MFGS

MODERN FRAMELESS
GLASS SYSTEMS

1 Test sample description

1.1 General

Product Code/Name	126 Ultra-Tilt Channel System
Test Requirements	AS/NZ 1170
Date of test	19/02/20

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: 126 Ultra-Tilt Channel System

Material	Aluminium 6063 T6
Overall Size	118mm H x 86mm 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 126 Ultra-Tilt Channel System 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 then 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.

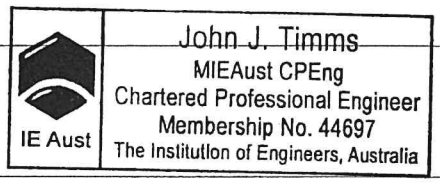
Channel System: 126 Ultra-Tilt Channel System

Tested By: Blake Austin

Signature:

Witnessed By: JOHN TIMMS

Signature:



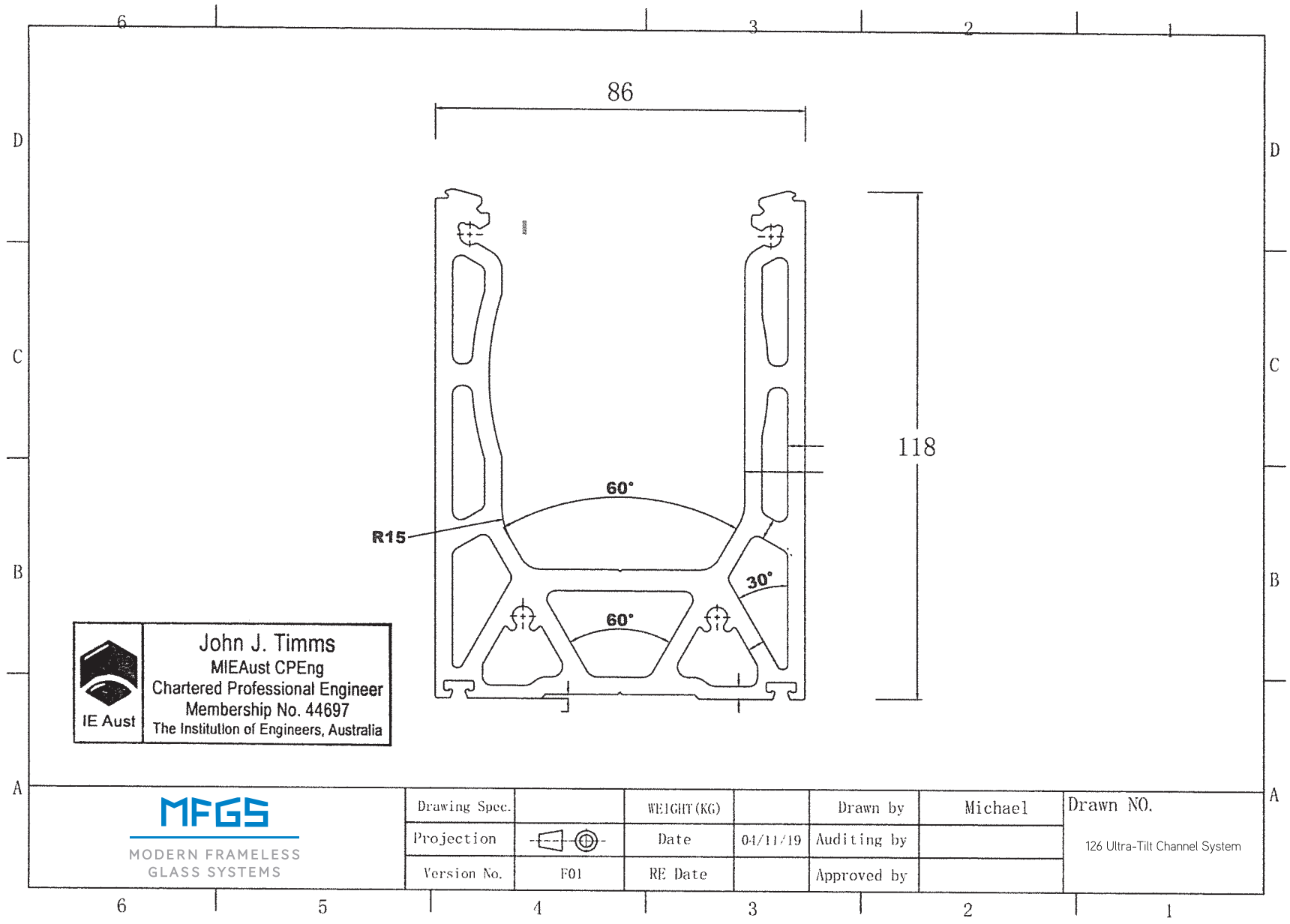
Date: 19/02/2020

MINIMUM IMPOSED ACTIONS FOR BARRIERS

MFGS
MODERN FRAMELESS GLASS SYSTEMS

Product: 126 Ultra-Tilt Channel System			**Glass Size**					
Type of occupancy for part of the building or structure	**Specific uses**	**Horizontal uniformly distributed line load KN/M**	**12mm**	**14.28mm SGP**	**15mm**	**17.52mmSGP**	**21.52mmSGP**	**25.52mm SGP**
(A) Domestic and residential activites	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 then 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, reastraunts, bars, etc.	1.5	✗	✗	✗	✓	✓	✓
(C3) Areas without obstacles for moving people and not susceptible to over-crowding	Stairs, landings, eternal 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	✗	✗	✗	✗	✗	✓
(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	✗	✗	✗	✓	✓	✓

IE Aust
John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia



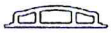
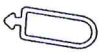
IE Aust
