CAMBRIDGE FIRERESEARCH

REPORT NUMBER CFR1606031

FIRE RESISTANCE TEST
IN ACCORDANCE WITH BS476: Part 22: 1987

Sponsor:	Exitex Limited
Address:	Mountpleasant Dundalk County Louth Ireland
Date of test:	3rd June 2016

Results:

Left hand doorset

Test duration:	37 minutes
Integrity:	36 minutes
Insulation:	36 minutes

Right hand doorset

Test duration:	37 minutes
Integrity:	33 minutes
Insulation:	33 minutes

Summary of test specimen:

Two single acting single leaf doorsets comprising Jeld Wen door blanks, tested unlatched.

Left hand leaf size:
2040 high x 926 wide x 44 thick overall

Right hand leaf size:
2040 high x 925 wide x 44 thick overall

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0 CONTENTS PAGE

1 PREPARATION FOR TESTING

1.1 Specimen conditioning

The specimen components were at Cambridge Fire Research for a total period of 1 days, during which time they were stored, surveyed and prepared for testing. During this period the temperature and relative humidity were measured and recorded to be within the range of 13 to 16°C and 70 to 77% respectively.

1.2 Associated construction

Cambridge Fire Research constructed a timber stud partition with a layer of 12.5mm British Gypsum FireLine board to the unexposed face and a layer of 15mm British Gypsum FireLine board to the exposed face. This provided two apertures, the left hand aperture was 2072 mm high x 1007 mm wide and the right hand aperture was 2071 mm high x 1005 mm wide.

In accordance with Fire Test Study Group Resolution No. 51 continuity of the threshold was simulated by the installation of a solid non-combustible threshold extension by Cambridge Fire Research, such that the extension was flush with the threshold onto which the specimen was positioned.

1.3 Specimen construction

The specimens were supplied complete by the sponsor.

1.4 Specimen verification

Cambridge Fire Research carried out a detailed survey of the specimens to verify the information provided by Sponsor. This included verifying the weight, densities, materials and dimensions of construction components wherever possible.

Details and drawings of the construction are shown in Appendix 1.

Photographs of details of the construction taken before the test are shown in Appendix 2.

1.5 Specimen installation and fixity

The sponsor installed the specimens into the associated construction. The specimens were asymmetrical and fitted such that the doors opened towards the heating conditions of the test. The doorsets were unlatched prior to the start of the test.

1.6 Specimen selection

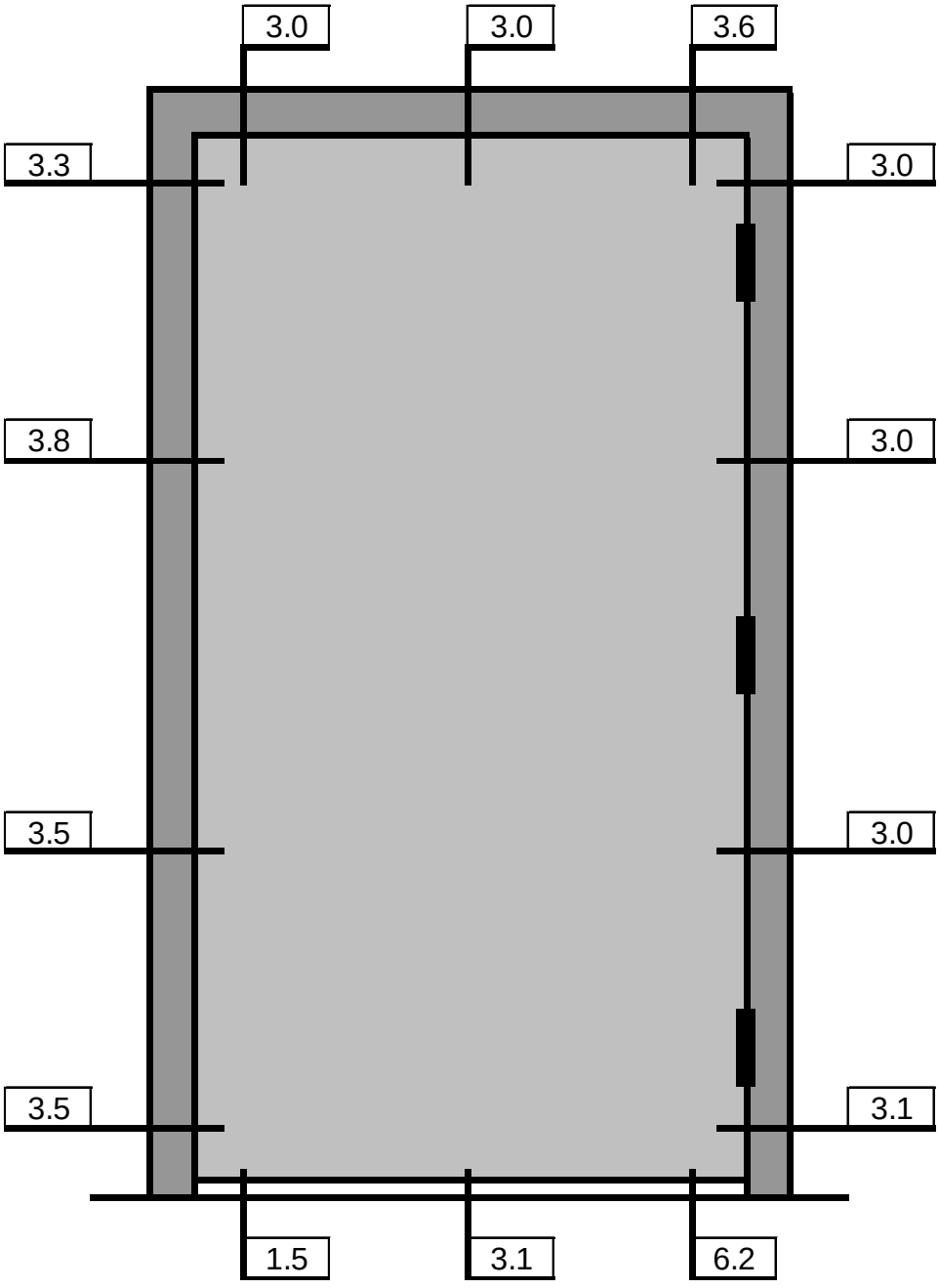
Cambridge Fire Research was not involved in any selection or sampling procedures for the tested specimen. The sponsor declared that the intumescent strips FO104 and FO154 were sampled by Certifire.

2 PRE-TEST MEASUREMENTS AND SETTING

2.1 Gap measurements

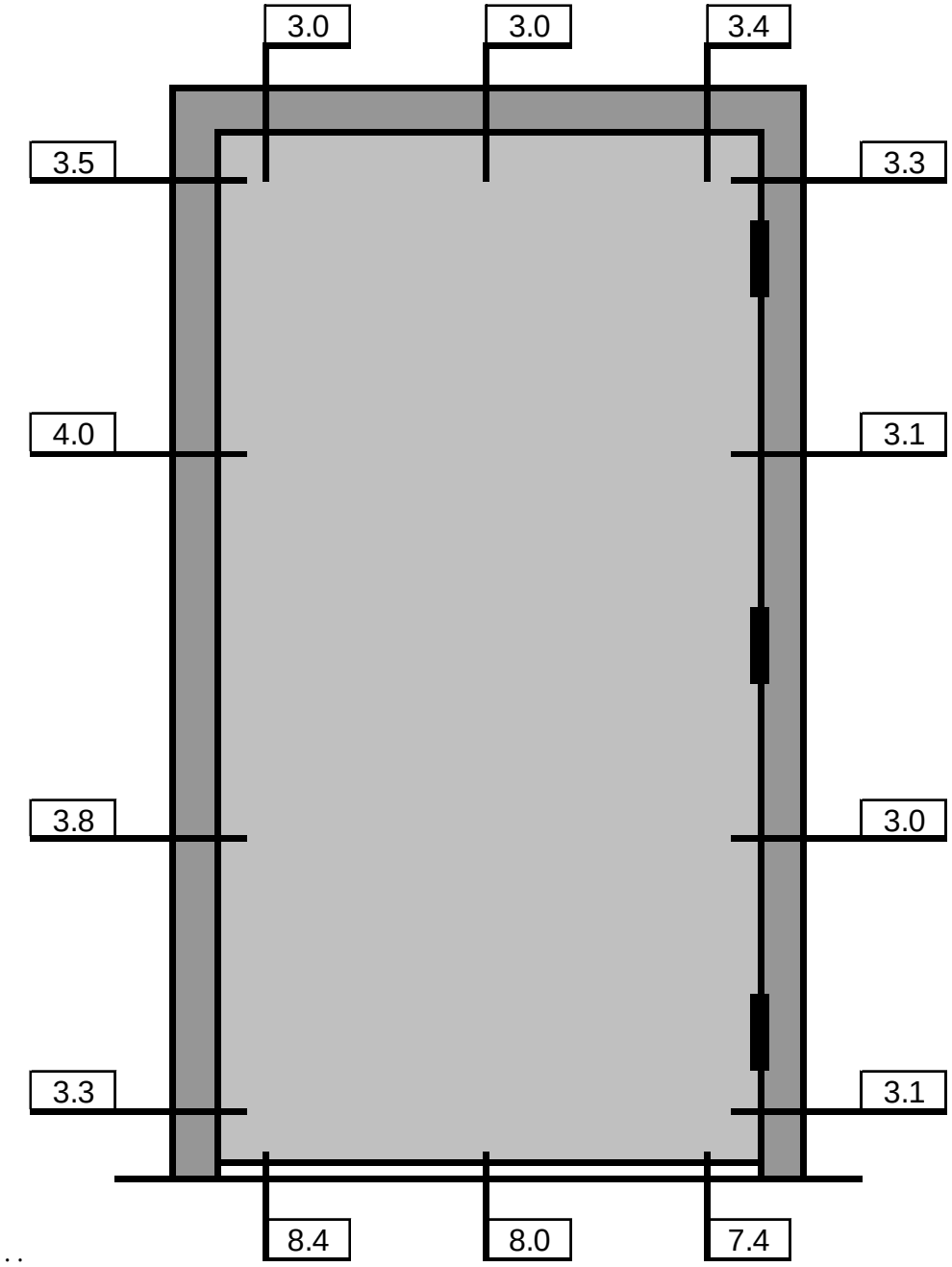
The gap between the leaf edges and the frame and at the threshold was measured on the exposed face prior to the start of the test. The following figures show the position at which the measurements were made and the recorded gap (mm) at those positions.

