IN THE MATTER OF THE INQUIRIES ACT 2005

AND IN THE MATTER OF THE INQUIRY RULES 2006

THE GRENFELL TOWER INQUIRY

EXHIBIT RD5

BM TRADA

Sponsor:
Distinction Doors Ltd.
Wentworth 36
Wentworth Industrial Estate
Wentworth Way
Tankersley
Barnsley
S75 3DH

Fire Resistance Assessment

CONFIDENTIAL

Report: Chilt/A09205 Revision B
Contract: CNA/F14111

Distinction Doors Composite GRP 30 Minutes Fire Resisting Doorsets

Valid from: 29 September 2014
Valid until: 29 September 2019

Contents

1 Introduction

This document constitutes a global assessment to collate the fire resistance test evidence relating to 30 minute composite GRP and foam core fire resisting doorsets, for Distinction Doors Ltd. The assessment uses established extrapolation and interpretation techniques in order to extend the scope of application by determining the limits for the design, based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476: Part 22: 1987.

2 General Description of Construction

The construction of door leaves are identified as Nan Ya 30 minute door blanks, which are constructed to the following specification:

Element			Material	Dimensions (mm)	Density (kg/m³)
Stiles	Inner		Mixed wood # finger jointed lamels	30 wide x 40 thick	400-600*
	Outer		Mixed wood # finger jointed lamels	70 - 30 wide x 40 thick	400-600*
Rails	Top	Inner	Mixed wood#	30 wide x 40 thick	400-600*
		Outer	Mixed wood#	70 - 30 wide x 40 thick	400-600*
	Bottom	Inner	Mixed wood#	30 wide x 40 thick	400-600*
		Outer	Mixed wood#	70 - 0 wide x 40 thick	400-600*
Core	Standard		Phenolic foam	40 thick reducing to 15 thick at fielded areas	75*
	Interlocking facings[1]		Phenolic foam	40 thick reducing to 28 thick at fielded areas	75*
Facings			Moulded GRP	2 thick	-

* Sated by client, not checked by laboratory.

\# Mixed wood consisting of pine, acacia and styrax.

1 Construction using interlocking facings combined with minimum 28 thick fielded leaf areas is normally utilised for 60 minutes performance doorsets but where required may also be used for 30 minutes performance – see section 4: note 5 and appendix E for limitations and application.

3 Configurations

Based on the tests listed in Appendix A, the following doorset configurations are permitted:

Abbreviation	Description
LSASD	Latched, single acting, single doorset
ULSASD	Unlatched, single acting, single doorset

3.1 Orientation to Fire Risk

The primary fire resistance tests for this design were all conducted with the doorset hung such that the door leaf opened towards the fire, the most onerous orientation in terms of fire resistance performance. Based on this testing, assessment is made that doorsets to this design may be hung to open either away from or towards the fire risk side of the doorset.

Note: This does not apply to elements within the door leaf, such as glazing, which must be orientated as specified within this assessment report.

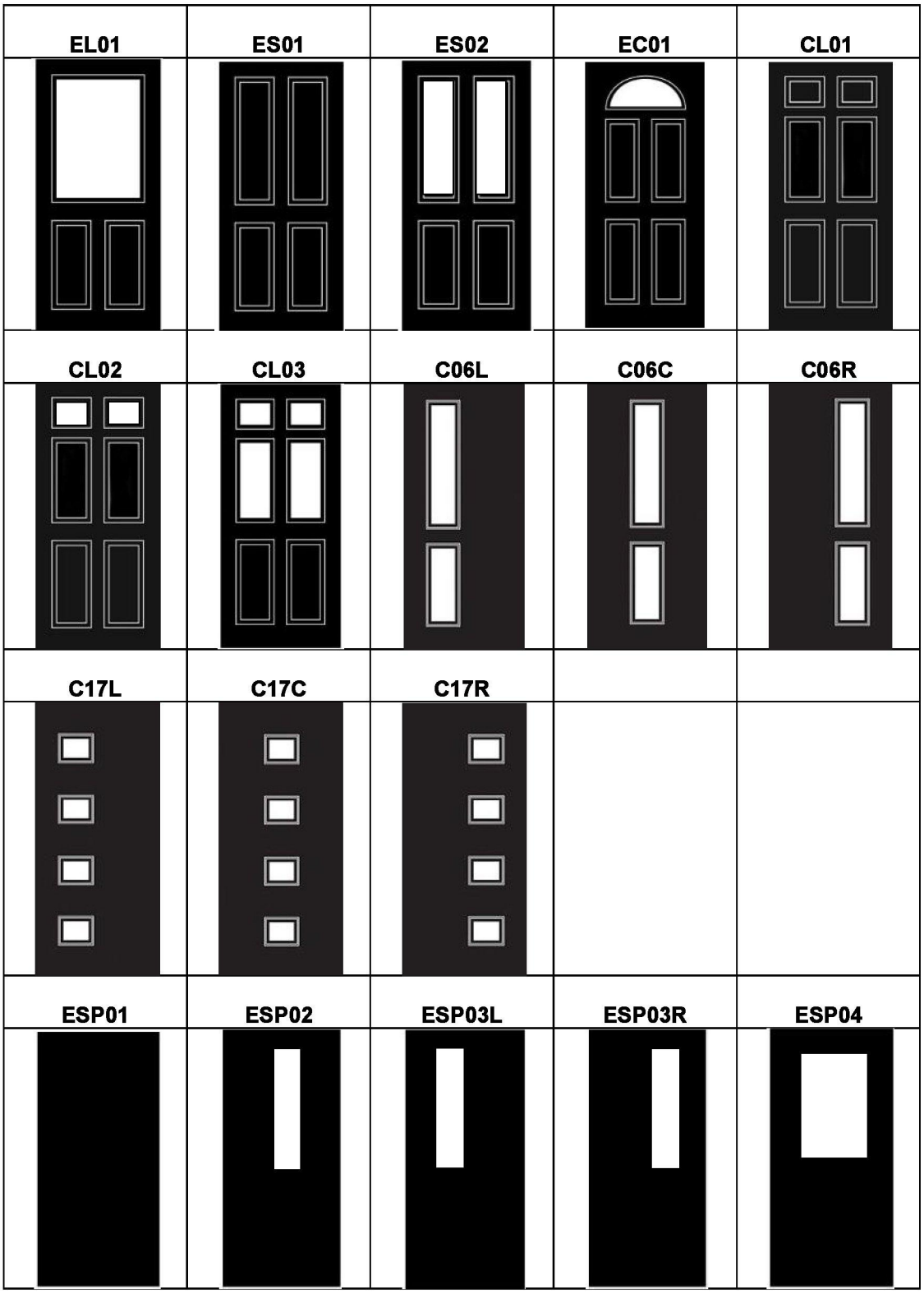
4 Variations to Construction

Based on the testing conducted, which is detailed in appendix A, assessment of the following variations to the construction are permitted:

1. A flush door and doorsets incorporating a maximum of up to 6 depression moulded panels may be produced.
2. Part glazed and part panelled versions of the design have been tested. Therefore, the ratio of glazing with depression moulded panels may be varied as required, up to the stated limits for glazing and panels. (See section 5 for style options.)
3. Flush doorsets may be glazed using the tested and assessed glazing systems described in section 10 and within the parameters detailed in section 10.2.
4. The depression moulding detail may be altered providing the moulding is no wider or deeper than tested.
5. Based on the testing conducted in RF09038, doors may either be constructed as tested in the primary data or alternatively the interlocking method of assembly is also assessed. Note: trimming parameters for the interlocking design are different and must comply with the requirements detailed in appendix F. (A diagram of the interlocking system is contained in appendix F).
6. Based on the testing conducted in RF12103, outer stiles may also be constructed from either a single 40mm thick piece of softwood or 2 No. 20mm thick lamels, each lamel of finger jointed mixed wood timber, of minimum density 400kg/m^3.
7. Based on the testing conducted in RF12120, when utilising a latched configuration, outer stiles and rails may also be constructed from Polymer of the same material composition and density as tested. Sidelights are not permitted for doorsets utilising Polymer stiles and rails.
8. Based on the testing conducted in RF13209, when utilising a latched configuration, door leaves may be constructed from either 2, 3, or 4mm thick GRP facings, but when using an unlatched configuration, only with 2mm thick GRP facings.
9. Based on the testing conducted in RF13209, 2mm thick PVCu edge band lippings, manufactured from the same material as tested, may be utilised on the vertical edges of door leaves to this design.

5 Assessed Styles

Based on the available test data, the following door styles are assessed:



Notes:

1. Styles C06L, C06C and C06R, must have a minimum of 165mm width of core between the glazed apertures.
2. Styles ES02, CL02 and CL03, must have a minimum of 114mm width of core between the glazed apertures.

6 Leaf Sizes

6.1 Moulded and Flush Door Blanks

Nan Ya moulded and flush door blanks are supplied in the following sizes which are covered by this assessment:

Max height (mm)	**Max width** (mm)
2013	762
2013	838
2013	914

Doorsets containing leaves with smaller dimensions than those stated are deemed to be less onerous and are therefore automatically covered. Smaller doorsets may be created by trimming the above manufactured sizes within the limits stated in section 6.3 below.

6.2 Smaller Flush Door Blanks

Nan Ya flush door blanks may also be manufactured and supplied in smaller sizes down to an untrimmed height of 1800mm and untrimmed width of 430mm. Providing the leaves are manufactured with full size untrimmed inner and outer stiles and rails, as detailed in section 2, the manufactured size may be trimmed, within the limits stated in section 6.3 below, to produce smaller leaves.

6.3 Leaf Size Adjustment

The manufactured door leaf sizes to this design, may be altered as follows:

Manufactured Leaf Size (mm)	**Leaf Type**	**Permitted Reduction** (mm)
2013 high x 762 wide	Moulded and Flush	Door leaves may be reduced in size by a maximum of 20 from each side, a maximum of 40 from the top, and a maximum of 70 from the bottom, so that the stiles and rails remain within the range defined in section 2. (See note 2 in appendix A)
2013 high x 838 wide 2013 high x 914 wide	Moulded and Flush	Door leaves may be reduced in size by a maximum of 40 from each side, a maximum of 40 from the top, and a maximum of 70 from the bottom, so that the stiles and rails remain within the range defined in section 2.
Sizes less than 2013 high and less than 762 wide	Flush	Providing they have been manufactured with full width stiles and rails (100 wide), door leaves may be reduced in size by a maximum of 40 from each side, a maximum of 40 from the top, and a maximum of 70 from the bottom, so that the stiles and rails remain within the range defined in section 2.

Note: See appendix F for leaf adjustment options when using the interlocking design

7 Fanlights

Fanlights are not covered by this assessment.

8 Glazed Sidelights

8.1 General

Based on the testing conducted in RF10172, sidelights glazed with 7mm thick Pilkington Pyrodur 30-104 based DGU's may be utilised with this doorset design, but only as tested, with door leaves incorporating the Winkhaus AV2 lock combined with the Winkhaus Ecoframe™ and frame coupler, and the proven Therm-A-Seal perimeter intumescent system detailed in section 12.5

The sidelights must consist of two DGU panes separated by a transom, as tested, and with a maximum assessed pane size for each DGU of 966mm high x 560mm wide.

A diagram illustrating the tested frame coupler and glazing system is contained in appendix D.

8.2 Sidelight Framing

The sidelight frame must be as detailed in the table below:

Element	Product/Material	Details and Dimensions (mm)
Head, jambs	Winkhaus Ecoframe 44	60 wide x 70 deep including a 20 high x 23 deep integral stop/bead Art .No 2837381
Transom – side light	Winkhaus Ecoframe transom	72 wide x 70 deep including 20 high x 23 deep integral beads Art. No 2869391
Doorframe/ sidelight joint	Winkhaus Ecoframe coupler Part No. WW TC201	Please refer to the Ecoframe™ Design Manual pages 6.6.1 and 6.6.2[1]
Head and threshold to jamb jointing detail	Butted – screwed	Please refer to the Ecoframe™ Design Manual pages 3.1 and 3.3[1]
Stops – integral	-	-
Fixings to supporting construction	Steel wood screws	100 long at maximum 600 centres to jambs and 400 centres to head

[1] **Note**: References to Winkhaus Ecoframe™ Manufacturing Manual 2013c are correct at issue date of this report. Users must confirm with Winkhaus that references are correct at time of use.

8.3 Sidelight Glazing

Sidelights must be glazed with a DGU, constructed as detailed in the table below.

Element	Product	Dimensions (mm)	Location
Glass type	Double glazed unit	10 thick Pilkington Pyrodur 30-201 external	Fitted on the non fire risk side
		4 thick Pilkington Planabel A low E hard coat, toughened	Fitted on the fire risk side
		Stainless steel spacer argon filled	Fitted between the glass layers
Expansion allowance	-	4 on all edges	-
Beading including bead cover	Aluminium Part: 2917541 Please refer to the Ecoframe™Design Manual, page 2.1[1]	-	-
Beading location			Fitted around the perimeter of the glazing on the exposed face
Beading fixing	Please refer to the Ecoframe™Design Manual, page 6.5[1]	38 long steel screws	Fitted at nominally 300mm centres
Intumescent protectiion	Sealmaster Fireglaze compound	As Ecoframe™ Design	Fitted around the glazing aperture

[1] **Note**: References to Winkhaus Ecoframe™ Manufacturing Manual 2013c are correct at issue date of this report. Users must confirm with Winkhaus that references are correct at time of use.

9 Leaf Facing Materials

1. This design must be manufactured with 2- 4mm thick GRP facings, as tested.
2. 3-4mm thick GRP facings are only permitted in doorsets utilising a latched configuration
3. Other than kick plates and push plates, as specified in section 15.4, metallic additions to the facings are not permitted.

10 Door Leaf Glazing

10.1 General

The testing conducted demonstrated that the design is capable of including double glazed units.

Glazing is acceptable in single or multiple apertures as depicted in section 5, up to a total maximum area of 0.55m^2.

10.2 Glazing Systems

The tested glazing systems are described in the following tables and depicted in appendices B and C.

10.2.1 Alansons ARO-seal 1107FR 'Wet' Glazing System

Element	Product	Dimensions (mm)	Location
Glass type	Nominally 24mm thick double glazed unit	6.8 thick clear laminate	Fitted on the non fire risk side
		AGC 7 thick Pyrobelite 7	Fitted on the fire risk side
		10 thick stainless steel spacer	Fitted between the glass layers
Expansion allowance	-	2-3 all round	-
Glazing Beading	Nan Ya ABS cassette	37-38 high x 16 deep	Fitted on both faces of the leaf
Beading fixings	Snap fit interlocking beads (see appendix C)	-	-
Intumescent protection	Alansons ARO-seal 1107 FR sealant (see appendix C)	2-3 thick	Fitted between glass and bead and leaf and bead on both faces
Glazing clips	0.9mm thick two part profiled galvanised steel (see section 10.3 and appendix B)	main section 70 wide x 46.5 deep (overall), secondary section 52 wide x 11.5 deep fitted through slots in main clip on exposed face	See section 10.3 and appendix B

Assessed Glass Products

The following glass type may be used in place of the Pyrobelite 7, in the DGU above.

Glass Type	Manufacturer
Pyrodur Plus 30-104	Pilkington Glass Ltd

10.2.2 Sealedtight Solutions ST30/2.5 Dry Graphite Glazing System

Element	Product	Dimensions (mm)	Location
Glass type	Nominally 24 thick double glazed unit	6.4 thick clear laminate	Fitted on the non fire risk side
		7 thick Pilkington Pyrodur Plus 30-104	Fitted on the fire risk side
		10 thick stainless steel spacer	Fitted between the glass layers
Expansion allowance	-	3 all round	-
Glazing Beading	Nan Ya ABS cassette	37-38 high x 16 deep	Fitted around the glazing aperture on both faces
Beading fixings	Snap fit interlocking beads (see appendix C)	-	-
Cassette fixing to perimeter	Alansons 1101 clear adhesive	-	-
Intumescent protection	Sealedtight Solutions ST30/2.5 dry graphite strip (see appendix C)	30 wide x 2.5 thick	Fitted around the glazing aperture
Glazing clips	0.9mm thick two part profiled galvanised steel (see section 10.3 and appendix B)	70 wide x 46.5 high	See section 10.3 and appendix B

Pyrodur Plus 30-104, in the DGU above, may be replaced by the following glass types:

Glass Type	Manufacturer
6-7mm Pyroshield or Pyroshield II	Pilkington Glass Ltd
Pyrobelite 7	AGC Flat Glass

10.2.3 Glazing System Notes

1. Pyroshield/Pyroshield II may only be used on the non fire risk side of DGU's.
2. AGC Pyrobelite 7 glass must only be used with 6.8mm laminated glass.
3. 6.4mm thick Pilkington Stippolyte laminated glass may be used on the non fire risk side of double glazed units when using Pyrodur Plus 30-104.
4. All glass products must be used in accordance with the manufacturers' installation requirements, particularly with respect to expansion tolerances.
5. Glazed apertures must not be nearer than 68mm to any leaf edge.
6. Single, double, and half moon apertures are permitted (see section 5, section 10.3 and appendix B).
7. Surface applied glazing beads are not permitted for the Distinction Doors design.

