



MODERN FRAMELESS GLASS SYSTEMS

1 Test sample description

1.1 General

Product Code/Name	106 Ultra-Tilt
Test Requirements	AS/NZ 1170
Date of test	04/11/2019

1.2 Barrier/Glass

Glass make up	Refer to Panel layout
Glass panel size	Height – 1000mm Width - 1000mm
Overall size	Height – 1038mm Width – 1000mm
Handrail used	No Handrail
Glass Grips / Clamping Plates	Refer to Panel Layout

1.3 Channel System: 106 Ultra-Tilt

Material	Aluminium 6063 T6
Overall Size	98mm H x 72mm W x 1500mm L
Drawing supplied	Yes
Fixing method	M10 316 Stainless steel bolts

2.1 General Notes

- 1 – This product was tested for Certification as a Balustrade Assembly only. Fastening the 106 Ultra-Tilt Channel to the support Structure is a site condition and installers must ensure that the fasteners are adequate to resist the required design loads.
- 2 – The material to which the glass supports are being fastened must adequately resist the design loads.
- 3 - Using different glass thickness for each load category, the glass must be to equal strength or greater than what has been tested in this report.

3.1 BALUSTRADE DESIGN COMPLIANCE

This product was tested to comply with the following Australian Standards.

Australian Standards AS1288–2006 “Glass in Buildings – Selection and installation”

This Standard sets out procedures for the selection and installation of glass in buildings, subject to wind loading, human impact, and special applications such as overhead glazing, balustrades and glass assemblies. Glass strength requirements are given for glazing, based on the tensile stresses developed on the surface of the glass.

Australian Standards AS/NZS 1170.0: 2002 - “Structural Design Actions – General Principles”.

This Standard specifies general procedures and criteria for the structural design of a building or structure in limit states format. It covers limit states design, actions, combinations of actions, methods of analysis, robustness and confirmation of design. The Standard is applicable to the structural design of whole buildings or structures and their elements.

Australian Standards AS/NZS 1170.1: 2002 - “Structural Design Actions – Permanent, imposed and other actions”.

This Standard specifies permanent, imposed, liquid pressure, ground water, rainwater ponding and earth pressure actions to be used in the limit state design of structures and parts of structures. Provides design values of permanent, imposed and other actions to be used in the limit state design of structures and members. It is intended to be used in conjunction with AS/NZS 1170.0.

Australian Standards AS/NZS 1170.2:2011 - “Structural Design Actions – Wind Action”.

This Standard sets out procedures for determining wind speeds and resulting wind actions to be used in the structural design of structures subjected to wind actions other than those caused by tornadoes.

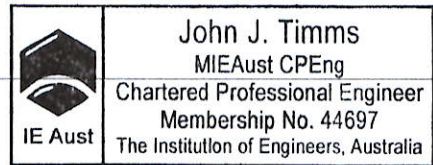
Channel System: 106 Ultra-Tilt

Tested By: Blake Aushk

Signature: 

Witnessed By: John Timms.

Signature: 




