
BALUSTRADE - GLASS



CLIENT - ALUMINIUM BALUSTRADES NORTH COAST

PRODUCT - STRUCTGLASS 1800 MM PANEL

TESTED BY
AZUMA DESIGN PTY LTD

AZT0399.17

NATA ACCREDITED LABORATORY No. 15147

This document shall not be reproduced, except in full.

The results of the tests, calibrations and/or measurements included
in this document are traceable to Australian/national standards.

1 Aim

To test the sample as per loads specified in 'Clause 3.6, Table 3.3 of AS1170.1 - 2002' and multipliers found AS1170.0 - 2002 by the test methods specified in 'Appendix B & C of AS1657-2013.

2 Reference Standards

- AS1170.0:2011 Structural design actions - Part 0: General principles
- AS1170.1:2002 Structural design actions - Permanent, imposed and other actions (Clause 3.6, Table 3.3)
- AS1657-2013 Fixed platforms, walkways, stairways and ladders- Design, construction and installation (Appendix 'B' & 'C')

3 Test Sample Description

3.1 General

Model No./Name	StructGlass Balustrade 1800 mm Panel
Customer	Aluminium Balustrade North Coast
Address	15-17 Bearing Ave, Warana, QLD, 4575
Azuma Testing Number	AZT 0399.17
Date of Test	11/10/2017
Overall Size	Height = 1212 mm Width = 1800 mm
Test Sample Description	Single panel of 1800 mm glass clamped by 2 posts that is set in a core drilled hole.

3.2 Barrier

Glass Material	Toughened/Laminated
Glass Thickness	11.52 (5/1.52/5) mm
Glass Panel Size	Height = 1150 mm Width = 1800 mm
Glass Installation Type	2 x Aluminium post 2 piece full vertical clamp
Gap between bottom of barrier and ground level	62 mm
Complies with AS 2208	Yes, See Attached
Handrail Used	Not part of design

3.3 Posts

Material	Aluminium
Overall Size	25 mm (W) x 80 mm (D) x 1348 mm (H)
Base Plate (if applicable)	100 mm (W) x 100 mm (D) x 2 mm (T)
Drawing supplied	Yes, See Attached
Fixing Method	Ø 80 mm hole core drilled, 120 mm embedment
Spacing Between Posts	1112.4 mm

3.4 Handrail

Handrail	No Handrail with sample
----------	-------------------------

4 Minimum Imposed Actions for Barriers

4.1 Concentrated Load

4.1.1 Procedure

From AS1657-2013 Fixed platforms, walkways, stairways and ladders- Design, construction and installation

1. Set the hydraulic ram to push on the handrail at the centerline between the two fixed points.
2. Record a datum from the center of the push area to a fixed point.
3. Smoothly increase the force acting on the side of the rail or top edge until the test force is equal to 600+ N.
4. Hold the test force for 1 minute.
5. Record the deflection.
6. Remove the test force and after 2 minutes record the permanent deflection reading.

The forces applied to this sample are taken from Table 3.3 from AS 1170.1-2002 - Section 3.6 Barriers, a combination factor for permanent and imposed actions is applied to these figures determined from AS1170.0-2002. The factor which is used is a 1.5 times multiplier. In the 'Load Applied' Column the base load is in brackets and the actual load applied to the sample is unbracketed.

4.1.2 Results

Direction	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
Outwards	900 N (600 N)	508 mm	509 mm	1 mm
Downwards	900 N(600 N)	529 mm	529 mm	0 mm

4.1.3 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1800}{60} = 30mm \quad (1)$$

This value is only applicable while it remains less than 30 mm, otherwise 30 mm is maximum allowable deflection.