10.3 Assessed Glazed Apertures

The tests conducted, evaluated the performance of a single rectangular glazing system as detailed in drawing MAS9Q, and twin top apertures as detailed in drawing MAS9S, contained in appendix B. Based on the performance of the largest area of glass and the tested twin apertures, alternative glazed options with a reduced area of glass have been deemed acceptable.

The additional glazed options are depicted in drawings MAS9N, MAS9W, MAS9S and MAS7L contained in appendix B

Glazing clips must be fitted in accordance with the following table:

Glazed Aperture Options[1]	Number of Clips	Clip Location
9Q - Half glazed	4	1 at the top of each vertical edge and 2 at the bottom edge
9N - Twin glazed apertures	3	1 at the top of each vertical edge and 1 at the centre of the bottom edge
9W - Half moon	4	2 at the top of the arched edge and 2 at the bottom edge
9S - Twin top apertures	2	1 at the centre of the top edge and 1 at the centre of the bottom edge
7L - Twin mid apertures	3	1 at the top of each vertical edge and 1 at the centre of the bottom edge
9N – Single offset glazed aperture	3	1 at the top of each vertical edge and 1 at the centre of the bottom edge
9N – Single central glazed aperture	3	1 at the top of each vertical edge and 1 at the centre of the bottom edge

[1] Drawings for referenced aperture options are contained in appendix B

11 Door Frames

11.1 Timber Door Frame Construction

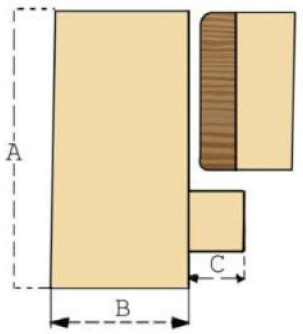
Timber door frames complying with the specification below may be used for this design when combined with Mann McGowan intumescent seals, as specified in section 12.1.

Material	**Section Size** (mm)	**Min Density** (kg/m³)
Softwood	70 x 32	510
Hardwood	70 x 32	510

Notes:

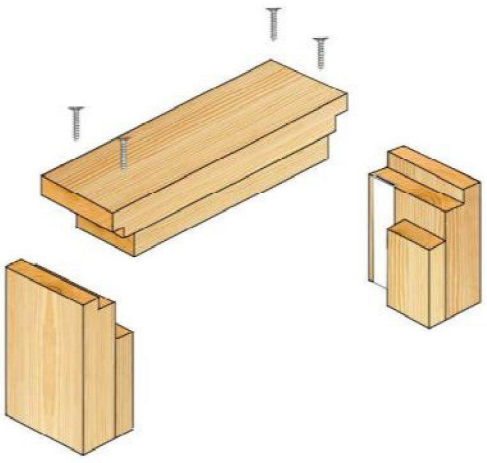
1. Timber used for constructing door frames must be straight grained, joinery quality, and free from knots, splits and checks.
2. A minimum 12mm deep planted or integral stop is required for timber door frames.
3. Door frame joints must be one of the 4 methods depicted. All methods require fixing with the appropriate length steel wood screws or ring shank nails.
4. Rounded or rebated quirk edges to door frames are not permitted.

The following diagram depicts the assessed timber frame profiles and dimensions:

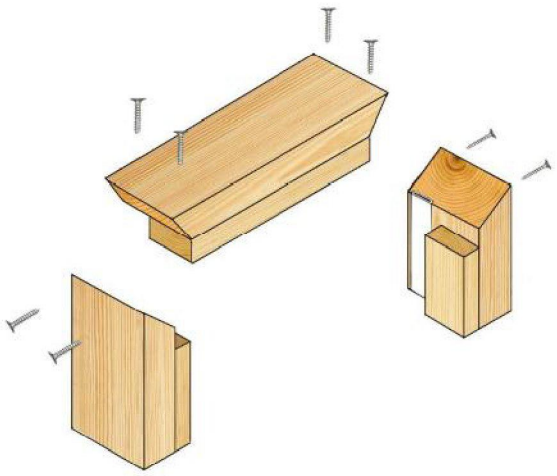


A= min 70mm
B= minimum 32mm
C= minimum 12mm

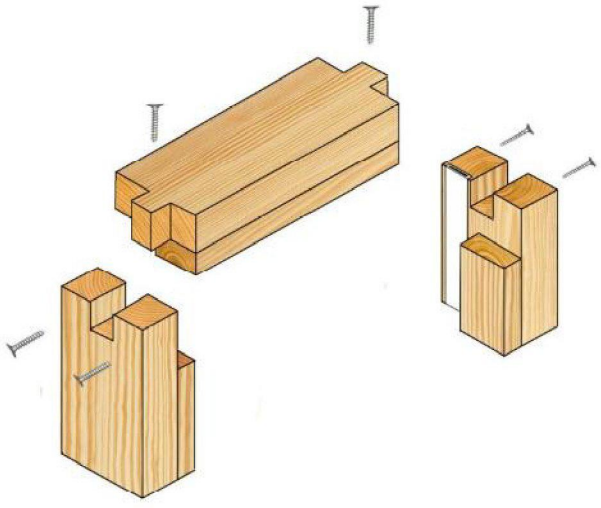
11.1.1 Timber Door Frame Joints



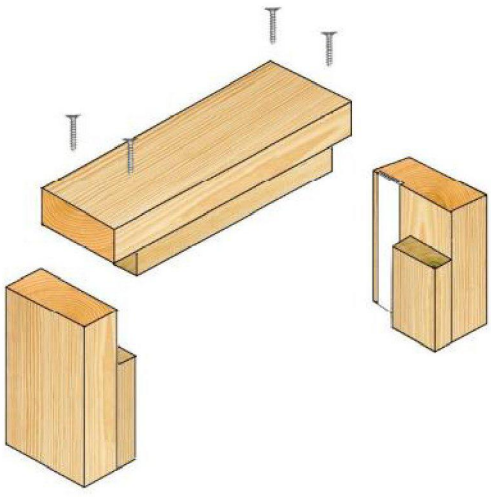
Half Lapped Joint



Mitre Joint



Mortise and Tenon Joint



Butt Joint

Note: Drawings are representative of each type of door frame joint; actual construction in terms of intumescent seal location and material, etc. must be as specified within this document.

11.2 Extruded PVC and Polymer Frames

Based on the testing conducted on this design, the following extruded PVC and polymer frames are assessed in combination with the specified intumescent systems.

Product	**Dimensions** (mm)	**Reinforcement** (mm)	**Intumescent System**[1]
Eurocell Composite EWS 032 profiled extruded PVC	65 wide x 70 deep (overall)	32 wide x 42 deep Metsä Wood Kerto S LVL	Lorient Polyproducts GP3303
Eurocell Composite EWS 031 profiled extruded PVC	80 wide x 70 deep including 20 high x 25 deep integral stop	32 wide x 42 deep Metsä Wood Kerto S LVL	Lorient Polyproducts GP3303
Profile 22 profiled extruded PVC Ref: 78014-1	67 wide x 70 deep including 17 high x 17 deep integral stop	Profiled aluminium box section with 1.5 thick wall	Pyroplex strip seal with flexible L section seal
Sheerframe extruded PVCu Ref: SK77950	70 wide x 70 deep including 18 high x 22 deep integral stop	30 x 35 x 1.5mm Steel box section Ref: SW119	Norsound NOR ST15, NOR 940 ST 25, and NOR 930
Winkhaus Ecoframe™ 44 Part: 2837381.	60 wide x 70 deep including 20 high x 23 deep integral stop	30 x 35 x 1.5mm Steel box section Ref: SW119	Lorient Polyproducts GP3303 combined with ISL Therm-A-Seal

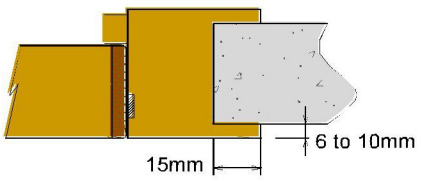
Notes:

1. Details of each intumescent system are specified in section 12.
2. Doorsets incorporating sidelights must use the Winkhaus Ecoframe™ - see section 8.
3. The Winkhaus Ecoframe™ 44 may only be used with the Winkhaus AV2 lock/latch system – see section 14.2.

   Note: References to Winkhaus Ecoframe™ Manufacturing Manual 2013c are correct at issue date of this report. Users must confirm with Winkhaus that references are correct at time of use.

11.3 Door Frame Installation

The following diagrams indicate acceptable and unacceptable door frame installations:



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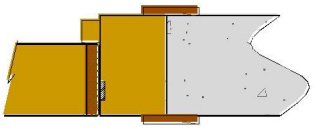

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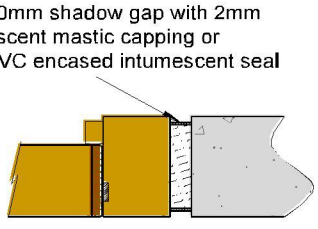

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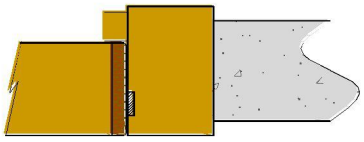

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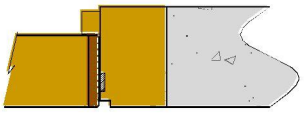

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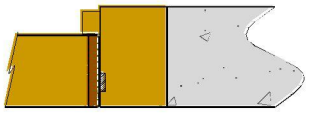


Permitted

Notes:

1. Drawing is representative of door frame installation; actual installation must be as this document specifies. See section 19 for sealing to structural opening specification.
2. For shadow detail depicted (top right) the sub-frame material must be the same material as approved for the door frame, or a non-combustible board, tightly fitted with no gaps.

12 Intumescent Materials

The test evidence generated for this doorset design permits the use of the following tested combinations of intumescent system and door frame.

Other intumescent system and frame combinations are not permitted.

12.1 Mann McGowan 100PSA

This system must be used with timber door frames, as specified in section 11.1.

Element	Product	Dimensions (mm)	Location
Door edges	None fitted	-	-
Frame reveal - head and jambs	Mann McGowan 100PSA	15 x 4	Fitted centrally in the frame reveal
Around hinges	Fully interrupted	-	Hinge blade fully interrupts seal on frame jamb
Under hinge blade	Interdens	1 thick	Fitted under the hinge blade on frame and jamb
Encasing latch body	Interdens	1 thick	Fitted around the latch and hook bolt bodies
Under latch forend	Interdens	1 thick	Fitted under latch forend
Around latch and hook bolt keeps	Fully interrupted	-	Latch and hook bolt keeps fully interrupt seal on frame jamb
Under latch and hook bolt keeps	Interdens	1 thick	Fitted under the latch and hook bolt keeps

12.2 Lorient Polyproducts GP3303

This system must be used with Eurocell frames as specified in section 11.2.

Element	Product	Dimensions (mm)	Location
Door edges – leaf head only	Lorient Polyproducts Ltd - GP3303	33 x 3	Fitted centrally in the leaf head
Frame reveal – head and jambs	Lorient Polyproducts Ltd - GP3303	33 x 3	Fitted in the frame reveal 2mm from the exposed face
Around hinges	Fully interrupted	-	Hinge blade fully interrupts seal in frame reveal
Under hinge blade	Lorient Polyproducts Ltd MAP	1 thick	Fitted under the hinge blade on leaf and frame
Under latch forend/around latch body	None fitted	-	-
Around centre latch keep	Fully interrupted	-	Centre latch keep fully interrupts seal in frame reveal
Under centre latch keep	Lorient Polyproducts Ltd MAP	1 thick	Fitted under centre latch keep
Around top and bottom hook bolt keep	Partially interrupted	-	Top and bottom hook bolt keeps partially interrupt seal in frame reveal with 6mm remaining continuous to the exposed face
Under hook bolt keeps	Lorient Polyproducts Ltd MAP	1 thick	Fitted under the hook bolt keeps

12.3 Pyroplex Strip and L Section System

This system must be used with Profile 22 frames as specified in section 11.2.

Element	Product	Dimensions (mm)	Location
Door edges	None fitted	-	-
Frame reveal – head and jambs	Pyroplex Strip Seals	35 x 2	Fitted in the back of the frame profile between frame and supporting construction
	Pyroplex Flexible Seals 'L' section	44 x 3 (total)	Fitted in the frame reveal and upstand of the stop
Around hinges	Partially interrupted	-	Hinge blade partially interrupts seal in frame reveal leaving 10mm continuous
Under hinge blade	None fitted	-	-
Encasing lock/latch body	Interdens	1 thick	Fitted around the body of the lock/latch
Under lock/latch forend	Interdens	1 thick	Fitted under the lock/latch forend
Around lock/latch keeps	Partially interrupted	-	Lock/latch top, middle and bottom keeps partially interrupt seal in frame reveal with 16mm remaining continuous
Under lock/latch keeps	None fitted	-	-

12.4 Norsound

This system must be used with the Sheerframe frames, as specified in section 11.2.

Element		Product	Dimensions (mm)	Location
Leaf edges – head only		Norsound NOR ST15 PVC encapsulated	15 x 4	Centrally fitted in the head of the leaf
Frame reveal	Head and jambs	Norsound NOR 940 ST25 graphite type intumescent	25 x 2.5	Fitted in the profile of the frame reveal
	Behind frame	Norsound NOR 940 ST30 graphite type intumescent	30 x 2.5	Fitted in the profile at the back of the frame
Around hinges		Fully interrupted	-	blades fully interrupt seal in frame reveal
Under hinge blade		Norsound NOR 905 graphite type intumescent	0.5 thick	Fitted under the hinge blade on frame and leaf
Encasing latch body		Norsound graphite AV2 lock kit	0.5 thick	Fitted around the body of the lock/latch and hook bolts
Under latch forend		Intumescent Seals Ltd Therm-A-Flex	10 x 2	Fitted under the latch forend
Around latch keeps		Fully interrupted	-	Latch keeps fully interrupt seals in frame reveal
Under latch keep		Norsound graphite AV2 lock kit	0.5 thick	Fitted under the latch keeps
Under door handle		Norsound NOR 905 graphite type intumescent	0.5 thick	Fitted under the door handle

12.5 Therm-A-Seal

This system must be used with Winkhaus Ecoframe™ 44 as specified in section 11.2.

Element	Product	Dimensions (mm)	Location
Door edges	Lorient Polyproducts Ltd GP3303	33 x 3	Fitted centrally in the leaf head and stiles
Frame reveal - head and jambs	Intumescent Seals Ltd Therm – A - Seal	15 x 4	Fitted in the frame reveal 14mm from the exposed face
	Intumescent Seals Ltd. Therm – A - Seal	10 x 4	Fitted in the frame reveal 33mm from the exposed face
Around hinges	Partially interrupted	-	Hinge blade fully interrupts 1st seal in frame reveal and leaves 2nd seal continuous
Under hinge blade	Intumescent Seals Ltd. Therm – A – Seal. Part: SP3510A	35 x 1	Fitted under the hinge blade on frame and leaf
Encasing lock/latch and hook box bodies	Intumescent Seals Ltd Therm - A – Strip Part: SP3510A	35 x 1	Fitted around the body of the lock/latch, top and bottom hook boxes, and under keep face plate.
Around latch forend	Fully interrupted	-	Latch forend fully interrupts seal in frame reveal
Under latch forend	None fitted	-	-
Around latch keep/hook box keeps	Partially interrupted	-	Latch keep/hook box keeps fully interrupt 1st seal leaving 2nd seal continuous
Under lock/latch keep/lining hookbox pocket	Intumescent Seals Ltd Therm - A – Strip Part: SP3510A	35 x 1	Fitted under lock/latch keep and lining hookbox pocket and under the keep face plate.

