

Technical Report

Report No R15222-2

Product Tested: Eurocell – Euroslide Patio Door with Low Threshold

Test Conducted for: MI Products
Middlemarch Business Park
4020 Siskin Parkway East
Coventry
CV3 4SU

Standard Specified: PAS 24:2012 – Enhanced security performance requirements for door assemblies

Project No: 15222

Date of Test: 29th July 2015

Test Conducted at: Wintech Engineering Limited
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Laboratory Development Manager

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1. Introduction

This report describes testing of a door sample conducted at the test laboratory of Wintech Engineering Ltd on behalf of MI Products Ltd in order to determine compliance with PAS 24:2012.

Wintech Engineering Ltd is accredited by the United Kingdom Accreditation Service as UKAS Testing Laboratory No. 2223

2. Summary of Results

The following summarises the results of testing carried out, in accordance with PAS 24:2012

Test Description	Result
A.3 – Security hardware & cylinder test	<i>Pass</i>
B.4.6 – Manual check test	<i>Pass</i>
B.4.4.3 – Mechanical infill test	<i>Pass</i>
B.4.3 – Manipulation test	<i>Pass</i>
B.4.5 – Mechanical loading test	<i>Pass</i>
B.4.4.2 – Manual infill test	<i>Pass</i>
B.4.4.4 – Manual cutting test	<i>Pass</i>
B.4.8 – Soft body impact test	<i>Pass</i>
B.4.9 – Hard body impact test	<i>Pass</i>
Overall Classification in accordance with PAS 24:2012	<i>DKT</i>

More comprehensive details are reported in Section 6.

Note: These results are valid only for the conditions under which the test was conducted

Note: All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.

3. Description of Test Sample

NAME OF SYSTEM:	Eurocell – Euroslide Patio Door with Low Threshold
MANUFACTURED BY:	MI Products Ltd / Eurocell Profiles
JOINING METHOD:	Mitre and welded top frame and sashes, Mechanical joint bottom frame to threshold.
DRAWINGS:	see section 7
LOCKING POINTS:	Mila Fearless 6 point lock to slider, Mila 3 point mushroom cam espag to interlock & MI Security interlock protectors and corner bolt.
GLASS MAKE UP & THICKNESS:	6-16-6 = 28mm glass unit
GASKETS:	Co-extruded gasket to all glazing EWS452G Interlock brush seal EWS451G Sash brush seal EWS450G Frame cover brush seal VSW401G Aluminium threshold brush seal EWS453G Top centre frame brush seal
HARDWARE USED:	Mila – Locks handle and cylinder (30*30mm) MI Products – top corner bolt, aluminium interlock and protectors Mila – Handle to interlock mechanism
DRAINAGE:	2 slots bottom of each sash 5 * 25mm 1 centre of threshold 30 * 30mm 1 each end of connecting blocks
SEALANTS USED:	Low modulus sealant around ends of connecting blocks at threshold frame joints.
SUB FRAME FIXINGS:	5mm * 80mm screws for frame and 4.3mm * 25mm screws for threshold.
HARDWARE FIXINGS:	4.3mm * 40mm gimlet point screws for lock 3.9mm * 45mm drill point for strikers 3.9mm * 32mm drill point for interlock protectors

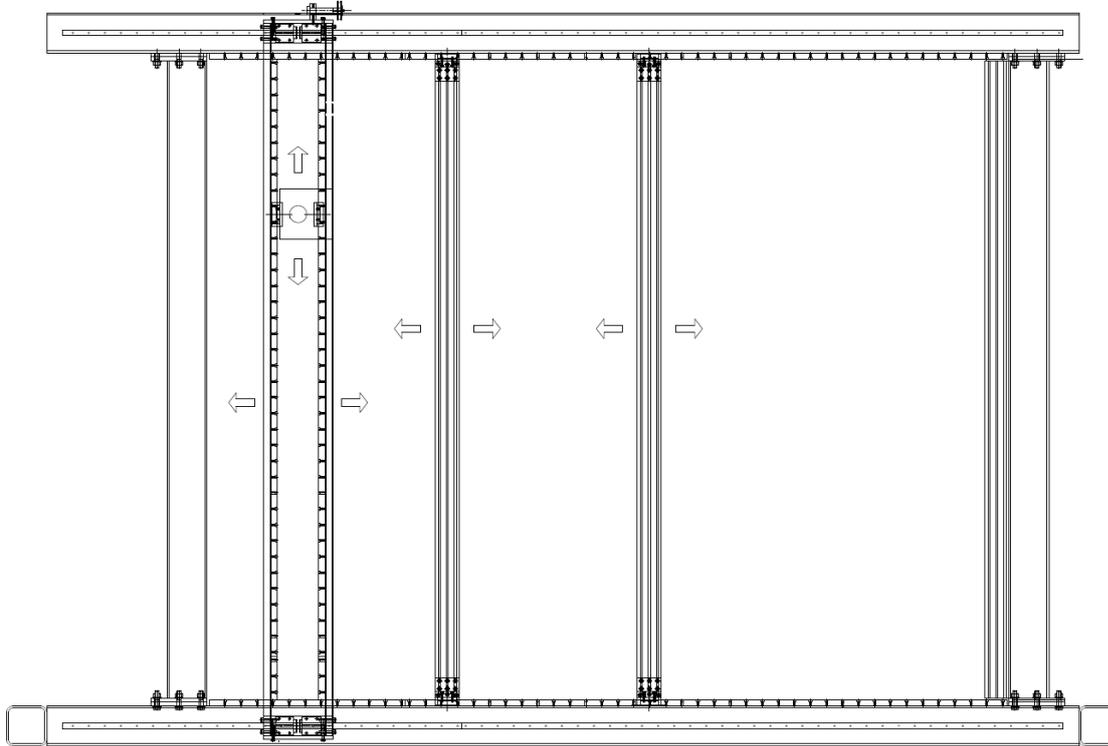
See Section 7 for test sample drawings as supplied by MI Products Ltd.