Left hand doorset:



. . . .

Right hand doorset:



2.2 Closer force measurement

The door opening and closing forces for both leaves were measured in accordance with Fire Test Study Group Resolution No. 63 and the calculated moments are shown in the following tables.

Left hand doorset:

Direction	Closing force (N)	Closing moment (Nm)	Opening force (N)	Opening moment (Nm)
Opening towards heating conditions	29.0	21.8	57.2	42.9

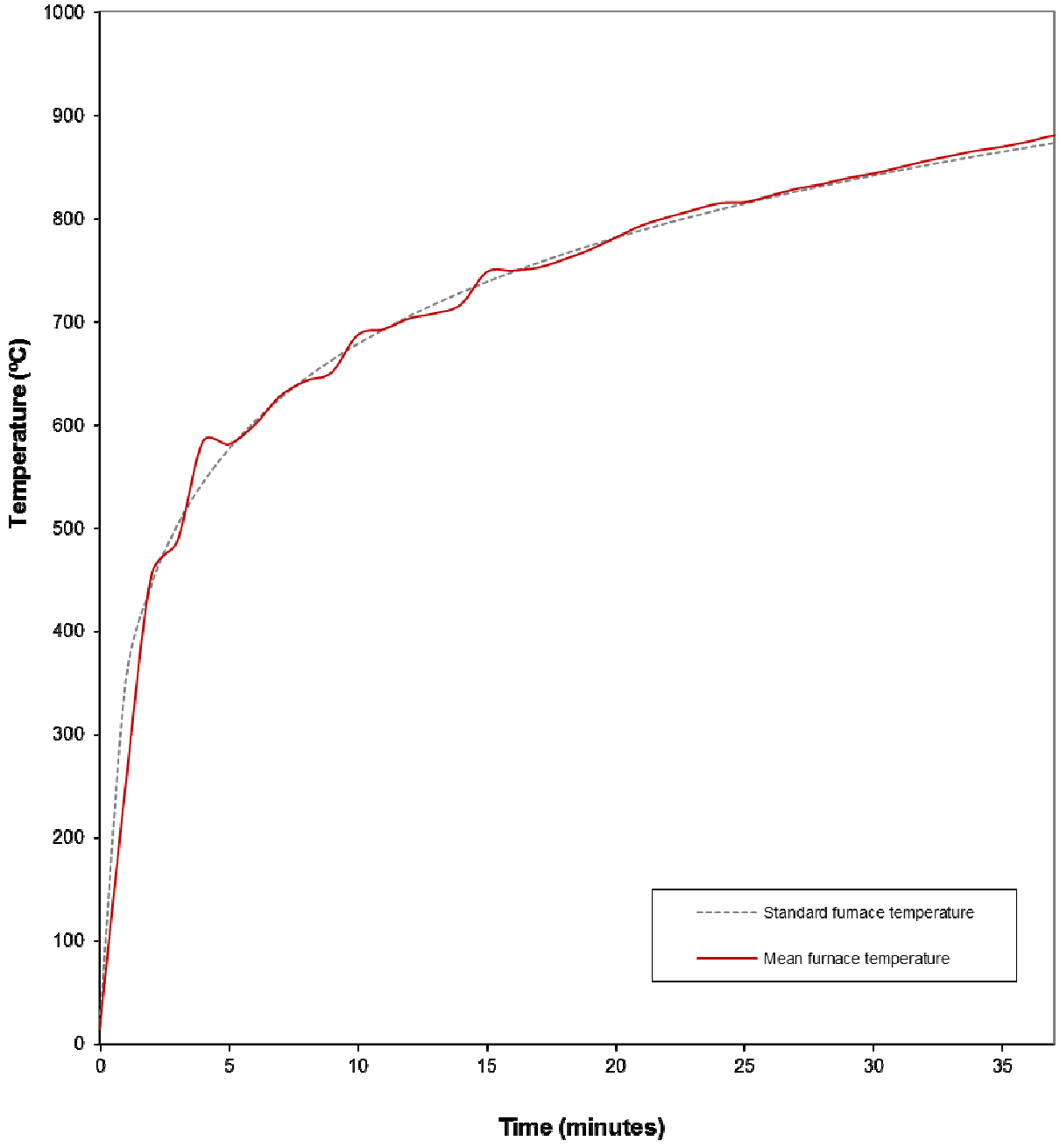
Right hand doorset:

Direction	Closing force (N)	Closing moment (Nm)	Opening force (N)	Opening moment (Nm)
Opening towards heating conditions	30.3	22.7	55.9	41.9

