Balustrade - Glass

AZUMA
Design

A Tech Australia / Sloane Accessories

Semi Frameless Aluminium Post System

Tested By
AZUMA DESIGN Pty Ltd

AZT0380.16

Nata Accredited Laboratory No. 15147

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

1 Test Standards

The product is tested to the following standard only

- *AS/NZS 1170.1 - 2002 Structural design actions - Permanent, imposed and other actions*

2 Test Sample Description

2.1 General

Model No./Name	Semi Frameless Aluminium Post System
Customer	A Tech Australia / Sloane Accessories
Address	258 Milperra Road, Milperra NSW 2168
Azuma Testing Number	AZT 0380.16
Date of Test	18/10/2016

2.2 Barrier

Glass Material	Toughened
Glass Thickness	10 mm
Glass Panel Size	Height = 1155 mm Width = 1050 mm
Overall Size	Height = 1240 mm Width = 1120 mm
Glass Installation Type	2 Side Support
Gap between bottom of barrier and ground level	85 mm
Complies with AS 2208	Yes
Handrail Used	No
Spacing Between Fixed Points	1080 mm

Azuma Design PTY LTD
38 Redfern Street Wetherill Park, NSW, 2164 Australia +61(02) 9604 0255
Accreditation Number : 15147
Accredited for compliance with ISO/IEC 17025.

2.3 Post

Material	Aluminium
Overall Size	50 mm (W) x 50 mm (D) x 1240 mm (H)
Base Plate (if applicable)	N/A
Drawing supplied	Yes
Fixing Method	Core Drilled quick set concrete

Figure 1: Post

3 Minimum Imposed Actions for Barriers

3.1 Concentrated Load

3.1.1 Procedure

From AS 1170.1 - 2002 - Subsection 3.6 Barriers - Table 3.3 Minimum imposed actions for Barriers.

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 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.

3.1.2 Results

Direction	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
Outwards	600 N	466 mm	467 mm	1 mm
Downwards	600 N	502 mm	502 mm	0 mm

Azuma Design PTY LTD
38 Redfern Street Wetherill Park, NSW, 2164 Australia +61(02) 9604 0255
Accreditation Number : 15147
Accredited for compliance with ISO/IEC 17025.

3.1.3 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1120}{60} = 18.67mm \tag{1}$$

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 18.67 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 18.67 mm after load is removed	0 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		

