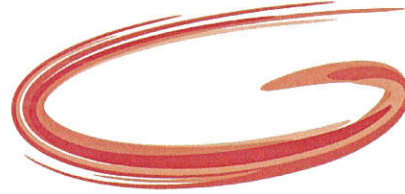

TEST REPORT



A Z U M A
Design

WIND AND WATER TESTING

CLIENT – A-TECH

PRODUCT – AWNING WINDOW

TESTED BY

AZUMA DESIGN PTY LTD

AZT0067.19

NATA ACCREDITED LABORATORY NO. 15147

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

1 Customer Requirements

Customer requires all applicable tests from AS/NZS 4420.1 to be conducted to the test sample supplied. The tests are Structural deflection, Operating Force, Air infiltration, Water penetration and Ultimate strength.

2 Reference Standard

- AS2047 – 2014 Windows and External Glazed Doors in Buildings
- AS/NZS 4420.1 – 2016 Windows external glazed timber and composite doors - Methods of test - Test sequence, sampling and test methods

3 General Information

Customer	A – Tech
Address	258 Milperra Road, Milperra NSW 2214
Date(s) of Test	22/02/2019
Azuma Test Number	AZT0066.19
Window/Door Type	Awning Window/Low Lite
Test Sample Description	Awning window with fixed low lite. Awning sash operated by a single point chainwinder with additional side latching points for strength. Test sample was supplied and installed by the customer.

4 Test Result Summary

Test Method	Figures Recorded	Result
Deflection Test	Positive – 1600 Pa	Pass
	Negative – 1600 Pa	Pass
Operating Force Test	Not Applicable	Not Required
Air Infiltration Test	Low	Pass
Water Penetration Resistance Test	500 Pa	Pass
Ultimate Strength Test	Positive – 2800 Pa	Pass
	Negative – 2500 Pa	Pass

5 Test Sample Description

Product Name	Front Glazed Awning with Low Light
Model	Not Provided
Dimension of Frame	2695 mm (Height) x 1210 mm (Width)
Dimension of Sashes	Sash 1: 1630 mm (Height) x 1120 mm (Width) Sash 2: 1000 mm (Height) x 1120 mm (Width)
Glazing – Size/Type	Sash 1: 1550 mm (Height) x 1030 mm (Width) Sash 2: 930 mm (Height) x 1115 mm (Width) All glass is 6.38 mm Laminated Clear
Hardware	Doric DS1 Chainwinder Doric DS303 Cam Catch
Drawing Identification	ATA-FGALL-001 Rev.-
Profile Section	150 mm
Drain holes (Create Drawing if required)	N/A
Weep holes (Create Drawing if required)	6 x 25 mm at 300 mm spacing
Gasket/Seals/Hairs	Acoustic foam seals
Glass Retention	Rubber wedge glazed
Sub Head and Sub Sill Used	Yes

6 Procedures

6.1 Deflection Test

1. The test sample shall be operative and pre-loaded as described in AS 4420.1.
2. The pre-load pressure shall be removed and the zero position of the displacement measuring devices recorded.
3. Differential pressures in the same direction shall then be applied across the test sample in not less than four approximately equal increments until the test pressure is reached. The pressure shall be held for at least 1 min at each pressure increment, and the readings of the displacement measuring devices recorded before the pressure is increased.
4. The differential pressure shall be removed and after 2 min the zero displacement readings shall be taken.
5. The direction of the air pump or test sample shall be reversed and Steps (1) to (4) shall be repeated using the opposite test loading.

6.2 Operating Force Test

1. With the window closed, but unlocked, an operating force shall be applied, without shock, in the plane and direction of the sash operation.
2. For both directions of sash travel, the following forces shall be noted and recorded:
 - (a) That capable of setting the sash in motion.
 - (b) That capable of maintaining the motion after the sash frame is clear of the perimeter frame of the test sample.
3. Each sliding sash of the test sample is tested separately.
4. For horizontally sliding sashes, the force shall be applied either at the position of a fixed handle, or at one-third of the height of the pull stile above the sill for continuous or adjustable handgrips.
5. For vertically sliding sashes, the force shall be applied at the sash pulls or at the midpoint of the bottom rail, or at the position nominated by the manufacturer.