Criteria	Observation	Result
Outwards		
Deflection no more than 30 mm after load is removed	1 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
Downwards		
Deflection no more than 30 mm after load is removed	0 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		

4.1.4 Pictures

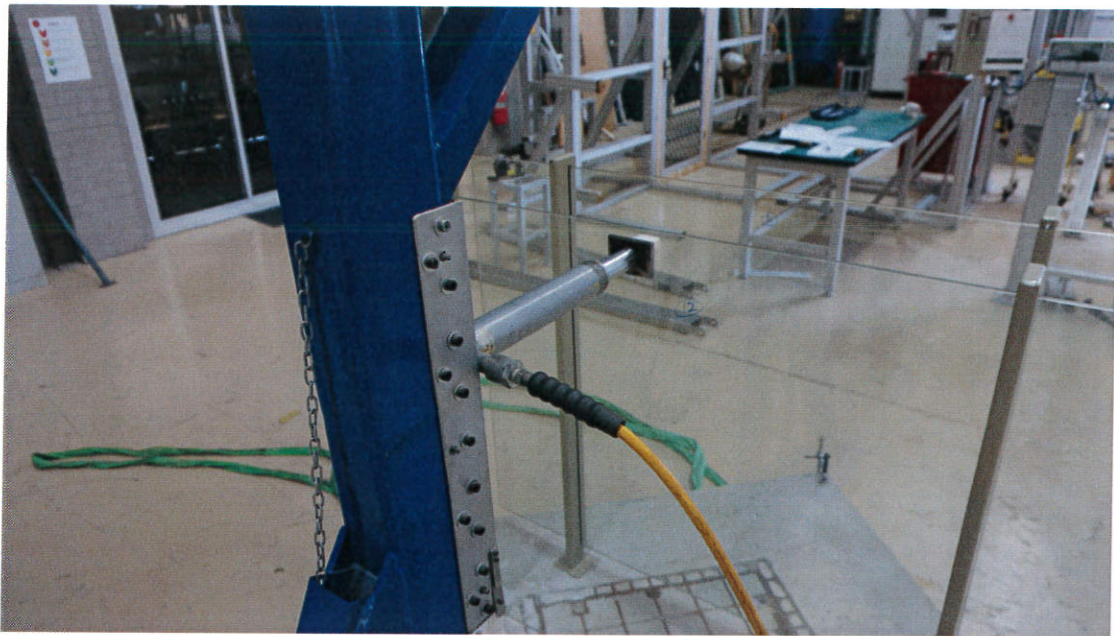


Figure 1: Outwards Push

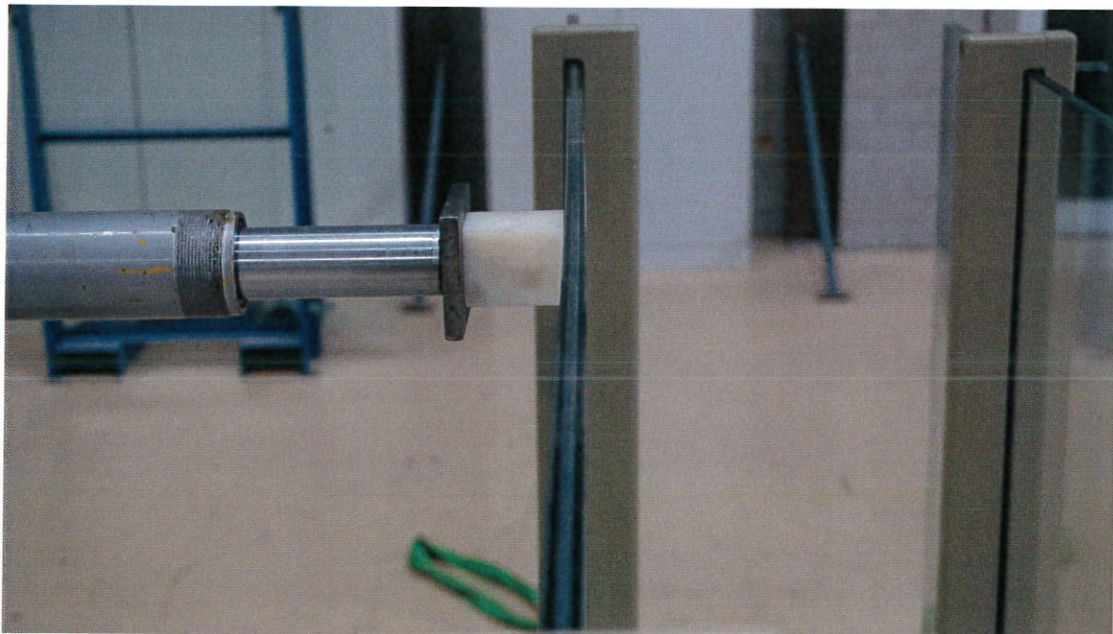


Figure 2: Outwards Push - Bend

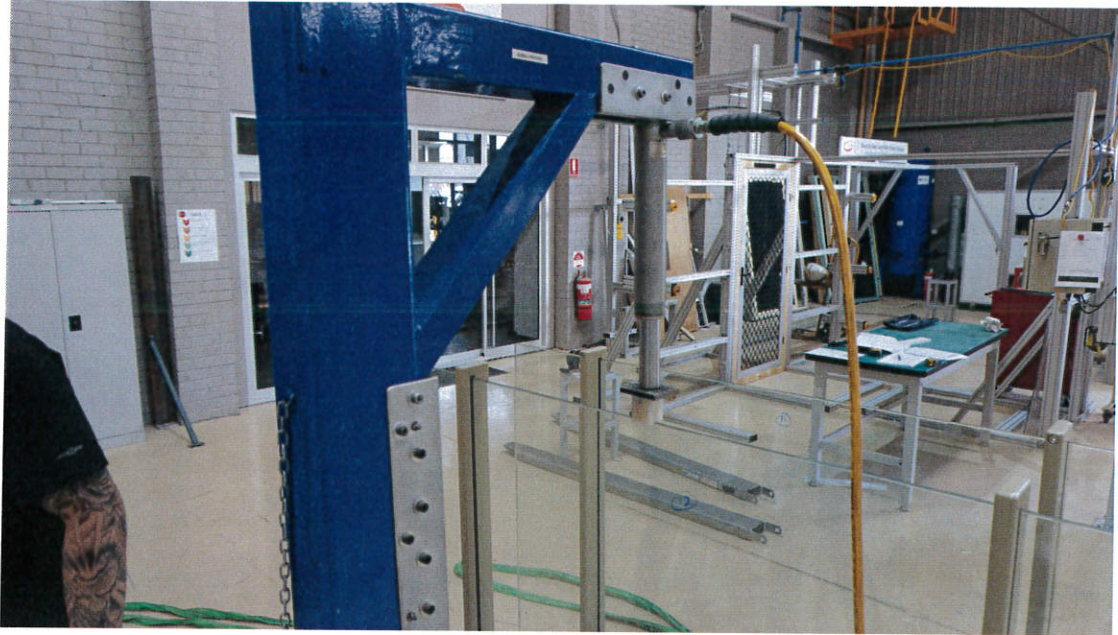


Figure 3: Downwards Push

4.2 Uniformly Distributed Load - VERTICAL

4.2.1 Procedure

From AS1657-2013 Fixed platforms, walkways, stairways and ladders- Design, construction and installation

1. Set the hydraulic ram to push on the handrail at the centerline between the two fixed points.
2. Record a datum from the center of the push area to a fixed point.
3. Smoothly increase the force acting on the side of the rail until the test force is equal to the required figure.
4. Hold the test force for 1 minute.
5. Record the deflection.
6. Remove the test force and after 2 minutes record the permanent deflection reading.

The forces applied to this sample are taken from Table 3.3 from AS 1170.1-2002 - Section 3.6 Barriers, a combination factor for permanent and imposed actions is applied to these figures determined from AS1170.0-2002. The factor which is used is a 1.5 times multiplier. In the 'Load Applied' Column the base load is in brackets and the actual load applied to the sample is unbracketed.

4.2.2 Calculation

The required uniformly distributed load for the glass panel is the imposed action multiplied by the width of the product:

$$RequiredForce(N) = ImposedAction(N/m) * WidthofthePanel(m) * CombinationFactor \quad (2)$$

Note: Width used in the above equation was 1800 mm.

4.2.3 Results

Uniformly Distributed Load	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
350 N/m	N/A	N/A	N/A	Not Tested
750 N/m	2025 N (1350 N)	529 mm	529 mm	0 mm

4.2.4 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1800}{60} = 30mm \quad (3)$$

This value is only applicable while it remains less than 30 mm, otherwise 30 mm is maximum allowable deflection.

