Chiltern House Stocking Lane Hughenden Valley
High Wycombe Buckinghamshire HP14 4ND UK

t +44 (0) 1494 569 800 **f** +44 (0) 1494 564895
e cif@chilternfire.co.uk **w** www.chilternfire.co.uk

Our Ref: Chilt/IF13037

18th April 2013

Vistamatic Ltd
51-55 Fowler Road
Hainault Industrial Estate
Hainault
Essex IG6 3XE

Re: Indicative Fire Resistance to the temperature and pressure conditions of BS 476: Part 20/22: 1987 (and current FTSG Resolutions where applicable). Test Chilt/IF13037

This letter is to confirm the results of an indicative fire resistance test undertaken on 4th April 2013.

Details of the test specimen

The overall size of the leaf was 1250mm high x 1230mm wide x 54mm thick. and included two Vistamatic VS1 secure vision panels.

Unexposed face prior to testing

Introduction

The glazing was supplied for test by the client and delivered during March 2013. Chiltern International Fire Limited (CIFL) fitted the glazing and further produced the doorset in respect of hardwood frame, intumescents and hardware.

Supporting construction

The supporting construction consisted of a C16 grade softwood timber stud frame, nominally 95mm deep x 45mm wide, clad on the furnace side only with 2No layers of nominally 15mm thick type F plasterboard. Drywall screws were used to fix the plasterboard at a maximum 300mm centres. The screw length was selected to achieve a minimum of 10mm penetration into the timber studs / track.

Specification

Drawings of the specimen are shown in the Appendix.

Description of construction (refers to Figures 1 to 3 of the appendix)

Leaf – identified as being produced from a Halspan FD 60 door blank

		Species/type	Dimensions (mm)	Density (kg/m³)	Key to figures
Stiles and rails		None fitted	-	-	-
Leaf core		Halspan graduated density particleboard	54 thick	630*	1
Adhesive	Lippings	PU	-	-	-
Lippings – vertical edges only		Sapele	6 thick	640**	2

* Manufacturers stated density, not checked by laboratory ** Nominal density

Door frame

	Species/type	Dimensions (mm)	Density (kg/m³)	Key to figures
Head and jambs	Sapele	70 deep x 32 wide	640**	3
Stop – planted (pinned)	Sapele	15 wide x 12 thick	640**	4
Head to jamb jointing detail	Mortice and tenon - screwed	-	-	-
Threshold	Non combustible	-	-	-

** Nominal density

Intumescent materials and interruptions by hardware

		Make/type	Size (mm)	Location	Key to figures
Leaf edge		None fitted	-	-	-
Frame reveal	Head and jambs	2No. Pyroplex Rigid Box Seals FO8500	15 x 4	Fitted 10mm apart, 7mm from the exposed face in the frame reveal	5
Around hinges		Partially interrupted	-	Hinge blade fully interrupts 1st seal and partially interrupts 2nd seal leaving 14mm continuous	-
Under hinges		Norseal Graphite Intumescent	1 thick	Fitted under hinge blade on frame and leaf	-
Glazing perimeter - left panel A		Norsound Vision 60 glazing liner	54 x 2	Fitted lining the glazing aperture	6
		Autostic adhesive	1 thick	Fitted between the glass and bead on both faces	7
Glazing perimeter – right panel B		Norsound Vision 60 glazing liner	54 x 2	Fitted lining the glazing aperture	8
		Sealmaster Fireglaze Compound	4 thick	Fitted between glass and bead on both faces	9
Around centre glass actuator spindle – both panels		2No. Norseal Graphite Intumescent (Product ref: 2.5-390 x 10/SA) Norseal graphite type intumescent	5 thick (overall)	Fitted around the spindle lining the aperture in the outer glass layers	-

Hardware

	Make/type	Size (mm)	Location	Key to figures
Hinges	2No. Royde and Tucker H101 lift off type hinges	100 x 35 (blade size)	Fitted 150mm and 970mm from the head of the leaf	10
Closer #	None fitted	-	-	-
Latch	None fitted	-	-	-

The leaf was wired shut at the bottom closing corner for the duration of the test

Glazing - both apertures: referenced Vistamatic VS1 secure vision panel

		Make/type	Size (mm)	Location	Key to figures
Glass type		Pyro-EX toughened glass – Express Toughening	19 thick	Fitted on the exposed face	11
		Annealed glass – Express Toughening	4 thick	Fitted in the top half of the right panel	12
		Pyro-EX toughened glass – Express Toughening	6 thick	Fitted on the unexposed face	13
		Stainless steel spacer bar – DGS (Product ref: SS/BT05.5)	5.5 thick	Fitted between the outer glass layers	14
Sight size A&B		-	370 wide x 770 high	-	-
Vision panel size A&B		-	400 wide x 800 high	-	-
Aperture size A&B		-	410 wide x 810 high	-	-
Expansion allowance		-	3 all round	-	-
Beading	A	Profiled stainless steel	54 high x 22 deep x 2 thick	Fitted on the unexposed face	15
		Stainless steel	54 high x 2 thick	Fitted around the glazing aperture on the exposed face	16
	B	Sapele (640 kg/m^3 density)	25 high x 13 deep including an 8 high x 5 wide bolection return and a 45º chamfer	Fitted on both faces	17
		6No. steel assembly brackets (glazing clips)	1.2 thick x 52 wide x 11.2 high (see clients drawing in appendix)	Fitted around glazing aperture, fixed with 2No. m8 x 40 long screws per bracket (see figure 1 for positions)	18
Beading fixings	A	Threaded studs	M5 x 12 long studs	Welded to unexposed face bead	19
		Machine security screws – fixed from the exposed face	M6 x 40 long screws	Fitted 30mm from corners at 200mm centres	20
	B	Steel pins	Ø2 x 50 long	Fitted 50 from corners at 100mm centres at 45º to the face of the glass	21
Panel A only		Hardwood setting block	3 thick	Fitted on bottom edge only	22

Test conditions

The furnace temperature was measured using the average of 5No furnace thermocouples. The temperature and pressure were controlled to the conditions outlined in BS 476 Part 20/22: 1987.