4. Test Arrangement

4.1 Test Rig

The test sample was supplied mounted in 100 x 75 mm timber sub-frame in accordance with manufacturer's installation requirements. It was fitted into the test rig, shown below which was constructed to meet the requirements of the test specification and was fitted plumb, square and without twist or bends.

Figure 1 – Test rig used for testing



5. Test Procedures

5.1 B.4.3 – Manipulation test

The objective of this test was to highlight any inherent vulnerability in the design of the door which, from the outside, would permit entry by the hardware being operated, released or disengaged when tested using all of group A tools from Section A.2.1 of PAS 24:2012 and, where applicable, tools specified in A.2.2.3, A.2.2.5 and A.2.2.6 in group B from Section A.2.2 of PAS 24:2012. No single attack technique was used for more than 3 minutes.

5.2 B.4.4.3 – Mechanical infill test

The objective of this test was to assess the ability of the infill to withstand a specified sequence of loading without gaining entry through the sample. The loads and loading sequence were in accordance with Section B.4.4.3 of PAS 24:2012.

5.3 B.4.4.2 – Manual infill test

The objective of this test was to assess the vulnerabilities of the infill, including gaskets and beading, using the tools described in section A.2.1 & A.2.2 of PAS 24:2012 for a maximum period of 3 minutes.

5.4 B.4.4.4 – Manual cutting test

The objective of this test was to cut an aperture in the infill or fabric of the door leaf in order to gain entry using the tools described in section A.2.1.3, A.2.1.4, A.2.2.1 and A.2.2.2 for a maximum period of 3 minutes.

5.5 B.4.5 – Mechanical loading test

The objective of this test was to assess the ability of the sample to withstand a specified sequence of loading without gaining entry through the sample. The loads and loading sequence were in accordance with Section B.4.5 of PAS 24:2012.

5.6 B.4.6 – Manual check test

The objective of this test was to assess any vulnerabilities of the sample that are not covered by the standard loading cases assessed in the mechanical loading test B.4.5. The tools described in Section B.4.6.2 of PAS 24:2012 were used for a maximum period of 15 minutes in an attempt to gain entry through the sample.

5.7 B.4.8 – Soft body impact test

The objective of this test was to assess the ability of the sample to resist impacts using a soft body impactor as shown in Figure B.10 of PAS 24:2012 and at various impact locations specified in Section B.4.8.2 of PAS 24:2012.

5.8 B.4.9 – Hard body impact test

The objective of this test was to assess the hardware, infill medium and its retention system to hard body impacts using the impactor as shown in Figure B.11 of PAS 24:2012. Impacts were conducted at various locations specified in Section B.4.9.2 of PAS 24:2012.

5.9 A.3 – Security hardware & cylinder test

The objective of this test was to assess the lock and cylinder and its resistance to manual attack when using the tools as described in Section A.2 of PAS 24:2012. The test was broken in to 2 parts as follows:

Part 1 – the hardware was attacked for a total of 3 minutes which consisted of the following activities

- i. Attempts to remove, dislodge or otherwise gain access to the cylinder and lock by attacking any protective item
- ii. Attempts to break or defeat the cylinder by applying a twisting or bending force
- iii. Attempts to operate any accessible mechanism in order to gain entry

Part 2 – the hardware was attacked for a total of 3 minutes which consisted of the following activities

- i. Attempts to remove, dislodge or otherwise gain access to the cylinder and lock by attacking any protective item
- ii. Attempts to screw self-cutting screws in to the exposed part of the cylinder in order to provide a suitable fixing force for activity iii.
- iii. Attempts to break and defeat the cylinder by applying a nominally axial force to the screw using a hooked head crowbar attachment
- iv. Attempts to operate any accessible mechanism in order to gain entry

6. Test Results

6.1 Lab Temperature

The temperature measured inside the laboratory during the test was: **21.2 °C**

Note The test samples were stored in a non-destructive environment at a temperature of 15 – 30°C and an r.h. of 25 – 75 % for a minimum of 24 hours, testing was also conducted at those conditions. Prior to testing, the door was closed and locked from the outside and any keys were removed.