6.3 Air Infiltration Test

1. Operation and pre-loading as described in AS 4420.1.
2. The face of the test sample shall then be sealed airtight by covering it with an impervious film. If this is not practicable, all joints, weep holes, and glazing or sealant lines of the test sample shall be sealed with impervious adhesive tape.
3. Positive and negative test pressures shall then be applied, and the base air infiltration rates through the test apparatus shall be determined by air flow meter.
4. The sealing film or tape shall be removed from the test sample and the air infiltration rates determined. The air infiltration through the test sample shall be the difference between the base and total readings.

6.4 Water Penetration Resistance Test

1. The test sample shall be subjected to water sprayed uniformly and continuously over the exterior face of the test sample at a rate not less than 0.05 L/m²s. At the start of the test, the water sprays shall operate for 5 min with zero air pressure differential on the test sample.
2. The test pressure shall be applied and maintained for 15 min with the water sprays still operating. The visible internal surfaces of the test sample shall be inspected throughout the water spray operation.
3. Any water appearing on the inside surfaces of the test sample shall be noted and recorded, with the extent and, if possible, the source of penetration of uncontrolled water. Uncontrolled water shall be as defined in AS 2047.
4. The pressure and water sprays shall then be removed from the test sample.

6.5 Ultimate Strength Test

1. The test sample shall be subjected to a smoothly increasing differential pressure up to the test pressure determined in Clause 6.1, conducted individually in both positive and negative directions.
2. The time taken to reach the structural test pressure shall be approximately 1 min. Test pressure shall be maintained on the test sample for a period of 10 s.
3. If a sponsor requires incremental tests, each increment shall represent a separate test requiring 10 s duration.
4. At the conclusion of the test at each loading, the test sample shall be inspected and any signs of deformity or damage or collapse of the test sample noted and recorded.

7 Results

7.1 Deflection Test

Setup 1	
Structural Member	Awning Sash
Span Length	1470 mm
Transducers Used	1,2,3
Maximum Allowable Deflection	5.88 mm
Test Pressure Applied	Positive – 1600 Pa
	Negative – 1600 Pa
Test Deflection Ratio of Sample	Positive – 1/487 or 3.02 mm
	Negative – 1/268 or 5.48 mm
Result	Positive – Pass
	Negative – Pass

Setup 2	
Structural Member	Transom
Span Length	1060 mm
Transducers Used	4,5,6
Maximum Allowable Deflection	4.24 mm
Test Pressure Applied	Positive – 1600 Pa
	Negative – 1600 Pa
Test Deflection Ratio of Sample	Positive – 1/2208 or 0.48 mm
	Negative – 1/1828 or 0.58 mm
Result	Positive – Pass
	Negative – Pass

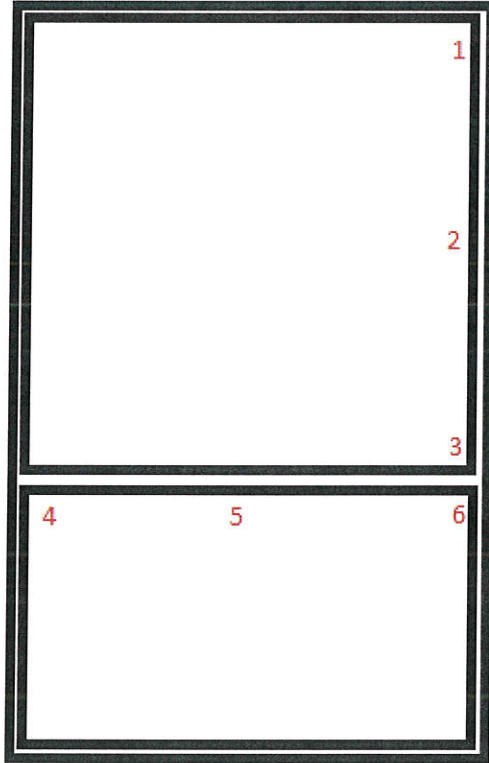


Figure 1: Transducer Positions

7.2 Operating Force Test

Not Required for the design of the test sample

7.3 Air Infiltration Test

Barometric Pressure	995 Pbar
Air Temperature	26 °C

Pressure	Sealed	Unsealed	Actual
Positive - 75 Pa	8 Pa	12 Pa	4 Pa
Negative - 75 Pa	10 Pa	15 Pa	5 Pa

