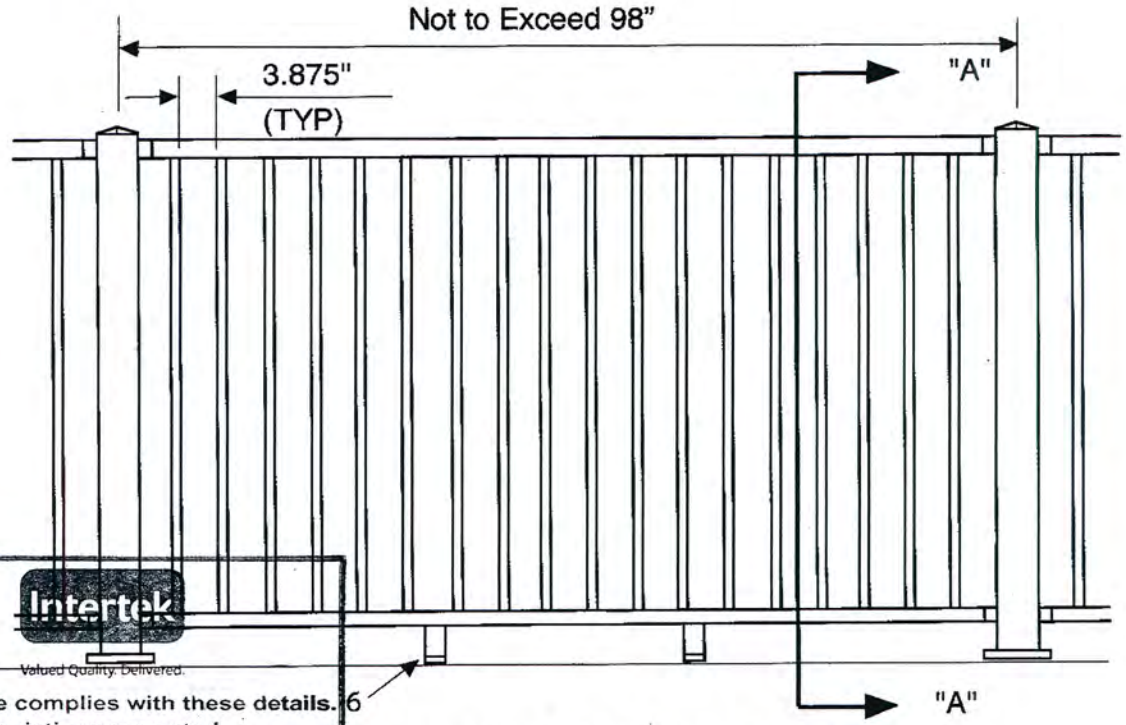
5/8" x 5/8" x 8' Component Picket Railing - Surface Mount





SECTION "A-A"

NOT TO SCALE



ELEVATION OF BALCONY RAILING

NOT TO SCALE

Intertek
Valued Quality. Delivered.

Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:

Notes: 1. This guard system complies with the requirements of Part 9 of the 2010 Canadian Building Code (NBC), 2012 British Columbia Building Code (BCBC) and the 2012 Ontario Building Code (OBC).
2. Fastening detail to be determined on-site and is not within the scope of this document.

Century Aluminum Railings
9685 Agur St., Summerland ,B.C. V0H 1Z2
Phone: (778) 516-6000 • Fax: (778) 516-6003 • **Toll Free: 1-877-810-4841**

	Material - Aluminum	Thickness	Alloy
1	Top Rail - Century 2.35" x 1.89	.083	6063-T54
2	Post - 2.50" x 2.50"	.075	6063-T54
3	Picket - .625" x .625"	.050	6063-T54
4	Bottom Rail - 1.06" x 1.41"	.070	6063-T54
5	Baseplate - 4" x 4"	.250	6005A-T6
6	Support Leg	.125	6063-T54

02/27/15

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Alloy	6063–T5
Finish	MILL
Exposed Surface	3
Area (mm^2)	440.5
Lineal mass	1.185
Perimeter	450.98
Outside Perimeter	243.51
Factor	381
C.C.D.	60
Break corners	.40
Unmarked Thickness	1.90
Unmarked Radii	.95
Date	18SEP08
Drawn by	JEJ
Scale	1:1
Gap Ratio	