Criteria	Result	Pass/Fail
350 N/m (945 N)		
Deflection no more than 30 mm after load is removed	Not Tested	N/A
Any damage, signs of breakage or fracture observed	Not Tested	N/A
Notes: Nil		
750 N/m (2025 N)		
Deflection no more than 30 mm after load is removed	0 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
Total Deflection	0 mm	Pass

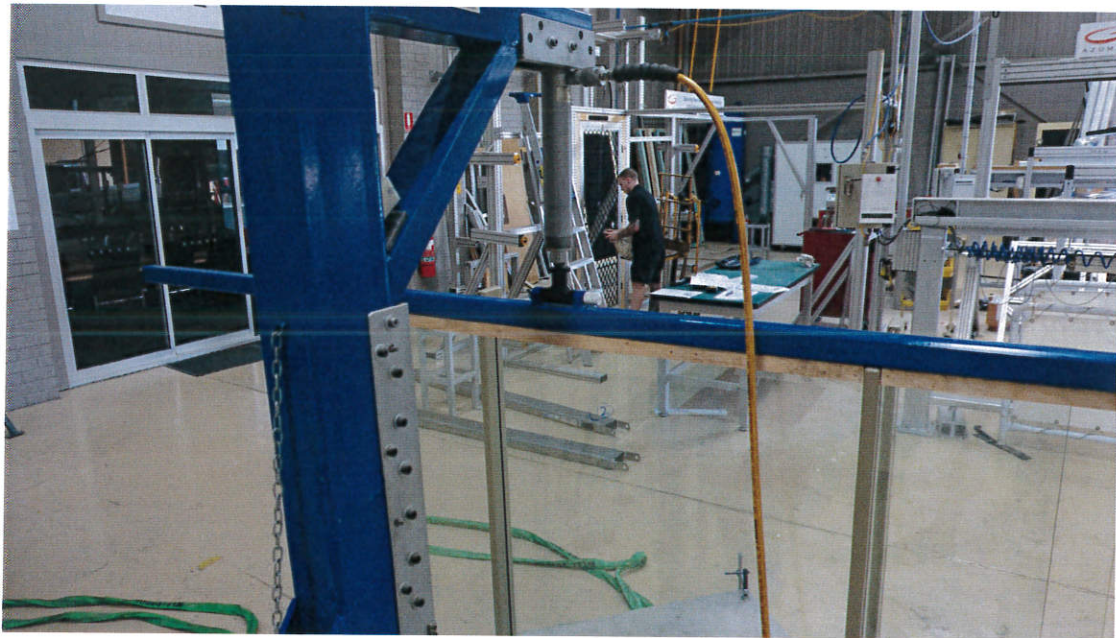


Figure 4: Vertical Uniform Distributed Load

4.3 Uniformly Distributed Load - HORIZONTAL

4.3.1 Procedure

From AS1657-2013 Fixed platforms, walkways, stairways and ladders- Design, construction and installation

1. Set the hydraulic ram to push on the handrail at the centerline between the two fixed points.
2. Record a datum from the center of the push area to a fixed point.
3. Smoothly increase the force acting on the side of the rail until the test force is equal to the required figure.
4. Hold the test force for 1 minute.
5. Record the deflection.
6. Remove the test force and after 2 minutes record the permanent deflection reading.

The forces applied to this sample are taken from Table 3.3 from AS 1170.1-2002 - Section 3.6 Barriers, a combination factor for permanent and imposed actions is applied to these figures determined from AS1170.0-2002. The factor which is used is a 1.5 times multiplier. In the 'Load Applied' Column the base load is in brackets and the actual load applied to the sample is unbracketed.

4.3.2 Calculation

The required uniformly distributed load for the glass panel is the imposed action multiplied by the width of the product:

$$RequiredForce(N) = ImposedAction(N/m) * WidthofthePanel(m) * CombinationFactor \quad (4)$$

Note: Width used in the above equation was 1800 mm.

4.3.3 Results

Uniformly Distributed Load	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
350 N/m	N/A	N/A	N/A	Not Tested
750 N/m	2025 N (1350 N)	509 mm	510 mm	1 mm
1500 N/m	N/A	N/A	N/A	Not Tested
3000 N/m	N/A	N/A	N/A	Not Tested

4.3.4 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1800}{60} = 30mm \quad (5)$$

This value is only applicable while it remains less than 30 mm, otherwise 30 mm is maximum allowable deflection.