Air Infiltration Level	Direction	Allowable	Actual	Result
Low	Positive and Negative	$1.0 \text{ Ls}^{-1}\text{m}^{-2}$	$0.18 \text{ Ls}^{-1}\text{m}^{-2}$ $0.20 \text{ Ls}^{-1}\text{m}^{-2}$	Pass
High	Positive Only	$5.0 \text{ Ls}^{-1}\text{m}^{-2}$	$0.18 \text{ Ls}^{-1}\text{m}^{-2}$	Pass

7.4 Water Penetration Resistance Test

Wet Down Complete – 5 minutes	Yes
Maximum Pressure Applied to Sample	500 Pa
Time Pressure Held for	15 minutes
Leakages Observed	Nil
Observations	Silicone was used to seal the entire length of the frame to the subsill.

7.5 Ultimate Strength Test

Maximum Pressure Applied to Sample	Positive – 2800 Pa
	Negative – 2500 Pa
Time Pressure Held for	10 Seconds
Compliant with AS2047 Clause 2.3.1.7	Yes
Observations	Nil

8 Signatories

Tested By: Jayden Mudford

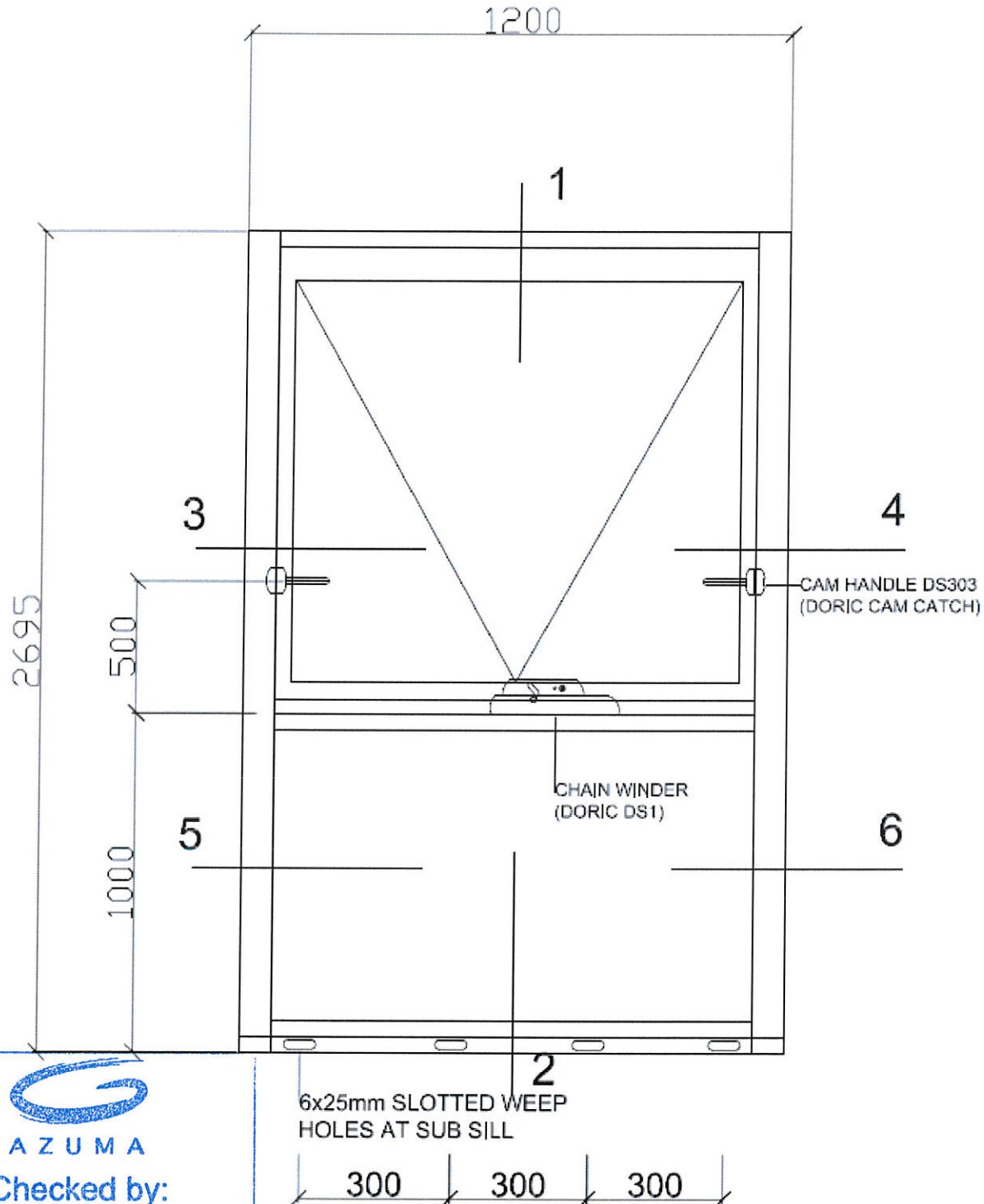
Signature: J. Mudford

Checked By: Ash Horne

Signature: A Horne

Date: 05/03/2019

END OF REPORT



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AN

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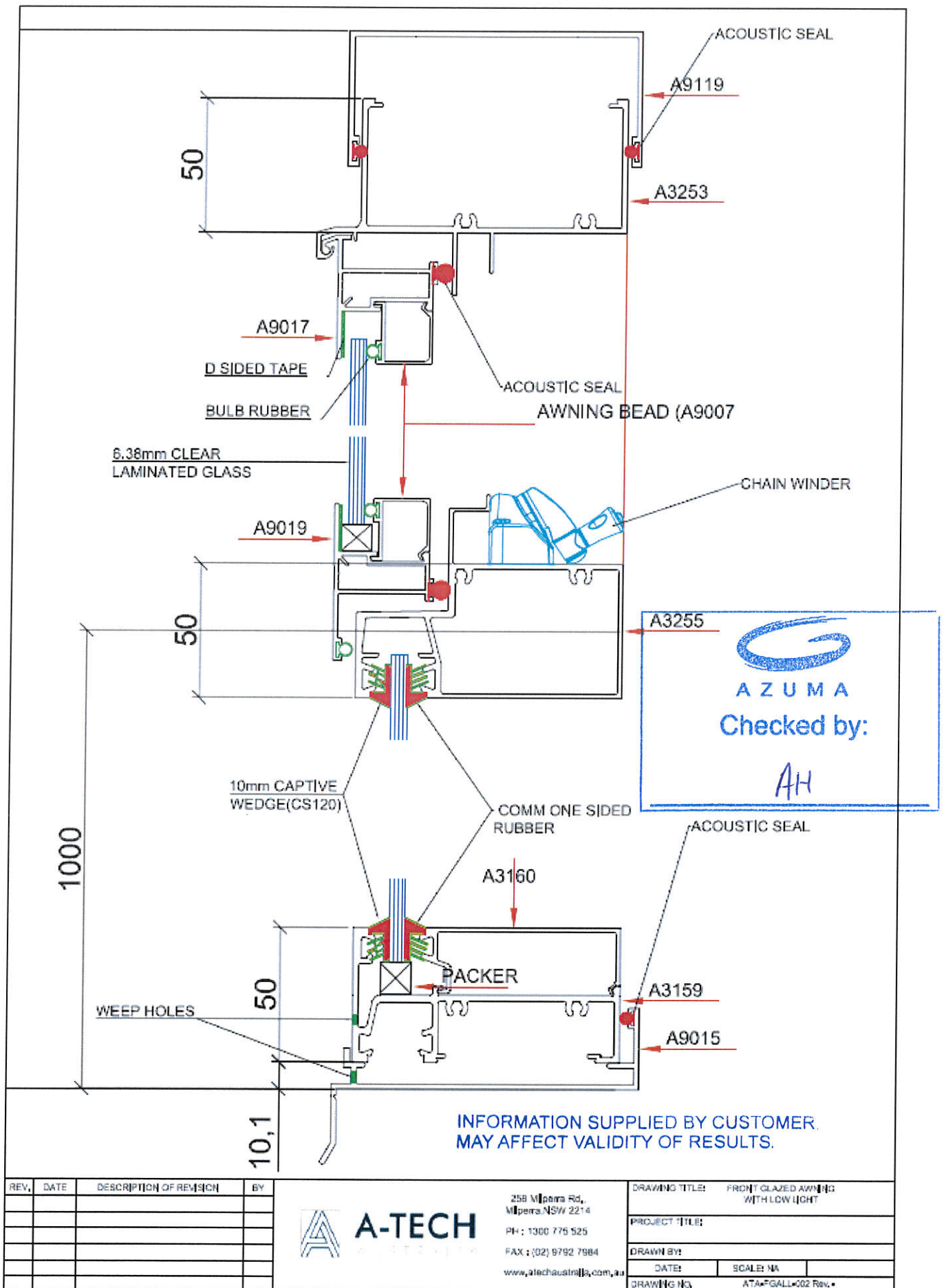
REV.	DATE	DESCRIPTION OF REVISION	BY