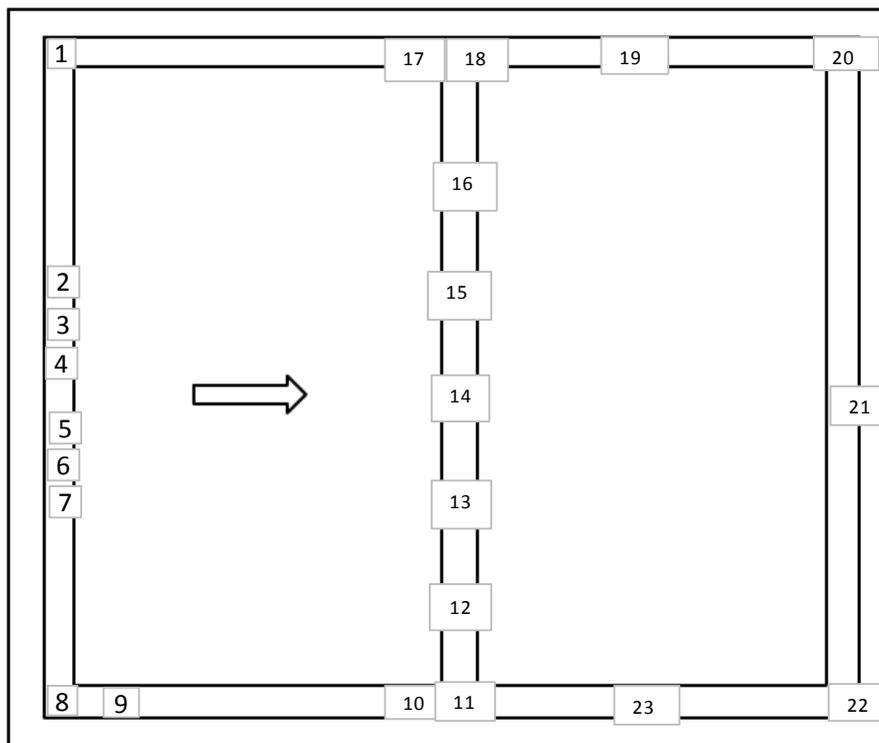
6.2 B.4.3 – Manipulation test

Attempts were made from the external face to operate, release and disengage the system hardware in order to gain entry through the sample in accordance with Section B.4.3 of PAS 24:2012. The results are as follows:

Table 1 – Manipulation test

Location	Tools Used	Method	Time
3	Knife	Cut away at profile to gain access to the locking point.	3 minutes
3	Paint Scraper & Screw driver	Tried to manipulate the lock at point 3 through the hole that had been cut in the profile. No access gained.	3 minutes
14	Knife	Cut away at profile to gain access to the locking point.	3 minutes
14	x2 Paint scrapers	Tried to manipulate the lock at point 14 through the hole that had been cut in the profile. No access gained.	3 minutes

Figure 2 – Attack locations



6.3 B.4.4.3 – Mechanical infill test

A series of loads were applied to the external face of the infill as defined in Section B.4.4.3 of PAS 24:2012. A parallel-to-plane load of 2.0kN was applied and held for 8-12 seconds at each corner of the infill.

No entry was gained during loading to the infill and as such the product has passed this part of the test.

6.4 B.4.4.2 – Manual infill test

Attempts were made from the external face to remove gaskets and beading in order to gain access to and remove the infill using tools A.2.2.2 & A.2.2.3 in accordance with Section B.4.4.2 of PAS 24:2012.

No entry was gained during this test.

6.5 B.4.4.4 – Manual cutting test

Attempts were made from the external face to cut an aperture in the infill or fabric of the door leaf in order to gain access using tools as described in section A.2.1.3, A.2.1.4, A.2.2.1 and A.2.2.2 of PAS 24:2012.

No entry was gained during this test.

6.6 B.4.5 – Mechanical loading test

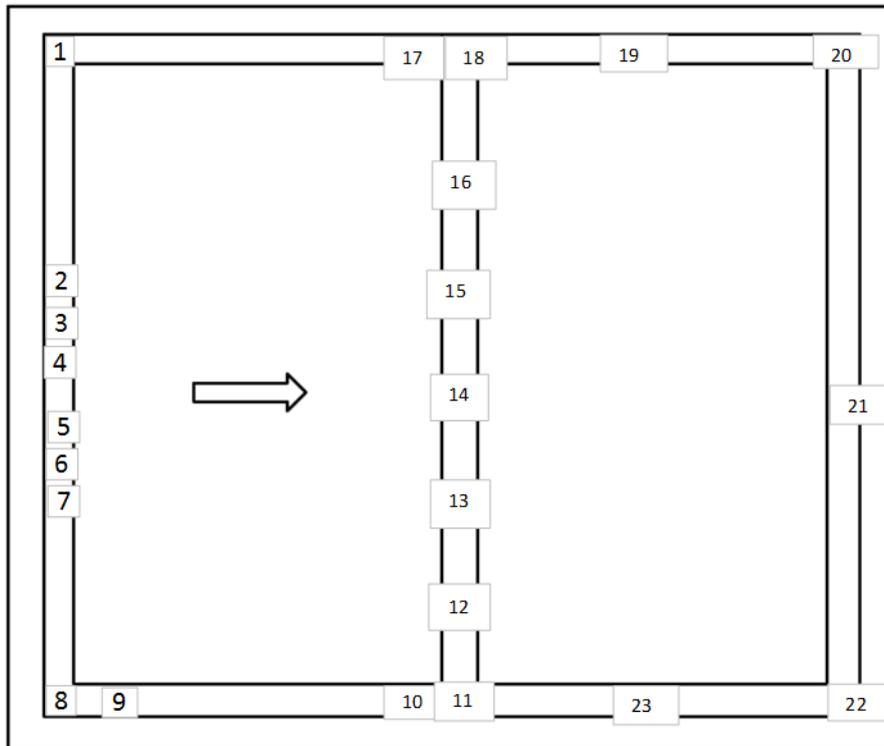
A series of loads were applied to the internal face of the sample as defined in Section B.4.5 of PAS 24:2012. A parallel-to-plane load of 1.5kN was applied and held while a perpendicular-to-plane load of 4.5kN was applied and held. The perpendicular-to-plane load was then removed followed by the parallel-to-plane load. This was conducted at each loading point and the results are as follows:

Table 2 – Mechanical Loading

Loading Point	Parallel-to-plane Load		Perpendicular-to-plane Load		Result
	Load	Direction	Load	Direction	
1) Top Corner Active Sash	4.5kN	→	1.5kN	N.A	Pass
1) Top Corner Active Sash	1.5kN	→	4.5kN	N.A	Pass
1) Top Corner Active Sash	1.5kN	↓	4.5kN	N.A	Pass
2) Locking point A	1.5kN	↓	4.5kN	N.A	Pass
2) Locking point B	1.5kN	→	4.5kN	N.A	Pass
2) Locking point C	4.5kN	→	N.A		Pass
3) Locking point A	1.5kN	→	4.5kN	N.A	Pass
3) Locking point B	1.5kN	↓	4.5kN	N.A	Pass
3) Locking point C	4.5kN	→	N.A	N.A	Pass
4) Locking point A	1.5kN	↓	4.5kN	N.A	Pass
4) Locking point B	1.5kN	→	4.5kN	N.A	Pass
4) Locking point C	4.5kN	→	N.A	N.A	Pass
5) Locking point A	1.5kN	↓	4.5kN	N.A	Pass
5) Locking point B	1.5kN	→	4.5kN	N.A	Pass
5) Locking point C	4.5kN	→	N.A	N.A	Pass

Loading Point	Parallel-to-plane Load		Perpendicular-to-plane Load		Result
	Load	Direction	Load	Direction	
6) Locking point A	1.5kN	↓	4.5kN	N.A	Pass
6) Locking point B	1.5kN	→	4.5kN	N.A	Pass
6) Locking point C	4.5kN	→	N.A	N.A	Pass
7) Locking point A	1.5kN	↓	4.5kN	N.A	Pass
7) Locking point B	1.5kN	→	4.5kN	N.A	Pass
7) Locking point C	4.5kN	→	N.A	N.A	Pass
8) Bottom Corner A	4.5kN	→	1.5kN	N.A	Pass
8) Bottom Corner B	1.5	↑	4.5kN	N.A	Pass
9) Roller	4.5kN	↑	1.5kN	N.A	Pass
10) Roller	4.5kN	↑	1.5kN	N.A	Pass
10) Corner	1.5kN	↑	4.5kN	N.A	Pass
11) Bottom corner Inactive Sash A	1.5kN	↑	4.5kN	N.A	Pass
11) Bottom corner Inactive Sash B	1.5kN	→	4.5kN	N.A	Pass
11) Bottom corner Inactive Sash C	N.A	N.A	4.5kN	↔	Pass
12) Lower Mechanical Interlock	N.A	N.A	4.5kN	↔	Pass
13) Continuous Interlock	N.A	N.A	4.5kN	↔	Pass
14) Middle Mechanical Interlock	N.A	N.A	4.5kN	↔	Pass
14) Centre of Inactive Sash	1.5kN	→	4.5kN	N.A	Pass
15) Continuous Interlock	N.A	N.A	4.5kN	↔	Pass
16) Top Mechanical Lock	N.A	N.A	4.5kN	↔	Pass
17) Top corner A	N.A	N.A	4.5kN	↔	Pass
17) Top corner B	1.5kN	↓	4.5kN	N.A	Pass
18) Top corner A	1.5kN	→	4.5kN	N.A	Pass
18) Top corner B	1.5kN	↓	4.5kN	N.A	Pass
19) Top Centre Inactive Sash	1.5kN	↓	4.5kN	N.A	Pass
20) Top Corner A	1.5kN	←	4.5kN	N.A	Pass
20) Top Corner B	1.5kN	↓	4.5kN	N.A	Pass
21) Centre of Inactive Sash	1.5kN	←	4.5kN	N.A	Pass
22) Bottom Corner A	1.5kN	↑	4.5kN	N.A	Pass
22) Bottom Corner B	1.5kN	←	4.5kN	N.A	Pass
23) Centre of Inactive Sash	1.5kN	↑	4.5kN	N.A	Pass

Figure 3 – Loading points



6.7 B.4.6 – Manual check test

Attempts were made from the external face to gain entry through the sample by attacking those areas that were not tested during the mechanical loading test B.4.5. The overall attack time was limited to 15 minutes with no single attack technique being used for more than 3 minutes.

No entry could be gained during this test.

6.8 A.3 – Security Hardware & Cylinder Test

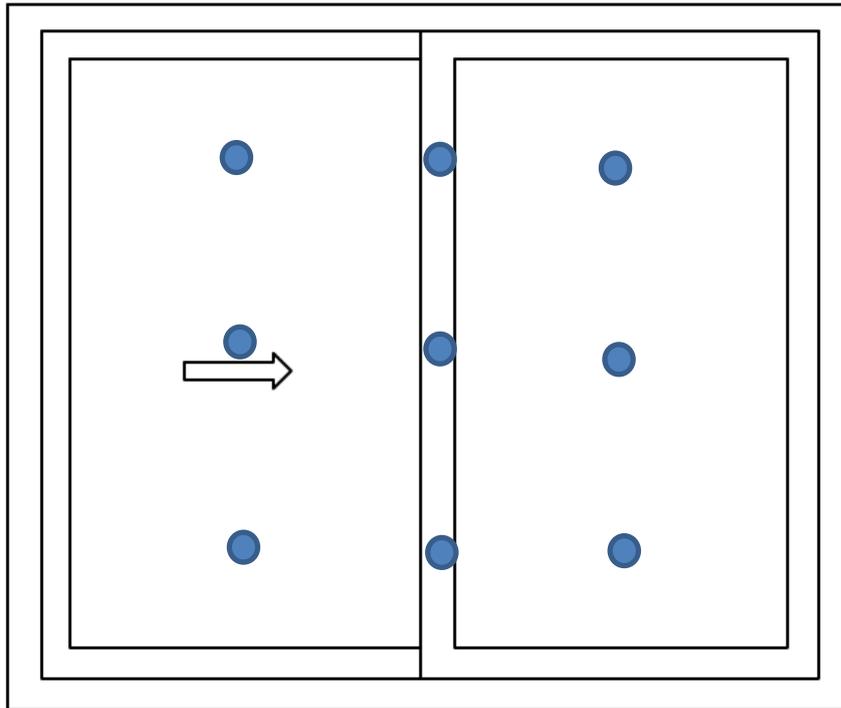
Attempts were made from the external face to operate, release and disengage the system hardware in order to gain entry through the sample in accordance with Section A.3 of PAS 24:2012.