3 TEST CONDITIONS, INSTRUMENTATION AND MEASURING

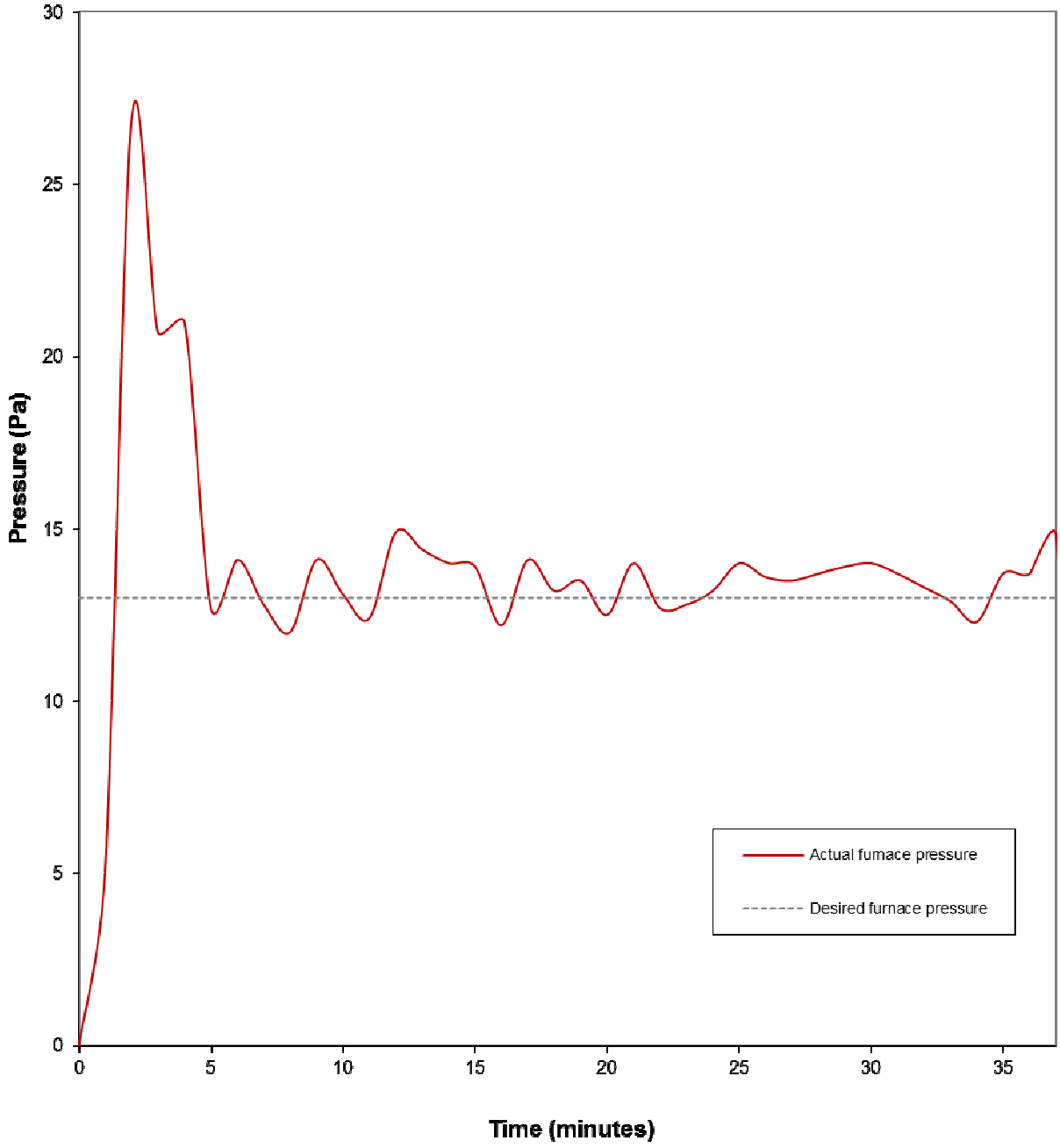
3.1 Furnace temperature

Furnace temperature was controlled so as to follow the standard temperature/time curve defined in the test standard and within the tolerances permitted. The furnace mean temperature was calculated from the output recorded using nine furnace thermocouples of the design specified in the test standard. The following graph shows the standard and mean furnace temperature/time data.



3.2 Furnace pressure

Furnace pressure was maintained for the duration of the test at a nominal + 13.0 Pa measured at the pressure sensing head. When a linear pressure gradient of 8.5 Pa/m is applied this equates to + 0 Pa at 1 m above the notional floor level. The furnace pressure was controlled within the tolerances permitted in the test standard. The following graph shows the actual and desired furnace pressure/time data.



3.3 Ambient temperature

Ambient temperature at the start of the test was 14°C.
Ambient temperature remained at 14°C during the test.

3.4 Unexposed face specimen thermocouples

Surface temperature measuring thermocouples of the design specified in the test standard were affixed to the unexposed face of the specimens to monitor the temperature rise as follows:

Left hand doorset:

Leaf	Channels 16 to 20	(mean & maximum)
	Channels 24 and 25	(maximum only)
Frame	Channels 21 to 23	(maximum only)

Right hand doorset:

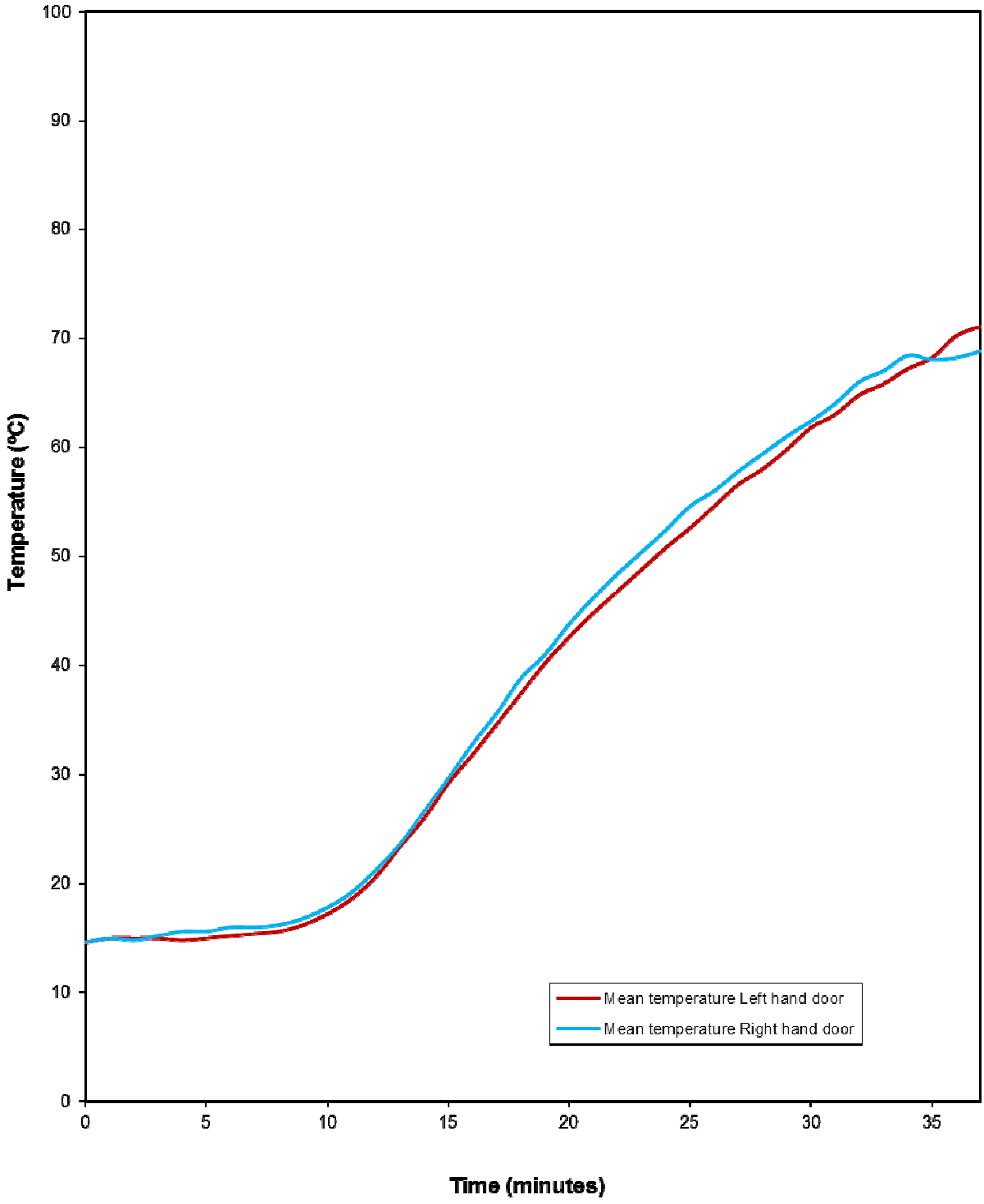
Leaf	Channels 26 to 30	(mean & maximum)
	Channels 34 and 35	(maximum only)
Frame	Channels 31 to 33	(maximum only)

The positions of these thermocouples are shown in Appendix 3.

A roving thermocouple was available for measurement of any specific hotspots and was recorded on Channel 15.

The recorded data of all individual thermocouples is shown in the tables in Appendix 4.

The following time/temperature graph shows the mean leaf temperatures.


Temperature (ºC)
100
90
80
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
Time (minutes)
Mean temperature Left hand door
Mean temperature Right hand door