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DRAWING TITLE: FRONT GLAZED AWNING WITH LOWLIGHT	
PROJECT TITLE:	
DRAWN BY:	
DATE:	SCALE: NA
DRAWING NO. ATA-FGALL-001 Rev. 1	

Azuma Design Pty Ltd
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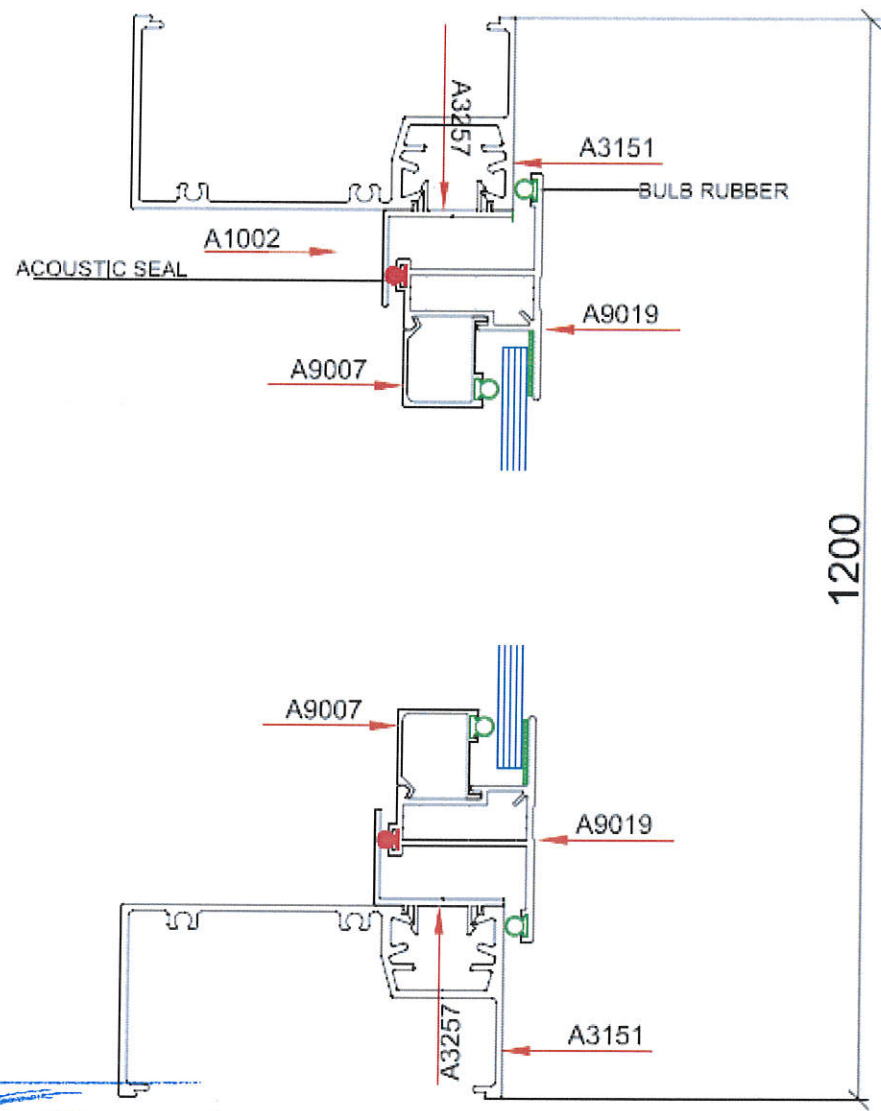