Criteria	Result	Pass/Fail
350 N/m (945 N)		
Deflection no more than 30 mm after load is removed	Not Tested	N/A
Any damage, signs of breakage or fracture observed	Not Tested	N/A
Notes: Nil		
750 N/m (2025 N)		
Deflection no more than 30 mm after load is removed	1 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
1500 N/m (4050 N)		
Deflection no more than 30 mm after load is removed	Not Tested	N/A
Any damage, signs of breakage or fracture observed	Not Tested	N/A
Notes: Nil		
3000 N/m (8100 N)		
Deflection no more than 30 mm after load is removed	Not Tested	N/A
Any damage, signs of breakage or fracture observed	Not Tested	N/A
Notes: Nil		
Total Deflection at 750 N/m Rating	1 mm	Pass

4.3.5 Pictures

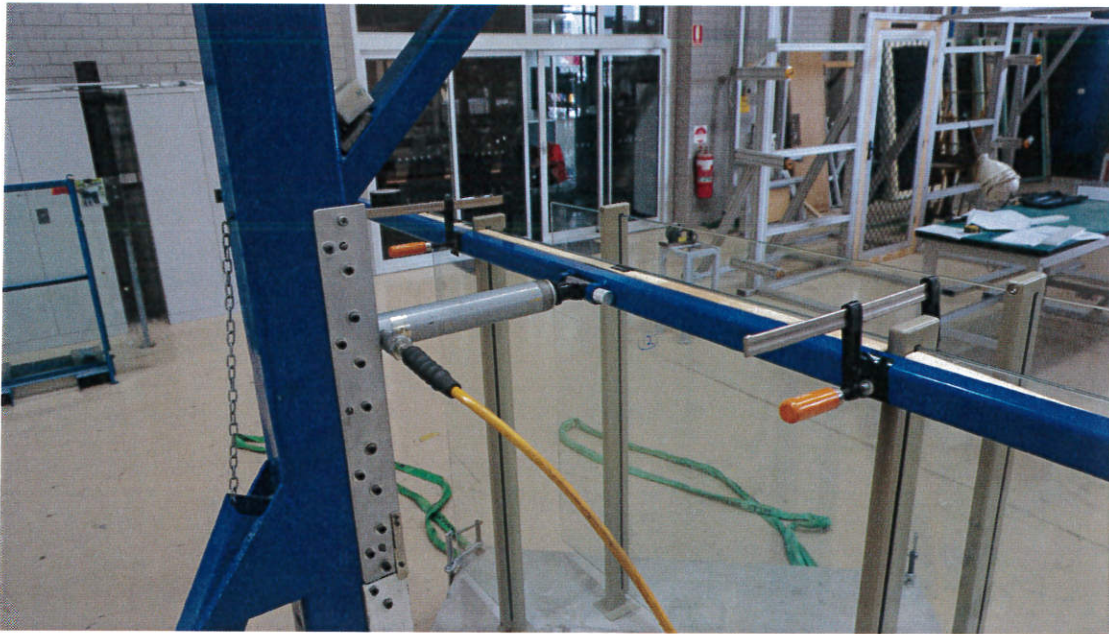


Figure 5: Horizontal Uniform Load



Figure 6: Horizontal Uniform Load - 750 N/m

5 Conclusion and Signatories

5.1 Conclusion

From the results achieved the sample is deemed to satisfy the loading requirements as per table 3.3 of AS1170.1- 2002 for the following classification:

- for a Category 'A' Domestic and residential activities - Other Residential (See C3);
- for a Category 'B, E' Offices and work areas not included elsewhere including storage areas - Fixed platforms, walkways, stairways and ladders for access (see NOTE 2).
- for a Category 'C3' Areas without obstacles for moving people and not susceptible to over-crowding - Stairs, landings, external balconies, edges of roofs, etc.

NOTE: All classifications with equal or lower load specifications may be applied to this sample. For more information as to their specific use please see table 3.3 of AS1170.1 - 2002.