† Toolmaker's Dimension
* Close Tolerance
APEL ID Rib
R Full radii

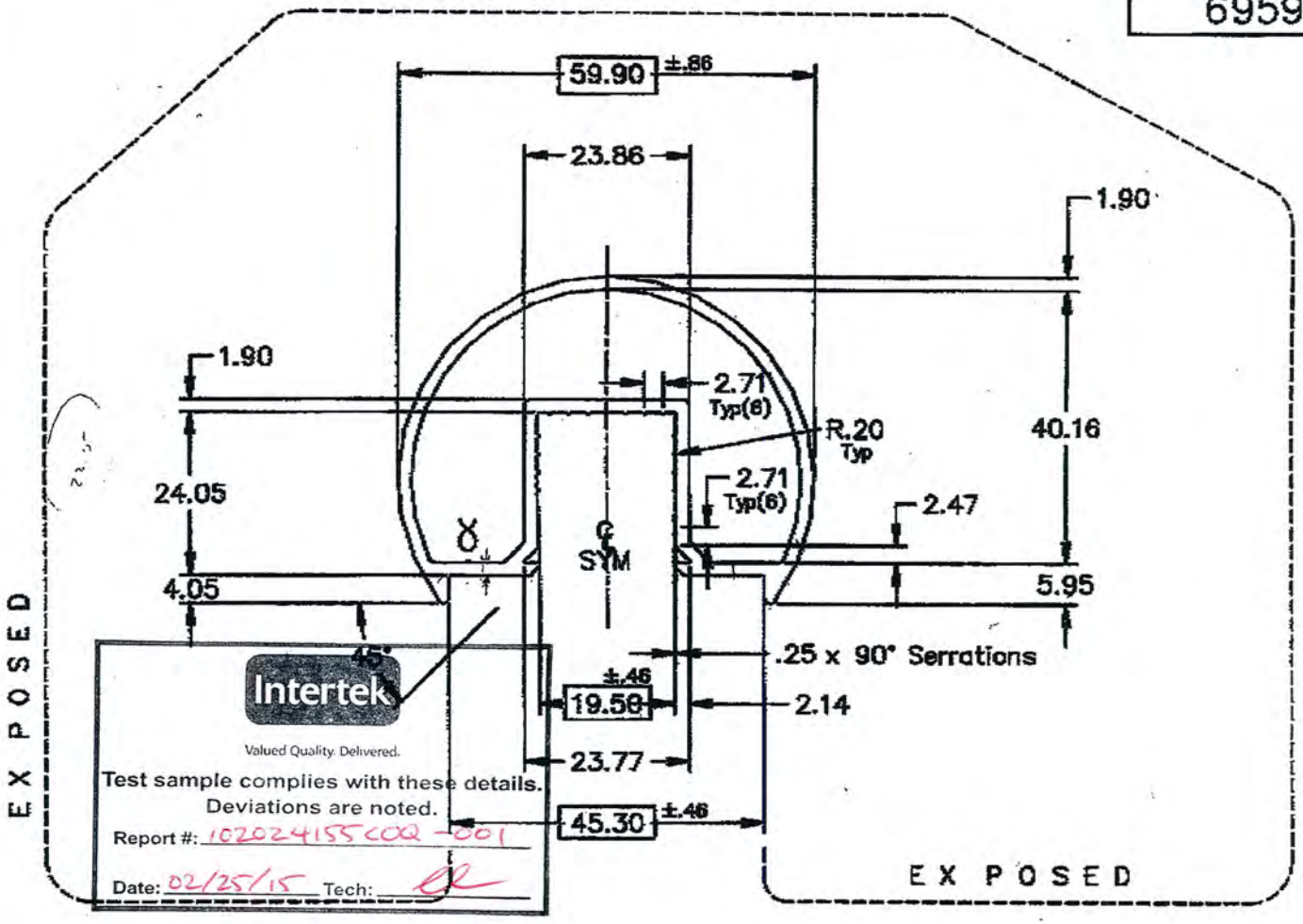
Customer no.

APEL SHAPE NO. 695950

REV. MAY/01

NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO. 695950



IMPORTANT DIMENSION(S)

APEL SHAPE NO. 695950	Date	Rev.	Description RETAIL TOP RAIL
			Customer BEAVER HOME IMPROVEMENTS

APEL
Extrusions Limited

PRINT APPROVAL: BEAVER DEKSMART
CUSTOMER SIGNATURE INDICATES THAT DIMENSIONS AND TOLERANCES HAVE BEEN ACCEPTED AS SHOWN. CUSTOMER ALSO ASSUMES ALL LEGAL RESPONSIBILITY FOR HAVING THIS PROFILE MADE AND WILL FULLY PROTECT APEL EXTRUSIONS LTD. IN CASE OF PATENT OR ANY OTHER CLAIMS.
DATE: SIGNED:

Revision	Proposal	Designer
–	1	

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Finish	ARCH
Exposed Surface	2
Area (mm² / in²)	294.4
Lineal mass (Kg/m – lb/ft)	.792
Perimeter (mm / in)	332.1
Outside Perimeter (mm / in)	
C.C.D. (mm / in)	64.2
Break corners (mm / in)	.38
Unmarked Thickness (mm / in)	1.79
Unmarked Radii	.89
Date	13MAY11
Drawn by	EJS
Scale	1:1
Gap Ratio	

- ▭ Important Dimension
- Ŧ Toolmaker's Dimension
- ✱ Close Tolerance
- ᗅ APEL ID Mark
- R Full radii
- ⚠ Metallurgical Streaking may occur here and will not be a cause for rejection