3.1.4 Pictures

Figure 2: Outwards Push

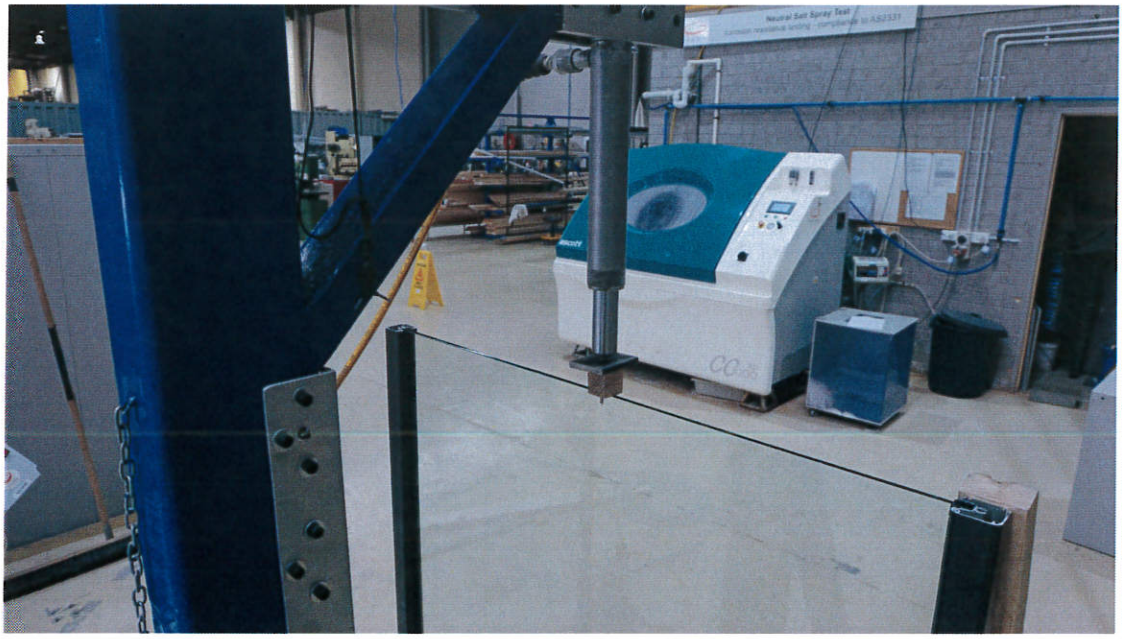


Figure 3: Downwards Push

3.2 Uniformly Distributed Load - VERTICAL

3.2.1 Procedure

From AS 1170.1 - 2002 - Subsection 3.6 Barriers - Table 3.3 Minimum imposed actions for Barriers.

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 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.

3.2.2 Calculation

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

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

Note: Width used is the above equation was 1120 mm.

3.2.3 Results

Uniformly Distributed Load	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
350 N/m	392 N	502 mm	502 mm	0 mm
750 N/m	840 N	502 mm	502 mm	0 mm

3.2.4 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1120}{60} = 18.67mm \tag{3}$$

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 (392 N)		
Deflection no more than 18.67 mm after load is removed	0 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
750 N/m (840 N)		
Deflection no more than 18.67 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

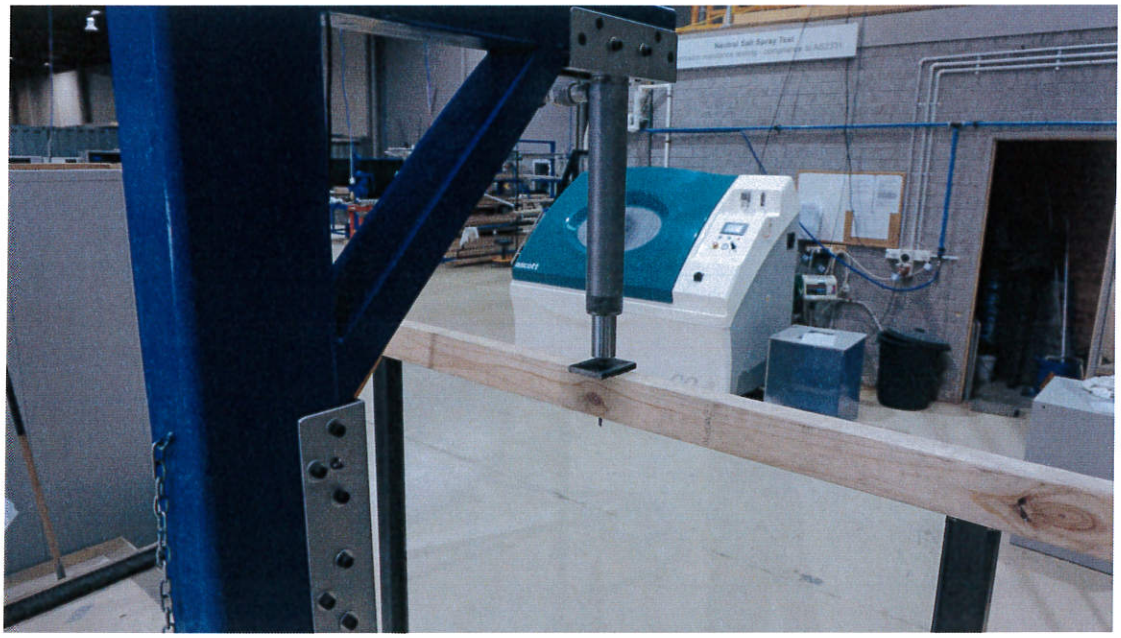


Figure 4: Vertical Uniform Distributed Load

3.3 Uniformly Distributed Load - HORIZONTAL

3.3.1 Procedure

From AS 1170.1 - 2002 - Subsection 3.6 Barriers - Table 3.3 Minimum imposed actions for Barriers.