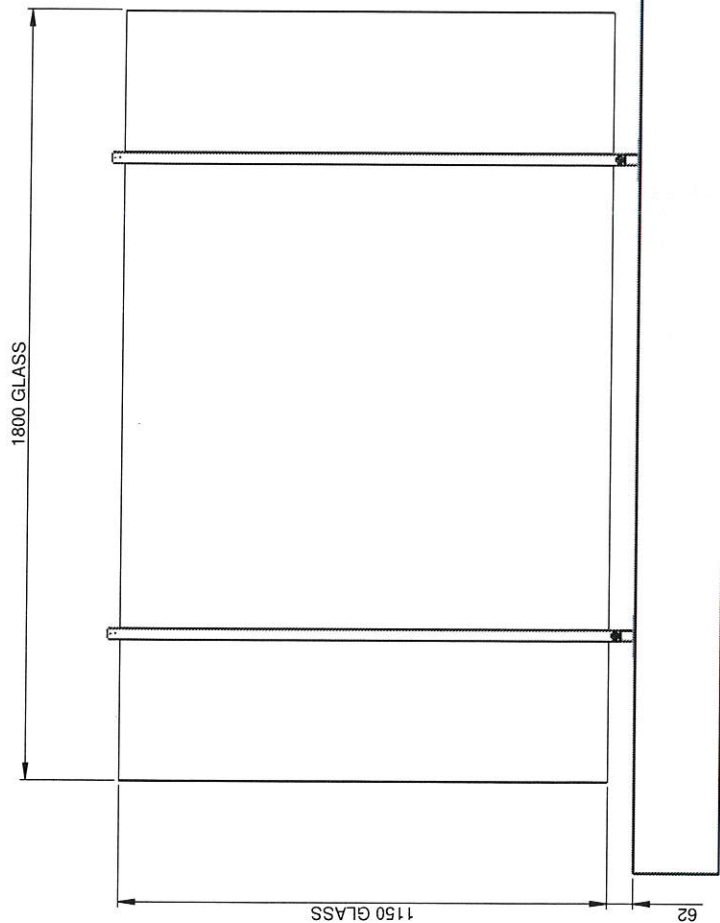
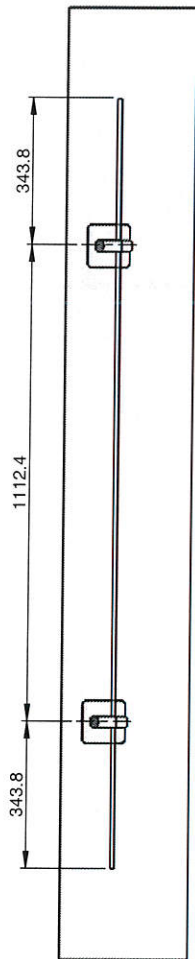
NOTE 2: This usage (under B,E) is for access to and safe working places normally used by operating, inspection, maintenance and servicing personnel.