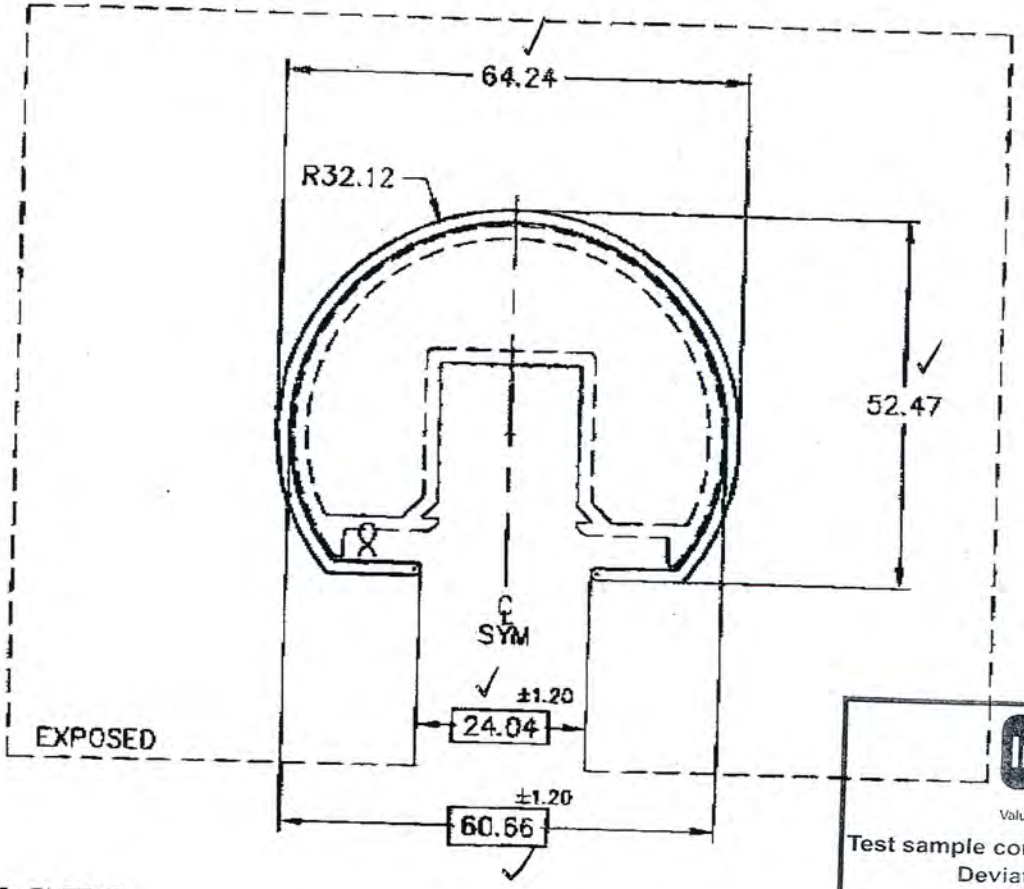
Customer no. 4990

APEL SHAPE NO. 672358

REV. NOV/10

NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO. 672358



SECTION TO SLEEVE FIT WITH 695950 ✓

Intertek
Valued Quality. Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:

Date	By	Rev.	Description	Customer
			BEAVER CENTURY ROUND SLEEVE	BEAVER ~~DEKSMART~~ CENTURY
		MH 17, 2011		

05/16/2011 05:35 FAX 604 944 6574 APEL BC SALES 002

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Alloy	6063–T54
Finish	ARCH
Exposed Surface	4
Area (mm^2)	541.11
Lineal mass	1.456
Perimeter	524.32
Outside Perimeter	252.37
Factor	360
C.C.D.	90
Break corners	.40
Unmarked Thickness	1.90
Unmarked Radii	.95
Date	9FEB09
Drawn by	JEJ
Scale	1:1
Gap Ratio	

∓ Toolmaker's Dimension
∗ Close Tolerance
∝ APEL ID Rib
R Full radii

Customer no. H212212075

APEL SHAPE NO. **695987**

REV. MAY/01

NOTE: Commercial tolerances to apply unless otherwise stated.