13 Adhesives

The following adhesives have been tested for use with this doorset design:

Element	Product
Facings	Polyurethane adhesive resin (core)

14 Tested Hardware

The following hardware has been successfully incorporated in the tests referred to in this assessment:

14.1 Hinges, Closers and Furniture

Element	Product	Dimensions (mm)	Location
Hinges	3No Royde and Tucker H101 lift off type hinges	101 x 35 (blade size)	Fitted 152mm, 890mm and 1640mm from the head of the leaf
	3No Nico butt type steel hinges	102 x 40 (blade size)	Fitted 120mm, 635mm and 1790mm from the head of the leaf
	3 No. Fullex bearing butt type hinges	100 x 36 (blade size)	Fitted 100mm, 955mm and 1760mm from the head of the leaf
	4 No. Winkhaus Ecoframe™ bearing butt type hinges Part: 2837373	98 x 32 (blade size)	Fitted 100mm, 372mm 1020mm and 1730mm from the head of the leaf
	3No Paddock H101 lift off type hinges	101 x 35 (blade size)	Fitted 152mm, 890mm and 1640mm from the head of the leaf
	3 No. Paddock Mk 4 bearing butt type hinges	101 x 38 (blade size)	Fitted 95mm, 950mm and 1705mm from the head of the leaf
Closers	Dorma UK Ltd TS71 overhead type closer	232 x 68 (footprint size)	Fitted as per the manufacturer's instructions
	Dorma UK Ltd TS68 overhead type closer	232 x 68 (footprint size)	
	Dorma UK Ltd TS83 overhead type closer	293 x 60 (footprint size)	
	Rutland TS3204 overhead type closer	220 x 59 (footprint size)	

Element	Product	Dimensions (mm)	Location
Furniture	Hoppe Winkhaus Palladio aluminium lever handle	260 x 35 (footprint size)	Fitted appropriate to the latch
	Hoppe Atlanta aluminium lever handle	240 x 26 (footprint size)	
	Hoppe Tokyo lever handle Ref. CRBHAN 008	245 x 30 (footprint size)	
	Yale YS17 Mk 2 lever handle	250 x 28 (footprint size)	
Threshold Seals	Exitex MDS 25/5/2 profiled aluminium extrusion	30 high x 120 deep Ecoframe™ Design Manual – page 3.3[1]	Fitted as per the manufacturer's instructions
	Exitex MXS 15 profiled aluminium extrusion	15 high x 71 wide overall	-
	Profile 22: Product reference: 2438 combined with plastic end cleats 7835L/7835R and gaskets: 1831 and 1832	60 wide x 15 high	-
	Stormguard AM3 threshold	25 high x 114 wide overall	
Weather Seals[2]	Schlegel Qlon Aquamac 21	9 high x 6 wide	Fitted in stop upstand on the unexposed face. (supplied pre-fitted to the Winkhaus Ecoframe™)
	Schlegel brush strip	10 high x 8 wide	Fitted in the frame reveal, integral to the frame
	Schlegel Qlon 9154 buffer seal	8 high x 8 wide	Fitted in the upstand of the stop. Supplied pre fitted to the frame
Security viewer	U. A. P. viewer	12Ø barrel 25Ø outer	Fitted centrally in the leaf bedded on Environmental Seals 1mm thick No.1 HP intumescent
Letterplate	Paddock Firemaster P207	305 x 70 (footprint size)	Fitted centrally in the leaf width, 860mm from the threshold

Notes:

1 References to Winkhaus Ecoframe™ Manufacturing Manual 2013c are correct at issue date of this report. Users must confirm with Winkhaus that references are correct at time of use.

2 Extruded frames may also include integral extruded seals.

14.2 Latches and Locks

The following latches and locks have been tested with this design.

Product	Details	Dimensions (mm)	Tested Locations (mm)
Fullex Crimebeater	Fullex Crimebeater multi point + CRB 0002 back/set and lock cylinder: 25603[1]	1720 x 20 (forend size) with 35mm radius ends	Centre latch 1000-1065from the head of the leaf
	Fullex hook bolt keep set ref. CRD 0002	180 x 30 (keep size)	Fitted 750 (top) and 650 (bottom) from centre latch
Paddock Lockmaster	Paddock Lockmaster multi point with Eurocylinder[1]	2014 x 20 (forend size)	Centre latch fitted 1080 from the threshold
	Top and bottom keeps	130 x 20	Fitted 240 and 1730 from head
Avantis multi-point	Avantis 3-point multi point: DLC1-751-MS[1]	1785 x 20 (forend size)	Centre latch fitted 1000-1065mm from the head of the leaf
	Top and bottom hook bolt keep	142 x 25 (keep size)	Fitted 930mm (top)and 995mm (bottom) from centre latch
Winkhaus AV2	Winkhaus AV2 3 -point ref: 4929140 (RH and LH) with Eurocylinder[1]	1770 x 20 (forend size)	Centre latch fitted 935mm from the head of the leaf
	Winkhaus AV2 F24-908 centre keep F24-908 hook keep	178x 25 (keep size)	Fitted 225mm and 1715mm from head of the leaf

[1] Alternative cylinder locks matching the dimensions of the tested Eurocylinder locks above, and utilising similar metallic mechanism materials, may be substituted for the tested cylinder locks, when used in conjunction with the above multipoint locks.

15 Additional & Alternative Hardware

The following sections detail the permitted scope and constraints for fitting additional and alternative hardware to the door design.

The following items of hardware must also bear the CE mark:

Locks and latches: test standard EN 12209

Electro mechanically operated locks: test standard EN 14846

Single axis hinges: test standard EN 1935

Controlled door closing devices: test standard EN 1154

Electrically powered hold open devices: test standard EN 1155

Door co-ordinators: test standard EN 1158

Emergency exit hardware: test standard EN 179

Panic exit hardware: test standard EN 1125.

15.1 Automatic Closing

Automatic closing devices, must either be as tested or components of equal specification that have demonstrated a contribution to the required integrity performance of this type of doorset design, when tested to BS 476: Part 22: 1987, BS EN 1634-1, or BS EN 1634-2.

15.2 Hinges

A minimum of 3 hinges must be used with this doorset design. Alternative hinges to those tested must meet the following specification:

Element	Specification
Blade height:	90 - 120mm
Blade width (excluding knuckle):	32 - 40mm
Blade thickness	2.5 - 4mm
Fixings:	Equal number and nominally same pattern as tested
Materials:	Steel or stainless steel
Hinge positions:	Nominally as defined in section 14.1
Intumescent protection:	See section 12

Note: When using the Winkhaus Ecoframe™, 4 No. Winkhaus Bearing Butt hinges must be used. Refer to the current Winkhaus Technical manual for details.

15.3 Latches & Locks

The door design covered by this assessment must use one of the multipoint locks tested and detailed in section 14, utilising either a 35mm or 45mm backset.

For Winkhaus refer to section 11.2, note 3.

15.4 Push Plates/Kick Plates

Steel, stainless steel or brass, face-fixed ironmongery such as push plates and kick plates may be fitted to the doorsets providing they do not exceed 10% of the door leaf area and are fitted to the nominal 'stile' and 'rail' sections of the facing.

15.5 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals may be fitted to this doorset design without compromising the performance, providing fitting does not interfere with the activation of the intumescent seals or hinder the self closing function of the leaves.

16 Door Gaps

For fire resistance applications, door gaps and alignment tolerances must fall within the following range:

Location	Tolerances
Door edge gaps	Representative of the tested gaps but as a guideline, a minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud from the door frame by more than 3 mm
Threshold gaps	A maximum of 10mm between the bottom of the leaf and top of floor covering[1].

[1] **Note:** Tested or assessed proprietary fitted thresholds will each have their own specified gaps between the leaf and the body of the threshold.

17 Fixings

The frame jambs are to be fixed to the supporting construction using steel fixings at 500mm maximum centres. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 40mm. It is not necessary to fix the frame head, although packers must be inserted.

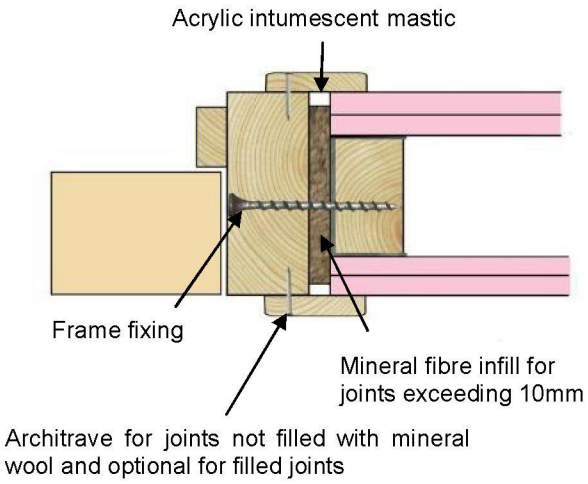
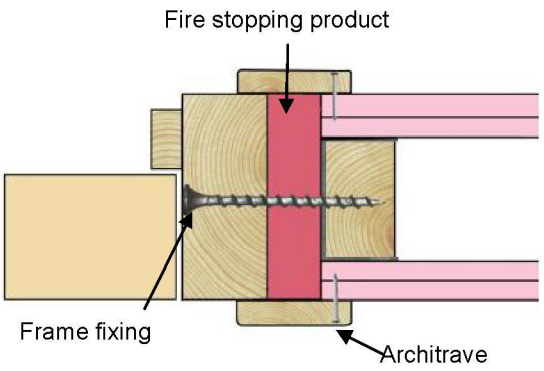
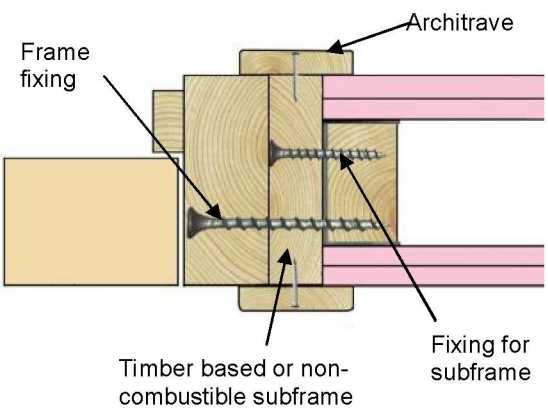
18 Supporting Construction

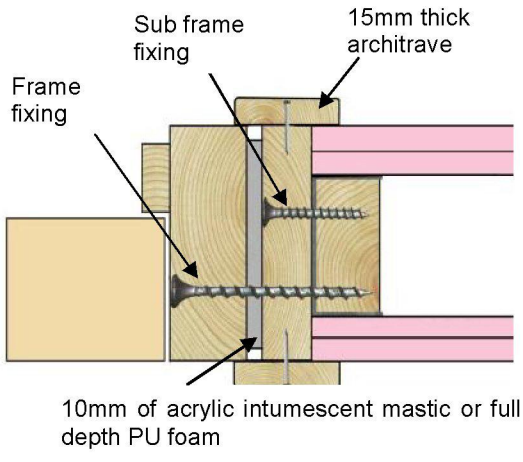
The supporting construction must provide the required level of fire resistance designated for the doorset design and be a suitable medium to permit adequate fixity.

19 Sealing to Structural Opening

The door frame to structural opening gap must be protected using one of the methods shown in the following table.

Note that these diagrams are illustrative only. Actual installations must follow the guidance given for the relevant frame type within this document.

<table>
<tr>
<td>1. Gaps up to 10mm must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td>
<td rowspan="2"> 
</td>
</tr>
<tr>
<td>2. Gaps between 10mm and 20mm must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Architraves are optional.</td>
</tr>
<tr>
<td>3. Gaps up to 20mm filled with proprietary fire stopping product (e.g. expanding PU foam or preformed compressible intumescent foam). Products must be tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td>
<td> 
</td>
</tr>
<tr>
<td>4. Timber based or non-combustible subframe up to 50mm thick, with no gaps between the components. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td>
<td> 
</td>
</tr>
</table>

5. Timber based or non-combustible subframe up to 50mm thick, with gaps up to 10mm between the components filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.	

Guidance for various methods of sealing the frame to structural opening gap is also given in BS 8214: 2008, "Code of practice for fire door assemblies", which may be referred to where appropriate.

20 Smoke Control

20.1 General

If the doorset design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the doorset must meet one of the following criteria:

(a) have a leakage rate not exceeding $3m^3/m/hour$ (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or

(b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 - *Fire resistance tests for door and shutter assemblies*, Part 3 – *Smoke control doors*.

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above, must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation under approved document B; and a suffix 'S' or 'Sa', as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.

Note: The incorrect specification and fitting of smoke seals may impair the operation of a doorset and therefore compromise the fire resistance performance. Advice should be sought from the seal manufacturers regarding the correct specification and installation of smoke seals or combined smoke and intumescent seals.

20.2 Further Considerations

Other guidance is available, including BS EN 9999-2008 - *Code of practice for fire safety in the design, management and use of buildings,* which may impose different or additional requirements. It is the responsibility of the relevant parties to stipulate the precise smoke control specification, prior to commencing manufacture and/or installation.

21 Insulation

Insulation performance may be claimed for a doorset to this design meeting the following:

Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets

22 Conclusion

If the doorset design constructed in accordance with the specification documented in this global assessment, were to be tested in the appropriate configuration in accordance with BS 476: Part 22: 1987, it is our opinion that it would provide a minimum of 30 minutes integrity and insulation (subject to section 21).

23 Declaration by the Applicant

1. We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No. 82: 2001.
2. We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
3. We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
4. We are not aware of any information that could adversely affect the conclusions of this assessment.
5. If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

Signed:

Name:

For and on behalf of: Distinction Doors Ltd

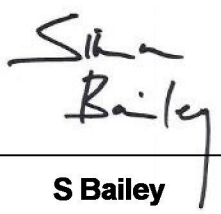
24 Limitations

The following limitations apply to this assessment:

1. This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.
2. This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, BM TRADA reserves the right to withdraw the assessment unconditionally but not retrospectively.
3. This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
4. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
5. This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.

25 Validity

1. The assessment is valid initially for a period of five years from the date of issue, after which time it must be submitted to BM TRADA for technical review.
2. This assessment report is not valid unless it incorporates the declaration given in Section 23 duly signed by the applicant.