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 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.

3.3.2 Calculation

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

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

Note: Width used is the above equation was 1120 mm.

3.3.3 Results

Uniformly Distributed Load	Load Applied	Datum (mm)	Reading after load removed (mm)	Permanent Deflection (mm)
350 N/m	392 N	467 mm	467 mm	0 mm
750 N/m	840 N	467 mm	468 mm	1 mm
1500 N/m	1680 N	N/A	N/A	N/A
3000 N/m	3360 N	N/A	N/A	N/A

3.3.4 Pass/Fail Criteria

The following maximum deflection limits apply to this product:

$$\frac{Span}{60} = \frac{1120}{60} = 18.67mm \tag{5}$$

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 (392 N)		
Deflection no more than 18.67 mm after load is removed	0 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
750 N/m (840 N)		
Deflection no more than 18.67 mm after load is removed	1 mm	Pass
Any damage, signs of breakage or fracture observed	Nil	Pass
Notes: Nil		
1500 N/m (1680 N)		
Deflection no more than 18.67 mm after load is removed	N/A	Not Tested
Any damage, signs of breakage or fracture observed	N/A	Not Tested
Notes: Nil		
3000 N/m (3360 N)		
Deflection no more than 18.67 mm after load is removed	N/A	Not Tested
Any damage, signs of breakage or fracture observed	N/A	Not Tested
Notes: Nil		
Total Deflection at 750 N/m Rating	1 mm	Pass

3.3.5 Pictures

Figure 5: Horizontal Uniform Load - 350 N/m

Figure 6: Horizontal Uniform Load - 750 N/m

4 Conclusion and Signatories

4.1 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 - All areas within or serving exclusively one dwelling including stairs, landings, etc. but excluding external balconies and edges of roofs;
- for a Category 'B, E' Offices and work areas not included elsewhere including storage areas - Areas not susceptible to overcrowding in office and institutional buildings also industrial and storage buildings
- 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.