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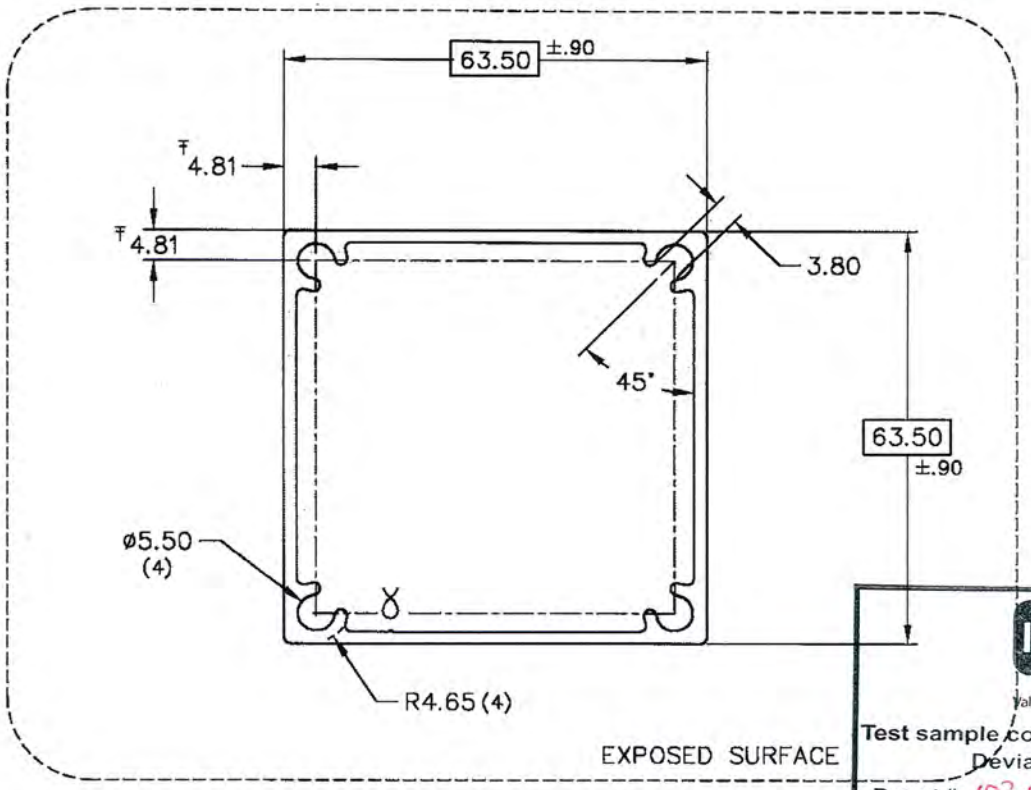

Intertek
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Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:

IMPORTANT DIMENSION(S)

Date	Rev.	
		Description 63.5 POST with Screw chases (2½").
		Customer BEAVER HOME IMPROVEMENTS

APEL
Extrusions Limited

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Finish	ARCH
Exposed Surface	3
Area (mm^2)	209
Lineal mass	.562
Perimeter	237.5
Outside Perimeter	
C.C.D.	50.1
Break corners	.42
Unmarked Thickness	1.78
Unmarked Radii	
Date	29SEPT99
Drawn by	EJS
Scale	2:1
Gap Ratio	

- ▭ Important Dimension
- ∓ Toolmaker's Dimension
- ∗ Close Tolerance
- ⋉ APEL ID Mark
- R Full radii
- ▲ Metallurgical Streaking may occur here and will not be a cause for rejection

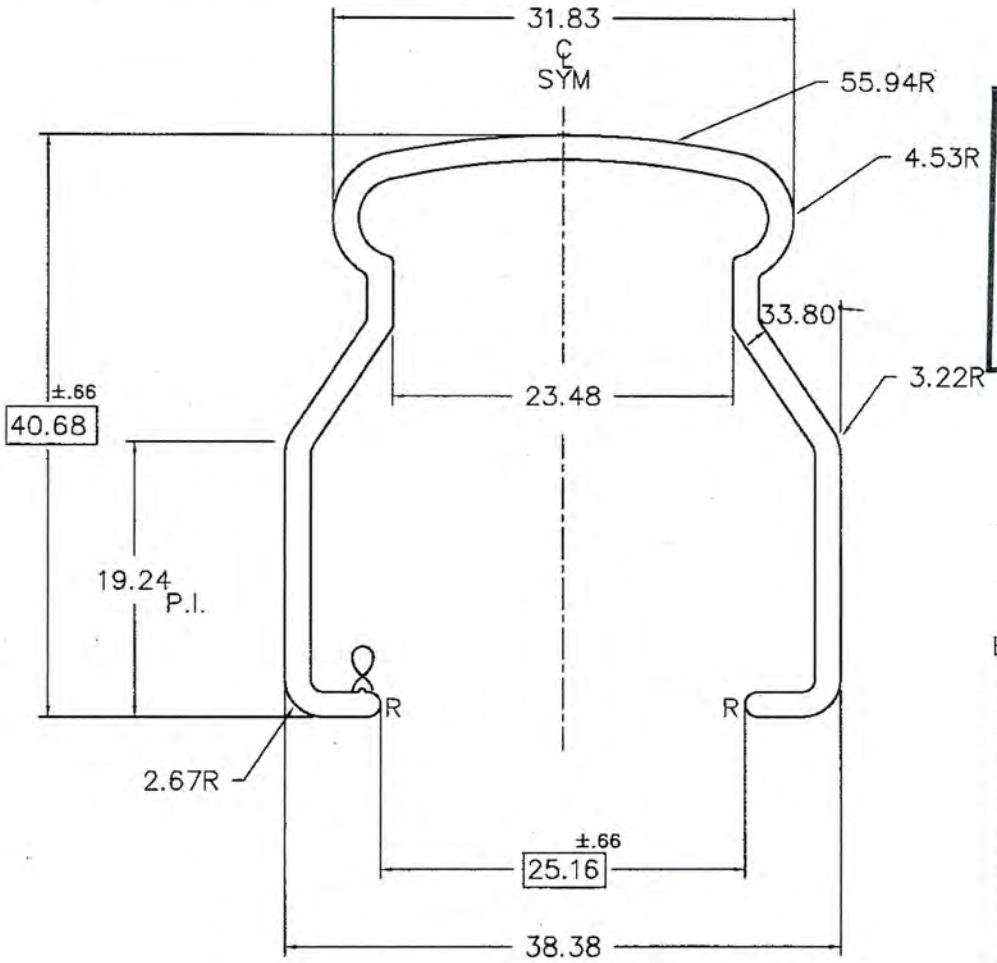
Customer no.