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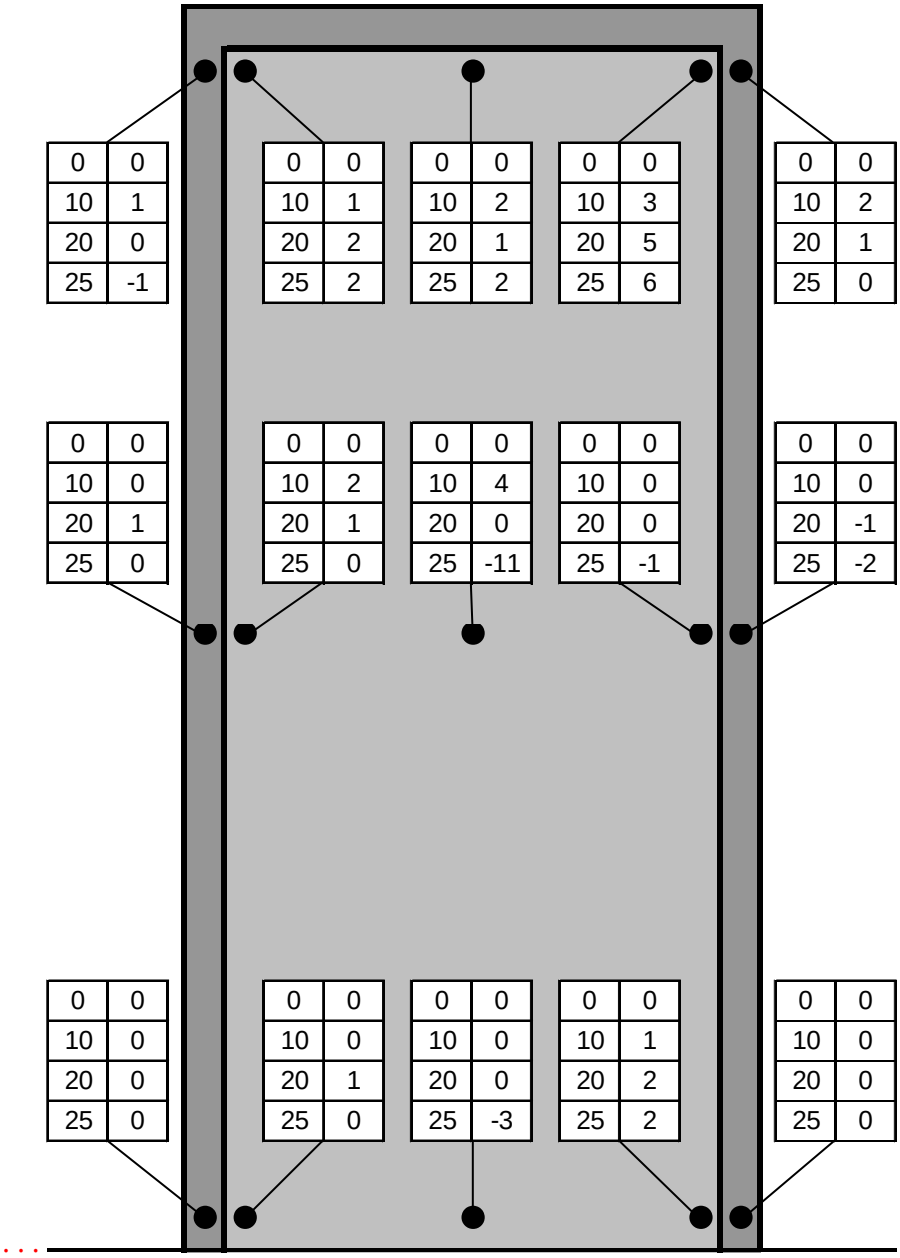
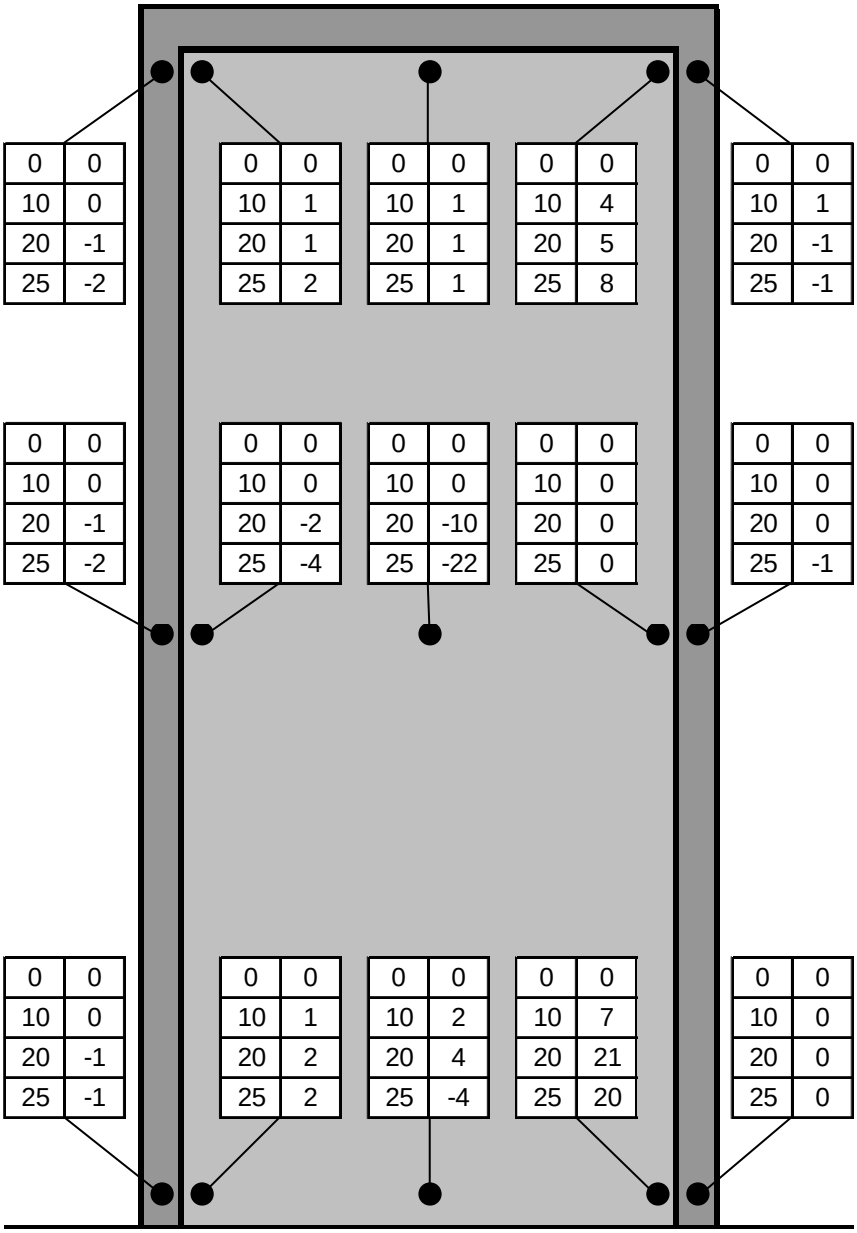
3.5 Deflection

Taut stainless steel wires were anchored horizontally across the unexposed face of the specimens such that any deflection experienced by the test specimens could be measured. One wire was positioned 10 mm vertically below the head of the leaves, the second at mid-height and the third 10 mm vertically above the threshold. The following figure shows these positions with the elapsed time (minutes) in the left hand column and the recorded deflection (mm) in the right hand column. Positive values indicate deflection towards the heating conditions of the test**.**

Left hand doorset:



Right hand doorset:



4 TEST OBSERVATIONS

Left hand doorset:
Photographs taken during the test are shown in Appendix 2.

(E = Exposed face: U = Unexposed face)		
Time	Face	Observation
(min:sec)		
00:00		Start of the test.
05:30	U	Smoke/steam issues at the closing stile/head corner.
12:00	U	Smoke/steam at top corners of frame/partition interface.
13:00	E	Closer detaches.
13:15	U	Smoke/steam issues at both top corners.
14:00	E	Majority of facing has detached and core is fissured.
24:30	U	Smoke/steam decreasing at top corners.
28:25	U	Smoke/steam issuing at centre hinge position.
32:00	U	Fielded regions starting to discolour at various locations. Smoke/steam increasing at centre hinge position and fielded regions.
36:00	U	Glow at both top corners.
36:23	U	Flaming commences at the head of the leaf.
36:33	U	**INTEGRITY FAILURE** due to sustained flaming. **INSULATION FAILURE** due to integrity failure.
37:32		The test is terminated.

Right hand doorset
Photographs taken during the test are shown in Appendix 2.

(E = Exposed face: U = Unexposed face)		
Time	Face	Observation
(min:sec)		
00:00		Start of the test.
05:00	U	Smoke/steam issues at the closing stile/head corner.
12:10	U	Aluminium on threshold at closing stile.
12:35	U	Smoke/steam issues at hanging stile/head corner but is decreasing generally.
13:30	U	Leaf to stop gap at bottom of closing stile is nominally 12mm.
15:00	E	Handle missing, facing missing and core is fissured.
20:00	U	Leaf surface coating bubbling at closing stile/head corner and 300mm down closing stile.
28:00	U	Smoke/steam issuing at centre hinge position.
31:55	U	Expanded intumescent visible at bottom of closing stile.
32:18	U	Glow at hanging stile/head corner.
32:41	U	Fissuring at top right hand corner of left hand centre panel.
33:22	U	Glow at top right hand corner of left hand centre panel.
33:37	U	Flaming commences at the top right hand corner of left hand centre panel.
33:47	U	**INTEGRITY FAILURE** due to sustained flaming. **INSULATION FAILURE** due to integrity failure.
35:10	U	Flaming commences at bottom left hand panel.
35:20	U	**Further integrity failure** due to sustained flaming.
37:32		The test is terminated.

5 LIMITATIONS

1. The test results relate only to the specimens tested. Appendix A of BS476: Part 22: 1987 provides guidance information on the application of fire resistance tests and the interpretation of test data. Application of the results to specimens of different dimensions, orientation or incorporating different components should be the subject of a design appraisal or further testing.

2. The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use, nor do they reflect the actual behaviour in fires.

3. The doorsets were asymmetrical and were tested such that the door leaves opened towards the heating conditions of the test. The test results may not be appropriate to situations where the door leaves open away from the heating conditions.

Report prepared by:

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Deputy Head of Testing

Report checked by:

E Wilson
Head of Testing

Report issued: **12th July 2016**

APPENDIX 1 SPECIMEN CONSTRUCTION

The item numbers listed in Appendix 1 Table 1 are shown in the figures in Appendix 1 refer to the components of the specimen construction. Any photo numbers refer to those in Appendix 2.

Please note that unless otherwise indicated the following applies:

a) All dimensions and materials of construction were verified by the laboratory.
b) Figures are not to scale.
c) All dimensions are given in mm.