4.2 Signatories

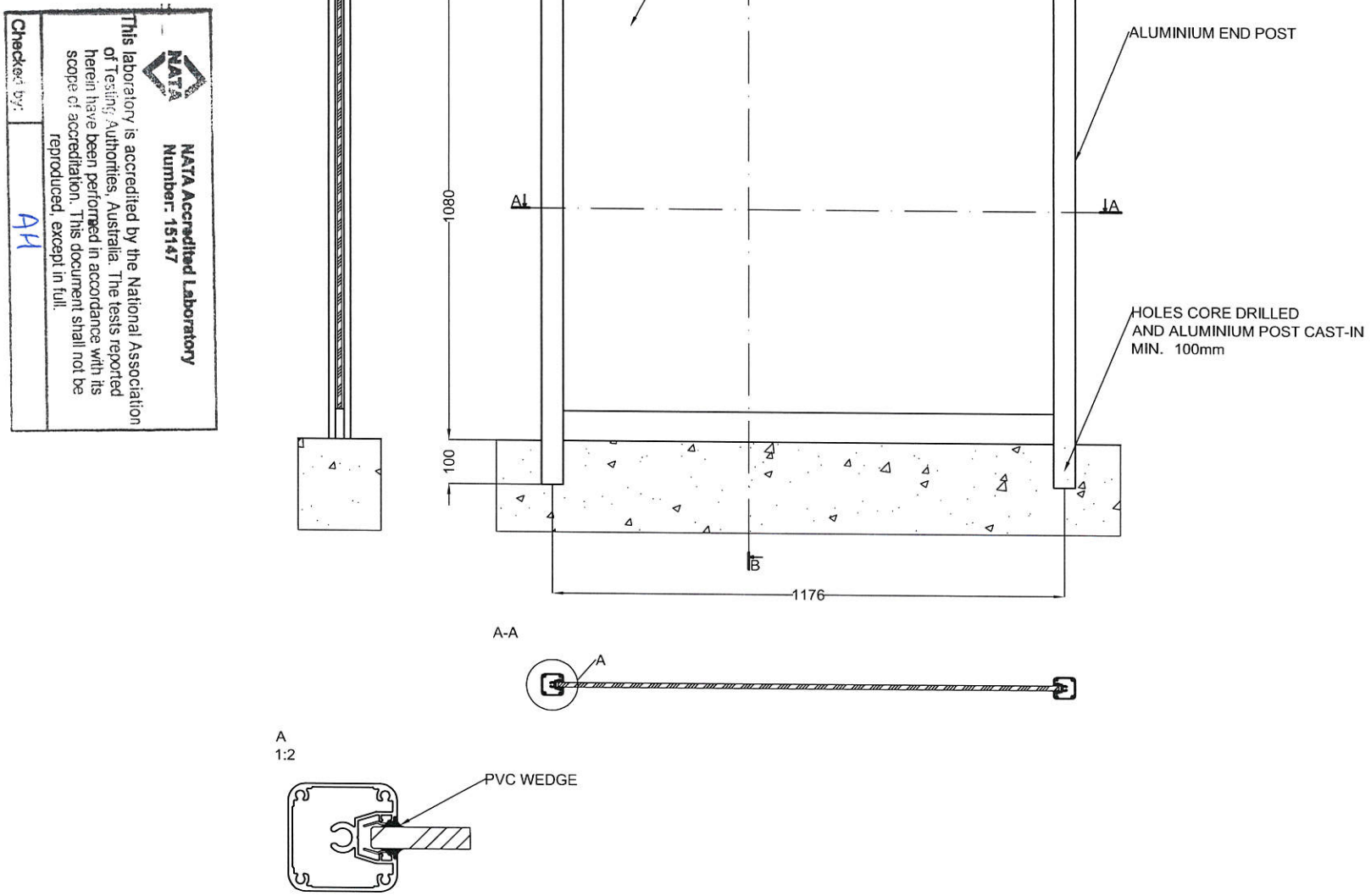
Tested By: Ash Horne

Signatory Name: Ash Horne

Signatory Signature: AHorne

Date: 18/10/16

AZTO380.16



NATA Accredited Laboratory Number: 15147

This laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced, except in full.

Checked by: AH

- ☐ PRELIMINARY
- ☐ FOR APPROVAL
- ☐ FOR CONSTRUCTION
- ■ AS BUILT

GLASS TYPE

10mm CLEAR TOUGHENED GLASS

DETAIL

SEMI-FRAMELESS GLASS BALUSTRADE ASSEMBLY

DRAFTSMAN

BARTOSZ MAZUR

LABORATORY

AZUMA DESIGN

PROJECT NAME

SEMI-FRAMELESS GLASS BALUSTRADE TEST

CHECK	DRAWN	DATE
C.I	B.M.	02/02/2017

FORMAT	SCALE
A3	1:10

DRAWING NO.	REV.
B-4	01

A-Tech Australia

STANDARDSMARK LICENCE

SAI Global hereby grants:

Australia Landson Glass (Qingdao) Co ., Ltd

70-2#, Huanghe Xi Road, Qingdao Economic & Technology Development Zone, Qingdao, China

StandardsMark Licence

Manufactured to:

AS/NZS 2208:1996 - Safety glazing materials in buildings

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No:SMK40095

Issued: 27 September 2016
Expires: 7 April 2018

Originally Certified: 8 April 2013
Current Certification: 27 September 2016

Paul Simpson
Global Policy Risk and Certification Manager

NATA Accredited Laboratory Number: 15147

This laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its scope of accreditation. This document shall not be reproduced, except in full.

Checked by: AH

Certified Product™ Australian Standard

JAS-ANZ

WWW.JAS-ANZ.ORG/REGISTER

*** For details of manufacture, refer to the licensee**

SAI GLOBAL
INFORM. INSPIRE. IMPROVE.

A2T0380.16