Signature:			
Name:	**S Bailey**	**A M Winning**	**P N Barker**
Title:	Product Assessor	Senior Product Assessor	Principal Technical Officer

Appendix A

Performance Data

Primary Data

Report No	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF08171 (Nan Ya)	A: LSASD (glazed: DGU)	1915 838 44	BS 476: Part 22: 1987	Integrity: 50 Insulation: 0
	B: LSASD (glazed: DGU)	2012 914 44		Integrity: 47 Insulation: 0
RF09037 (Nan Ya)	B: LSASD (glazed: 7mm Pyrobelite)	2015 914 44	BS 476: Part 22: 1987	Integrity: 49 Insulation: 0
RF10172	A: LSASD (glazed sidescreen Pyrodur DGU)	2015 914 44	BS 476: Part 22: 1987	Integrity: 49 Insulation: 0
RF11186	A: LSASD	2013 895 44	BS 476: Part 22:1987	Integrity: 38 Insulation: 38
	B: LSASD	2015 914 44		Integrity: 41 Insulation: 41
RF12103	A: LSASD	2010 890 44	BS 476 Part 22:1987	Integrity: 36 Insulation: 36
	B: LSASD	2010 890 44		Integrity: 40 Insulation: 40
RF12120	A: LSASD	2014 912 45	BS EN 1634-1:2008 BS EN 1363-1:1999	Integrity: 31 Insulation: 31
	B: ULSASD	1950 800 44		Integrity: 33 Insulation: 33
RF13170	A: LSASD	1950 800 44	BS EN 1634-1:2008 BS EN 1363-1:1999	Integrity: 31 Insulation: 31

Primary Data Continued

Report No	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF13209	A: LSASD	2010 905 45	BS EN 1634-1:2008 and BS EN 1363-1:1999	Integrity: 36 Insulation: 36
	B: LSASD	2014 908 45		Integrity: 33 Insulation: 33

Supplementary Data

Report No	Configuration	Leaf Size (mm)	Standard	Performance (mins)
RF09038 (Nan Ya interlocking frames and 25.8mm core)	A: LSASD	2014 913 46	BS 476 Part 22: 1987	Integrity: 55 Insulation: 55
	B: LSASD	1938 838 46		Integrity: 50 Insulation: 50
PF13274 (LB Plastics Ltd)	B: LSASD (Norsound NOR940 graphite system)	2014 790 44	BS 476 Part 22:1987	Integrity: 29 Insulation: 29
PF14114 (Sealedtight Solutions Ltd)	A: LSASD (Sealedtight graphite glazing system)	1975 914 44	BS 476 Part 22:1987	Integrity: 35 Insulation: 35
BTC14434F (L B Plastics Ltd)	ULSASD (Environmental Seals intumescent system)	2030 940 45	BS 476 Part 22:1987	Integrity: 35 Insulation: 35

Notes:

1. Test RF09038 is used to justify the interlocking frame detail as a construction option for the 30 minute designs detailed in the primary data. The interlocking detail is depicted in appendix D.
2. The primary testing of this design utilised moulded door leaf samples which were either 914mm wide and tested with untrimmed internal leaf framing stiles and top rail, each having a combined width of 100mm (inner 30mm + outer 70mm), or 838mm wide leaves with the internal leaf framing stiles and top rail tested trimmed to a combined width of 60mm.

   Based on the integrity performance demonstrated during testing, both 838mm and 914mm wide door leaves are assessed for the stiles and top rail to be either untrimmed or trimmed to a maximum of 40mm, ensuring internal framing is never less than the 60mm minimum width tested.

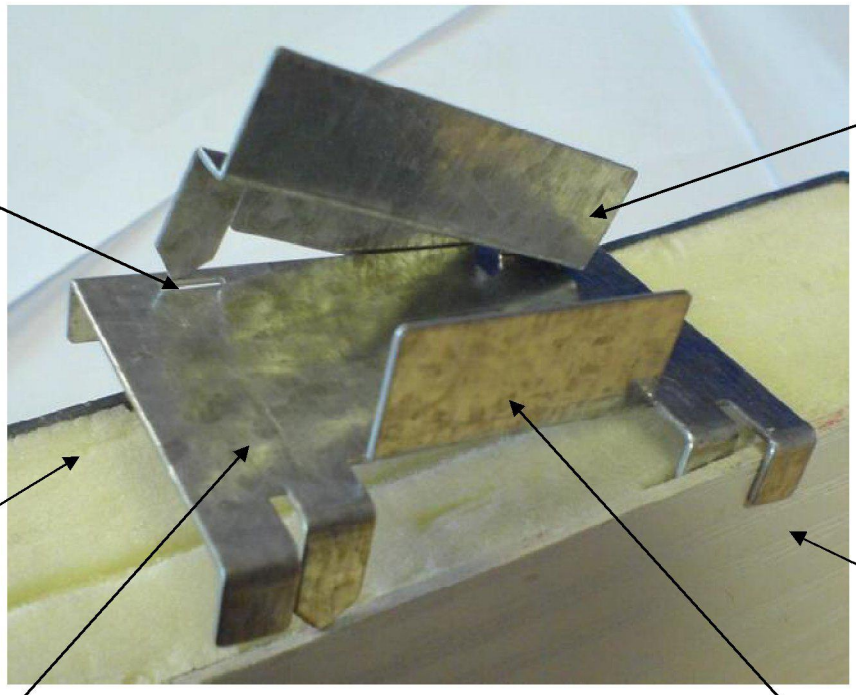
   However, the construction of moulded 762mm wide door leaves, which are covered by this assessment, comprises stiles of a combined width of only 80mm (30 +50mm). Therefore, in order to maintain the stile at the minimum 60mm width tested, a maximum of only 20mm may be trimmed from each stile of a 762mm wide doorset (as specified in Section 5 of this assessment).

   Flush doorsets supplied as 762mm wide must be assumed to be of the same construction as the moulded design and therefore the same trimming restriction will apply. The manufactured untrimmed width of stiles and rails of smaller sizes of flush leaves must be confirmed with the manufacturer or supplier and trimmed within the parameters specified above.
3. U/LSASD = Unlatched/Latched single action single door; DGU = Double Glazed Unit.