Appendix 1 Table 1a Left hand Leaf

Item	Component	Information
1L	**Door frame**	
	Supplier:	Exitex Limited.
	Description:	A 3 sided MDF frame with horizontal rebate joints at the top corners fixed with 2 No. Ø5 x 80 countersunk woodscrews at 65 centres and PVA adhesive**. 5 No. No.10 x 3" countersunk woodscrews set 200 from top and 140 from bottom with the remaining 3 No equally spaced on the jambs.
	Fixing to supporting construction:	
	Density (kg/m^3):	720 minimum**
	Overall size (h x w x d):	2077 x 992 x 100
	Cross section size (h x d):	30 x 100
2L	**Stops**	
	Supplier:	Exitex Limited.
	Description:	Butt jointed MDF stops fixed with 38mm x 16swg brads at 200* centres.
	Density (kg/m^3):	720 minimum**
	Overall size (w x d):	12 x 31
3L	**Leaf**	
	Supplier:	Exitex Limited.
	Manufacturer:	Jeld Wen
	Type:	F30RRO BTN 2040x926 MZF1 11/05/16 CF160 A4499704
	Description:	6 panel FD30 leaf with moulded skins as shown in Figures 1 to 4.
	Overall size (h x w x t):	2040 x 926 x 44 (to 23 at fielded area)
	Weight (kg):	38.2 (with ironmongery)
	Sub-components:	
	Core:	
	Type:	Particle board** machined to form panel profiles.
	Overall size((h x w x t):	1896 x 860 x 38
	Top/bottom rail - inner:	
	Description:	Particle board** oriented 90° to core and adhered to core using PVA adhesive**.

Item	Component	Information
3L cont	Overall size (h x w x t): Density (kg/m^3): Top/bottom rail - outer: Description: Overall size (h x w x t): Density (kg/m^3): Stiles: Description: Overall size (h x w x t): Density (kg/m^3): Moulded skin: Description: Thickness (t): Density (kg/m^3):	35ǂ x 860 x 38 Not declared* Softwood** adhered to inner rail using PVA adhesive**. 27ǂx 860 x 38 Not declared* Softwood** adhered to core using PVA adhesive**. 2040 x 34 x 38 hanging 2040 x 32 x 38 closing Not declared* Hardboard** adhered to core using PVA adhesive**. 3 Not declared*
4L	**Hinges** Manufacturer: Type: Material: Number: Location: Blade size (h x w x t): Knuckle size (Ø): Fixings (Ø x l):	 Hoppe Arrone AR8582-SSS butt hinge with concealed bearings. Stainless steel. 3 Set at 150, 930 and 1708 from the top of the leaf to the top of the blade. 102 x 29 x 3. 13.5. 4 No Ø4.9 x 30 countersunk stainless steel wood screws per blade.
5L	**Closer** Manufacturer: Reference: Description: Overall size (l x h x d):	 Hoppe Arrone size 3 AR 450 SE A scissor arm closer with mild steel arms and aluminium body incorporating steel components fitted to the exposed face of both leaves positioned in accordance with the manufacturer's instructions using 2No. Ø4.8 x 27 long steel pan head screws to the frame and 4No.Ø5.4 x 32 long steel raised countersunk screws to the leaf. 180 x 44 x 64
6L	**Latch** Supplier: Part Number: Description:	 Zoo Hardware Ltd CE1121 A mainly steel cylinder mortice latch fitted central to the leaf depth such that the centre line of the spindle is 950 above the bottom of the leaf and affixed through the steel forend using 2No. steel countersunk woodscrews. A steel strike was fitted to

Item	Component	Information
6L cont	Overall size: Body (h x w x d): Forend (h x d x t): Forend cover (h x d x t): Strike (h x d x t): Strike box (h x w x d):	the jamb to suit the position of the latch and affixed using 2No. steel raised countersunk woodscrews. 23 x 60 x 15 60 x 21.5 x 1.5 60 x 25 x 1.1 65 x 41 x 1.1, including a tongue of 40 x 16. 58 x 14 x 23.5 plastic
7L	**Handleset** Manufacturer: Reference: Description: Overall Size: Handle (h x w x l): Rose cover (Ø x d x t):	 M Marcus Steel Line SS-601-S Square section tube lever handle, stainless steel. Affixed to leaf with 2No. countersunk steel screws through backplate and 2No. through screws. 19 x 19 x 133 54 x 8 x 1
8L	**Automatic door bottom** Supplier: Reference: Description: Overall Size (h x w x d):	 Exitex Limited Concealex Surface mounted automatic door bottom with aluminium body and elastomeric seal fixed with 2 No. steel screws according to manufacturer's instructions to the unexposed side of the leaf. 39 x 900 x 13
9L	**Intumescent – frame** Manufacturer: Reference: Description: Location: Overall Size:	 Exitex Limited FO154 A strip of graphite-based intumescent in a PVC casing with self-adhesive tape on one side. It is fully interrupted at the hinges and at the strike. Positioned 14mm from exposed face. 15 x 4
10L	**Intumescent – hinge** Supplier: Reference: Description: Overall size (t):	 Exitex Limited Exi-Fire hinge pads A graphite based intumescent fitted beneath each blade 1
11L	**Intumescent – latch** Supplier: Reference: Description: Overall size (t):	 Exitex Limited Exi-Fire latch protection A graphite based intumescent wrapped around body of latch. 1

Item	Component	Information
12L	**Intumescent – strike and forend** Supplier: Reference: Description: Thickness (t):	 Exitex Limited Exi-Fire A graphite based intumescent under strike and forend and wrapped around body of strike box. 1
13L	**Fire stopping installation detail** Supplier: Reference: Description: Packers (h x d x t): Gap width (t):	 Craylon Limited Blue 60 Gaps between the frame and the associated construction were maintained using low expansion fire rated graphite packers and filled with expanding foam. 100 x 15 x 1, 100 x 15 x 3, 100 x 15 x 5 combined to give required thickness. 18 top, 7.5 sides

Key:
* Nominal value
** Sponsor declared value or detail, not verified by laboratory
‡ Constructional details omitted at the request of the Sponsor. Full details are held on file by the laboratory

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Appendix 1 Table 1b Right hand Leaf