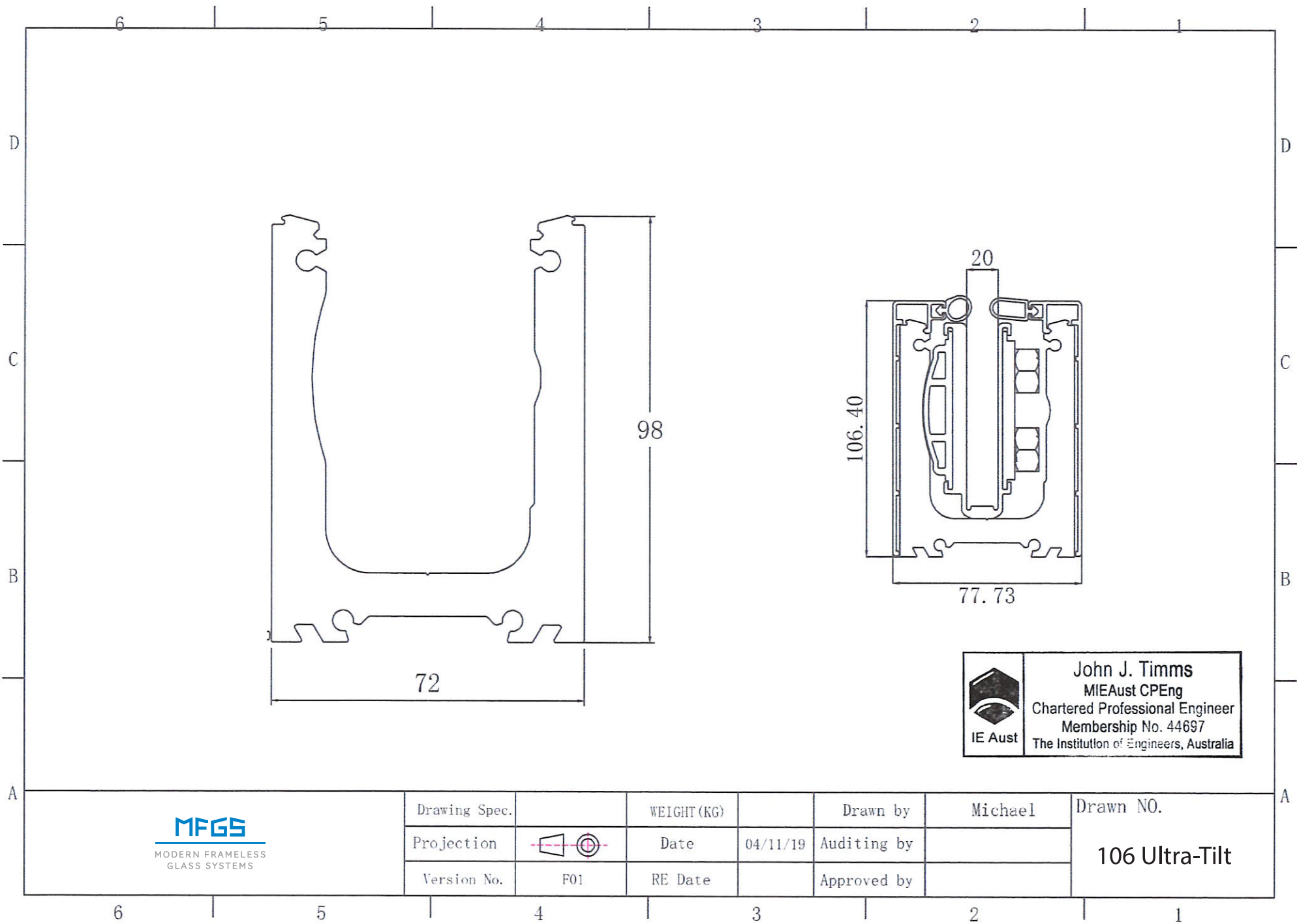
Date: 4/11/2019

MINIMUM IMPOSED ACTIONS FOR BARRIERS



Product: 106 Ultra-Tilt					
Type of occupancy for part of the building or structure	Specific uses	Horizontal uniformly distributed line load KN/M	12mm	17.52mm SGP	
(A) Domestic and residential activities	All areas within or serving exclusively one dwelling including stairs, landings, etc, but external balconies and edges of roofs (see C3)	0.35	✓	✓	
	Other residential, (see also C)	0.75	✓	✓	
(B, E) Offices and work areas not included elsewhere including storage areas	Light access stairs and gangways not more than 600mm wide	0.22	✓	✓	
	Fixed platforms walkways, stairways and ladders for access	0.35	✓	✓	
	Areas not susceptible to overcrowding in office and insitutional buildings also industrial and storage buildings	0.75	✓	✓	
(C) Areas where people may congregate					
(C1/C2) Areas with tables or fixed seating	Areas with fixed seating adjacent to a balustrade, reastrauts, bars, etc.	1.5	✗	✓	
(C3) Areas without obstacles for moving people and not susceptible to over-crowding	Stairs, landings, external balconies, edges of roofs, etc.	0.75	✓	✓	
(C5) Areas susceptible to over-crowding	Theatres, cinemas, grandstands, discotheques, bars, auditoria, shopping malls (see also D), assembly areas, studios, etc	3.0	✗	✗	
(D) Retail Areas	All retail areas including public areas of banks/building societies (see C5 for areas where overcrowding may occur	1.5	✗	✓	
F/G Vehicular	Pedestrian areas in car parks including stairs, landings, ramps, edges of internal floors, footways edges of roofs	1.5	✗	✓	