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3 - 4 SECTION
(FRONT GLAZE)



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INFORMATION SUPPLIED BY CUSTOMER,
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- ACOUSTIC FOAM SEAL (KS201) (Sub Head)
- ACOUSTIC FOAM SEAL (KS209A) (Awning panel)
- ACOUSTIC FOAM SEAL (KS203) (Sub Sill)

REV.	DATE	DESCRIPTION OF REVISION	BY



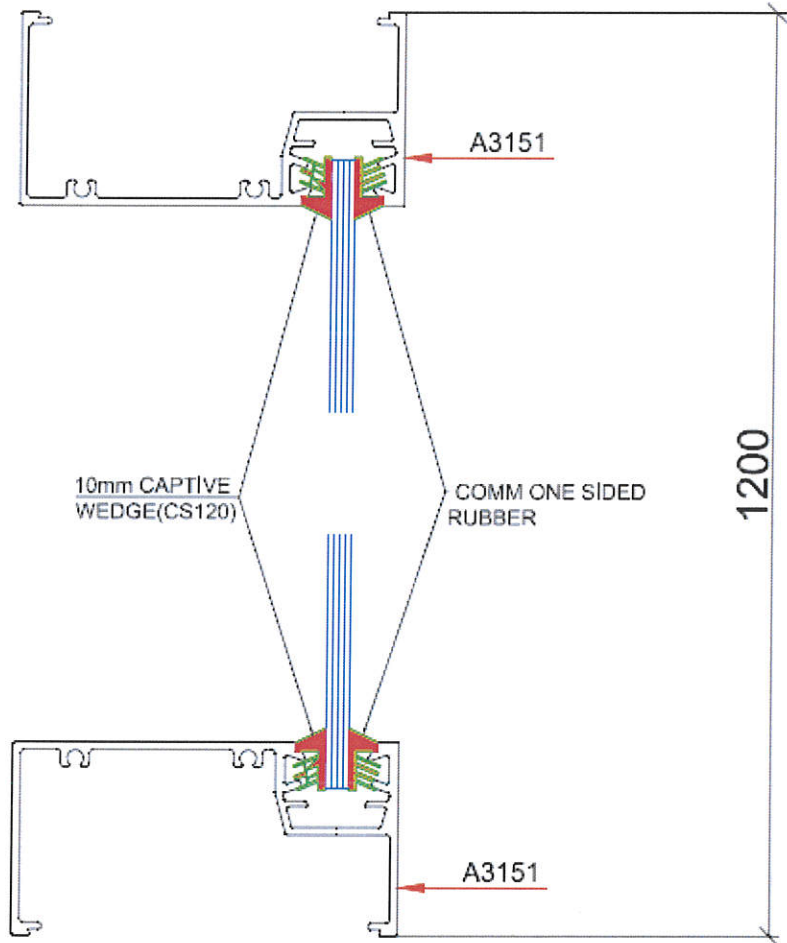
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5 - 6 SECTION
(FRONT GLAZE)




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