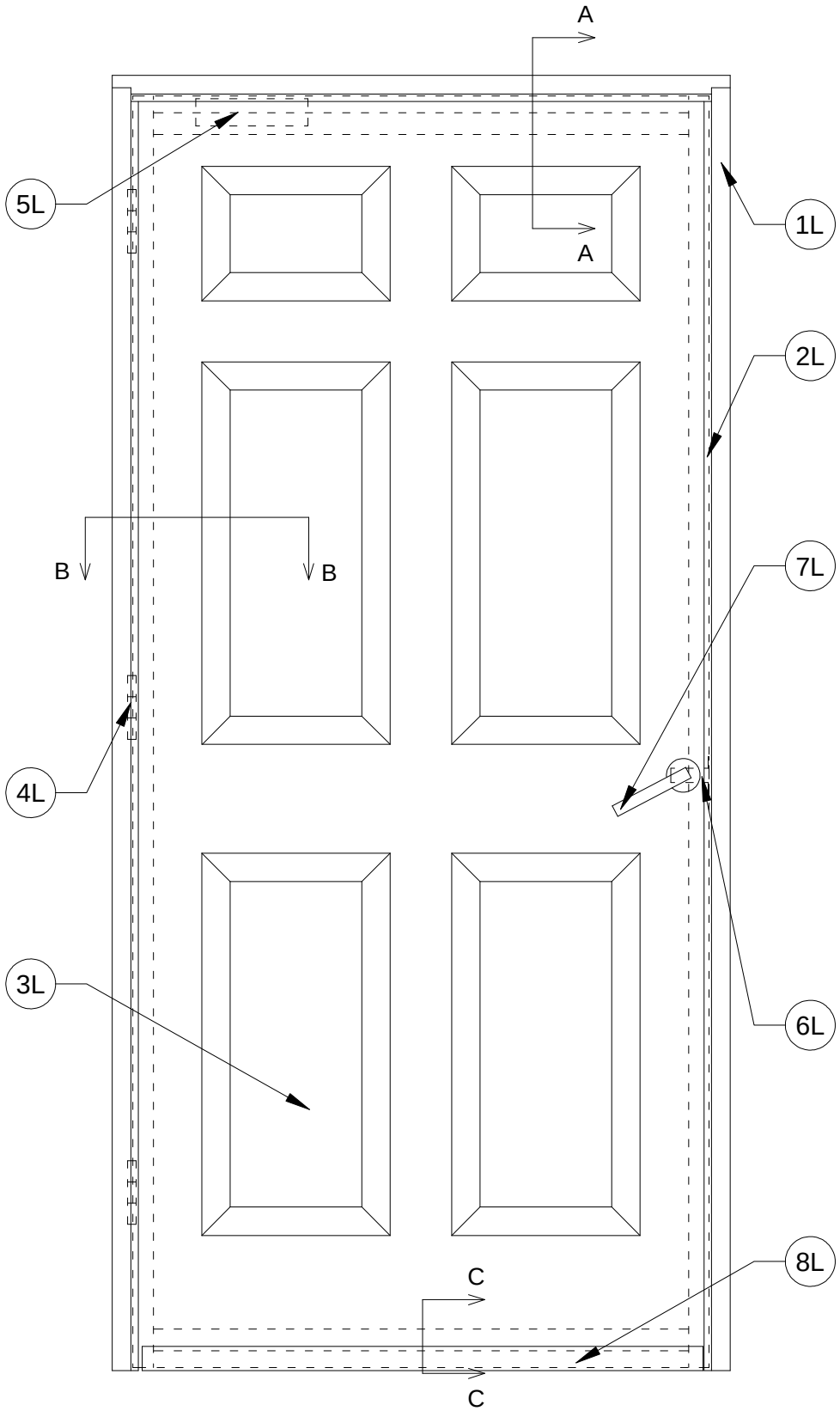
Item	Component	Information
1R	**Door frame**	
	Supplier:	Exitex Limited.
	Description:	A 3 sided MDF frame with horizontal rebate joints at the top corners fixed with 2 No. Ø5 x 80 countersunk woodscrews at 65 centres and PVA adhesive**.
	Fixing to supporting construction:	5 No. No.10 x 3" countersunk woodscrews set 200 from top and 140 from bottom with the remaining 3 No equally spaced on the jambs.
	Density (kg/m^3):	720 minimum**
	Overall size (h x w x d):	2078 x 992 x 100 x 30
	Cross section size (h x d):	30 x 100
2R	**Stops**	
	Supplier:	Exitex Limited.
	Description:	Butt jointed MDF stops fixed with 38mm x 16swg brads at 200* centres.
	Density (kg/m^3):	720 minimum**
	Overall size (w x d):	12 x 31
3R	**Leaf**	
	Supplier:	Exitex Limited.
	Manufacturer:	Jeld Wen
	Type:	F30RRO BTN 2040x926 MZF1 10/05/16 CF160 A4499758
	Description:	6 panel FD30 leaf with moulded skins as shown in Figures 5 to 8.
	Overall size (h x w x t):	2040 x 925 x 44 (to 23 at fielded areas)
	Weight (kg):	38.3 (with ironmongery)
	Sub-components:	
	Core:	
	Type:	Particle board** machined to form panel profiles.
	Overall size((h x w x t):	1896 x 861 x 38
	Top/bottom rail - inner:	
	Description:	Particle board** oriented 90° to core and adhered to core using PVA adhesive**.
	Overall size (h x w x t):	35ǂ x 861 x 38
	Density (kg/m^3):	Not declared*
	Top/bottom rail - outer:	
	Description:	Softwood** adhered to inner rail using PVA adhesive**.
	Overall size (h x w x t):	27ǂx 861 x 38
	Density (kg/m^3):	Not declared*
	Stiles:	
	Description:	Softwood** adhered to core using PVA adhesive**.
	Overall size (h x w x t):	2040 x 31 x 38 hanging 2040 x 33 x 38 closing

Item	Component	Information
3R cont	Density (kg/m^3): Moulded skin: Description: Thickness (t): Density (kg/m^3):	Not declared* Hardboard** adhered to core using PVA adhesive**. 3 Not declared*
4R	**Hinges** Manufacturer: Type: Material: Number: Location: Blade size (h x w x t): Knuckle size (Ø): Fixings (Ø x l):	 Hoppe Arrone AR8582-SSS butt hinge with concealed bearings. Stainless steel. 3 Set at 150, 930 and 1708 from the top of the leaf to the top of the blade. 102 x 29 x 3. 13.5. 4 No Ø4.9 x 30 countersunk stainless steel wood screws per blade.
5R	**Closer** Manufacturer: Reference: Description: Overall size (l x h x d):	 Hoppe Arrone size 3 AR 450 SE A scissor arm closer with mild steel arms and aluminium body incorporating steel components fitted to the exposed face of both leaves positioned in accordance with the manufacturer's instructions using 2No. Ø4.8 x 27 long steel pan head screws to the frame and 4No.Ø5.4 x 32 long steel raised countersunk screws to the leaf. 180 x 44 x 64
6R	**Latch** Supplier: Part Number: Description: Overall size: Body (h x w x d): Forend (h x d x t): Forend cover (h x d x t): Strike (h x d x t): Strike box (h x w x d):	 Zoo Hardware Ltd CE1121 A mainly steel cylinder mortice latch fitted central to the leaf depth such that the centre line of the spindle is 950 above the bottom of the leaf and affixed through the steel forend using 2No. steel countersunk woodscrews. A steel strike was fitted to the jamb to suit the position of the latch and affixed using 2No. steel raised countersunk woodscrews. 23 x 60 x 15 60 x 21.5 x 1.5 60 x 25 x 1.1 65 x 41 x 1.1, including a tongue of 40 x 16. 58 x 14 x 23.5 plastic
7R	**Handleset** Manufacturer: Reference:	 M Marcus Sorrento SC-4692-APMercury

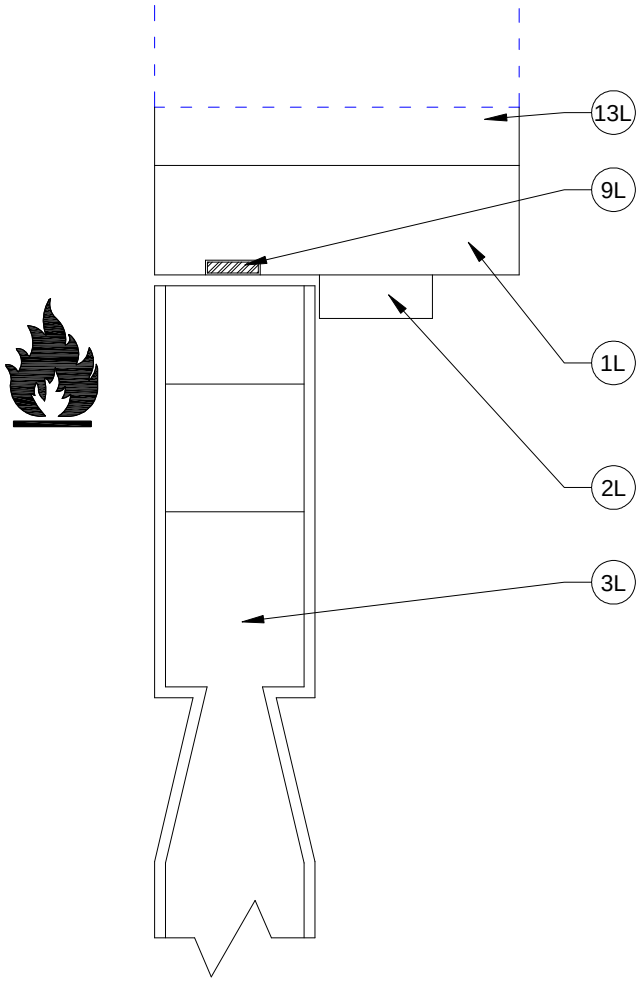
Item	Component	Information
7R cont	Description: Overall Size: Handle (Ø x l): Rose cover (Ø x d x t):	Oval tube lever handle, aluminium. Affixed to leaf with 2No. countersunk steel screws through backplate and 2No. through screws. 26 x 123 53 x 10 x 1.4
8R	**Intumescent – frame** Manufacturer: Reference: Description: Location: Overall Size:	 Exitex Limited FO104 A strip of graphite-based intumescent in a PVC casing with self-adhesive tape on one side. It is fully interrupted at the hinges and at the strike. Positioned 15mm from exposed face. 10 x 4
9R	**Intumescent – hinge** Supplier: Reference: Description: Overall size (t):	 Exitex Limited Exi-Fire hinge pads A graphite based intumescent fitted beneath each blade 1
10R	**Intumescent – latch** Supplier: Reference: Description: Overall size (t):	 Exitex Limited Exi-Fire latch protection A graphite based intumescent wrapped around body of latch. 1
11R	**Intumescent – strike and forend** Supplier: Reference: Description: Thickness (t):	 Exitex Limited Exi-Fire A graphite based intumescent under strike and forend and wrapped around body of strike box. 1
12R	**Fire stopping installation detail** Supplier: Reference: Description: Packers (h x d x t): Gap width (t):	 Craylon Limited Blue 60 Gaps between the frame and the associated construction were maintained using low expansion fire rated graphite packers and filled with expanding foam. 100 x 15 x 1, 100 x 15 x 3, 100 x 15 x 5 combined to give required thickness. 18 top, 7.5 sides

Key:
* Nominal value
** Sponsor declared value or detail, not verified by laboratory
‡ Constructional details omitted at the request of the Sponsor. Full details are held on file by the laboratory