The pressure at the head of the specimen was maintained at 9.3Pa to simulate a leaf height of 2.1m.

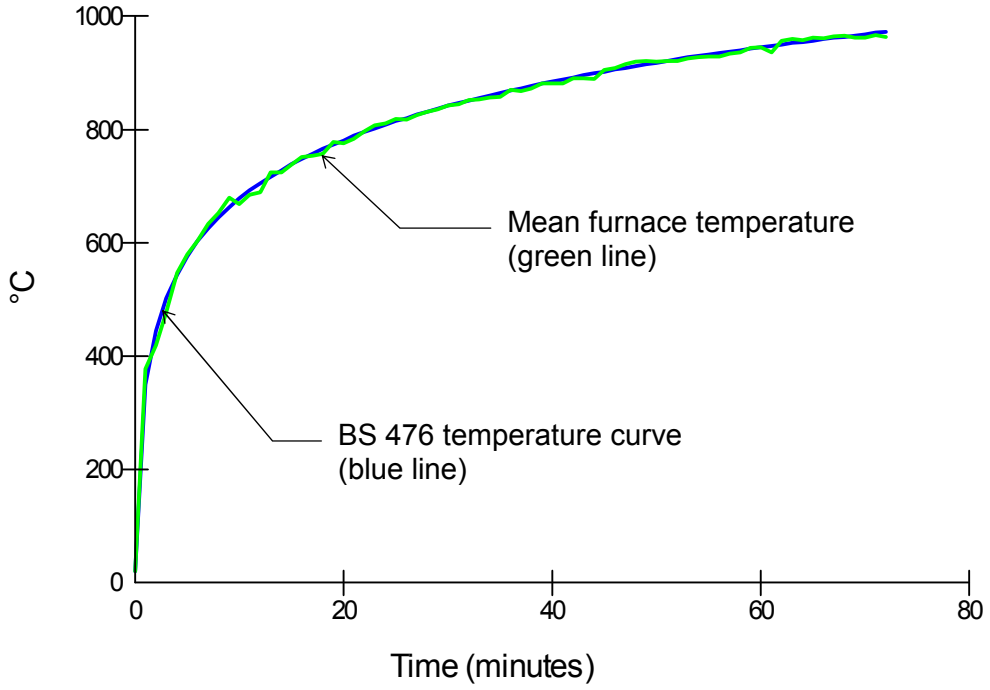
The ambient temperature of the laboratory at the start of the test was 10°C.

The temperature of the unexposed face of the specimen was measured by means of three thermocouples fixed to the frame and three thermocouples fixed to the leaf. Two thermocouples were fixed to each vision panel. The thermocouple positions are shown in figure 3 of the appendix. The temperatures were recorded and are shown graphically below:

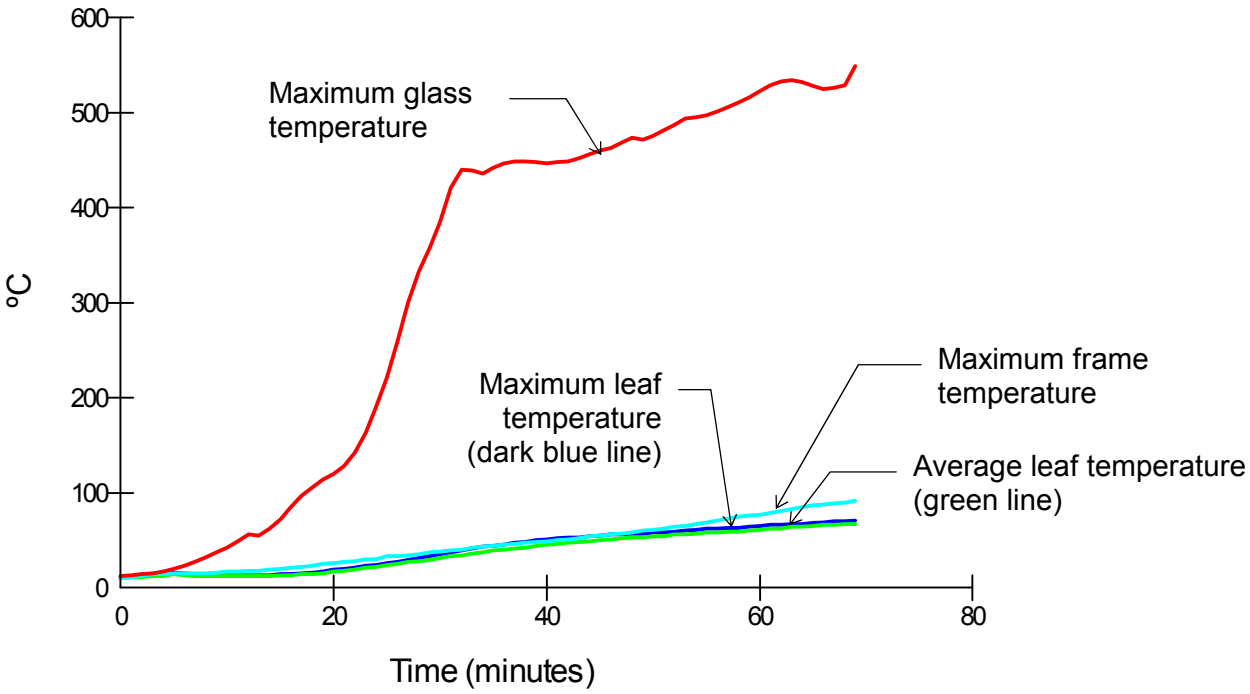
Test results

The following data and observations were recorded during the test.