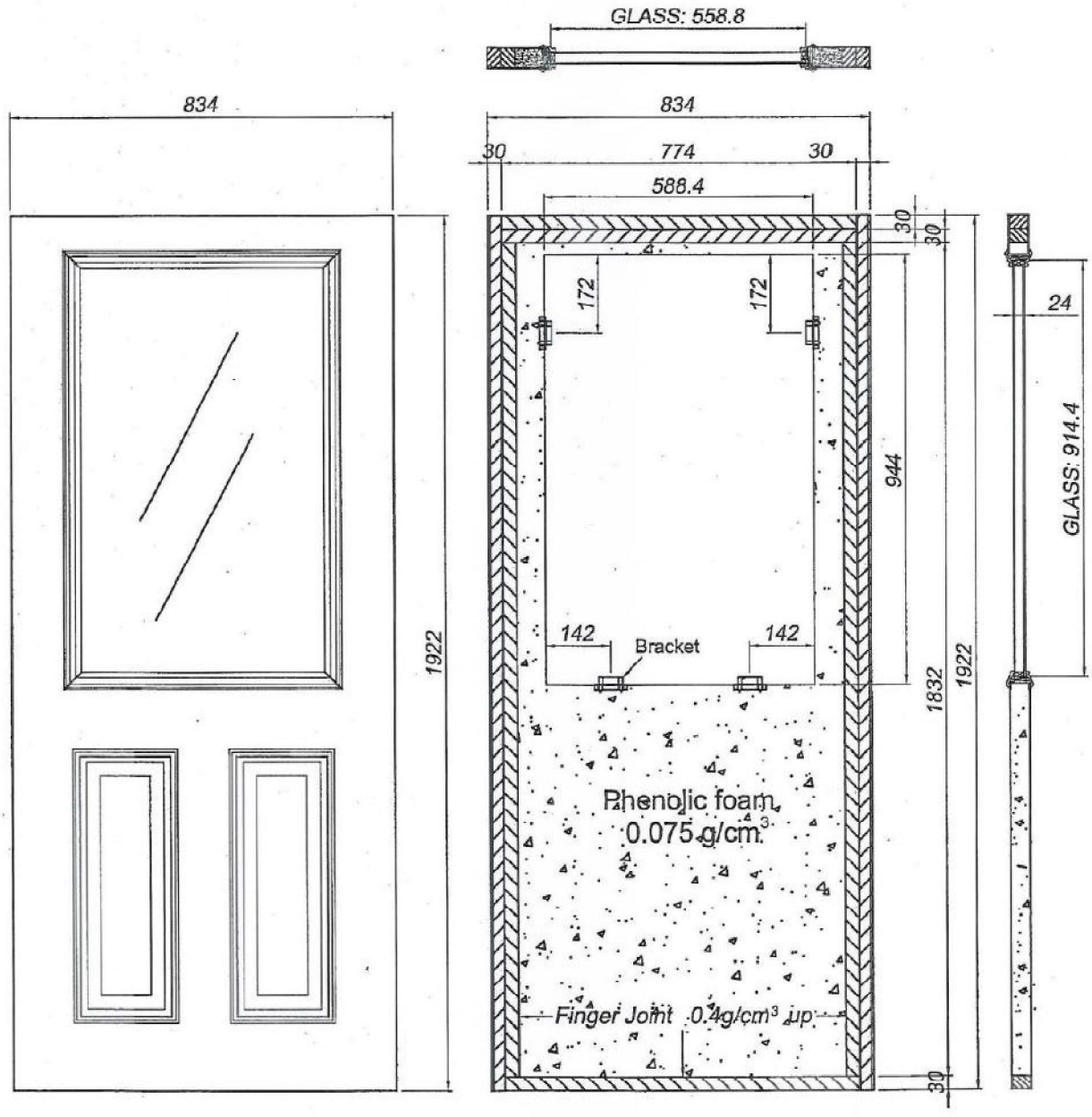
Appendix B

Glazing Details

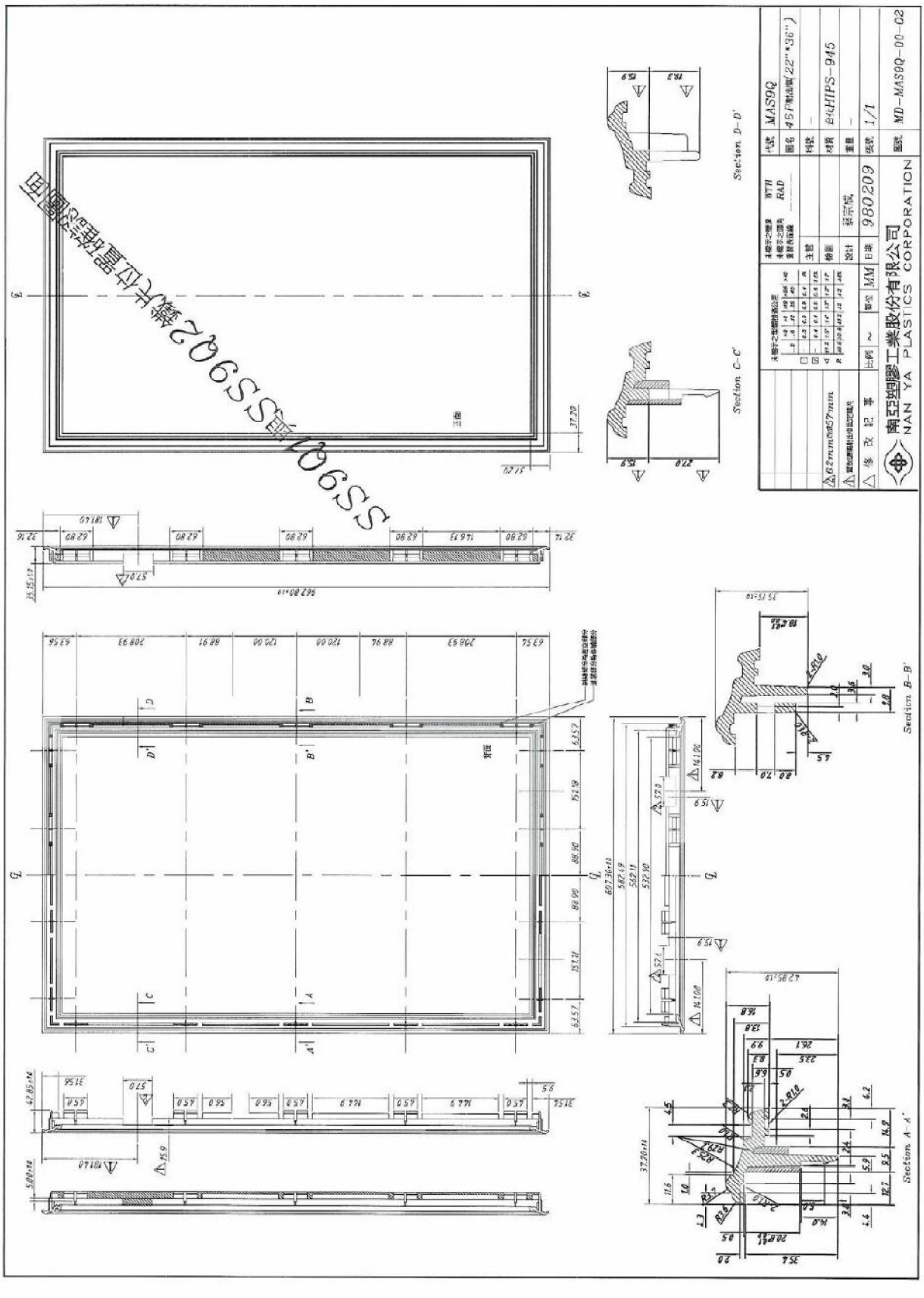
Details of Glazing Clip



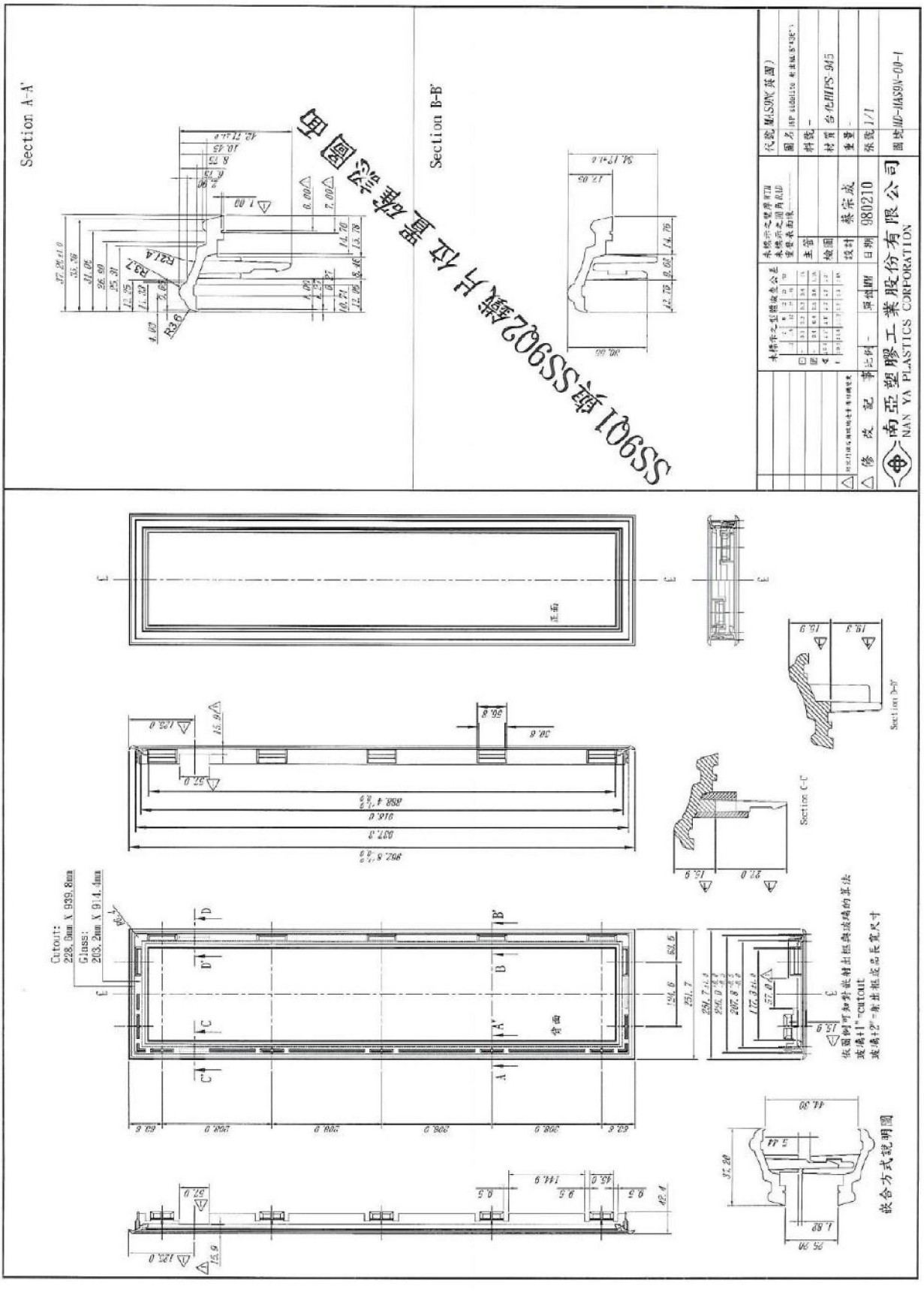
Diagrams Showing Glazing Clip Positions



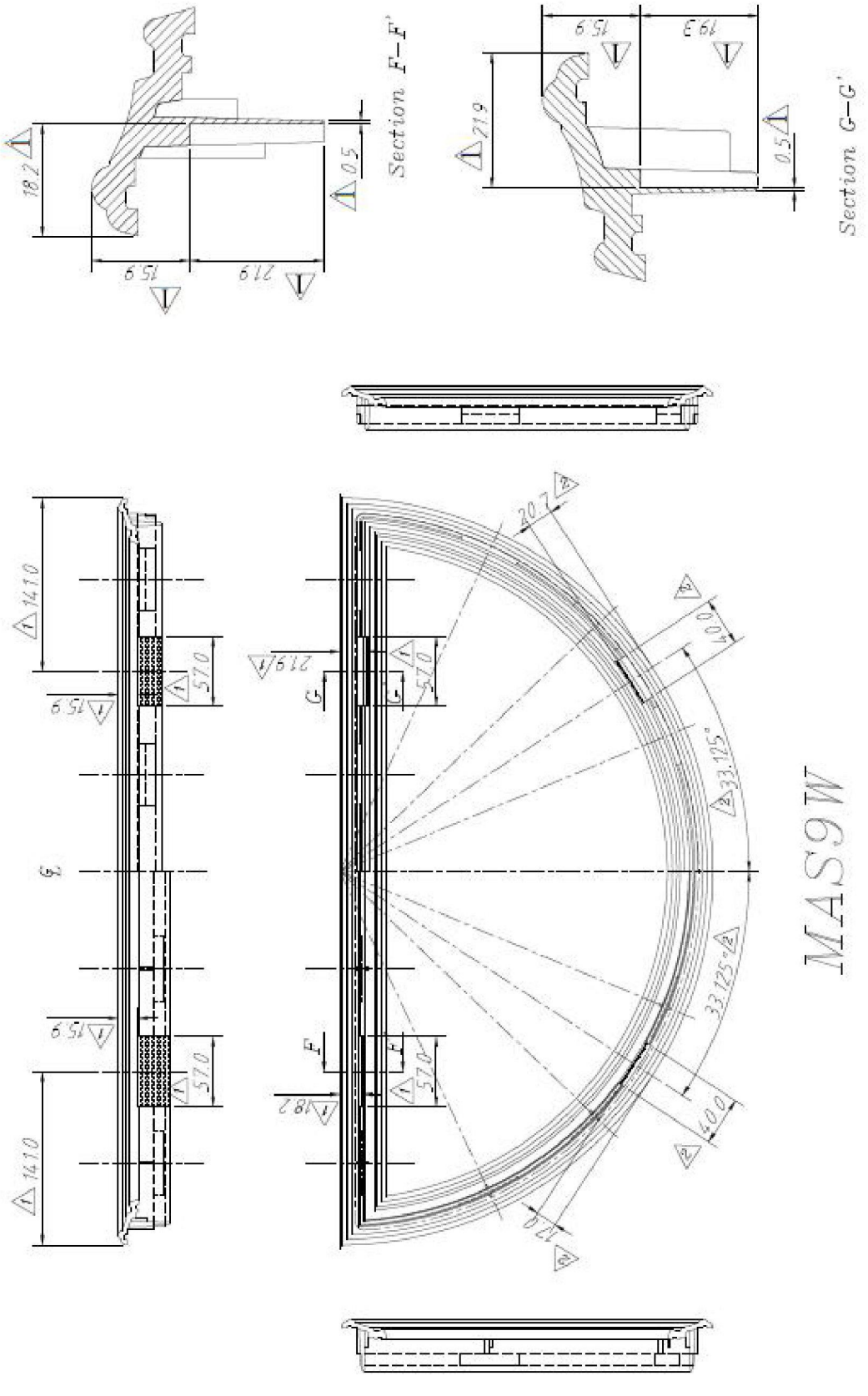
Single Glazed Aperture



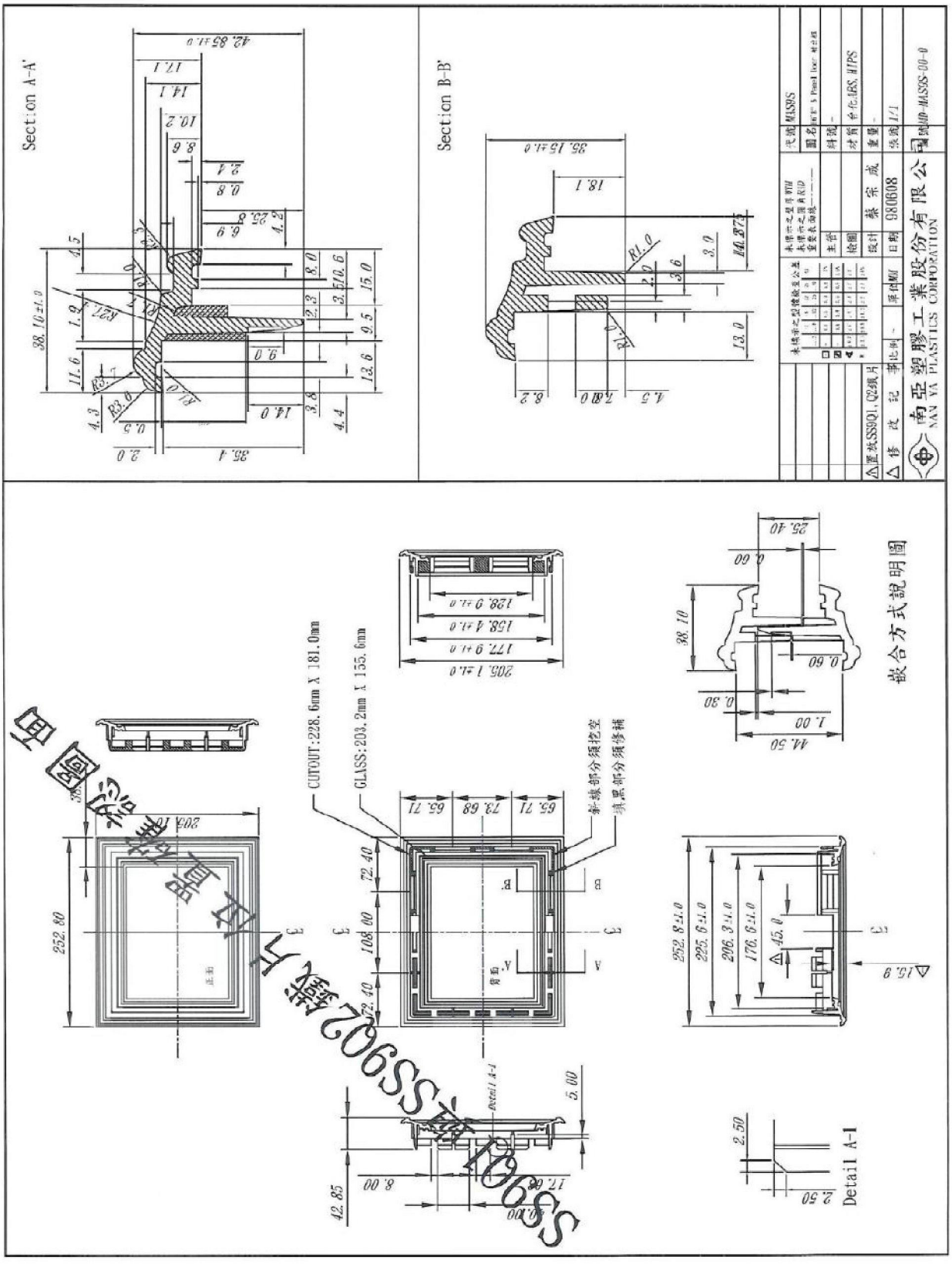
Twin Glazed Apertures



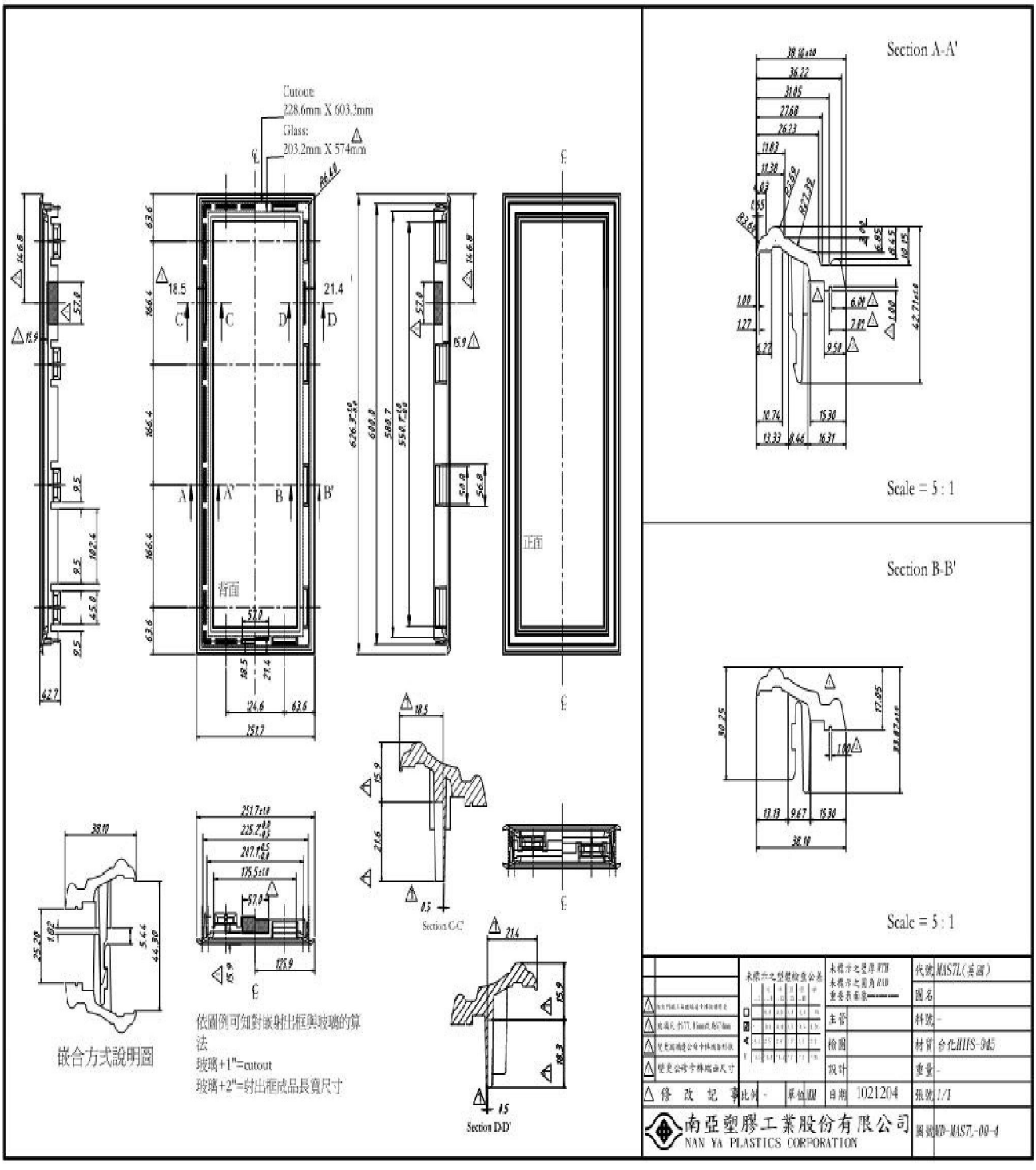
Half Moon Glazed Aperture



Twin Top Glazed Aperture



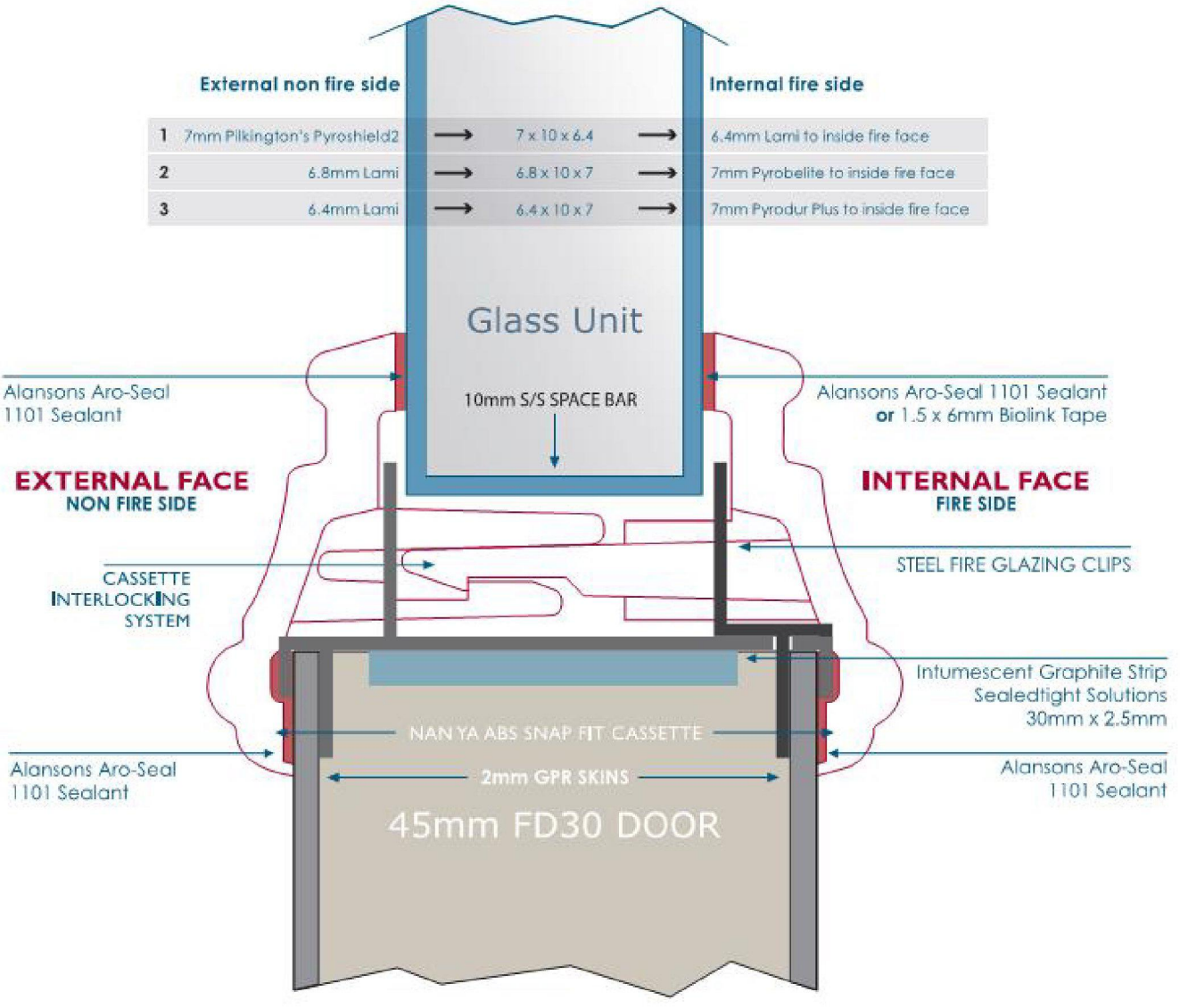
Twin Mid Apertures



Appendix C

Glazing Cassette Installation

1. Sealedtight Solutions Graphite Glazing System



FD30 (30 Minute) Nan Ya Fire Door Glazing Guide

Dry Graphite Step by Step Glazing guide

Step 1

Always have the recommended tools available. The solid table top bench/work surface should be protected and clean to avoid marking the door or cassettes. Ensure all necessary personal protective equipment is worn to prevent the risk of injury.

Step 2

Begin by removing the breakout flanges from both the inner and outer cassettes to accommodate the 2 part Steel fire glass retention clips. Taking care, using a Stanley knife score along the horizontal base line. Then using a hack saw cut vertically down either side to meet the base line and carefully remove using pliers.

Step 3

Offer one of the cassettes into the aperture cut out ensuring it is square & central and mark off the clip positions onto the foam.