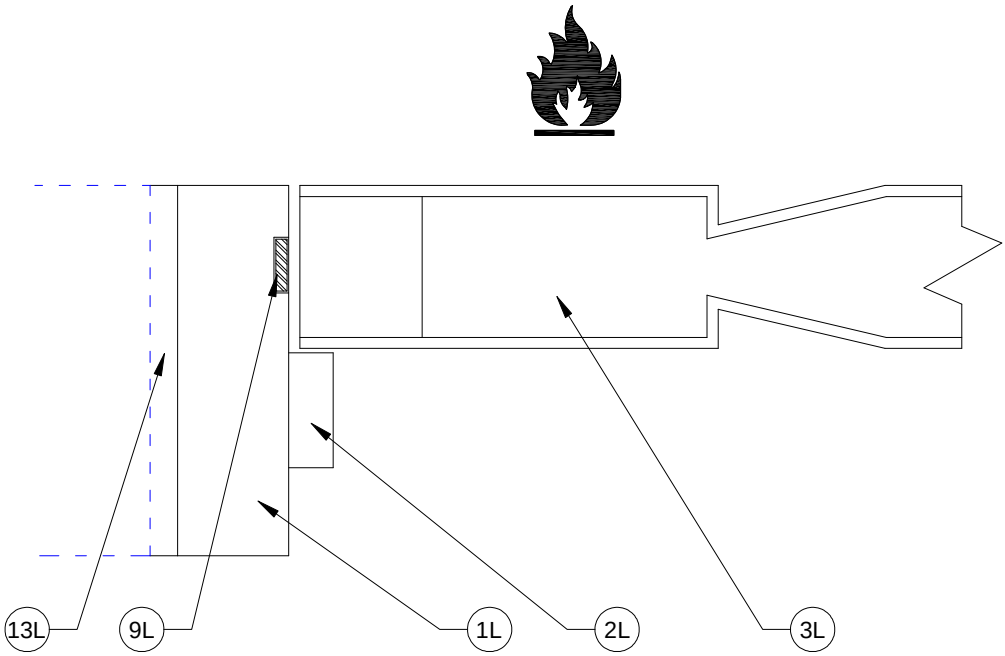
Appendix 1 Figure 1 – Elevation left hand doorset – unexposed face inc. hidden detail