Furnace temperature curve

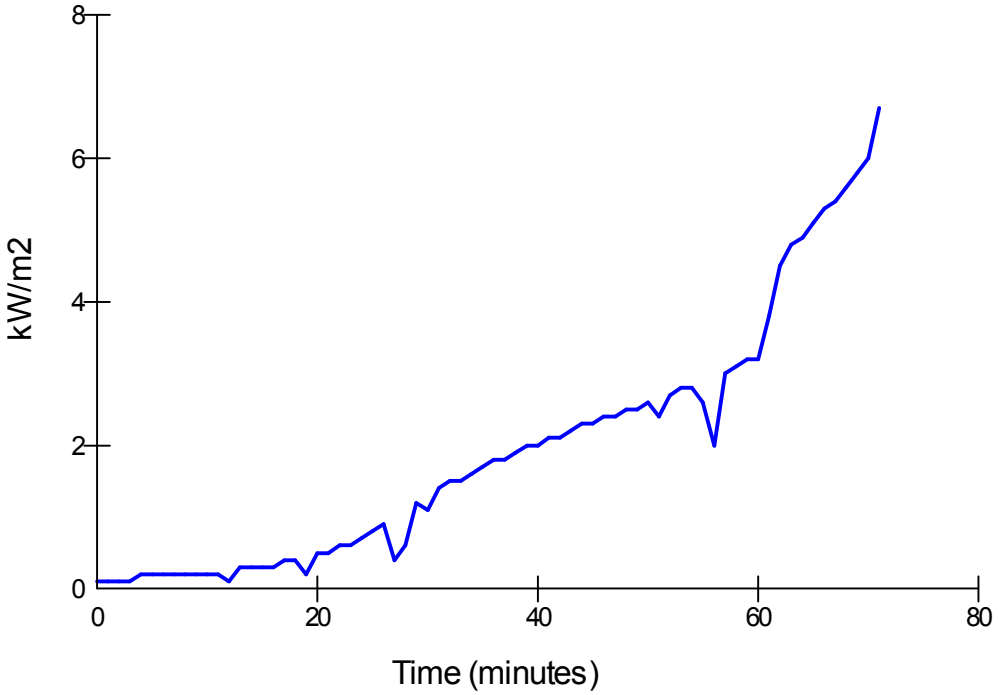


Unexposed face temperature curves



Radiation

A radiometer was used to measure the radiation at mid height 1m away from the specimen.



Observations

All comments relate to the unexposed face unless otherwise specified.

Time (minutes)	Comments
00.00	Test started.
06.00	Glazing panel A, there is smoke issuing from the perimeter of the glazing.
10.00	There is an increase in the level of smoke issuing from the top hinge position.
13.00	Glazing panel B, the exposed layer of glazing has shattered and the middle layer has cracked.
19.00	Glazing panel B, there are more cracks appearing in the middle layer of the glazing.
21.00	Glazing panel A, the middle glazing layer is cracking.
25.00	Glazing panel A, there is further cracking in the middle layer of the glazing.
27.00	Glazing panel A, a gap (approximately 1-2mm wide) has opened around the glazing bead.
28.10	Glazing panel A, there is an increase in the level of smoke issuing from the glazing perimeter.
29.00	Glazing panel B, the intumescent around the glazing is starting to react.
32.10	Glazing panel B, the unexposed glazing layer has cracked.
32.20	Glazing panel A, there is smoke issuing from around obscuring lever spindle of the glazing.
33.40	The obscuring levers on both glazing panels are falling out.
34.30	Glazing panel B, there is smoke issuing from across the face of the glazing.
36.00	Glazing panel A, there is discolouration of the leaf at the top left corner of the glazing panel.
37.30	Glazing panel A, the gap around the glazing bead and the leaf is now approximately 4-5mm wide.
38.00	Glazing panel B, there is an increase in the level of smoke issuing from the obscuring lever.
41.00	Glazing panel B, the exposed face glazing is still in place.
46.00	Glazing panel B, there is smoke issuing from the perimeter of the glazing.

47.30	Glazing panel B, there is discolouration of the top glazing bead.
51.00	Glazing panel A, there is discolouration of the leaf at the top right corner of the glazing.
54.00	Glazing panel B, there is an increase in the level of smoke issuing from the glazing perimeter.
55.00	Glazing panel B, there is further cracking in the exposed glazing layer.
56.30	Glazing panel B, the exposed glazing layer is falling away.
57.30	Glazing panel B, the bottom half of the exposed glazing layer has fallen away.
58.30	Glazing panel B, there is discolouration of the leaf above the glazing.
60.40	Glazing panel B, the exposed glazing layer has completely fallen away.
62.00	Glazing panel B, there is an increase in the level of smoke issuing.
62.40	Glazing panel A, there are large cracks appearing in the middle layer.
63.00	Glazing panel A, the exposed layer is starting to melt and fall out of the top.
65.45	Glazing panel B, there is flaming for in excess of ten seconds from around the obscuring spindle spreading to the beading of the glazing.
68.00	Glazing panel A, the glazing is starting to fall away at the top.
69.00	Glazing panel A, the middle glazing layer has fallen away.
72.30	Test terminated.

Primary Observations

Time (minutes)	Comments
65.45	Glazing panel B, there is flaming for in excess of ten seconds from around the obscuring spindle spreading to the beading of the glazing.
69.00	Glazing panel A, the middle glazing layer has fallen away.
72.30	Test terminated.

This test report relates to an investigation which utilised the test methodology given in BS 476: Part 20/22: 1987; the full requirements of the standard were not, however, complied with. The information is provided for the test sponsor's information only and should not be used to demonstrate performance against the Standard nor compliance with a regulatory requirement. The test was not conducted under the requirements of UKAS accreditation.