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

















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	Drawing Spec.		WEIGHT (KG)		Drawn by	Michael	Drawn NO. 106 Ultra-Tilt
	Projection		Date	04/11/19	Auditing by		
	Version No.	F01	RE Date		Approved by		

106 Ultra-Tilt COMPONENT AND MATERIAL



CODE	PART	DETAIL	DESCRIPTION	MATERIAL
EXTRUSIONS				
E1	BR-68BD		CHANNEL	ALUMINIUM 6063-T6
E2	BR80-SCP		FULL COVER	ALUMINIUM 6063-T5 6463-T5
E3	BR80-CP-S		SHORT COVER	ALUMINIUM 6063-T5 6463-T5
E4	BR-CP15		CURVE PLATE	ALUMINIUM 6063-T5
E5	BR-CP10		CURVE PLATE	ALUMINIUM 6063-T5
MISCELLANEOUS				
M1	BR-R1		RUBBER	EPDM (UV STABLE)
M2	BR-R2		RUBBER	EPDM (UV STABLE)
M3	BR68-R15		RUBBER	EPDM (UV STABLE)
M4	BR-R17		RUBBER	EPDM (UV STABLE)
M5	BR-R15		RUBBER	EPDM (UV STABLE)
M6	BR-RU15		U GASKET	TPV (UV STABLE)
M7	BR-RU12		U GASKET	TPV (UV STABLE)
M8	BR-SP10		STAINLESS STEEL PLATE	STAINLESS STEEL 2205
M9	Flange nuts M12		NUT	STAINLESS STEEL 316

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MODERN FRAMELESS
GLASS SYSTEMS

Product test Report

PTY LTD

DATE 14/11/19	PART NO. 106 Ultra-Tilt	H/RAIL TYPE N/A
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GLASS TYPE	12mm TOUGHENED
GLASS SIZE	1000W x 1000H
TEST METHOD	Horizontal loading applied with hydraulic ram
FIXING TYPE, CENTRES	400mm CENTRES COUNTER SUNK BOLTS MID
TEMPERATURE	21°C
HUMIDITY	68%
	3x CLAMPING KITS

RESULTS

LOAD KN	DEFLECTION UNDER LOAD	RESIDUAL DEFLECTION	TIME UNDER LOAD	DAMAGE TO PRODUCT	POSTION OF RAMS & LOAD CELLS	PANEL BREAK Y/N
0.5kn	16.5	0	10 SEC	NO		N
0.75kn	27.0	1.05	10 SEC	NO		N
1.0kn	38.7	2.34	10 SEC	NO		N
1.25kn						
1.5kn						
1.75kn						
2.0kn						
2.25kn						
2.5kn						
2.75kn						
3.0kn						
3.25kn						
3.5kn						

SWING TEST	WEIGHT KG	DROP HEIGHT	HIT LOCATION ON PANEL	PASS / FAIL

Notes:



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MODERN FRAMELESS GLASS SYSTEMS

Product test Report

PTY LTD

DATE 4/11/19	PART N ^o 106 Ultra-Tilt	H/RAIL TYPE N/A
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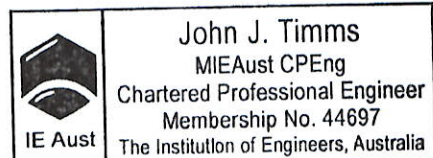
GLASS TYPE	17.52mm SGP TOUGHENED GLASS
GLASS SIZE	1000w x 1000H
TEST METHOD	Horizontal loading applied with hydraulic ram
FIXING TYPE, CENTRES	200mm CENTRES COUNTERSUNK BOLTS M10
TEMPERATURE	21°C
HUMIDITY	68%
	4x CLAMPING KITS

RESULTS

LOAD KN	DEFLECTION UNDER LOAD	RESIDUAL DEFLECTION	TIME UNDER LOAD	DAMAGE TO PRODUCT	POSTION OF RAMS & LOAD CELLS	PANEL BREAK Y/N
0.5kn	6.6	0	10 Sec	NO		N
0.75kn	10.3	0	10 Sec	NO		N
1.0kn	14.2	0.2	10 Sec	NO		N
1.25kn	21.2	0.5	10 Sec	NO		N
1.5kn	29.3	3	10 Sec	NO		N
1.75kn						
2.0kn						
2.25kn						
2.5kn						
2.75kn						
3.0kn						
3.25kn						
3.5kn						