Remove cassette from the aperture and position the base clip centrally over the marks with the up-stand positioned to the external door skin and pilot holes for the internal clip feet if required. Position using a small pin hammer ensuring the external feet straddle the door inner and outer skins, seated positively. Then introduce the secondary clips with the internal feet passing through the slots in the base clip and the long external foot locating on the outside of the internal skin.

Step 4

Remove all clips to permit the installation of the required intumescent strips. Measure and cut all lengths individually ensuring that they are not short and then remove the adhesive release liner (if present) and adhere/position centrally on the foam core with tight neat butted corner joints.

Step 5

Reposition all base clips over the top of the intumescent strips ensuring that the external feet straddle to the outside of the internal and external skins and it is held firmly.

Step 6

Clean thoroughly the inner and outer up-stand rebate leg channels of both cassettes using Distinction industrial wipes and dry off using industrial type paper roll ensuring they are dust free. Take the external glazing cassette and apply a 6-8mm bead of Alansons clear 1101 sealant to the inner and outer rebate legs where it meets both the glass and GRP skin. With the external cassette positioned on a solid bench place the cleaned door over the cassette (2 man lift) external face down. Check that the clip up-stands are central between the relieved cassette areas and the cassette is central within the door aperture.

FD30 (30 Minute) Nan Ya Fire Door Glazing Guide

Dry Graphite Step by Step Glazing guide

Step 7

Carefully position the Fire resistant insulated glass unit ensuring its correct orientation. (Refer to cross section drawings below) ensuring it is square within the cassette.

Introduce the secondary fire glass retention clip ensuring that the long external foot is positioned over the outside of the internal skin and persuade to its rest position using the small pin hammer.

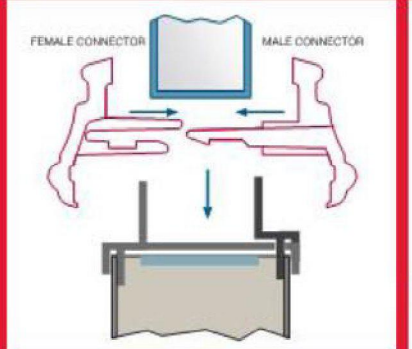
Step 8

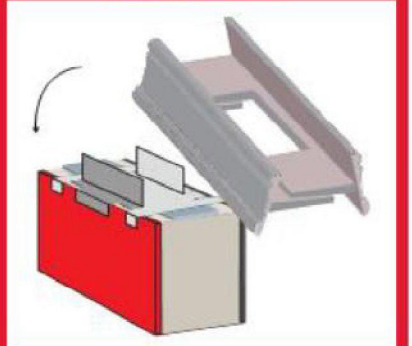
Take the internal glazing cassette (ensuring it is clean and dry) and apply a 6-8mm bead of Alansons clear 1101 sealant to the inner and outer rebate legs where it meets both the glass and GRP skin. Alternatively you can substitute the 1101 sealant on the inner up-stand rebate leg where the cassette meets the glass with 1.5mm x 6mm biolink clear acrylic adhesive tape ensuring the tape is level with the sightline.

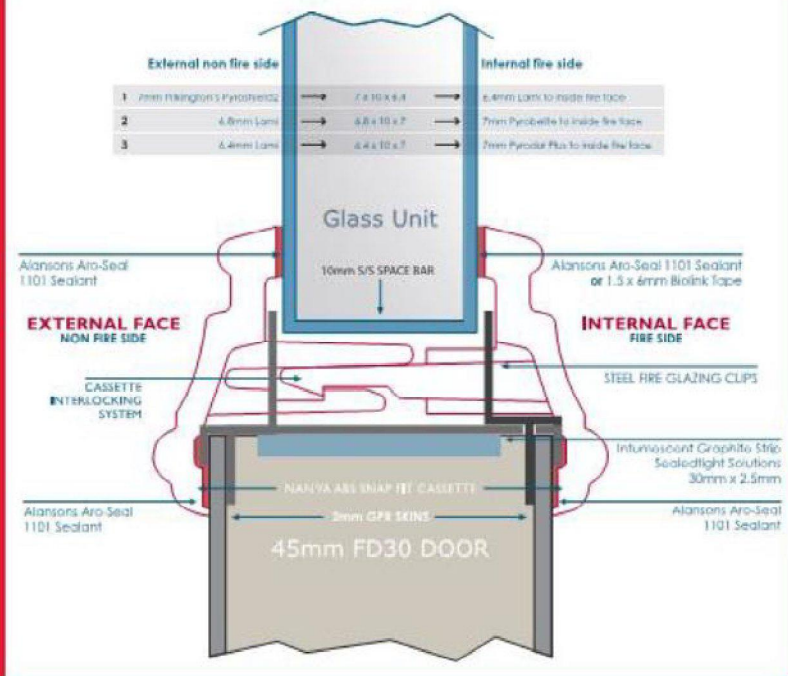
Offer the internal cassette over the external cassette ensuring that the male and female connectors are aligned. Working around the cassette apply pressure using the heel of your hand to push the internal cassette down to meet the external cassette to mate the connectors.

Step 9

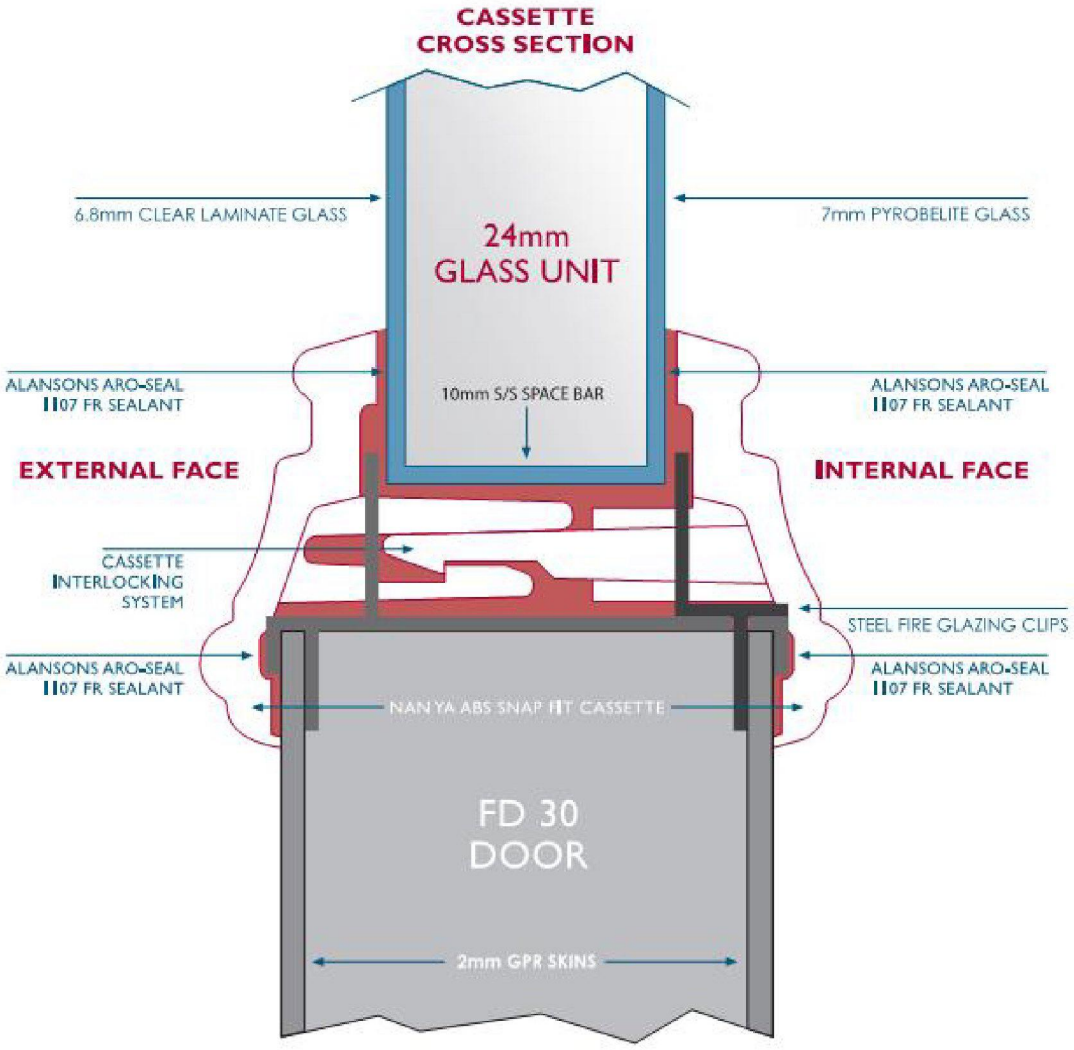
With care using a rubber mallet and piece of cardboard protection work your way around the perimeter of the cassette persuading the cassette to its rest position with the connectors mated. The cassette should sit flush to the skins although maybe held off slightly local to the Fire clips. Using a plastic scrapping tool remove the excess sealant between both the glass-cassette and door-cassette. Then using the Distinction universal wipes clean the remaining residue. Turn the door over (2 man lift) checking that the cassettes have mated if necessary repeat the process of using the rubber mallet. Finally remove the excess sealant on the external door face as explained above.





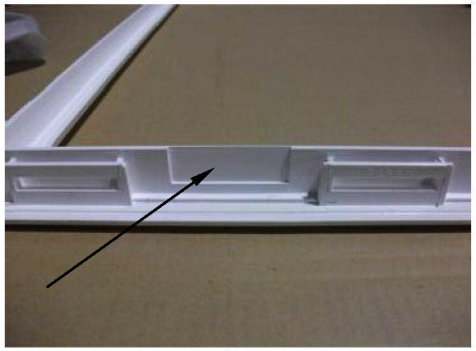
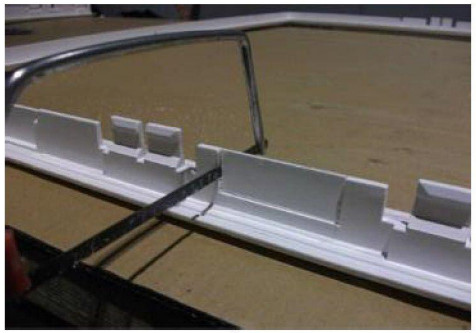
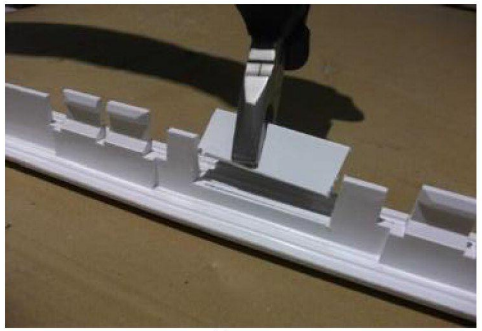


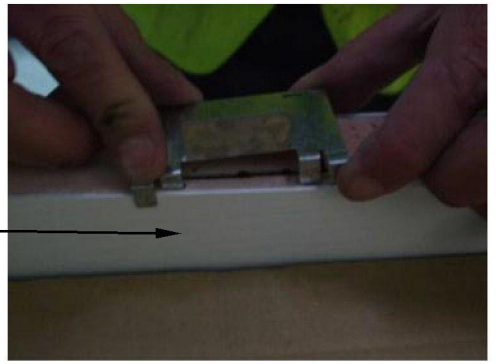
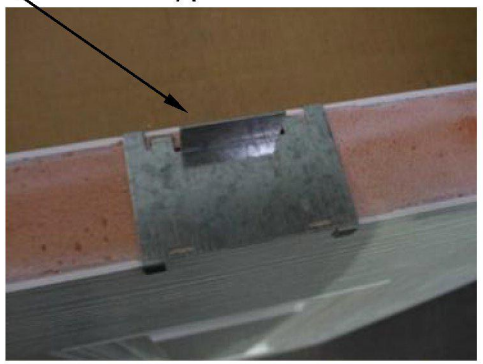
2. Alansons ARO-Seal FR1107 'Wet' Glazing System

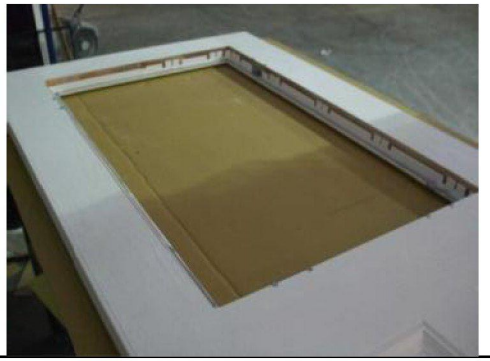
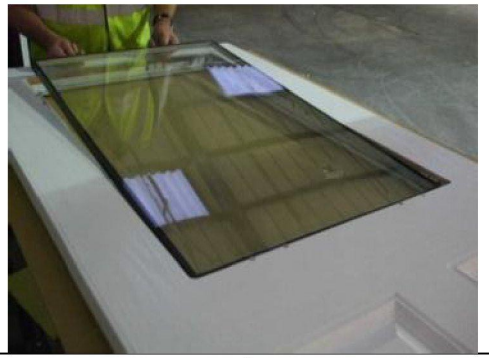
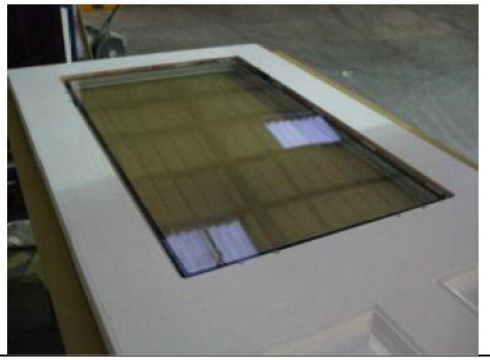
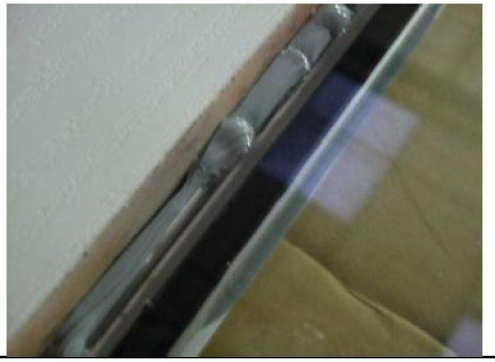


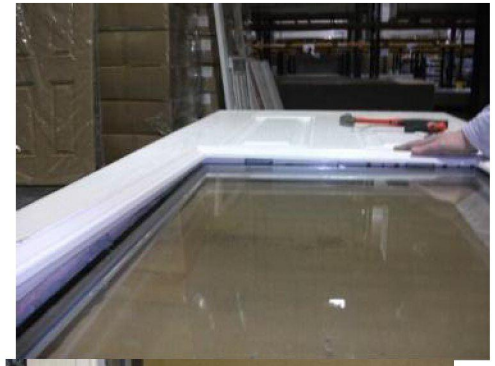
Note: The 7mm thick AGC Pyrobelite 7 Glass on the internal face may be replaced by 7mm thick Pilkington Pyrodur 30-104 glass.

Alansons ARO-Seal FR1107 'Wet' Glazing System – Step by Step Installation Guide

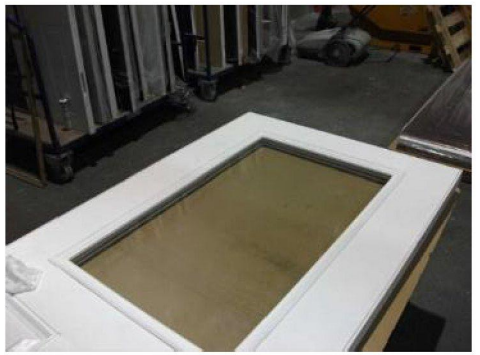
Step 1	Remove Break out flange (A) by firstly scoring with a Stanley knife horizontally (B) and then cut vertically with a hacksaw (C) and remove with care using pliers (D)	 A  B  C  D
Step 2	Position cassette within the cut aperture of the door slab and mark the position of the clips on the foam core as shown. 9Q = 4 clips per aperture 9N = 3 clips per aperture 9S = 2 clip per aperture 9W = 4 clips per aperture	 

Step 3	Position carefully the base clip centrally over the marks made on the foam with the upstand to the external face of the door as shown (B&C) **Note: External Face of Door** The clip should straddle the full width of the door slab with the legs positioned (B) Position all clips required for the chosen glazing cassette 9Q Half Glazed cassette shown in (D)	 A  B  C  D
Step 4	Apply Alansons 1107 Fire Retardant sealant approx 6-8mm diameter bead to both the inner and external upstands of the external cassette as shown.	 