Robert Axe
Deputy Head of Section
- Fire resistance
16.05.2013

Vincent Kerrigan
Technical Manager
16-05-2013

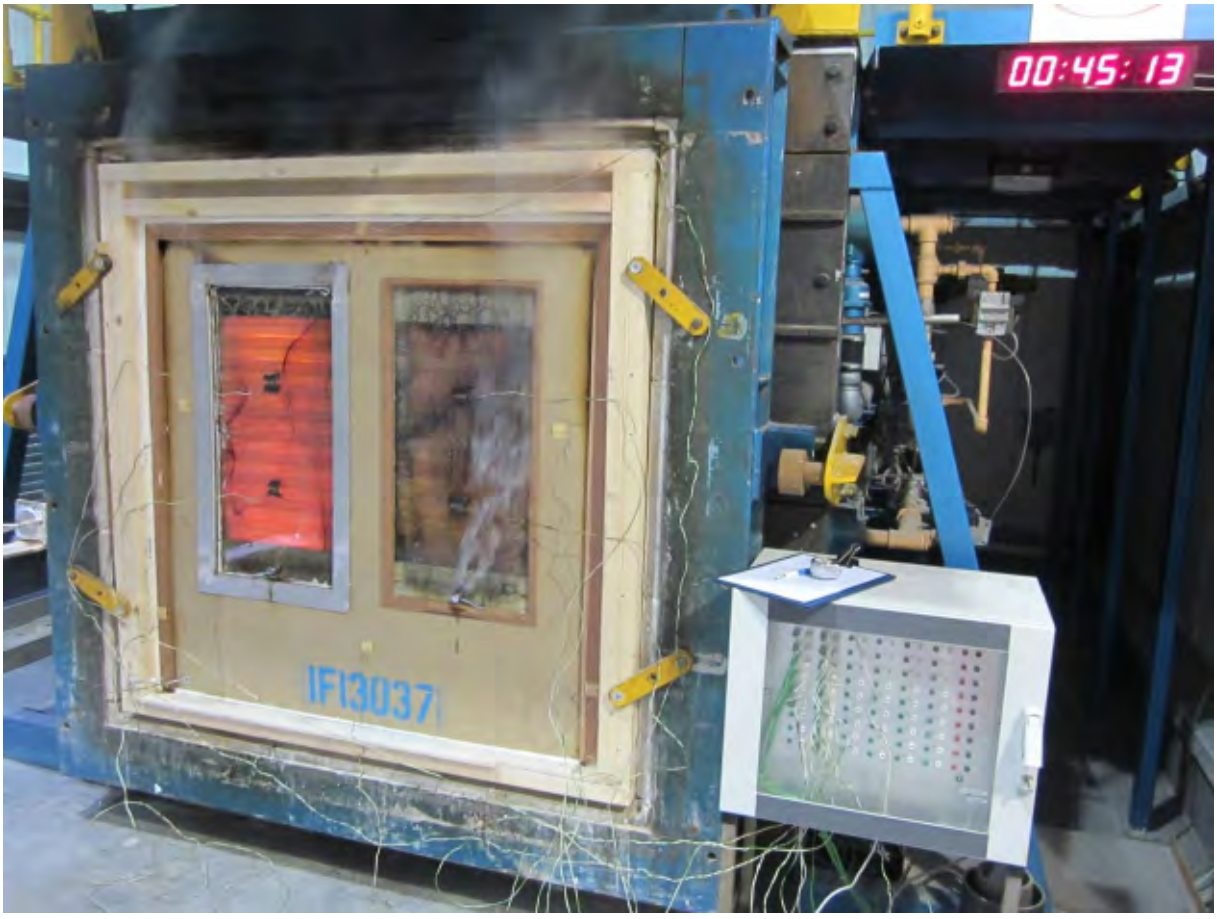
Photographs

At start of test

After 15 minutes

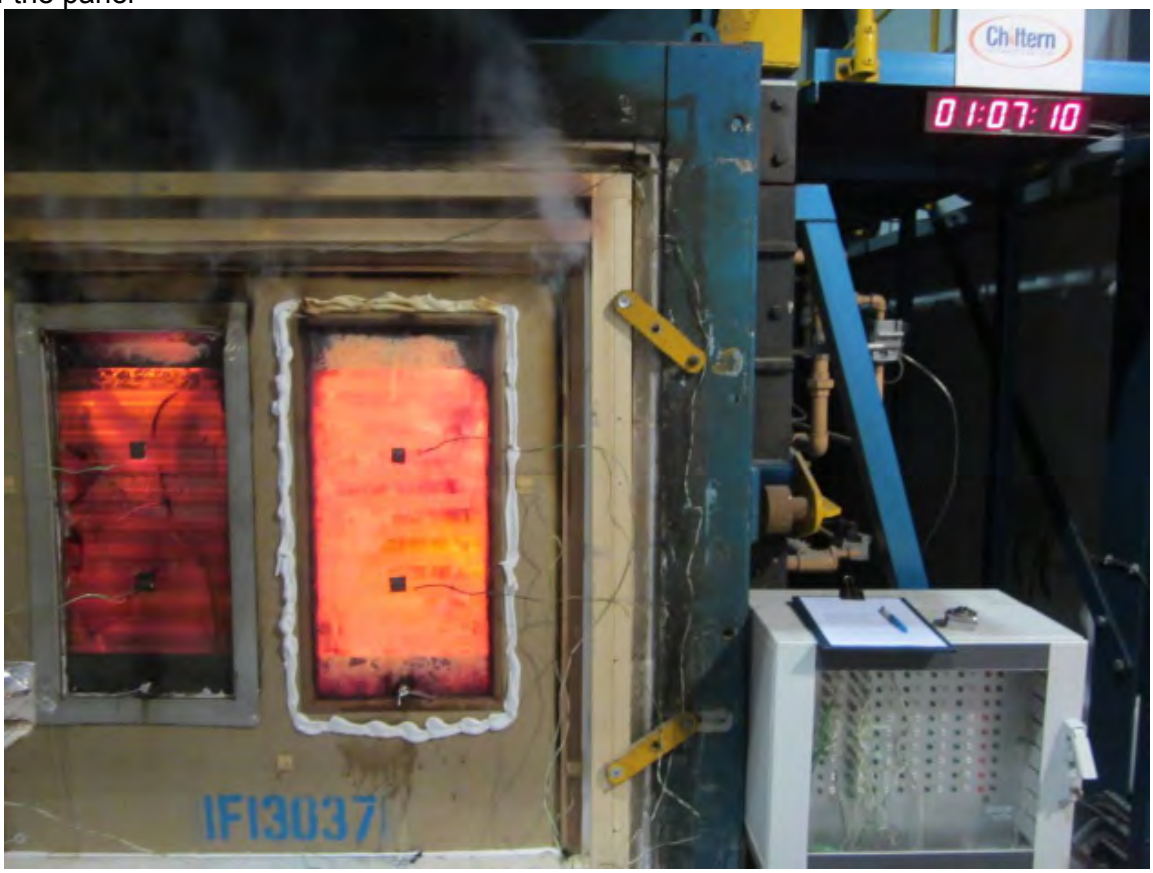
After 30 minutes

After 45 minutes