John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS GLASS SYSTEMS

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

Drawn NO.
126 Ultra-Tilt Channel System

BR86 COMPONENT AND MATERIAL

CODE	PART	DETAIL	DESCRIPTION	MATERIAL
EXTRUSIONS				
E1	BR86		CHANNEL	ALUMINIUM 6063-T6
E2	BR86CP		FULL COVER	ALUMINIUM 6063-T5 6463-T5
E3	BR86-CP-S		SHORT COVER	ALUMINIUM 6063-T5 6463-T5
E4	BR86SRP		CURVE PLATE	ALUMINIUM 6063-T5
E5	BR86SRP		CURVE PLATE	ALUMINIUM 6063-T5
E6	BR86SRP2		CURVE PLATE	ALUMINIUM 6063-T5
MISCELLANEOUS				
M1	BR86-R4		RUBBER	EPDM (UV STABLE)
M2	BR86-R15		RUBBER	EPDM (UV STABLE)
M3	BR86-R17		RUBBER	EPDM (UV STABLE)
M4	BR86-R25		RUBBER	EPDM (UV STABLE)
M5	BR05		U GASKET	TPV (UV STABLE)
M6	BR86-RU21.6		U GASKET	TPV (UV STABLE)
M7	BR86-RU25.6		U GASKET	TPV (UV STABLE)
M8	BR86-PP		STAINLESS STEEL PLATE	STAINLESS STEEL 2205
M9	BR86-PP		STAINLESS STEEL PLATE	STAINLESS STEEL 2205
M10	BR86-P3		STAINLESS STEEL PLATE	STAINLESS STEEL 2205
M11	Flange nuts		NUT	STAINLESS STEEL 316
M18	♦M10		THREAD ROD	STAINLESS STEEL 316

MFGS
MODERN FRAMELESS
GLASS SYSTEMS

Product test Report

PTY LTD

DATE	PART NO.	H/RAIL TYPE
18/2/20	126 Ultra-Tilt Channel System	N/A

GLASS TYPE		12mm TOUGHENED GLASS
GLASS SIZE		1000w x 1000H
TEST METHOD		Horizontal loading applied with hydraulic ram
FIXING TYPE, CENTRES		3 x CLAMP PLATES
TEMPERATURE	27.9°C	300mm CENTRES M10 CHEMICAL FIXED
HUMIDITY	39.8%	

RESULTS

LOAD KN	DEFLECTION UNDER LOAD mm	RESIDUAL DEFLECTION mm	TIME UNDER LOAD	DAMAGE TO PRODUCT	POSTION OF RAMS & LOAD CELLS	PANEL BREAK Y/N
0.5kn	17.23	0	60SEC	NO		N
0.75kn	26.83	0	60SEC	NO		N
1.0kn	40.99	1.33	60SEC	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:

IE Aust

John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS
GLASS SYSTEMS

Product test Report

PTY LTD

DATE	PART NO.	H/RAIL TYPE
18/2/20	126 Ultra-Tilt Channel System	N/A

GLASS TYPE	17.52mm SGP Toughened Glass
GLASS SIZE	1000W x 1000H
TEST METHOD	Horizontal loading applied with hydraulic ram
FIXING TYPE, CENTRES	4 x CLAMP PLATES
TEMPERATURE	CHANNEL 300mm CENTRES M/O CHEMICAL
HUMIDITY	FIXED

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	6.44	0.49	60 SEC	NO		N
0.75kn	10.33	0.56	60 SEC	NO		N
1.0kn	14.17	0.67	60 SEC	NO		N
1.25kn	19.26	1.70	60 SEC	NO		N
1.5kn	23.37	2.31	60 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:

IE Aust

John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS GLASS SYSTEMS

Product test Report

PTY LTD

DATE	PART NO	H/RAIL TYPE
14/11/19	126 Ultra-Tilt Channel System	N/A

GLASS TYPE		25.52mm SGP TOUGHENED GLASS
GLASS SIZE		1000W x 1000 H
TEST METHOD		Horizontal loading applied with hydraulic ram
FIXING TYPE, CENTRES		5x CLAMPING PLATES
TEMPERATURE	19°C	200mm CHANNEL CENTRES MIO CHEMICAL
HUMIDITY	65%	FIXED

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						
0.75kn						
1.0kn	4.9	0	60SEC	NO		N
1.25kn						
1.5kn	8.7	0.37	60 SEC	NO		N
1.75kn						
2.0kn	12.89	0.65	60 SEC	NO		N
2.25kn						
2.5kn	17.21	0.88	60 SEC	NO		N
2.75kn						
3.0kn	23.85	1.40	60SEC	NO		N
3.25kn						
3.5kn	31.65	2.73	60 SEC	NO		N

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

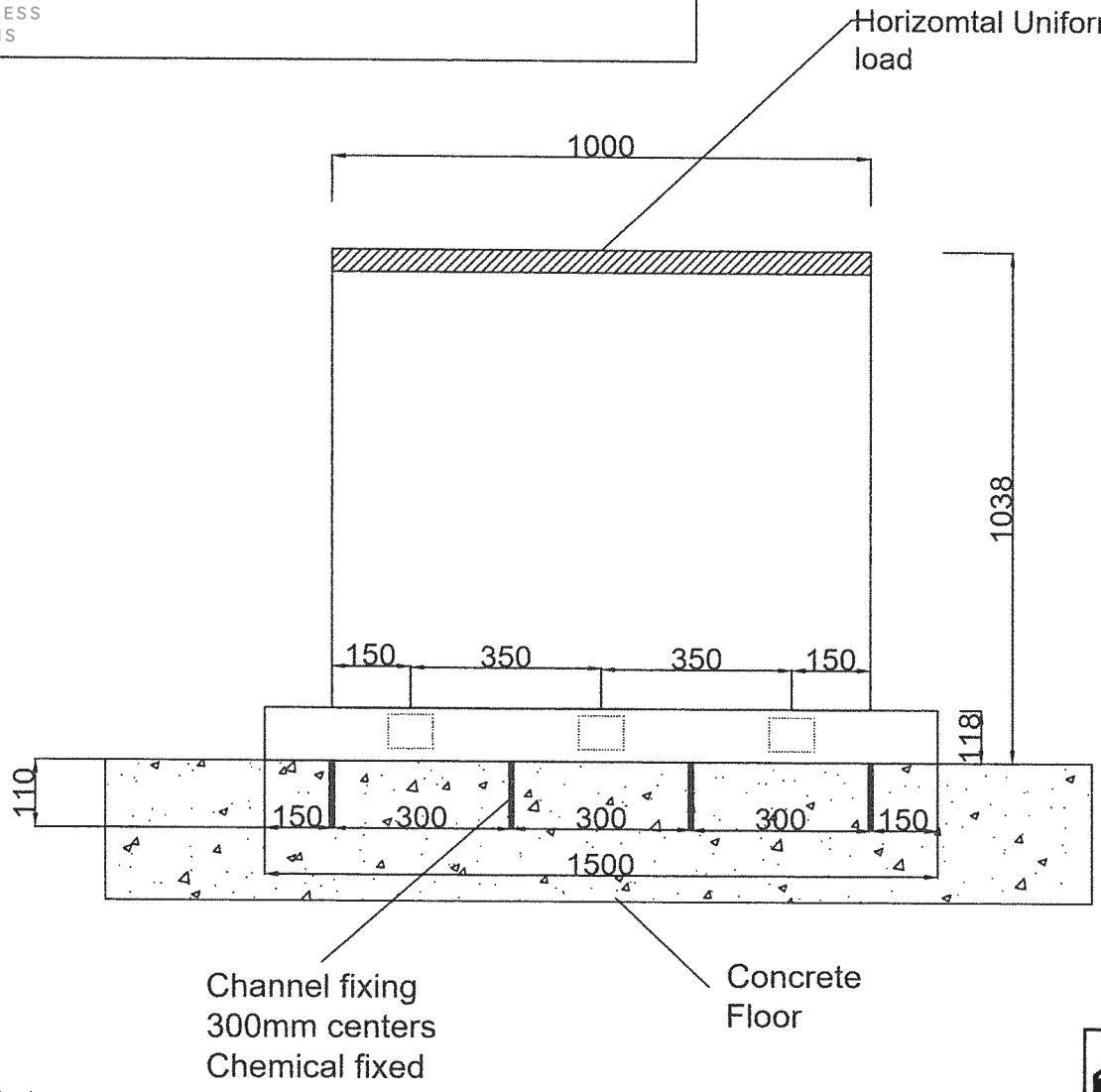
Notes:

IE Aust

John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS
GLASS SYSTEMS

Date: 19/02/2020



126 Ultra-Tilt Channel System

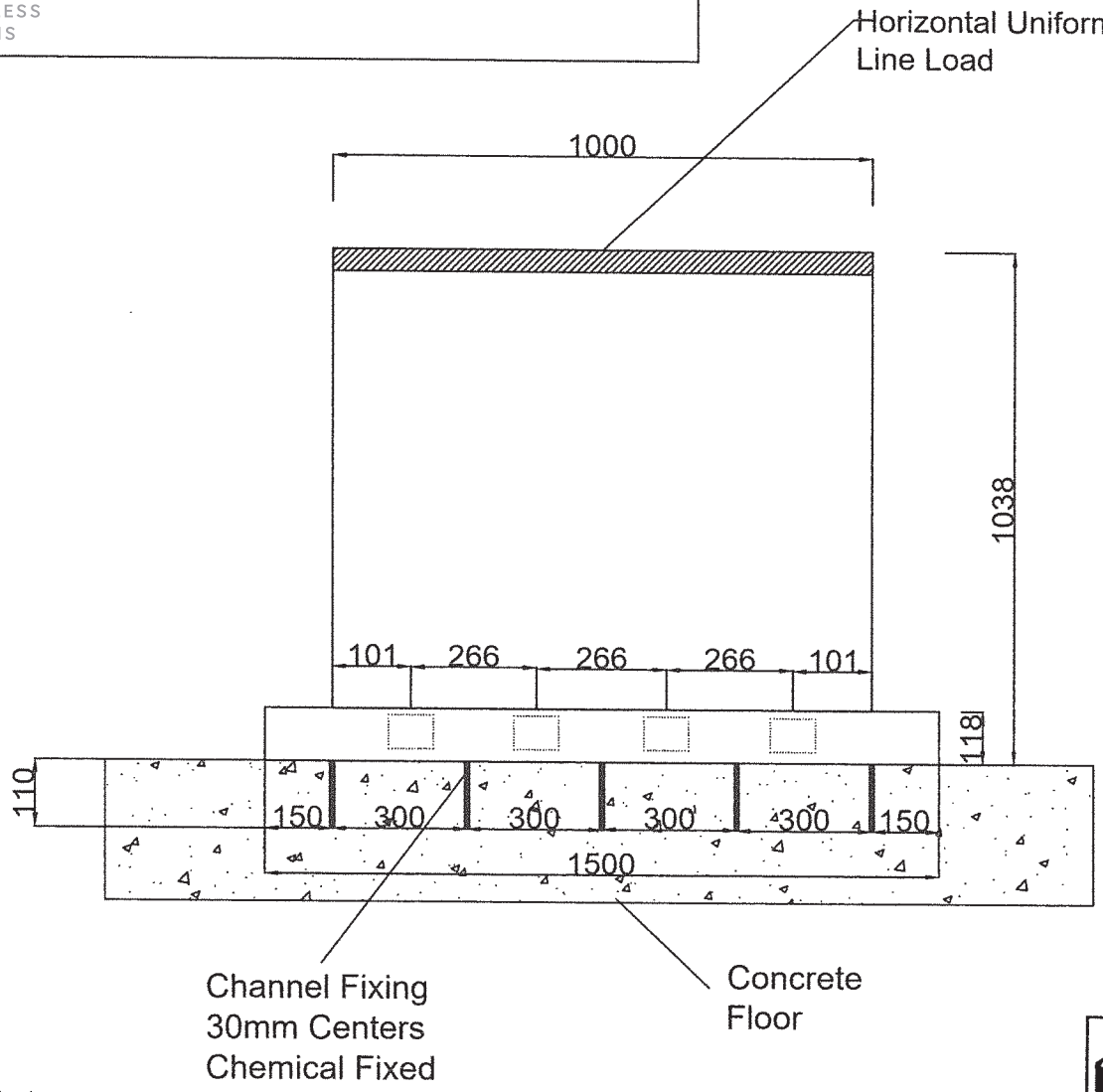
Part no:	Glass Type: 12mm Toughened Glass	
Material: Aluminum		
Fasteners used for testing: M10 Stainless steel bolts	Panel layout	Page 10 of 14