No entry was gained during the attack time, and as such the product has passed this part of the test.

6.9 B.4.8 – Soft body impact test

The test sample was subject to soft body impacts in 3 locations on the external face as shown in Figure 4. Each of the 3 locations was subject to 3 impacts from a drop height of 800mm, following which no damage was observed.

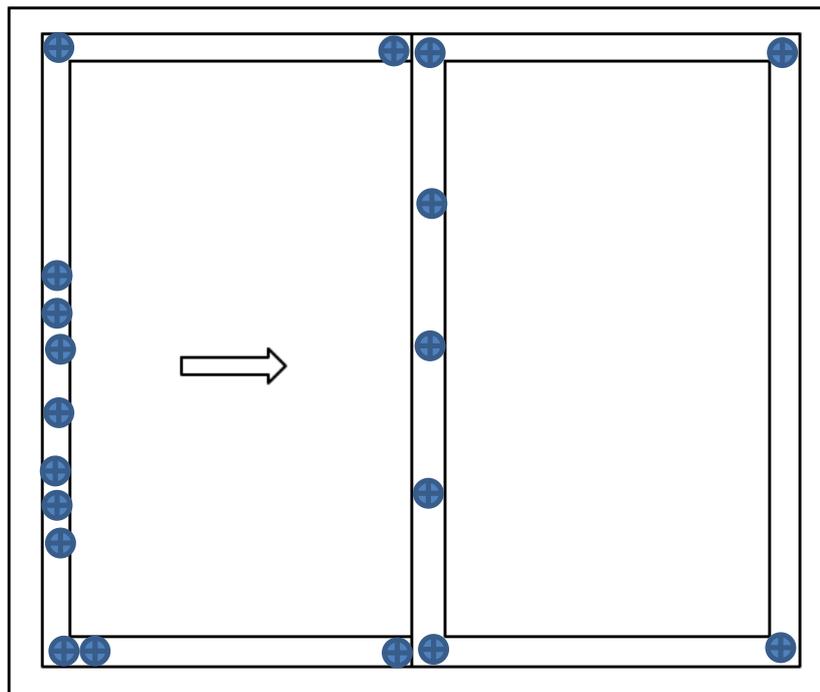
Figure 4 – Impact locations



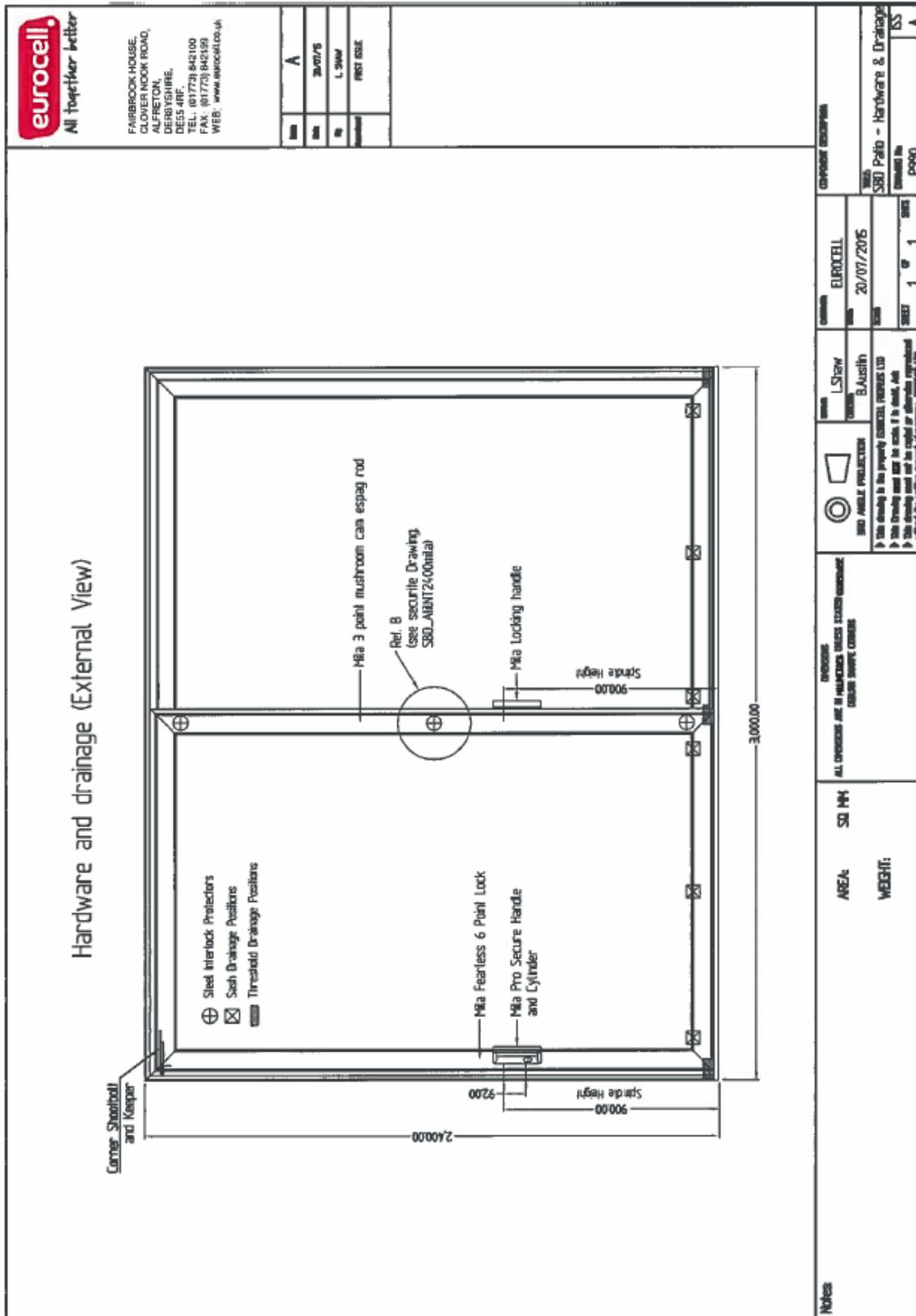
6.10 B.4.9 – Hard body impact test