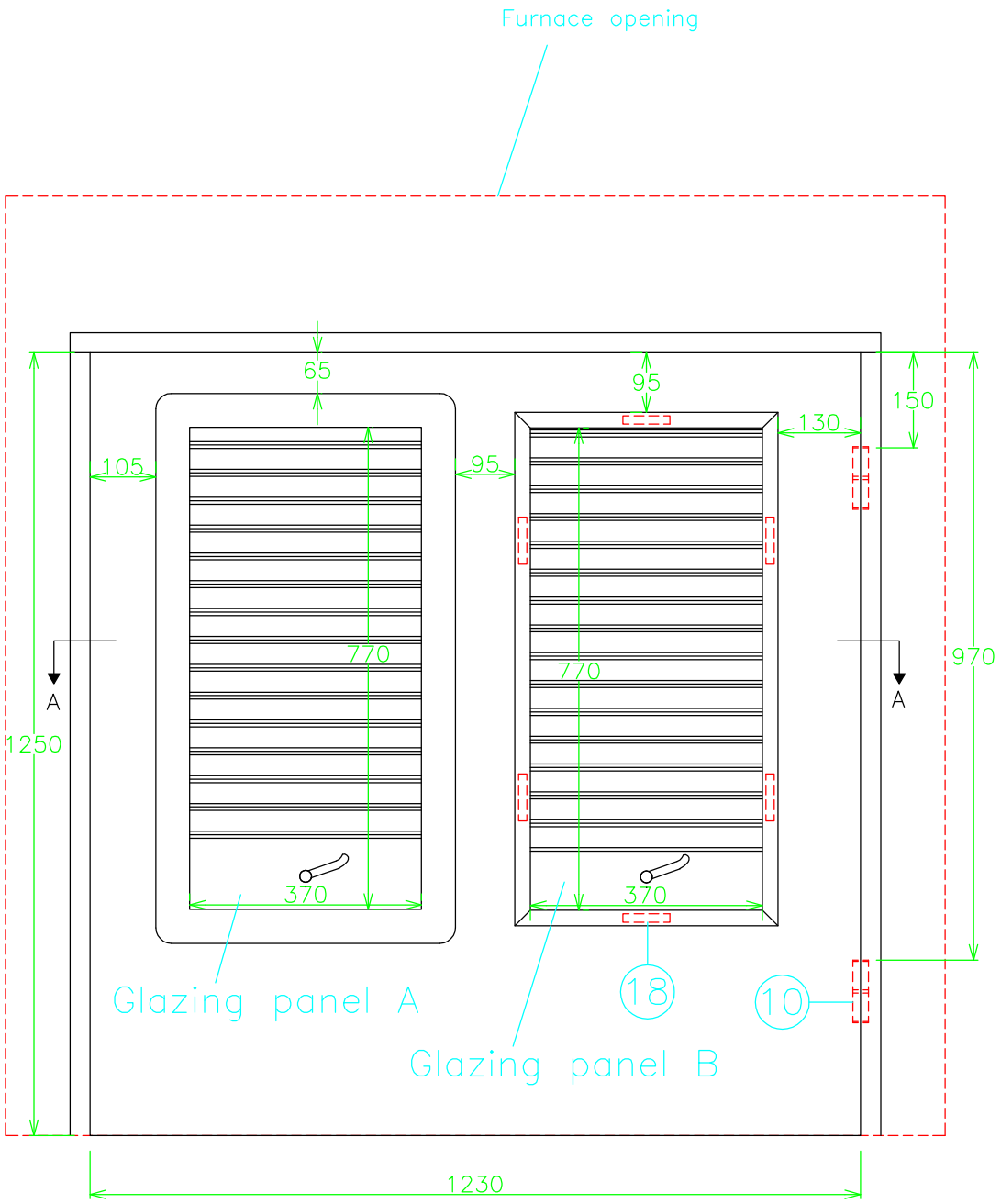


After 55 minutes

After 67 minutes – Mastic applied to perimeter of glazing panel B in preparation of blocking off the panel



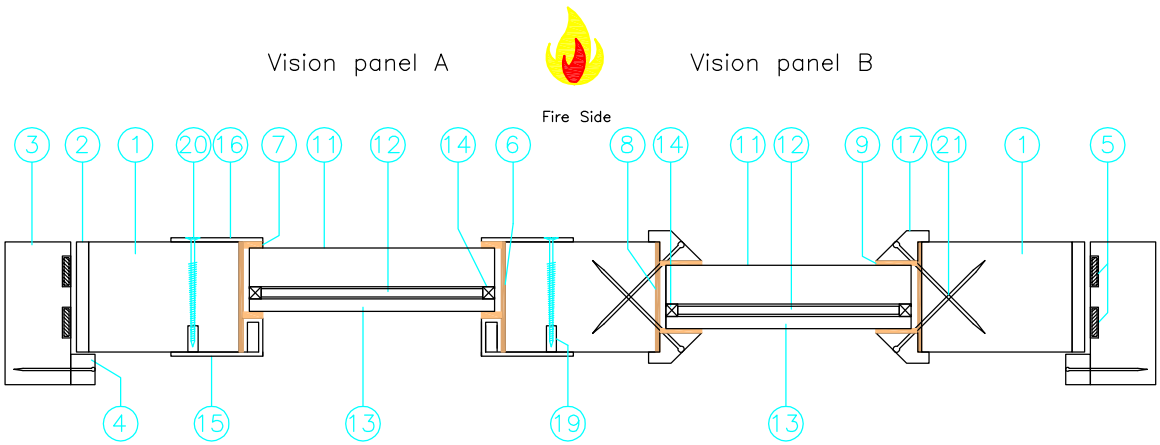
Appendix - figures 1 to 3 and 3No client drawings