APEL SHAPE NO.
626647

REV. DEC/09

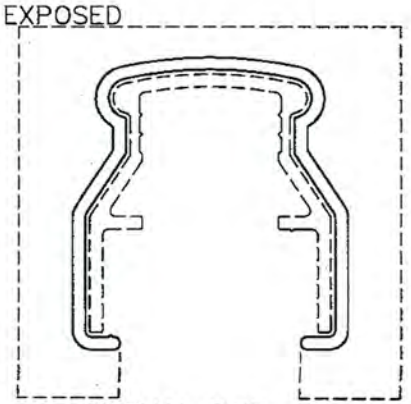
NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO.
626647



Intertek
Valued Quality. Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech: CC

SECTION TO SLEEVE
FIT WITH 626646



ACTUAL SIZE

Date	By	Rev.	
12OCT10	EJS	B	CUSTOMER NAME CHANGED
10FEB09	EJS	A	CUSTOMER NAME AND DESCRIPTION CHANGED

Description: Ⓐ OUTSIDE SLEEVE FOR NEW BOTTOM RAIL

Customer: Ⓑ Ⓐ DEKSMART RAILINGS

APEL Extrusions Limited

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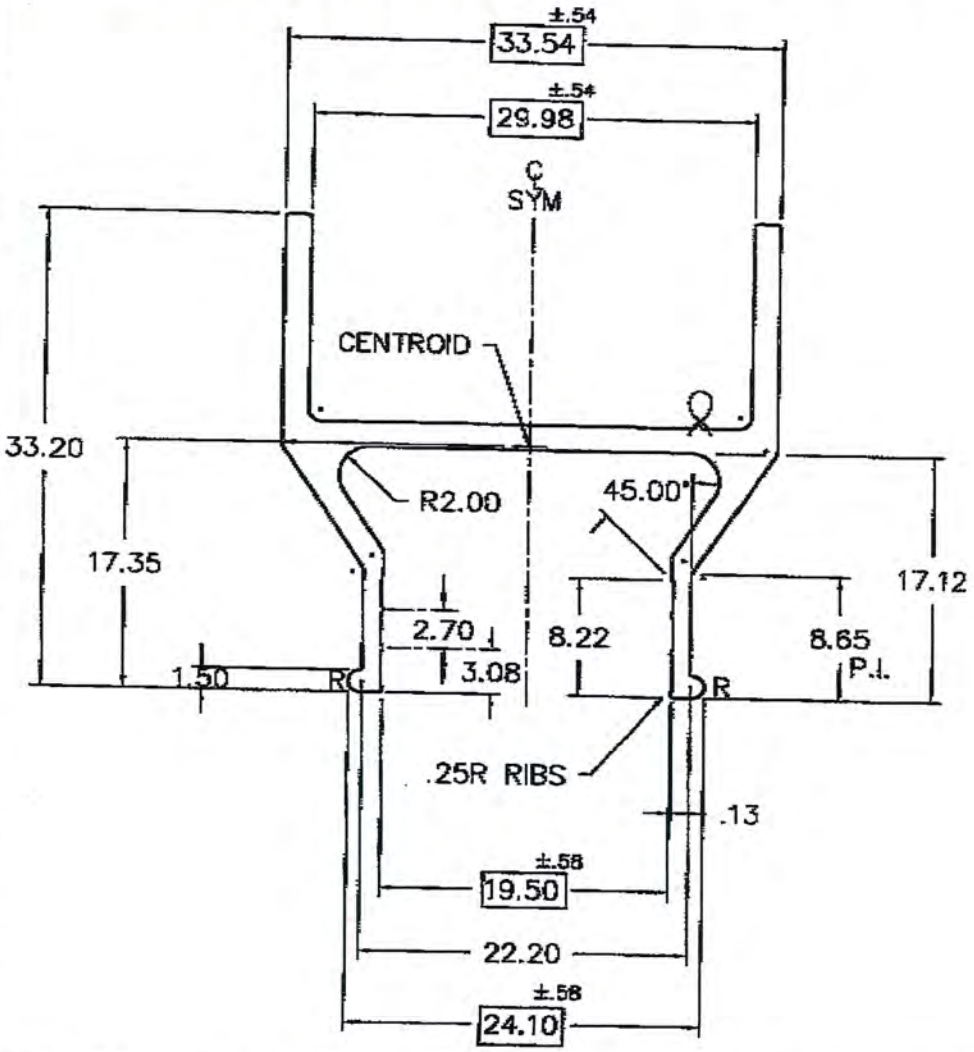
Finish	ARCH
Exposed Surface	2
Area (mm^2)	176
Lineal mass	.473
Perimeter	196.6
Outside Perimeter	
C.C.D.	43.5
Break corners	0.25
Unmarked Thickness	1.78
Unmarked Radii	.80
Date	12DEC03
Drawn by	EJS
Scale	2:1
Gap Ratio	