Step 5	Position the external cassette on a protected and grit free solid surface and then with care locate the door slab over the cassette ensuring that the clips are positioned between the relieved areas (the removed break out flange) as shown.	 
Step 6	Ensure the Glass is clean and then ensuring that the Fire glass is facing up to the inside of the door and position it between the cassette as shown.	 
Step 7	Fill between the glass and the cassette using Alansons 1107 sealant (A). Then fill between the cassette and the door blank substrate (B).	A  B 

Step 8	Position the secondary part of the clip as shown.	 
Step 9	Repeat Step 4 with the Internal Cassette.	
Step 10	Locate the internal Cassette over the external cassette ensuring that the male and female connectors are lined up (A) Once they are lined up apply pressure with the palm of your hand working around the perimeter (B) so that the cassette almost meets the glass and the door skin. Using a piece of cardboard for protection persuade the cassette using a rubber mallet again working around the perimeter. This will ensure that the internal and external cassettes snap together as shown (C & D)	A  B   C  D

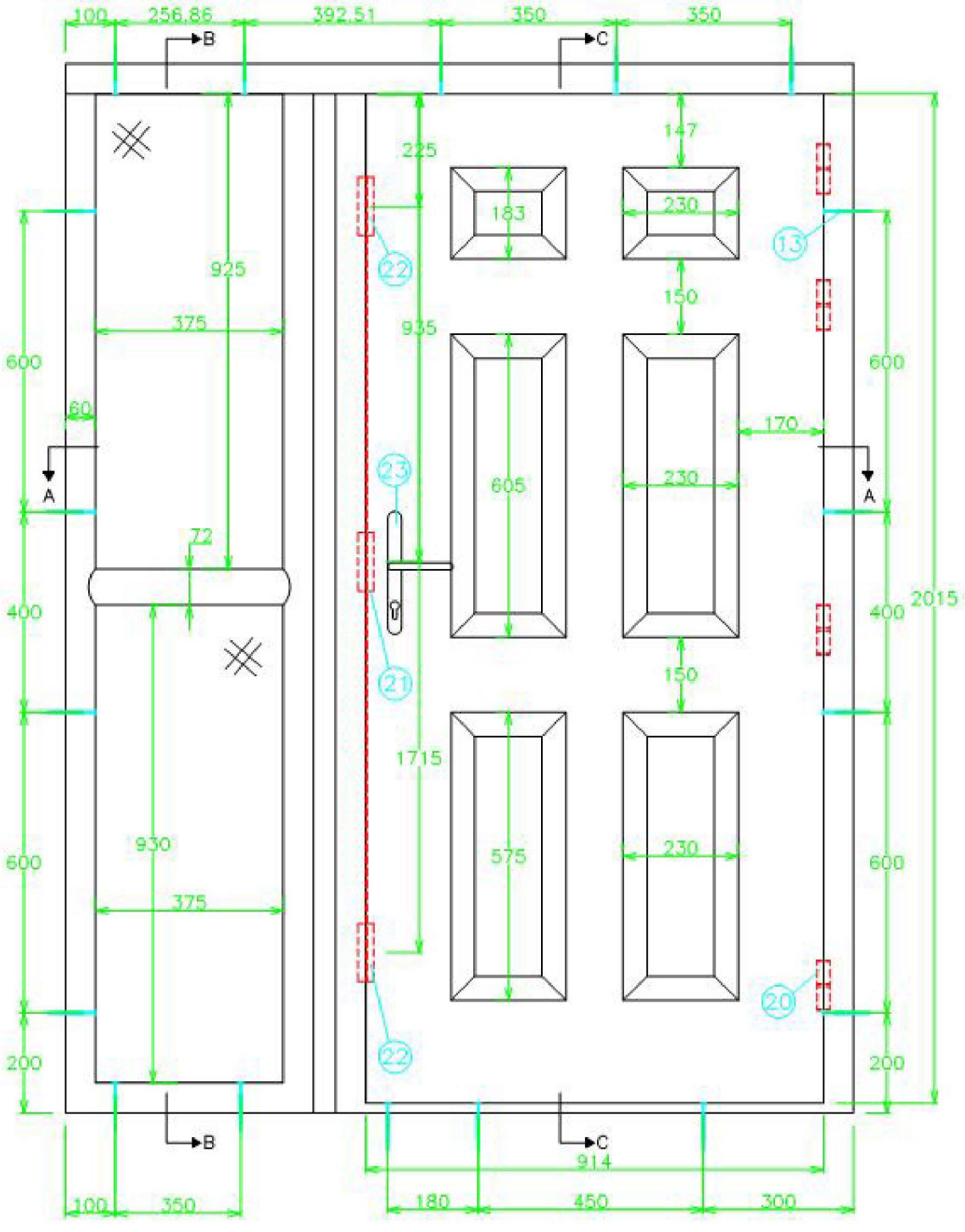
Step 11	Turn the door blank over and using a mallet and protection repeat step 10. The sealant will have squelched on to both the glass and door blank as shown.	 
Step 12	Use a plastic scraper to remove the majority of the surplus sealant on the door skin (A & B) Then use a solvent free industrial wipe (C & D) available from Distinction Doors to clean away the remainder of the sealant immediately after glazing whilst it is still wet.	 A  B  C  D

	After thorough cleaning all sealant should be removed and the finished glazed products appearance as shown in the images	  

Appendix D

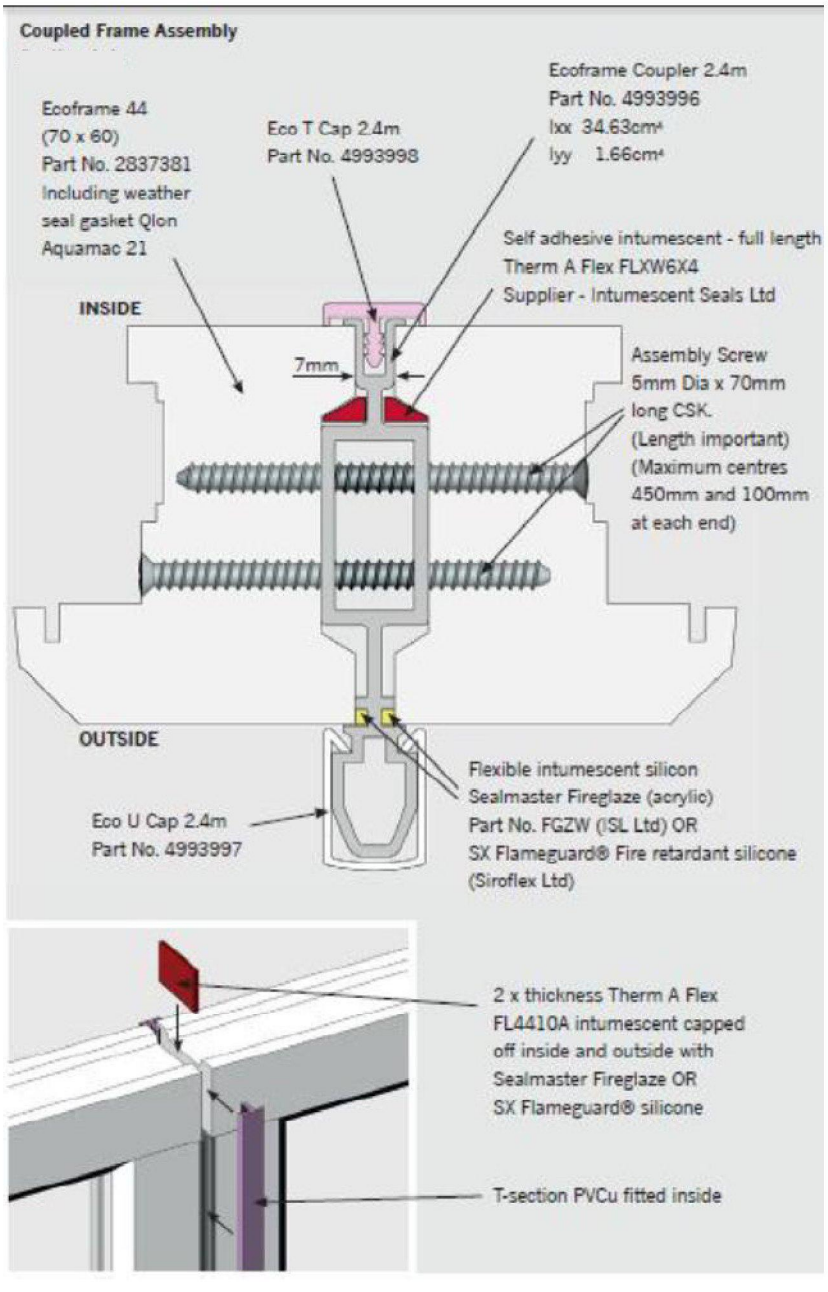
Assessed Sidelight Installation Diagrams

Sidelight Elevation Diagram



Note: Measurements shown are those of specimen tested in RF10172

Sidelight Frame Coupling Details

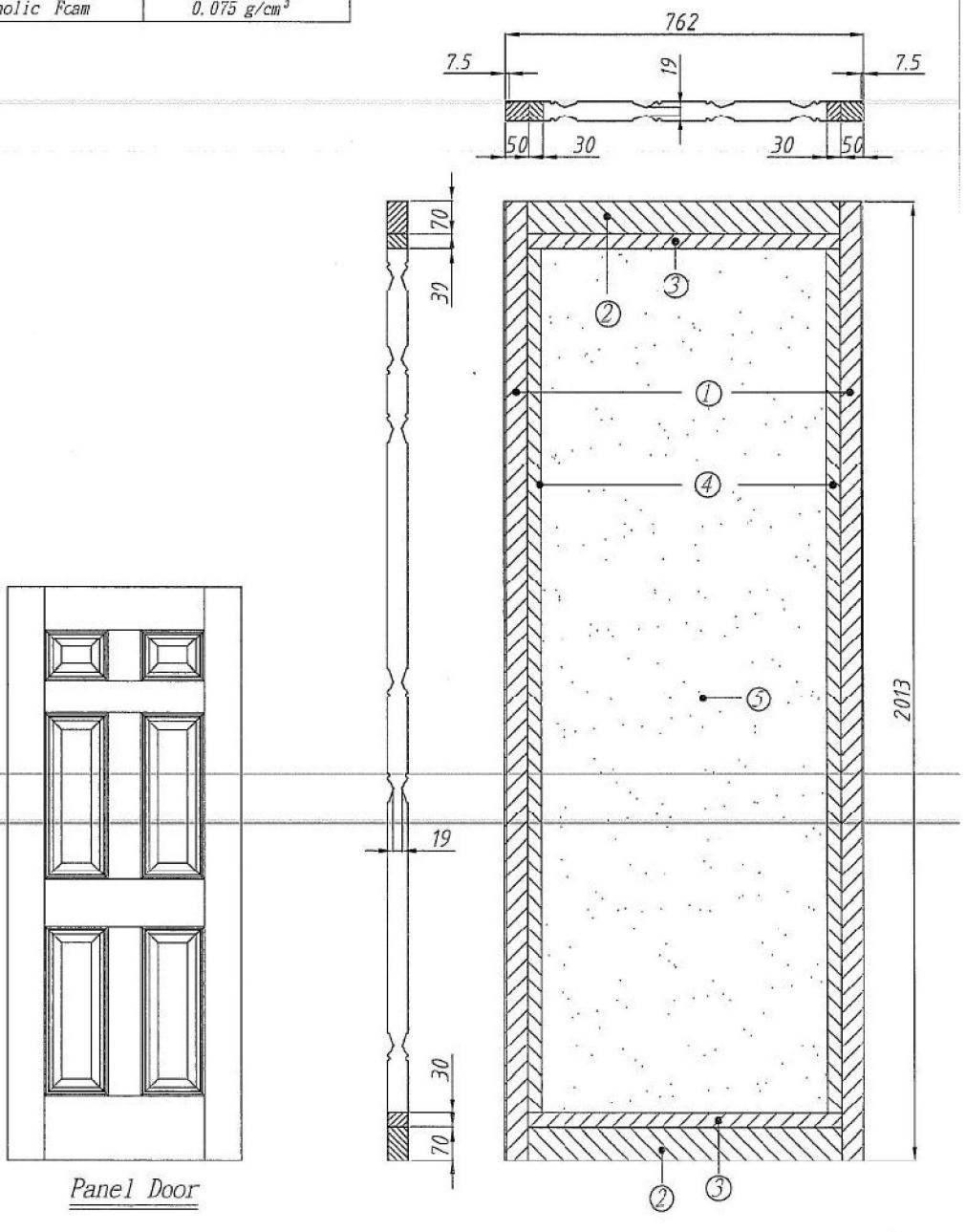


Appendix E

Door Construction Diagrams

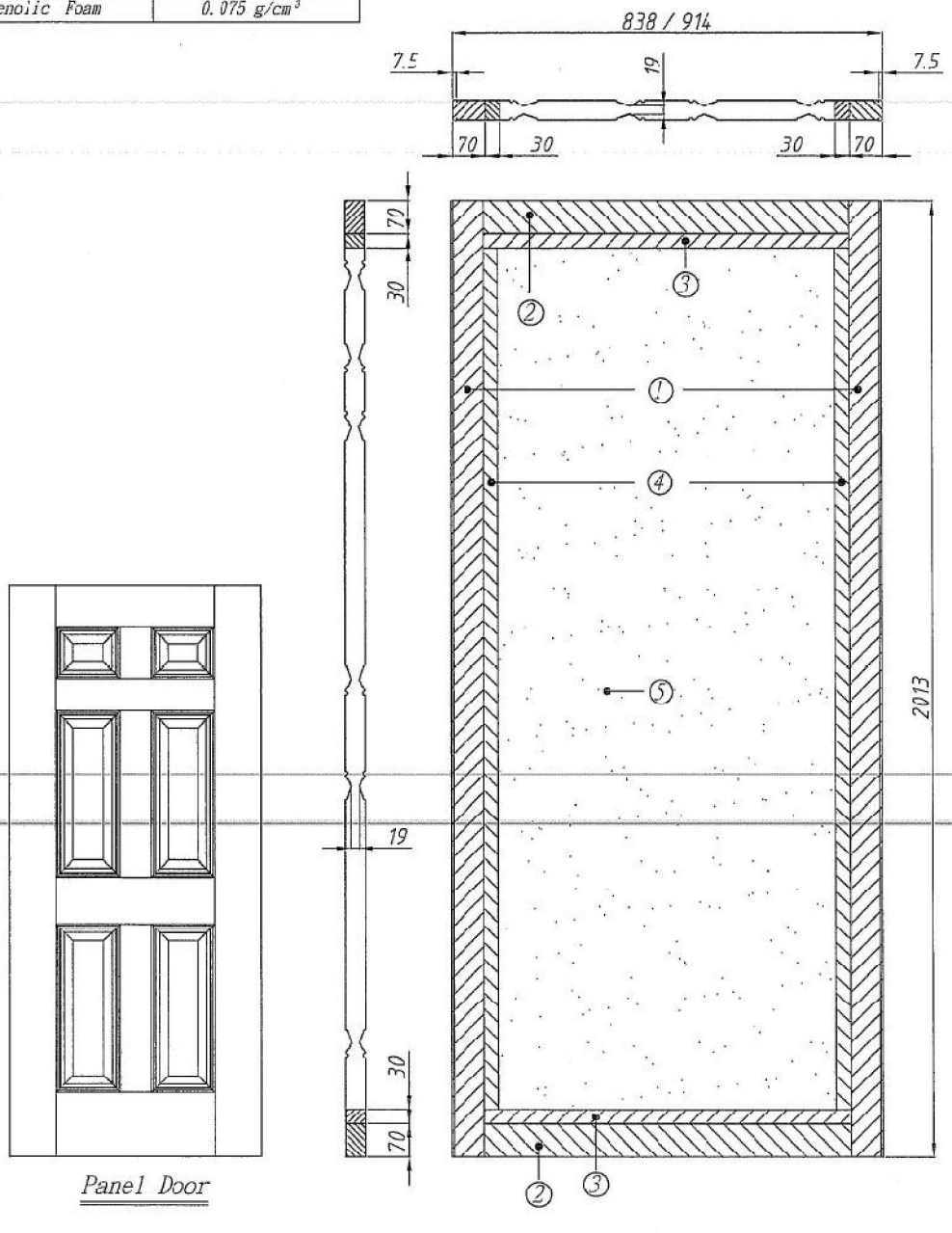
ESTABLISH : 2006. 08. 15	Structure for Trimmable Fire-rated Door	NUMBER : NYB-R-ALAG
MODIFY : 2009. 10. 06	PHENOLIC ALDEHYDE FIRE RATING DOOR FOR 30 MINUTE TRIMABLE (For Door Width 762mm)	PAGE : 1
VERSION: 2. 1		