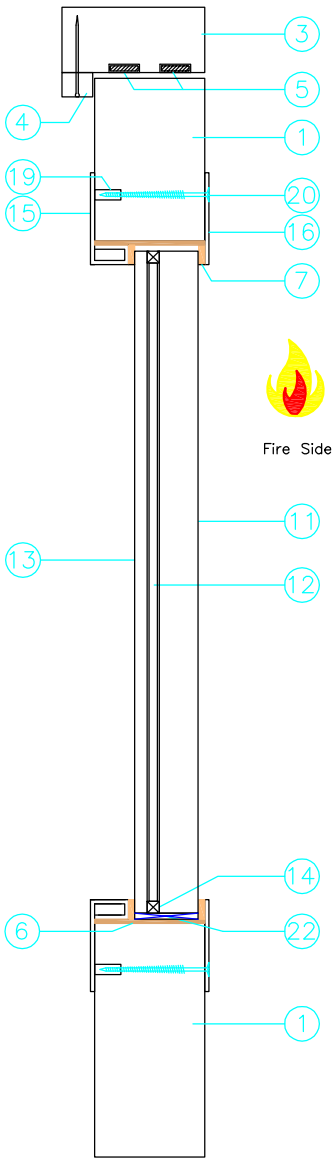
Chiltern House, Stocking Lane, Hughenden Valley
High Wycombe, Buckinghamshire, HP14 4ND, UK.
Tel: +44 (0)1494 569800 Fax: +44 (0)1494 564895

Title: Unexposed face elevation showing hardware locations (All dimensions in mm)		
Date Drawn: 18/04/12	Drawn By: ARD	Scale: NTS
Project No.: Chilt/IF13037		Appendix