- ☐ Important Dimension
- ∓ Toolmaker's Dimension
- ✱ Close Tolerance
- ⋈ APEL ID Mark
- R Full radii
- ▲ Metallurgical Streaking may occur here and will not be a cause for rejection

Customer no.

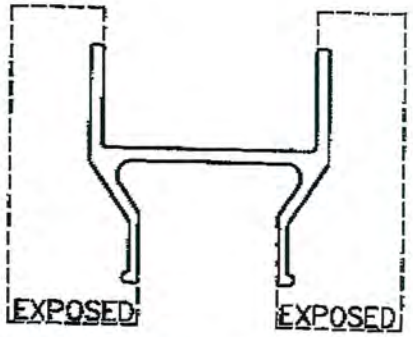
NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO. 629082



Ixx 0.0100 x 10^6 mm^4
Sxx 0.0005 x 10^6 mm^3
Rxx 7.55 mm
Iyy 0.0283 x 10^6 mm^4
Syy 0.0016 x 10^6 mm^3
Ryy 12.66 mm

Intertek
Valued Quality. Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:



ACTUAL SIZE

Date	By	Rev.	
21JULY10	EJS	Ⓑ	CUSTOMER NAME CHANGED
10FEB09	EJS	Ⓐ	DESCRIPTION AND CUSTOMER NAME CHANGED

APEL SHAPE NO. 629082
REV. DEC/f

Description Ⓐ BOTTOM RAIL

Customer Ⓐ Ⓑ DEKSMART RAILINGS

Extrusions Limited

This is not an APEL EXTRUSIONS LIMITED design. Customer MUST check and test the design since APEL is NOT responsible or liable for products produced from it. APEL's only warranty is stated on APEL's order acknowledgment.

Finish	ARCH
Exposed Surface	1
Area (mm^2)	41
Lineal mass	.110
Perimeter	66.3
Outside Perimeter	
C.C.D.	27.0
Break corners	0.25
Unmarked Thickness	1.25
Unmarked Radii	
Date	11MAR04
Drawn by	EJS
Scale	4:1
Gap Ratio	

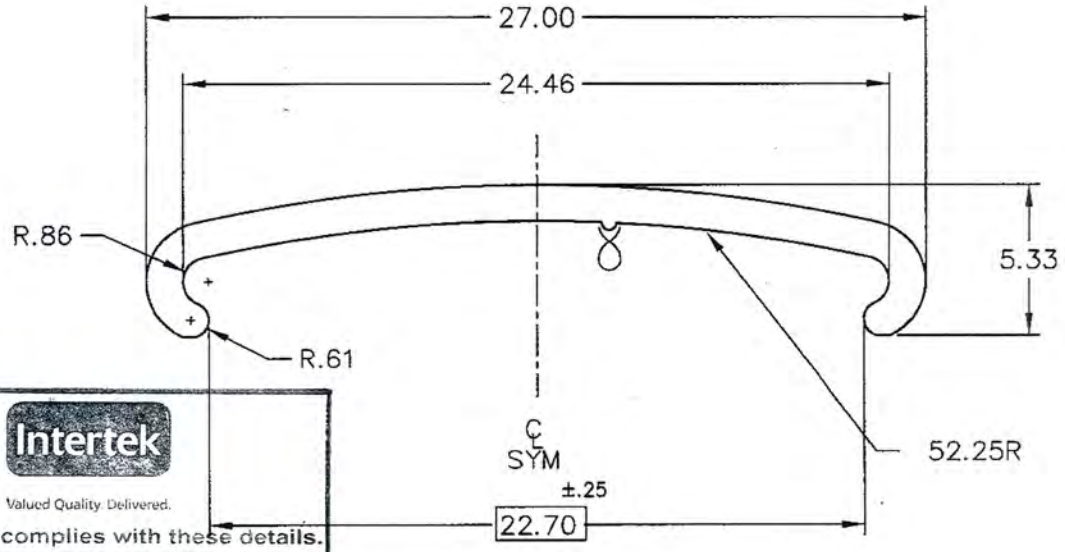
- ▭ Important Dimension
- ∓ Toolmaker's Dimension
- ∗ Close Tolerance
- ⊂ APEL ID Mark
- R Full radii
- ▲ Metallurgical Streaking may occur here and will not be a cause for rejection

Customer no.