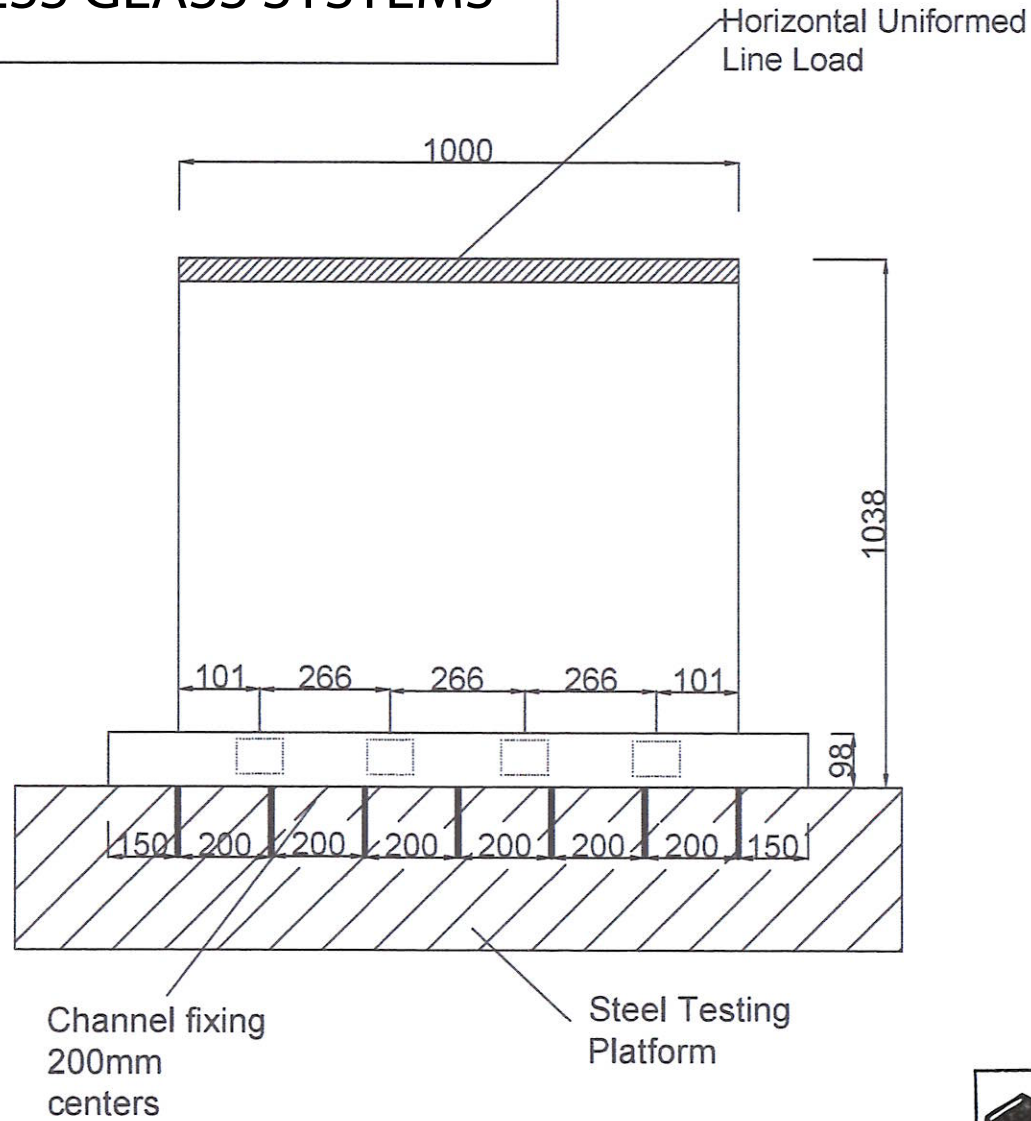
SWING TEST	WEIGHT KG	DROP HEIGHT	HIT LOCATION ON PANEL	PASS / FAIL


Notes:



MODERN FRAMELESS GLASS SYSTEMS

Date: 04/11/2019




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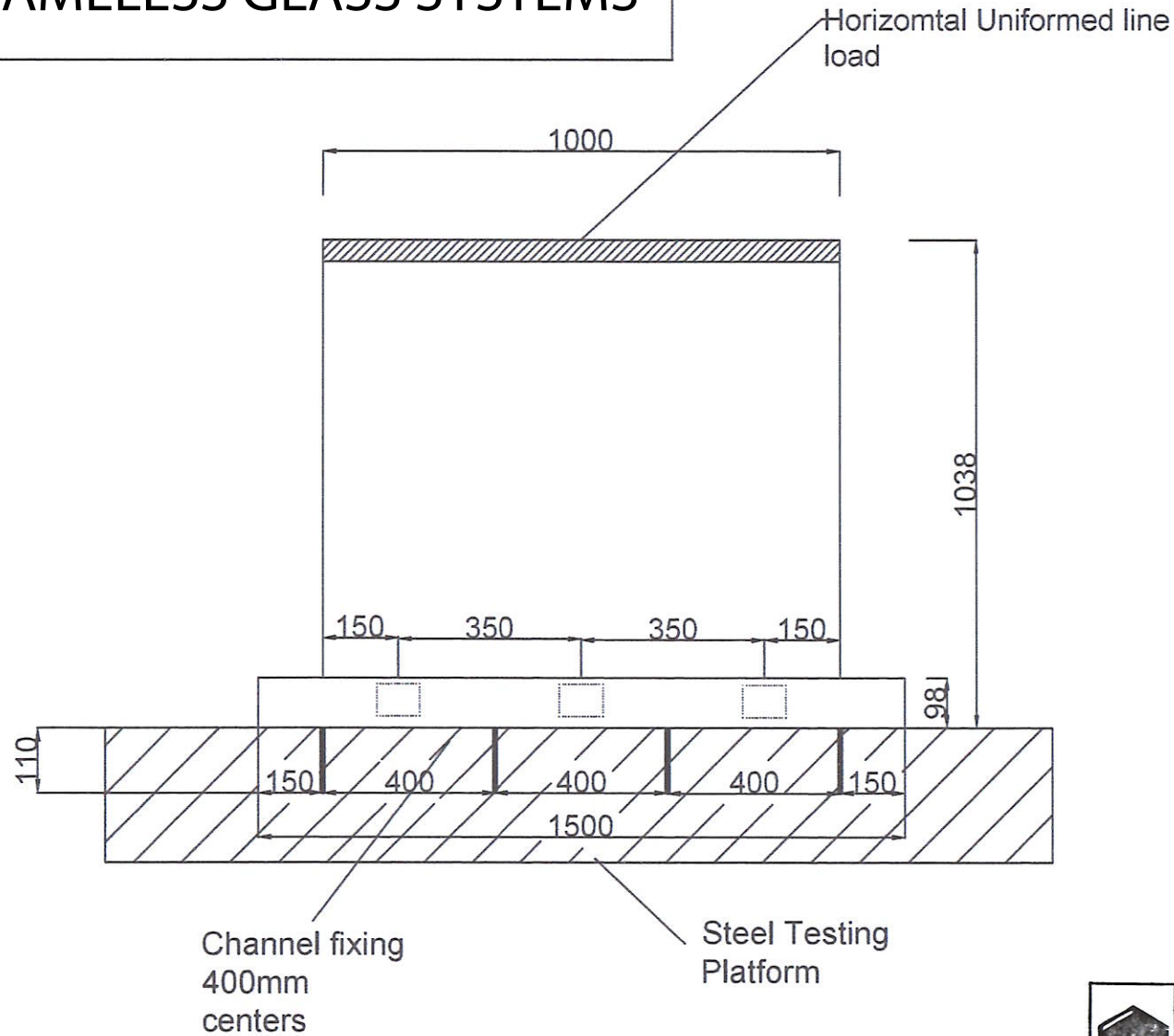
Part no: Glass Type: 17.52mm SGP Toughened Glass

Material: Aluminum 106 Ultra-Tilt


Fasteners used for testing: M10 Stainless steel bolts

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Date: 04/11/2019




106 Ultra-Tilt

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	MIEAust CPEng
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Part no:	Glass Type: 12mm Toughened Glass
Material: Aluminum	

Fasteners used for testing: M10 Stainless steel bolts

PHOTOS

 <p>IE Aust</p>	<p>John J. Timms MIEAust CPEng Chartered Professional Engineer Membership No. 44697 The Institution of Engineers, Australia</p>
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106 Ultra-Tilt - 12mm Toughened Glass

PHOTOS

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106 Ultra-Tilt – 17.52mm SGP Toughened Glass