Section A – A

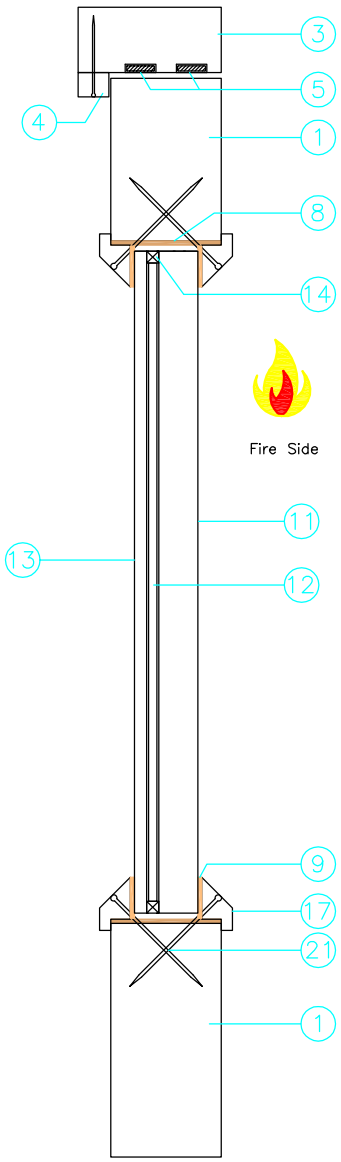


Section B–B



Vision panel A

Section C–C



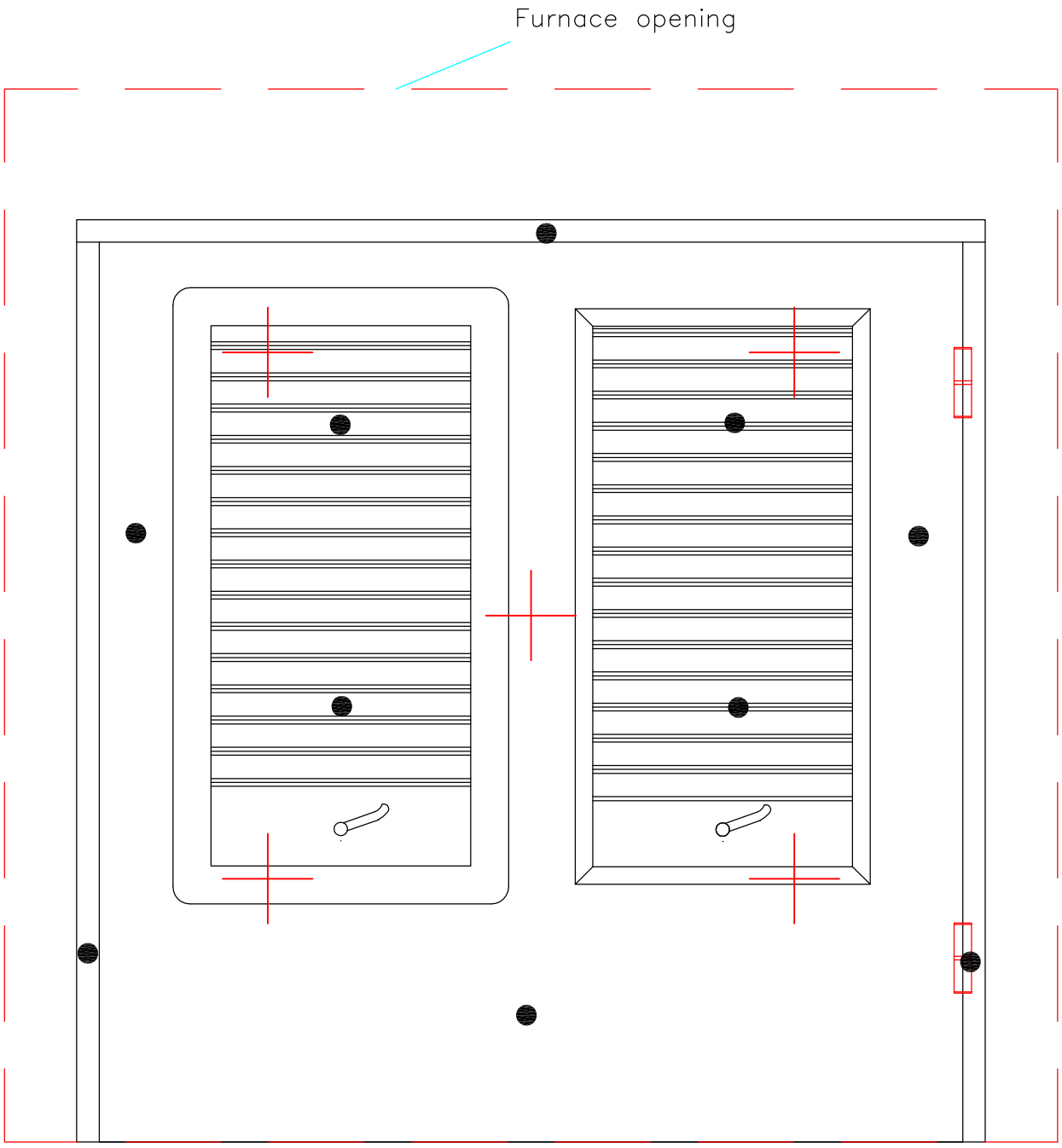
Vision panel B

Chiltern International Fire
Chiltern House, Stocking Lane, Hughenden Valley
High Wycombe, Buckinghamshire, HP14 4ND, UK.
Tel: +44 (0)1494 569800 Fax: +44 (0)1494 564895

Title: Horizontal and vertical cross sections

Date Drawn	Drawn By	Scale
18/04/13	ARD	NTS

Project No.	
Chilt/IF13037	Appendix



: Furnace Thermocouples

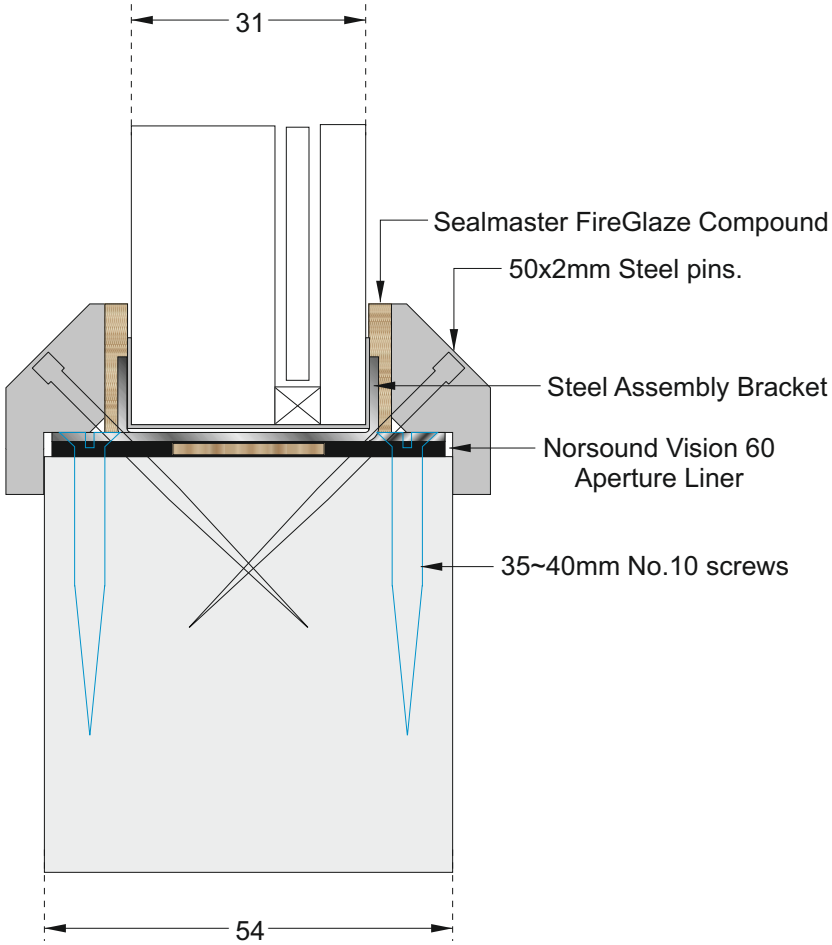
: Unexposed face thermocouples

Chiltern International Fire
Chiltern House, Stocking Lane, Hughenden Valley
High Wycombe, Buckinghamshire, HP14 4ND, UK.
Tel: +44 (0)1494 569800 Fax: +44 (0)1494 564895

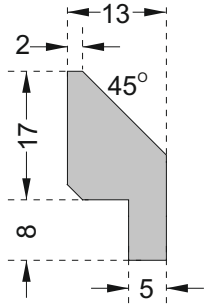
Title		
Thermocouple positions		
Date Drawn 18/04/13	Drawn By ARD	Scale NTS
Project No. Chilt/IF13037		Appendix

Norsound Ltd

FD60 Vistamatic Panel



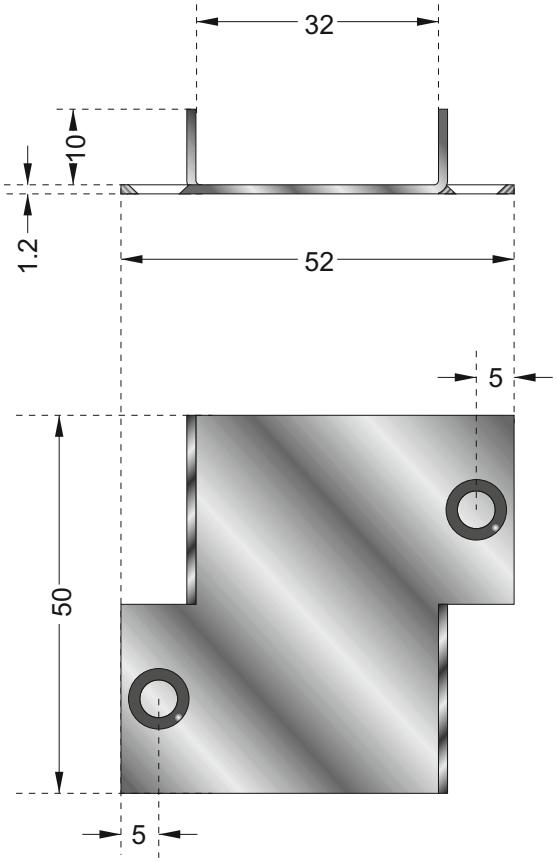
Nom. 640kg/m3 Hardwood Bead

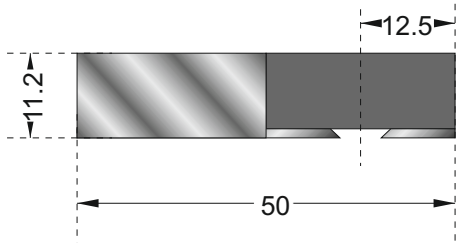


Dwg. Ref:	**Sk/AHP/070313/001**		
TITLE	Design Suggestion FD60 Installation for Vistamatic Panels in Wood doors		
Scale	1 : 1	**Date**	7/3/13
Revisions			