NO.	ITEM	DENSITY
①	Wood Stile	400-600 g/m
②	Top & Bottom Rail	400-600 g/m
③	Top & Bottom Rail	400-600 g/m
④	Reinforced Wood	400-600 g/m
⑤	Phenolic Foam	0.075 g/cm³

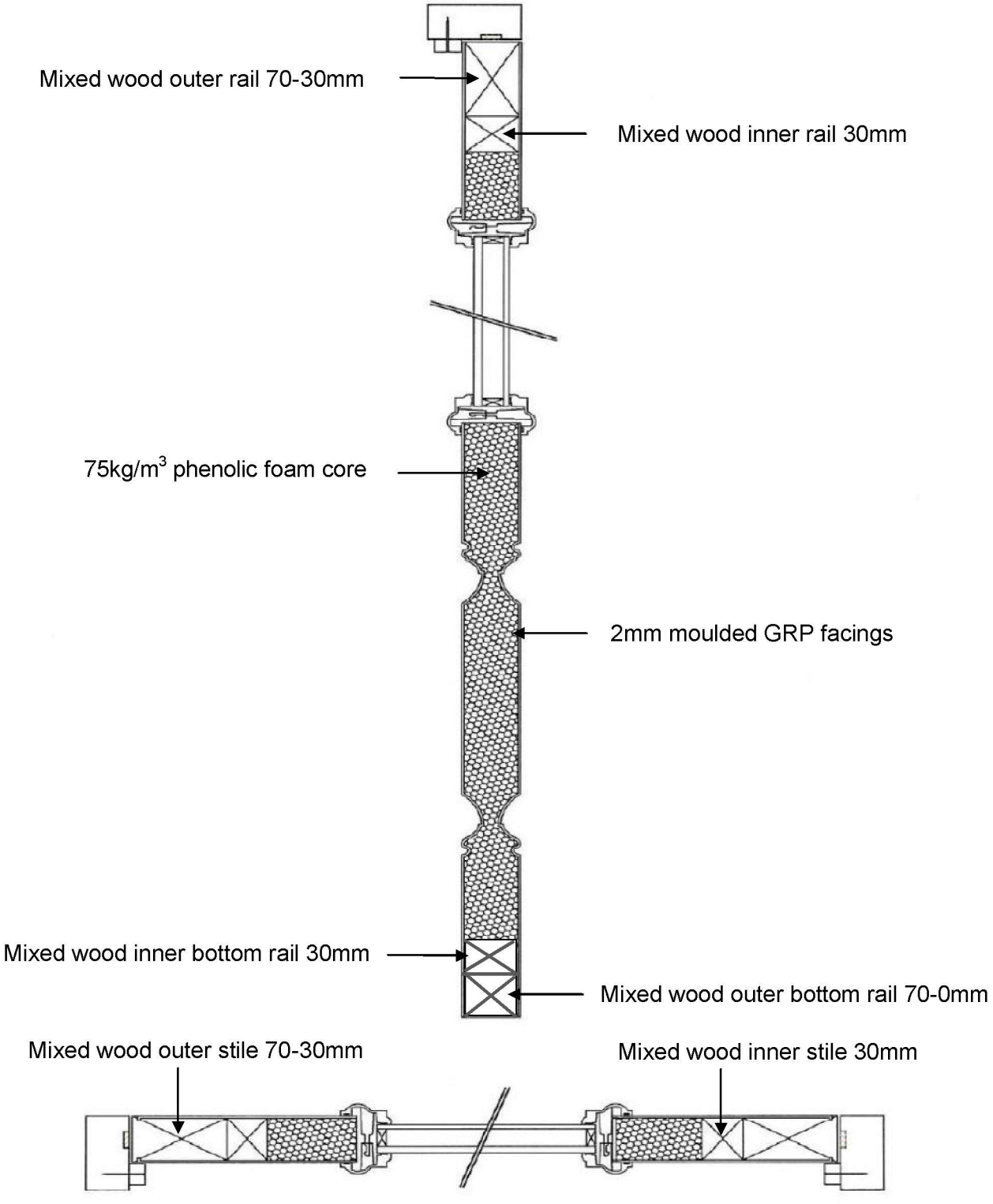


ESTABLISH : 2006.08.15	Structure for Trimmable Fire-rated Door	NUMBER : NYB-R-ALAG
MODIFY : 2009.10.06	PHENOLIC ALDEHYDE FIRE RATING DOOR FOR 30 MINUTE TRIMABLE (For Door Width 838mm & 914mm)	PAGE : 2
VERSION: 2.1		

NO.	ITEM	DENSITY
①	Wood Stile	400-600 g/m
②	Top & Bottom Rail	400-600 g/m
③	Top & Bottom Rail	400-600 g/m
④	Reinforced Wood	400-600 g/m
⑤	Phenolic Foam	0.075 g/cm³

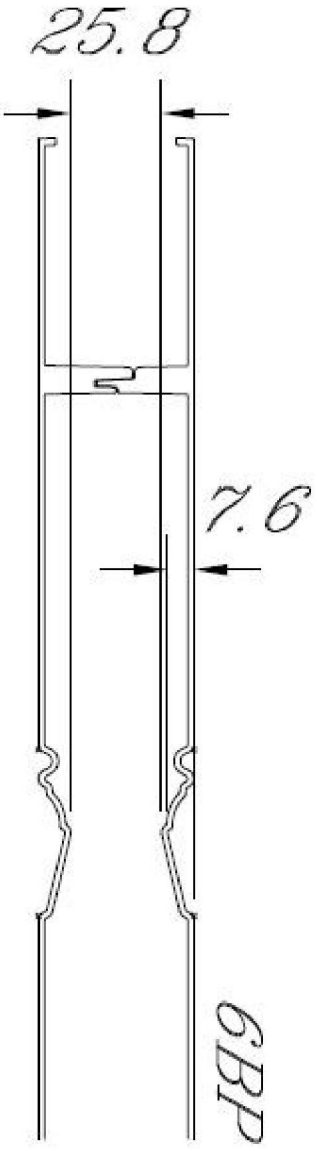


Panel Door

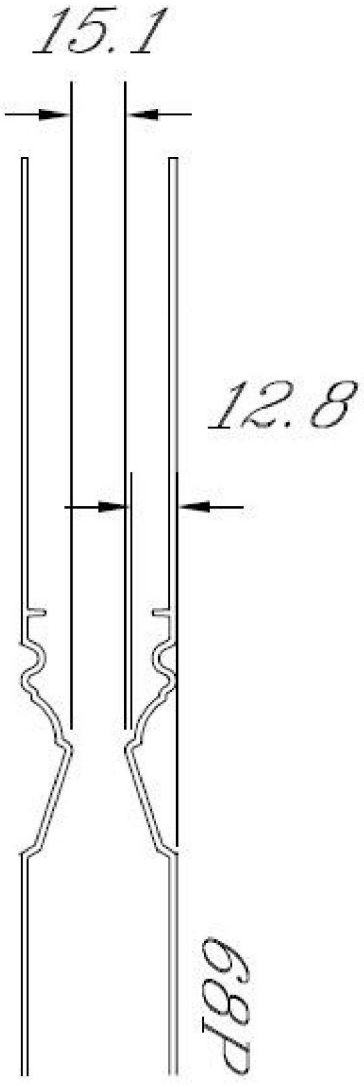

Mixed wood outer rail 70-30mm
Mixed wood inner rail 30mm
75kg/m3 phenolic foam core
2mm moulded GRP facings
Mixed wood inner bottom rail 30mm
Mixed wood outer bottom rail 70-0mm
Mixed wood outer stile 70-30mm
Mixed wood inner stile 30mm

Assessed Core thicknesses

Interlocking (FD60)

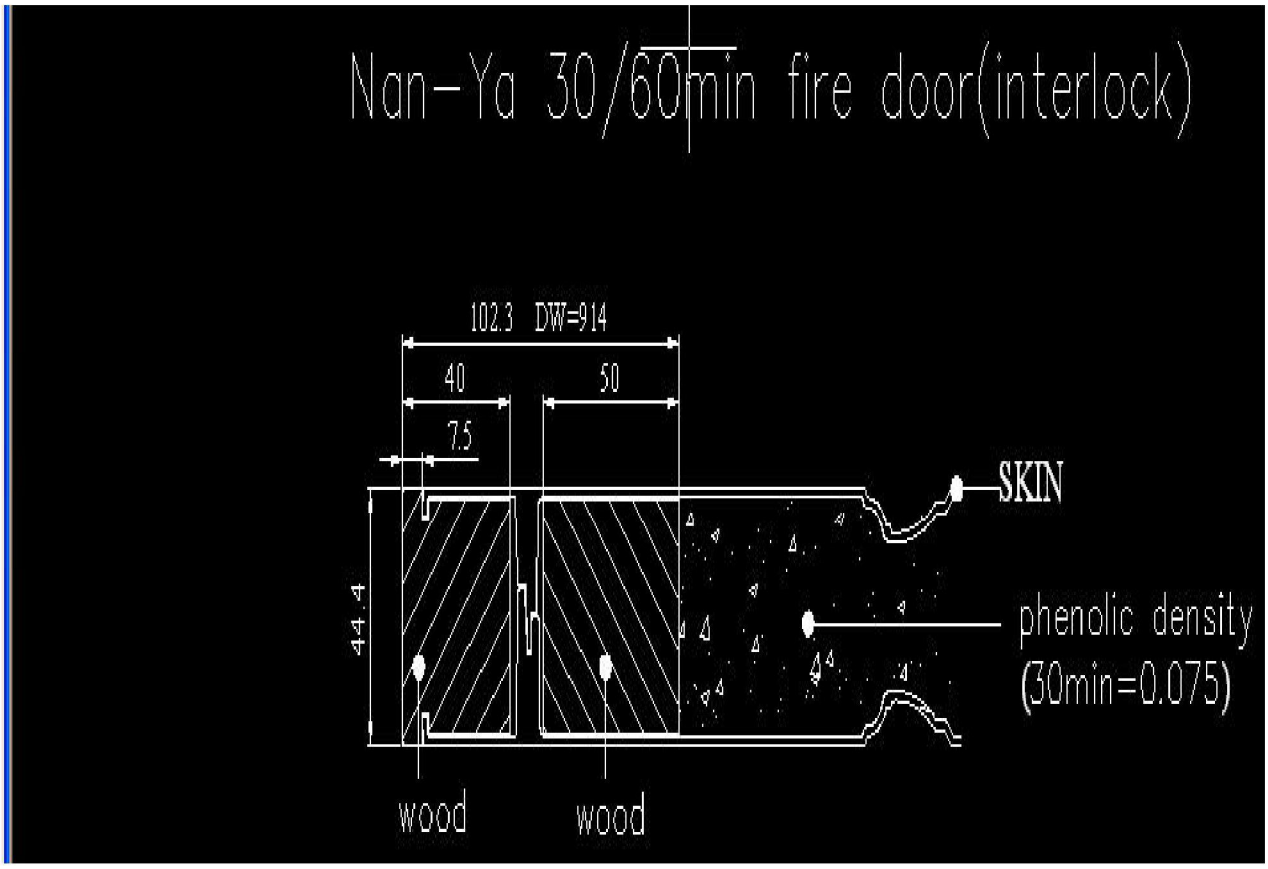


Standard (FD30)



Appendix F

Interlocking Stile Construction



Nan Ya FD60 Construction

The diagram above illustrates the interlocking stile construction used in conjunction with the 25.8mm minimum core thickness for the Nan Ya FD60 fire door design. However, where necessary this construction may also be utilised for an FD30 performance.

Subject only to the leaf size adjustment (trimability) limitations shown below, the following illustration, the interlocking construction is assessed as a construction variation for use with the full scope of application within this report.

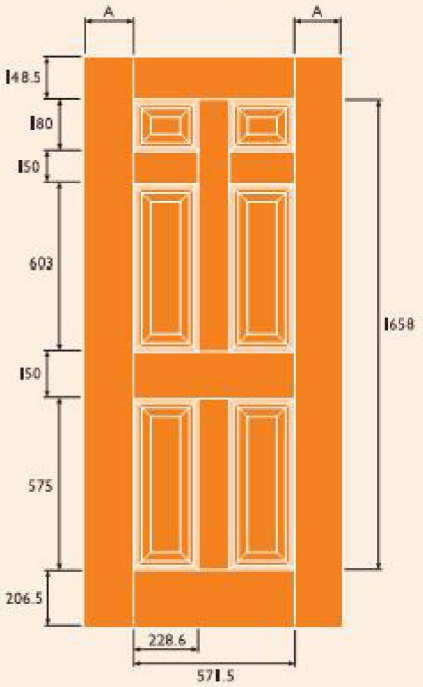
fd60 6 panel door blank

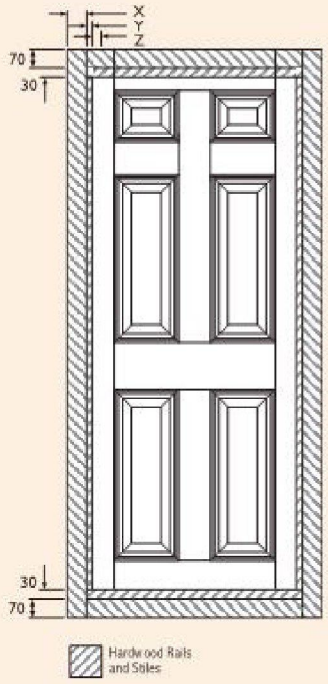
CLASSICAL RANGE OF DOOR STYLES

White

Colours are a non-stock item but available on factory order subject to minimum quantities. 10-12 weeks lead time.

DOOR SPECIFICATIONS





STRUCTURAL DIMENSIONS					TRIMABILITY		
Blank Size	A	X	Y	Z	Top	Sides (each)	Bottom
780 x 2013mm	104.25mm	41mm	10mm	50mm	40mm	30mm	70mm
838 x 2013mm	133.4mm	41mm	10mm	50mm	40mm	30mm	70mm
914 x 2013mm	171.5mm	61mm	9mm	30mm	40mm	38mm	70mm

Please Note:

- All trimmed edges must be treated with either paint or a clear sealant for protection purposes
- All flat/apartment entrance fire doors should be fitted with a self-closing device, as per Building Regulations Approved Document B (Fire Safety) Volume 2 Appendix B
- Surface mounted, overhead, rack and pinion type closers are recommended on all Nan Ya Fire Doors, as tested
- Concealed self-closing devices are not recommended. However, should they be used for any reason, then:
  a. Test evidence/assessment must be provided
  b. Adequate protective treatment must be applied to the surfaces of the closer to prevent corrosion from the phenolic foam
  c. Nan Ya and/or Distinction Doors will not be held liable for any performance related issues with concealed self-closing devices
- All hardware and fittings that may come in contact with phenolic foam must have adequate surface protection against corrosion, in addition to intumescent protection

27/02/2014 Version 002

Distinction doors

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Appendix G

Revisions & Amendments

Revision	BM TRADA Reference	Date	Description
A	CNA/F13263	16.12.2013	Assessment and addition of leaf design CL03 depicted in section 3
B	CNA/F14111	25.09.2014	Five year revalidation with the inclusion of new test evidence from RF10172; RF11186, RF12103, RF12120, RF13209, PF13274 and PF14114, to allow: smaller doorsets, flush glazed doorsets, sidelights, additional construction and frame variations, unlatched configurations and additional hardware and glazing options.

BMTRADA

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