The test sample was subject to hard body impacts on the external face as shown in Figure 5. Each of the impact locations was subject to 3 impacts from a drop height of 165 mm following which no entry was gained through the sample.

Figure 5 – Impact locations



7. System Drawings



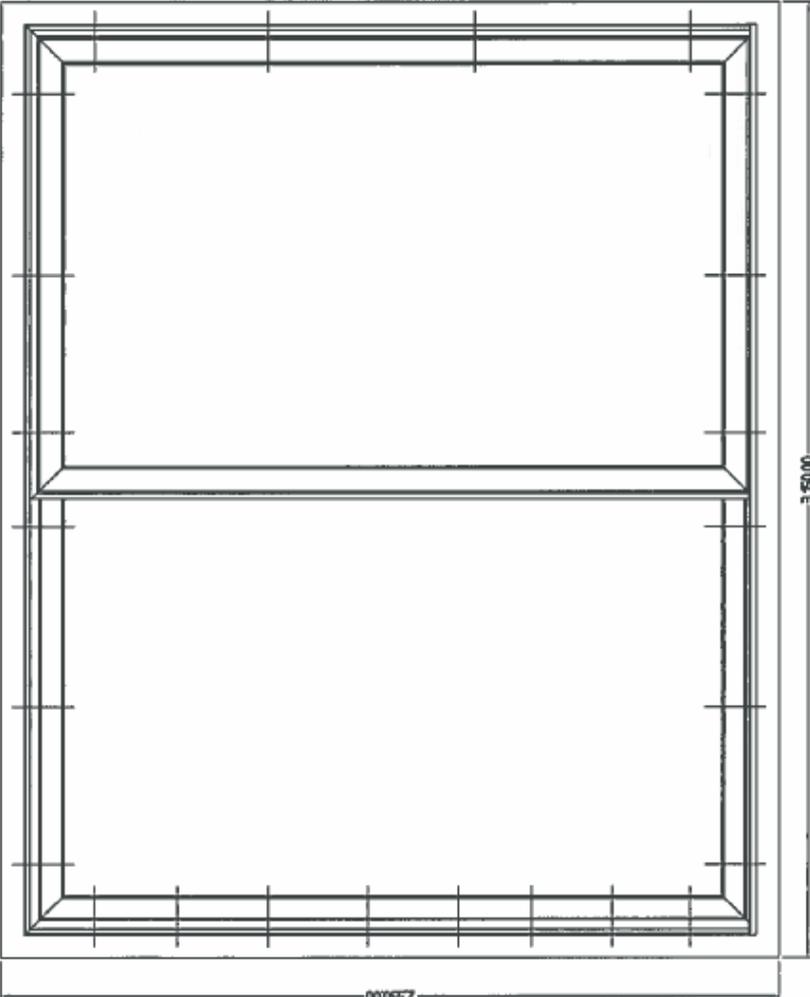


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Area	A
Date	20/07/15
By	L SHAW
Checked	PIET BOELE

COMPONENT DESCRIPTION	S80 Patio - Subframe Fixing	
COMPONENT CODE	EUROCELL	
DATE	20/07/2015	
SCALE	1 OF 1	



Subframe Fixing (Internal View)

Notes:

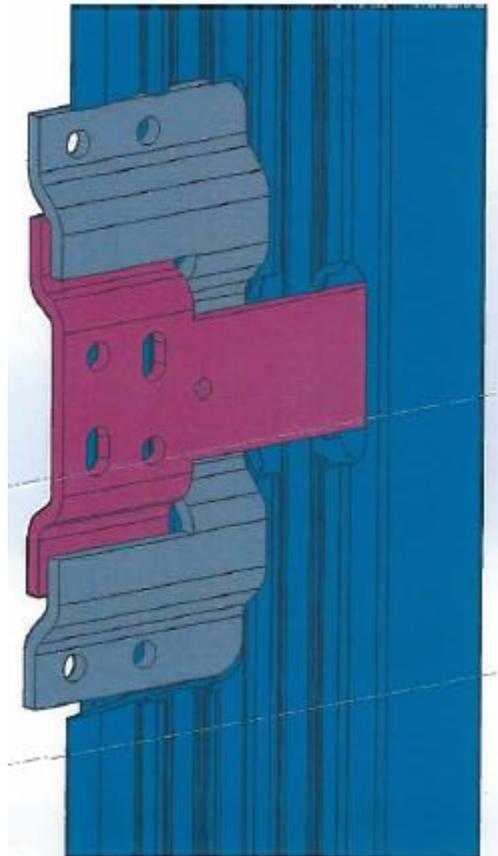
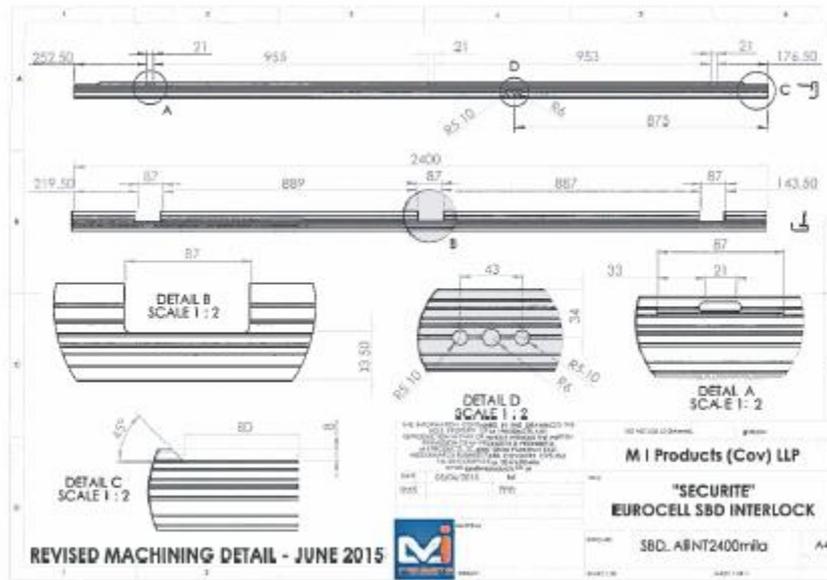
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- UNLESS SHOWN OTHERWISE
- UNLESS SHOWN OTHERWISE

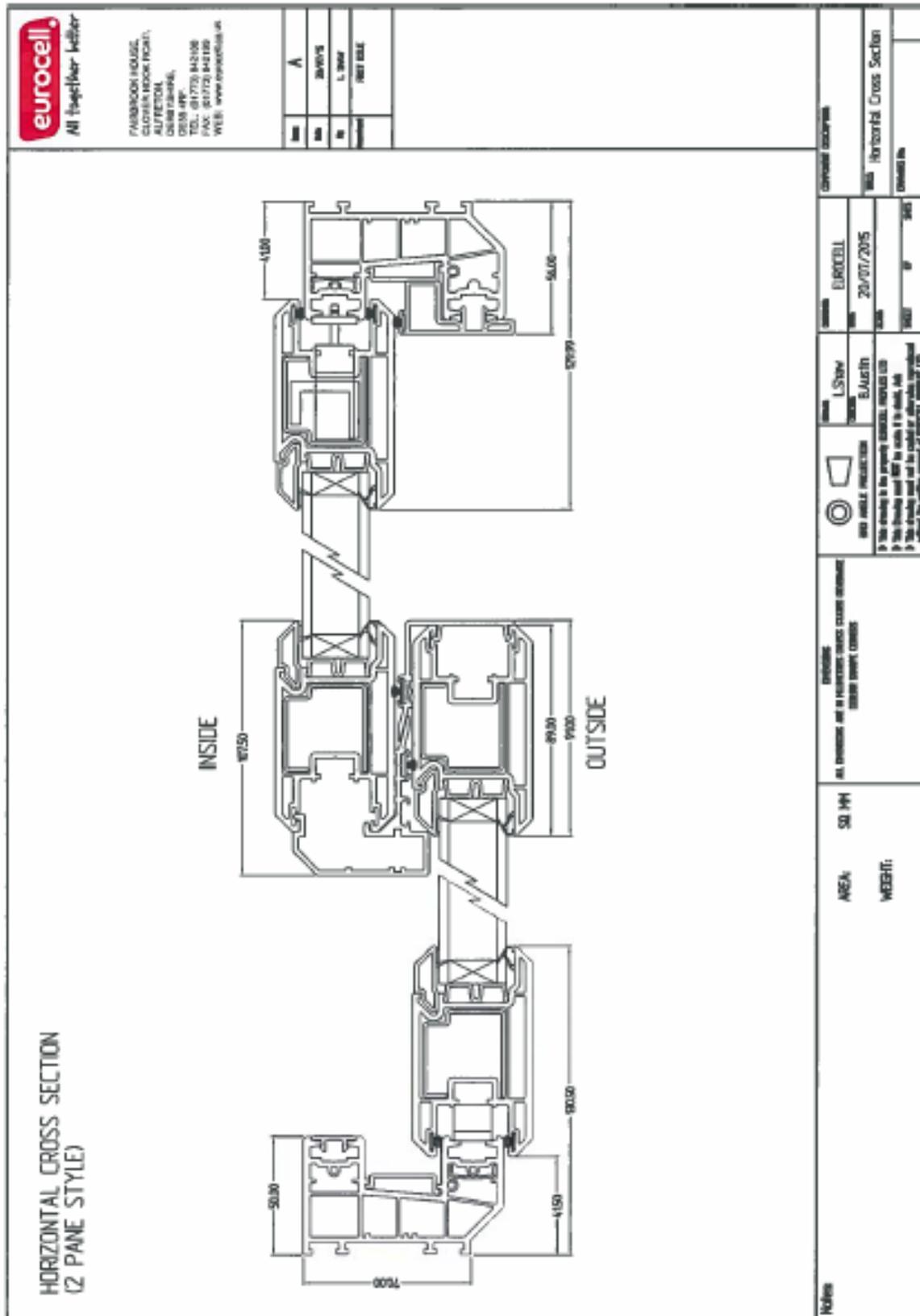
AREA: SQ MM **WEIGHT:**

REVISIONS:

NO	DATE	DESCRIPTION
1	20/07/2015	ISSUED FOR MANUFACTURE

SEALING: L SHAW **DESIGNED BY:** L SHAW





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Customer description	EUROCELL		EUROCELL	EUROCELL
Project No	20/07/2015	20/07/2015	20/07/2015	20/07/2015
Product Name	EUROCELL	EUROCELL	EUROCELL	EUROCELL
Product Code	EUROCELL	EUROCELL	EUROCELL	EUROCELL
Product Description	Horizontal Cross Section			
Product No	EUROCELL			

Notes

1. All dimensions are in millimeters unless otherwise stated.

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3. All dimensions are in millimeters unless otherwise stated.

4. All dimensions are in millimeters unless otherwise stated.

5. All dimensions are in millimeters unless otherwise stated.

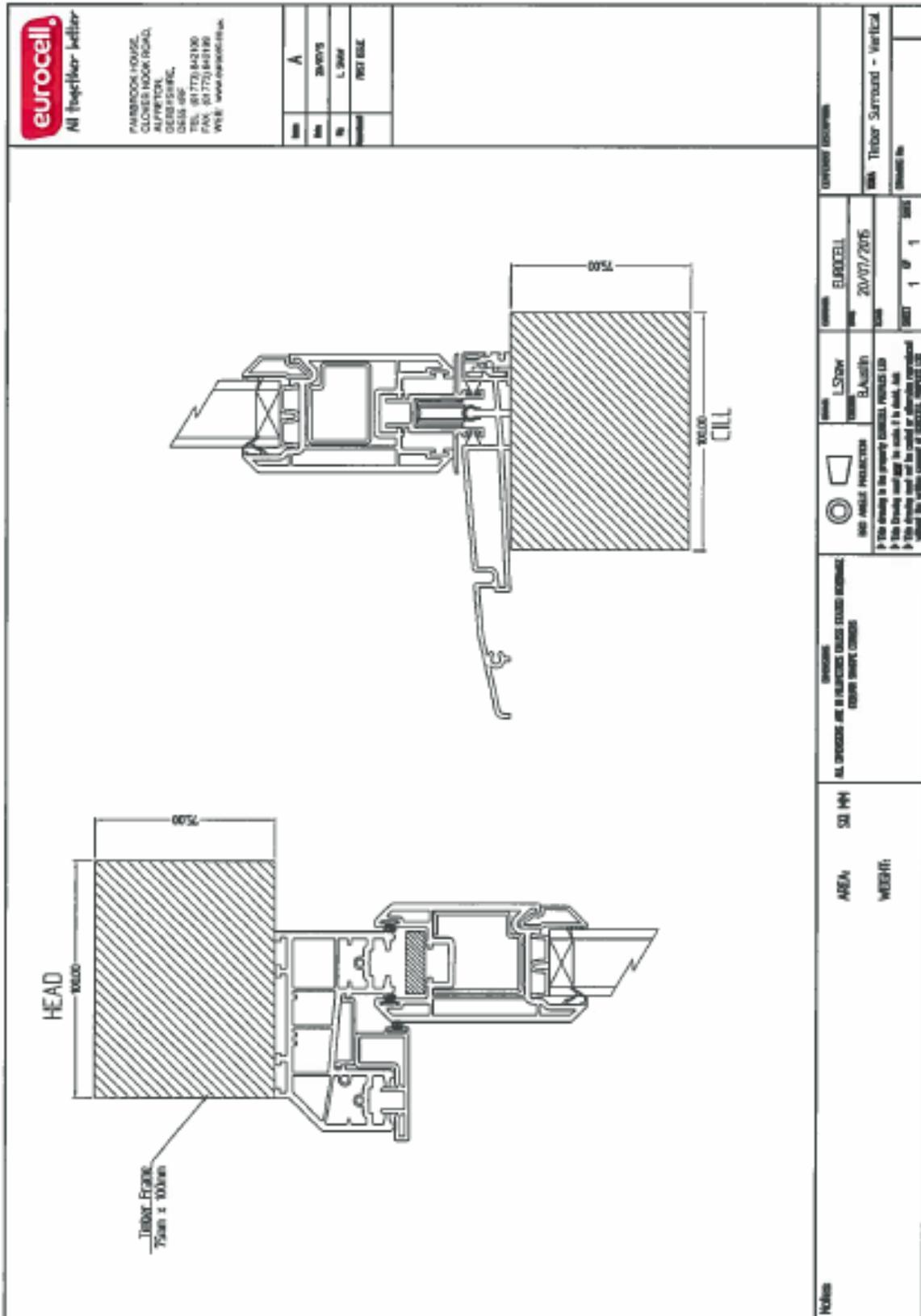
6. All dimensions are in millimeters unless otherwise stated.

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Size	A
Min	2000x1500
Max	L 2000
Weight	PERF. 6000

Customer Reference	EUROCELL
Date	20/07/2015
Drawn	L. Shaw
Checked	E. Austin
Scale	1:1
Sheet	1 of 1
Product	Timber Surround - Vertical
Project No.	
Project Name	
Project Address	
Project Contact	
Project Phone	
Project Email	
Project Reference	
Project Reference 2	
Project Reference 3	
Project Reference 4	
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