5.2 Signatories

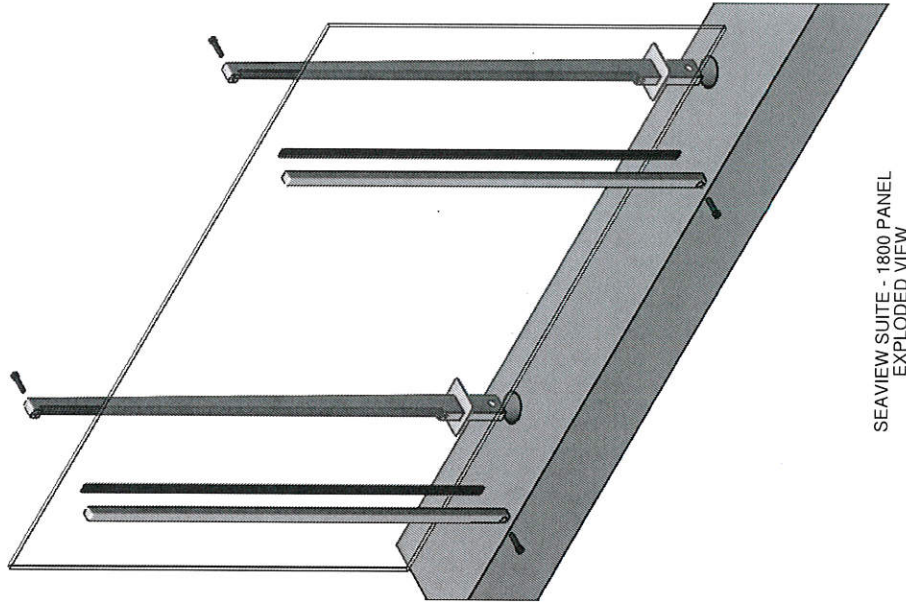
Tested By: Ash Horne

Signature: Ash Horne

Date: 11/10/2017



SEAVIEW SUITE - 1800 PANEL



SEAVIEW SUITE - 1800 PANEL
EXPLODED VIEW

AZT0399.17

Page 13 of 14

AVA
ARCHITECTURAL
METALWORKS
AUSTRALIA

PHONE: 617 5483 8333
WEB: www.abnc.com.au
EMAIL: admin@abnc.com.au

AB^{NC}

© Architectural Metalworks Australia - All Rights Reserved
This document is produced by Architectural Metalworks Australia (AMWA) for the benefit of and use by the client in accordance with the terms of the contract. AMWA does not warrant the accuracy or completeness of the information contained herein and shall not be liable for any loss or damage arising from the use of the information contained herein. The information contained herein is for the client's use only and shall not be used for any other purpose without the written consent of Architectural Metalworks Australia.

CLIENT
ARCHITECTURAL METALWORKS AUSTRALIA

PROJECT
SEAVIEW SUITE BALUSTRADE

SITE ADDRESS
15 / 17 BEARING AVE
WARANA

COLOUR
-

ITEM DESCRIPTION
GLASS BALUSTRADE

DWG NO. (PROJECT# - ITEM CODE - LEVEL#)
SEAVIEW SUITE-BAL-

WEIGHT
69.9 KGS

DRAWN
LD

27/07/2017

SHEET
15 OF 15

REVISION
A

SCALE
1:12

A3



PRODUCT COMPLIANCE SCHEDULE

NATIONAL GLASS PTY LTD

ABN 34 010 908 102

COMPANY MANUFACTURING ADDRESS:

166 Granite Street, Geebung, Boondall, QLD 4034, Australia.

This schedule identifies the Certified Product(s) on which the PAS-Mark and ID. Number may be used.

AS/NZS 2208:1996 Safety glazing materials in buildings

(Including Amendment 1)

Product Description	Plain Float and Patterned Toughened Safety Glass, Pyrolitic, Low E, Hard Coat Glass and Lacobel T.
Classification	Grade "A"
Nominal Glass Thickness	3mm to 12mm Float glass 3mm to 12mm Pattern glass
Maximum Glass Size	Furnace 1 dimensions: 1420 mm (W) x 2800 mm (L) Furnace 2 dimensions: 2440 mm (W) x 4500 mm (L) Furnace 3 dimensions: 2800 mm (W) x 6000 mm (L)
Glass Colours	Acid Etch, Blue, Bronze, Clear, Green, Grey and White
Glass Patterns	Arctic, Bamboo, Dessert Sand, Euro Cathedral, Flemish, Gluechip, New Cathedral, Roughcast, Satinlite, Screenview, Spotswood and Staccato.
Brand Name Endorsement	ANEETA WINDOWS, AUSTRALIA GLASS, BATHROOM SUPPLIES, DABSCO, FINLAYSON'S, GLASS SOLUTIONS, INGLASS, LOGAN CITY JOINERY, QUEENSLAND GLASS, TWEED COAST GLASS, WATER ART, TFD, WORKING GLASS MAN, T.F.D JOINERY, FOCUS, SKELETON GLASS, AUSTRALIAN MARINE WINDOWS & PLASTICS, AND MASLAN AUSTRALIA.

This schedule supersedes any previously issued schedule


Assessment ID No: CSI-7320

Certification date: 20 September 2016

Issue date: 20 September 2016

Expiry date: 21 September 2017

Schedule No: 7320-2016-09-S1-Rev1


Azma Khan
Managing Director
Certification Solutions
International Pty Ltd



The current validity of this document should be checked by contacting admin@csi-certification.com PASF_015 I1R2