APEL SHAPE NO.
615128

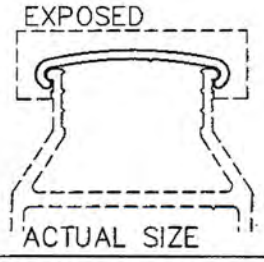
NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO.
615128



Intertek
Valued Quality Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech: ll

SECTION TO SNAP FIT OVER
629048 AND 629082



Date	By	Rev.	
50CT10	EJS	Ⓑ	CUSTOMER NAME CHANGED
20JUN08	EJS	Ⓐ	CUSTOMER NAME CHANGED

Description: SPACER CLIP

Customer: Ⓐ Ⓑ DEKSMART RAILINGS

REV. DEC/09

APEL Extrusions Limited

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Finish	ARCH
Exposed Surface	4
Area (mm^2)	71
Lineal mass	.191
Perimeter	112.6
Outside Perimeter	60.1
C.C.D.	20.8
Break corners	.71
Unmarked Thickness	1.27
Unmarked Radii	
Date	22MAR02
Drawn by	EJS
Scale	2:1
Gap Ratio	

- ▭ Important Dimension
- † Toolmaker's Dimension
- ✱ Close Tolerance
- ⊂ APEL ID Mark
- R Full radii
- ▲ Metallurgical Streaking may occur here and will not be a cause for rejection

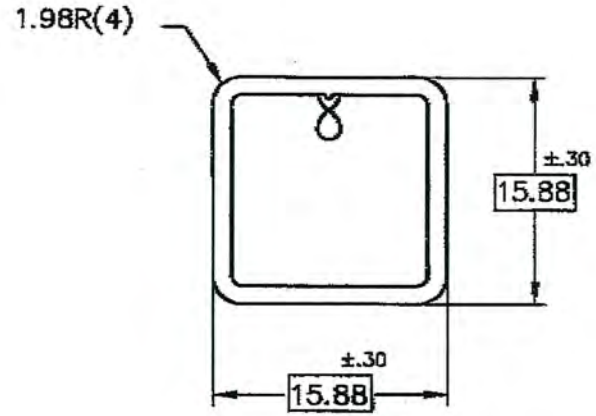
Customer no.

APEL SHAPE NO.
695273

REV. DEC.

NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO.
695273



Intertek
Valued Quality. Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:

EXPOSED ALL AROUND

ACTUAL SIZE

Date	By	Rev.	
19JULY1	EJS	(B)	CUSTOMER NAME CHANGED
20MAR08	EJ	(A)	CUSTOMER NAME CHANGED

Description: 5/8" PICKET

Customer: (B) (A) DEKSMART RAILINGS

APEL Extrusions Limited

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Finish	ARCH
Exposed Surface	2
Area (mm^2)	540
Lineal mass	1.453
Perimeter	340.9
Outside Perimeter	
C.C.D.	89.2
Break corners	.80
Unmarked Thickness	3.18
Unmarked Radii	
Date	7DEC98
Drawn by	EJS
Scale	1:1
Gap Ratio	

- Important Dimension
- Toolmaker's Dimension
- Close Tolerance
- APEL ID Mark
- R Full radii
- Metallurgical Streaking may occur here and will not be a cause for rejection