IE Aust

John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS
GLASS SYSTEMS

Date: 19/02/2020



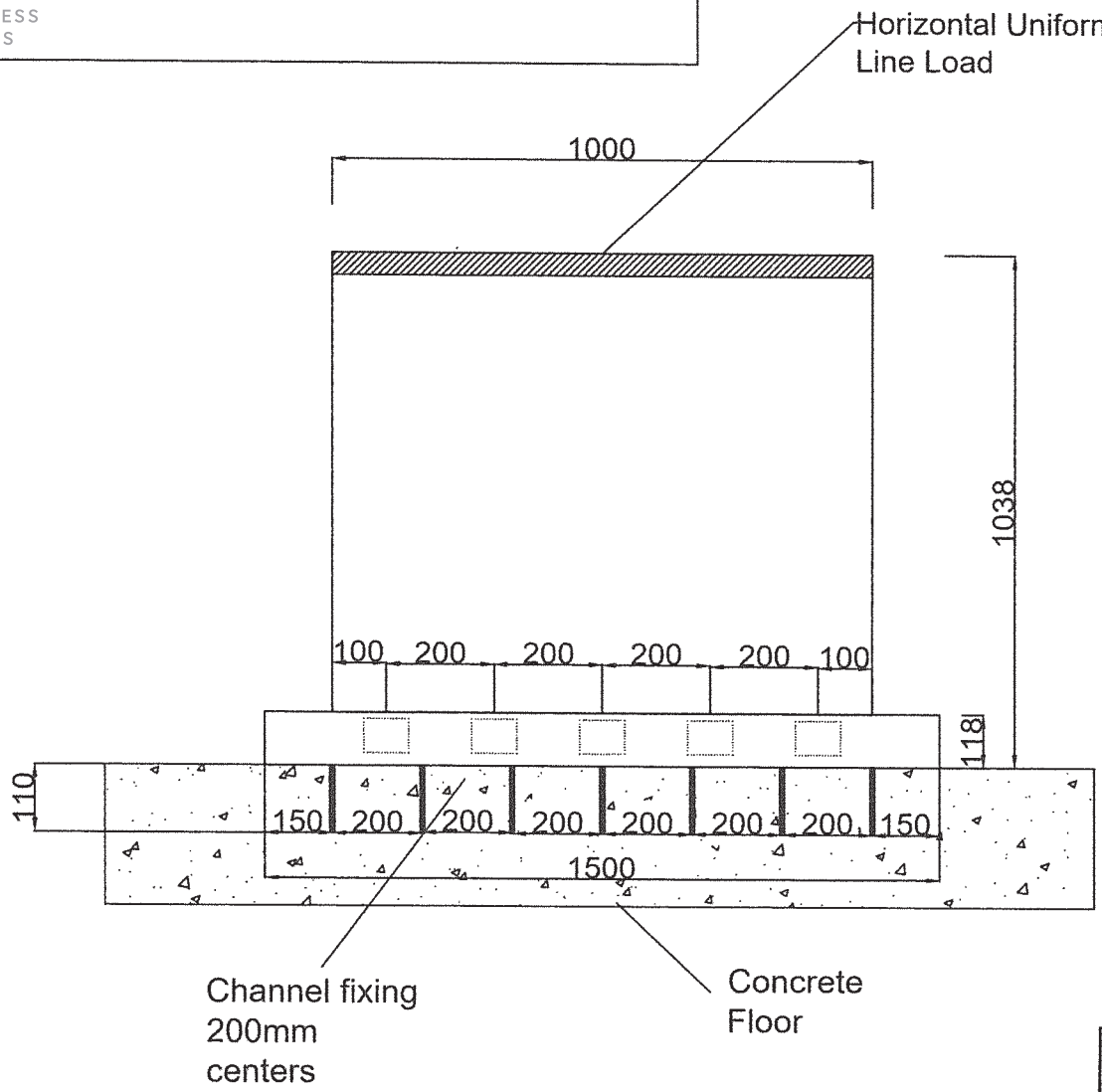
126 Ultra-Tilt Channel System

Part no:	Glass Type: 17.52mm SGP Toughened Glass	
Material: Aluminum		
Fasteners used for testing: M10 Stainless steel bolts		

IE Aust
John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

MFGS
MODERN FRAMELESS GLASS SYSTEMS

Date: 19/02/2020



126 Ultra-Tilt Channel System

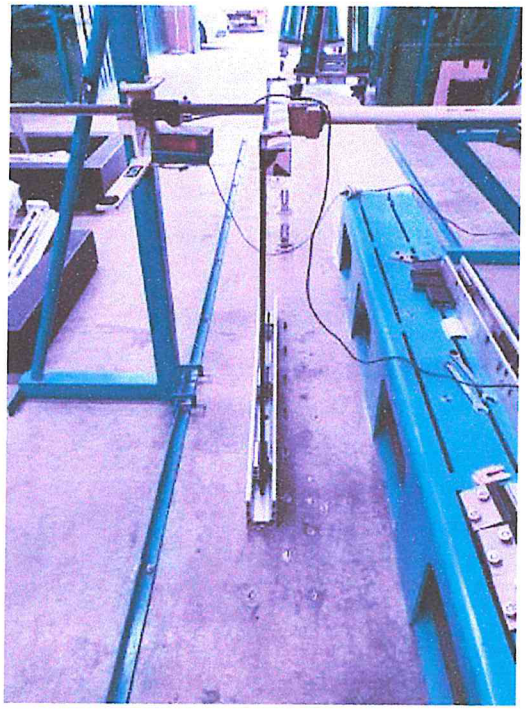
Part no:	Glass Type: 25.52mm SGP Toughened Glass	
Material: Aluminum		
Fasteners used for testing: M10 Stainless steel bolts		

IE Aust

John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

PHOTOS

12mm Monolithic Glasss



126 Ultra-Tilt Channel System

17.52mm SGP

126 Ultra-Tilt Channel System

IE Aust
John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia

PHOTOS

25.52mmSGP

126 Ultra-Tilt Channel System

25.52mm SGP

126 Ultra-Tilt Channel System

IE Aust
John J. Timms
MIEAust CPEng
Chartered Professional Engineer
Membership No. 44697
The Institution of Engineers, Australia