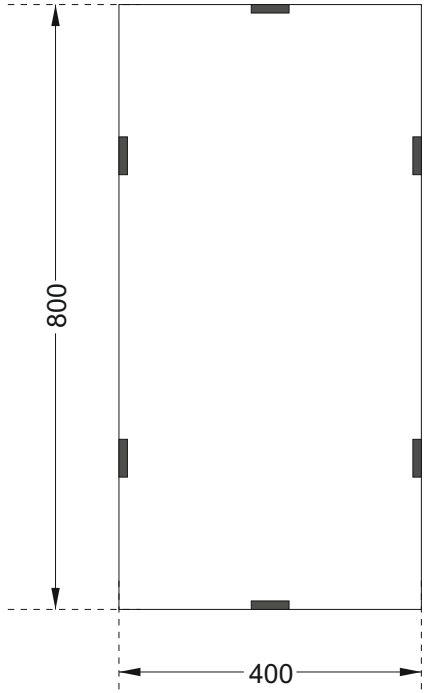
Norsound Ltd

Steel Assembly Bracket





Bracket Location (Scale 1:10)



Installation:

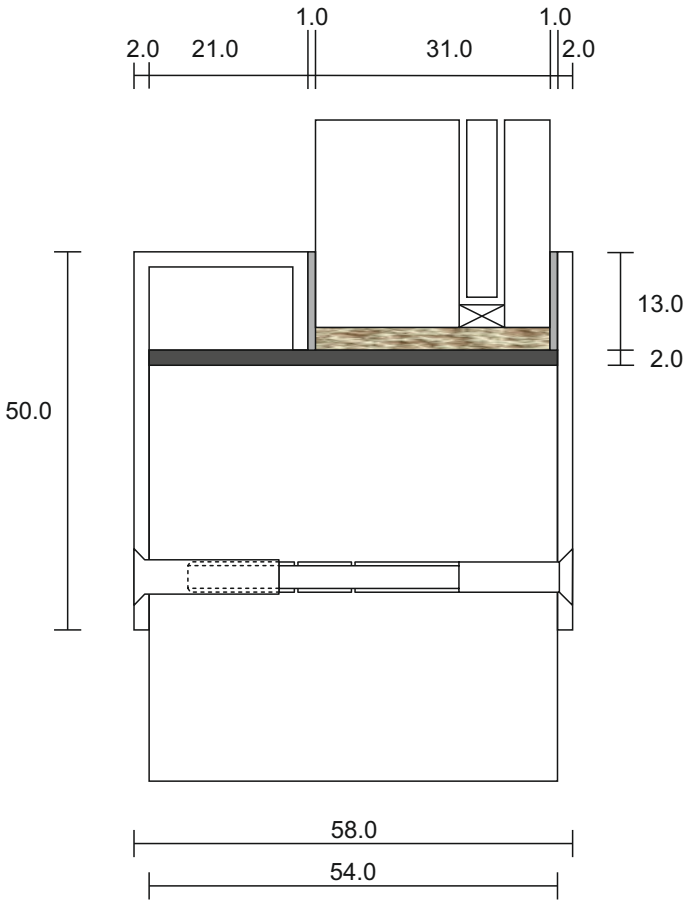
1/ Place brackets around Vistamatic panel to locations indicated.

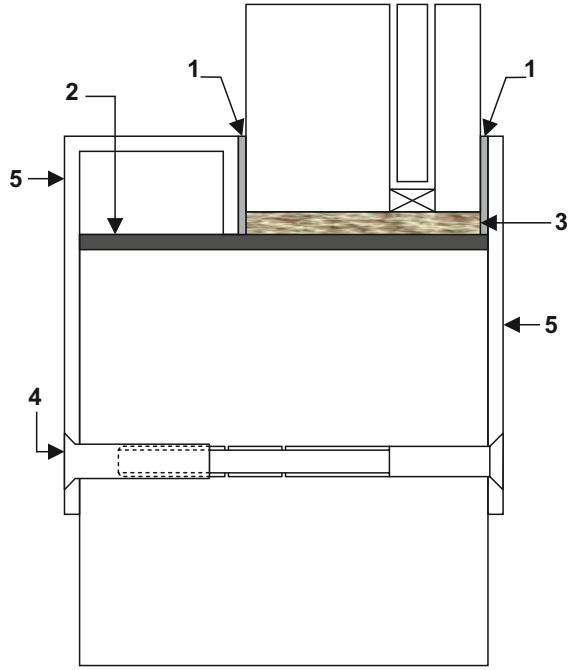
2/ Slide assembly into prepared aperture. i.e. Aperture with lining fitted.

3/ Align centre thickness of door and fix brackets with 35 ~ 40mm No. 8 ~ No. 10 steel 'twinfast' type screws.

4/ Fit hardwood bead with 3~4mm thickness Sealmaster FireGlaze compound with hardwood bead secured with 2mm thickness 50mm steel pins. ***(Avoid conflict between bead pin fixings and steel bracket screw fixings).***

Dwg. Ref:	**Sk/AHP/070313/002**							
TITLE	Design Suggestion FD60 Installation for Vistamatic Panels in Wood doors							
Scale	1:1 & 1:10	**Date**	7/3/13					
Revisions								





1- Autostik mastic between metal and glazing
to be confirmed
2- Graphite sheet
3 - 3mm hardwood packer
4-Intumescent mastic to be applied to hole before
Through bolt
5 - Metal bracket