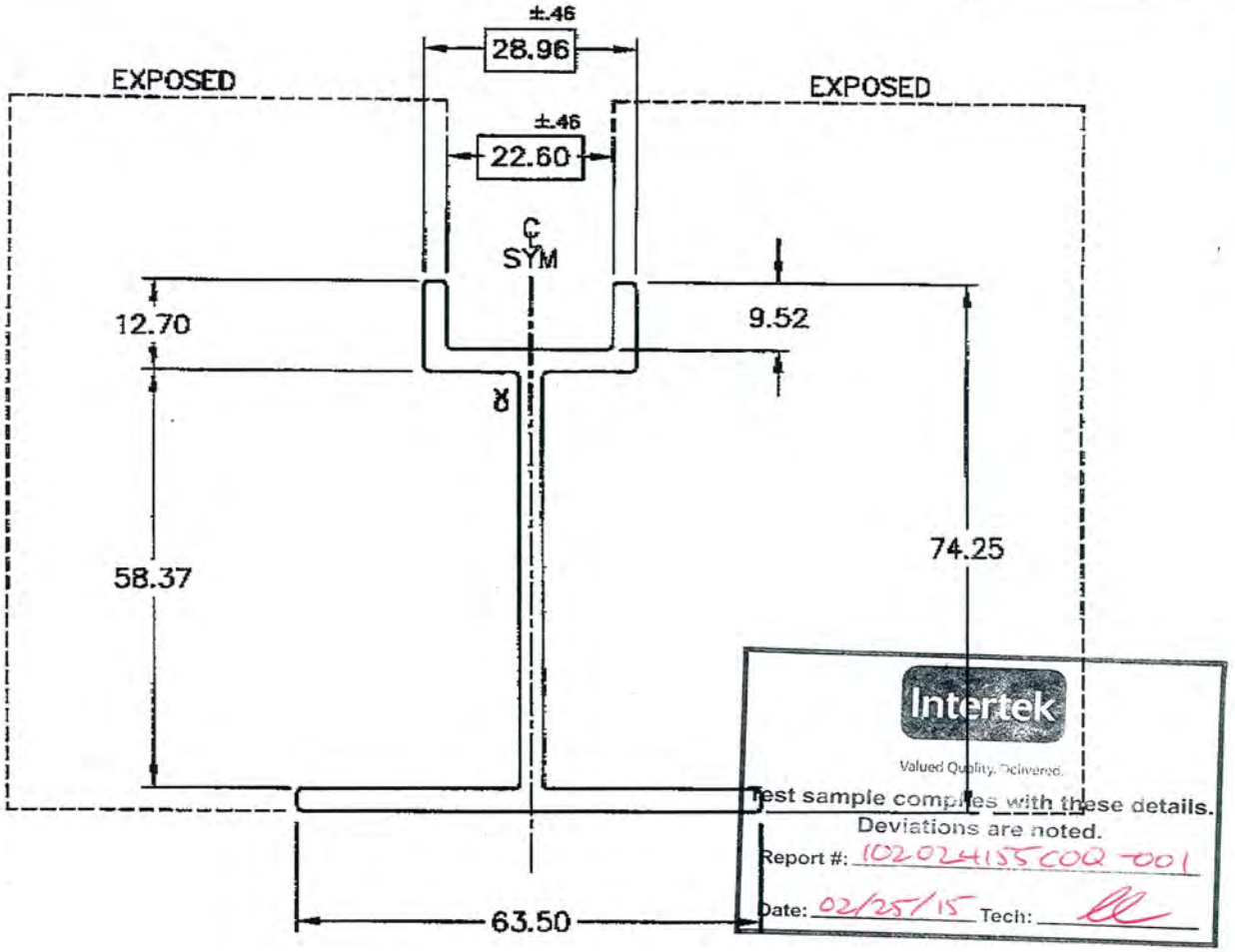
Customer no. VS-10330

APEL SHAPE NO. 628025

REV. DEC/

NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO. 628025



Intertek
Valued Quality, Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech:

Date	By	Rev.	
19JULY10	EJS	B	CUSTOMER NAME CHANGED
10FEB09	EJS	A	CUSTOMER NAME CHANGED

Description: BOTTOM RAIL SUPPORT LEG

Customer: B A DEKSMART RAILINGS

APEL Extrusions Limited

☑ CALGARY, ALTA.

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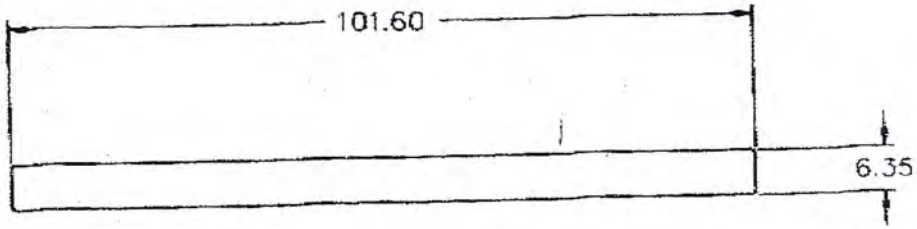
NOTE: Commercial tolerances to apply unless otherwise stated.

APEL SHAPE NO. 613029

Alloy	6060-T5
Finish	STD
Exposed Surface	0
Area (mm^2)	644.8
Lineal mass	1.735
Perimeter	214.9
Outside Perimeter	
Factor	124
C.C.D.	102.0
Break corners	.60
Unmarked Thickness	
Unmarked Radii	
Date	28JAN74
Drawn by	R.J.T.
Scale	1:1
Class no.	
Gap ratio	

Intertek
Valued Quality Delivered.
Test sample complies with these details.
Deviations are noted.
Report #: 102024155COQ-001
Date: 02/25/15 Tech: CC



T Toolmaker's Dimension
* Close Tolerance
APEL ID RIB
R Full radii

Customer no.

APEL SHAPE NO. 613029

REV. SEPT/95

Date	Rev.	
40CT95	REDRAWN. DIE REINSTATED DM	

Description: 4" x 1/4" FLAT BAR

Customer: APEL OPEN