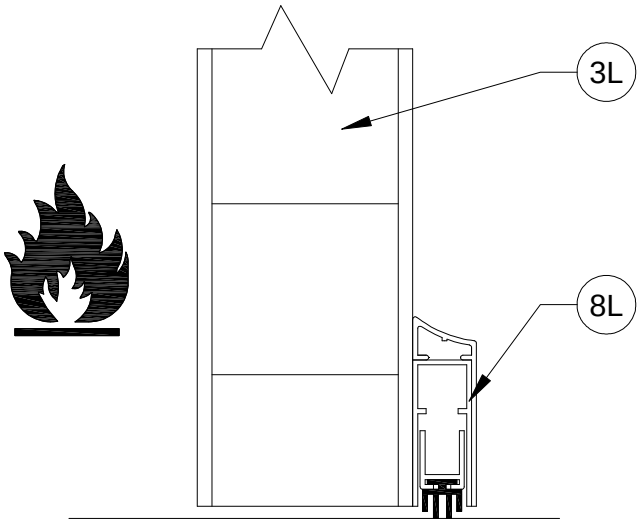
Appendix 1 Figure 2 – Section A – A



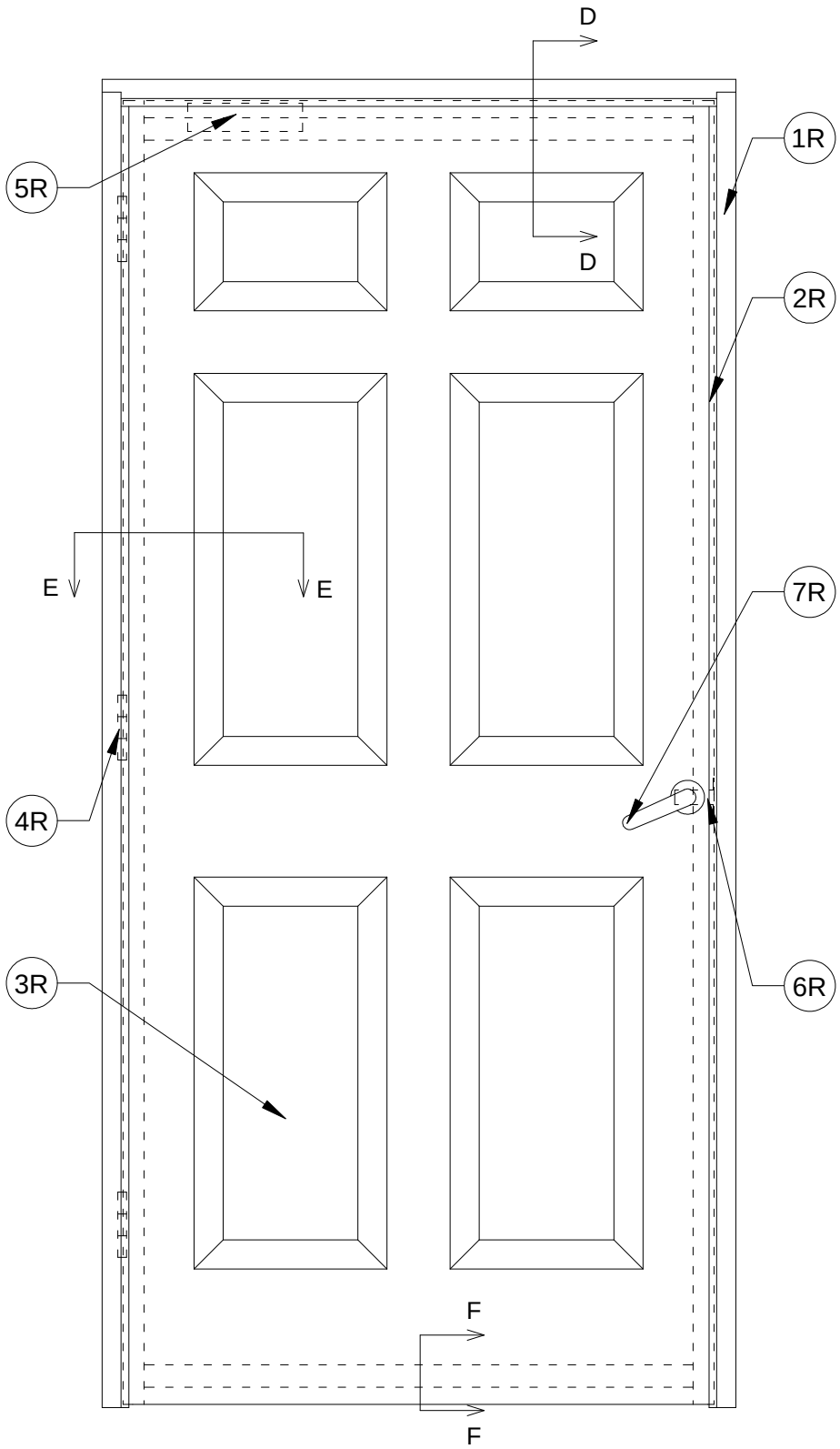
Appendix 1 Figure 3 – Section B – B



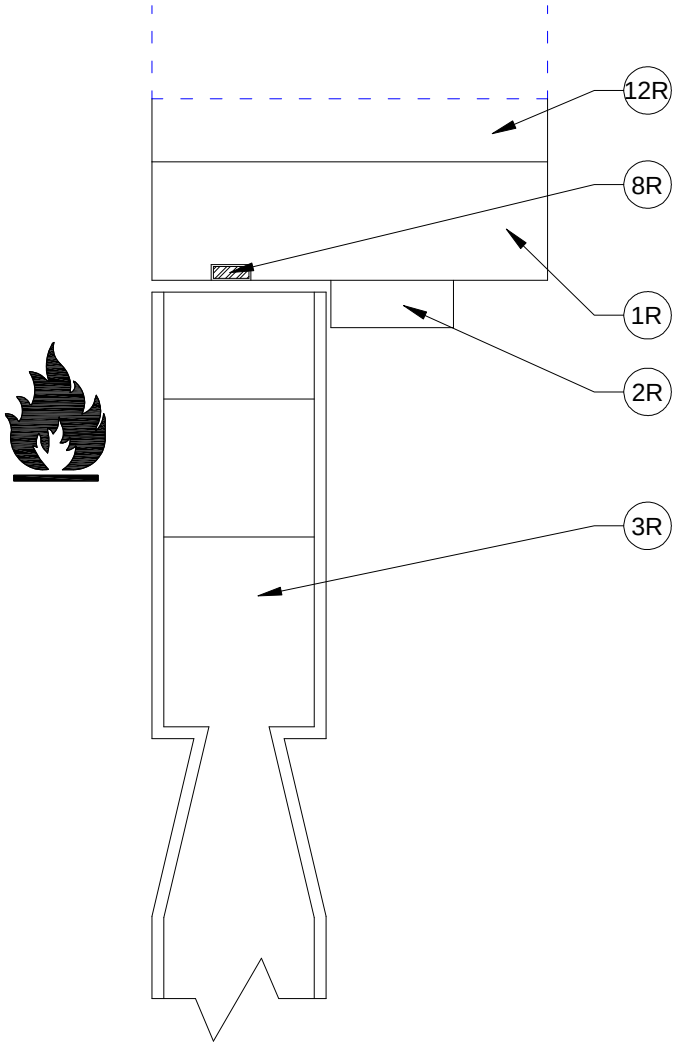
Appendix 1 Figure 4 – Section C – C



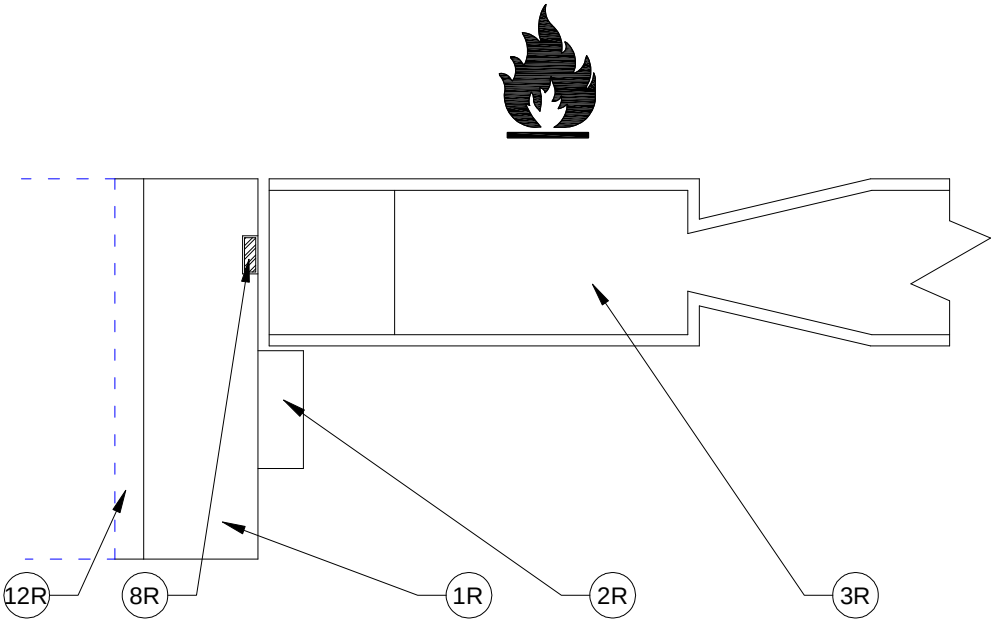
Appendix 1 Figure 5 – Elevation right hand doorset – unexposed face inc. hidden detail



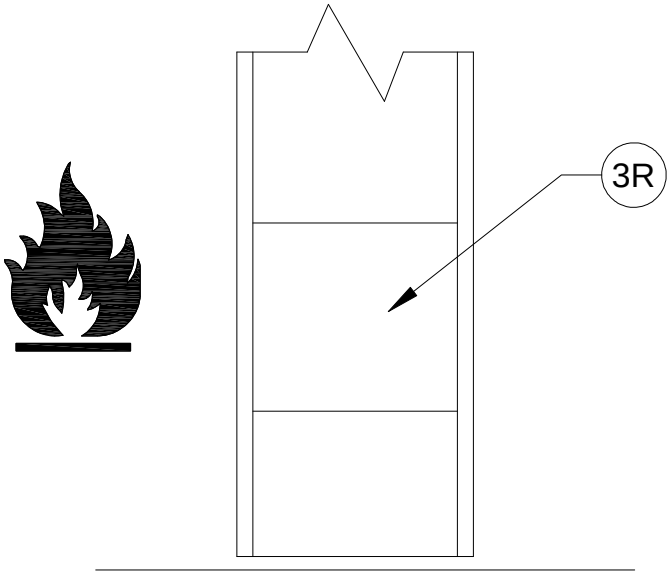
Appendix 1 Figure 6 – Section D – D



Appendix 1 Figure 7 – Section E – E



Appendix 1 Figure 8 – Section F – F



APPENDIX 2 PHOTOGRAPHS

Appendix 2.1 Pre-test photos

Photo 2.1.1 – Left hand doorset

Photo 2.1.2 – Left hand doorset

Photo 2.1.3 – Left hand doorset

Photo 2.1.4 – Left hand doorset

Photo 2.1.5 – Left hand doorset

Photo 2.1.6 – Left hand doorset

Photo 2.1.7 – Right hand doorset

Photo 2.1.8 – Right hand doorset

Photo 2.1.9 – Right hand doorset

Photo 2.1.10 – Right hand doorset

Photo 2.1.11 – Right hand doorset

Photo 2.1.12 – Right hand doorset

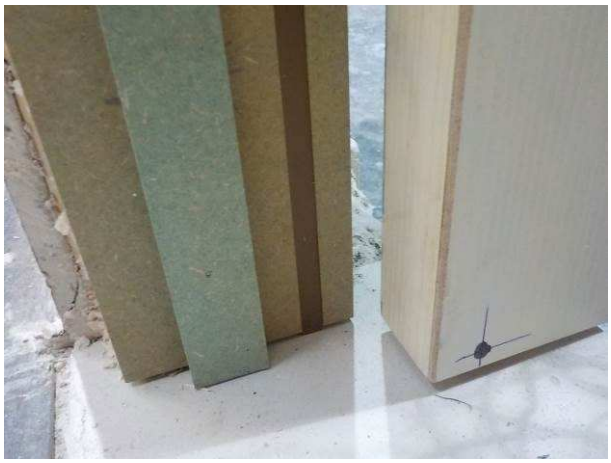


Photo 2.1.13


1606031
RH DOORSET
EXPOSED FACE
1606031
LH DOORSET
EXPOSED FACE

Appendix 2.2 During test photos

Photo 2.2.1

Photo 2.2.2

Photo 2.2.3

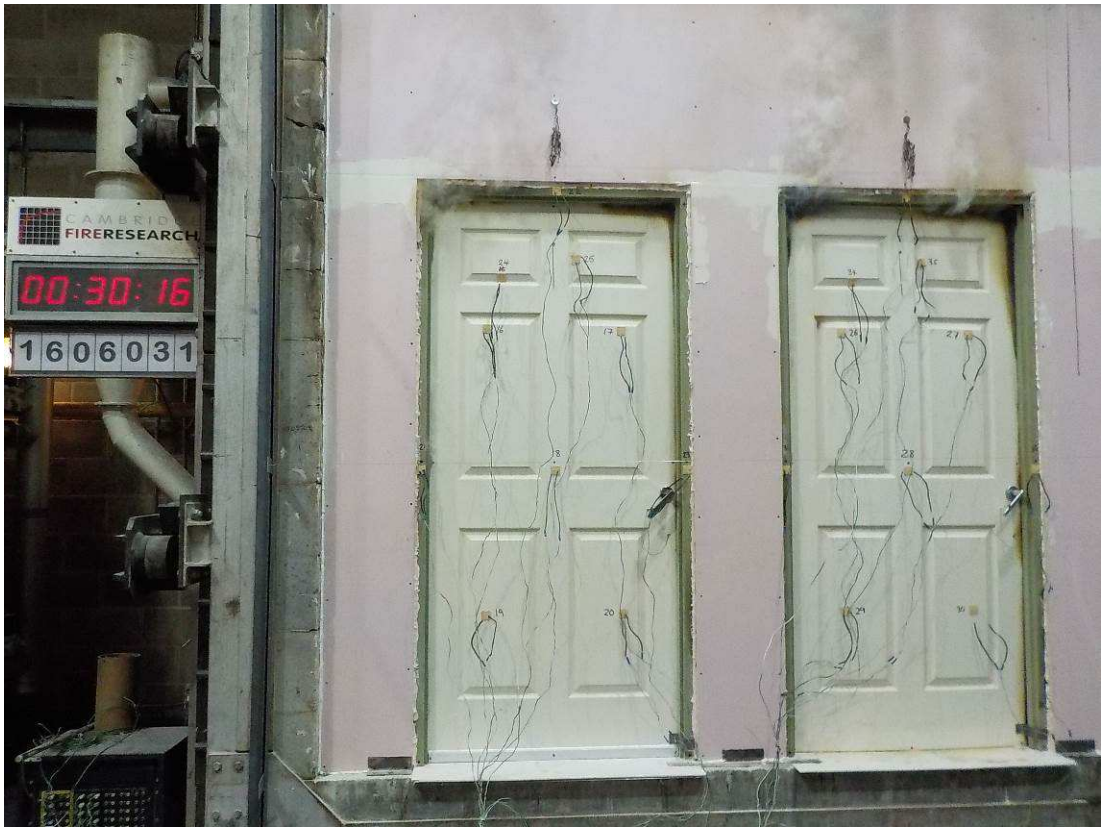
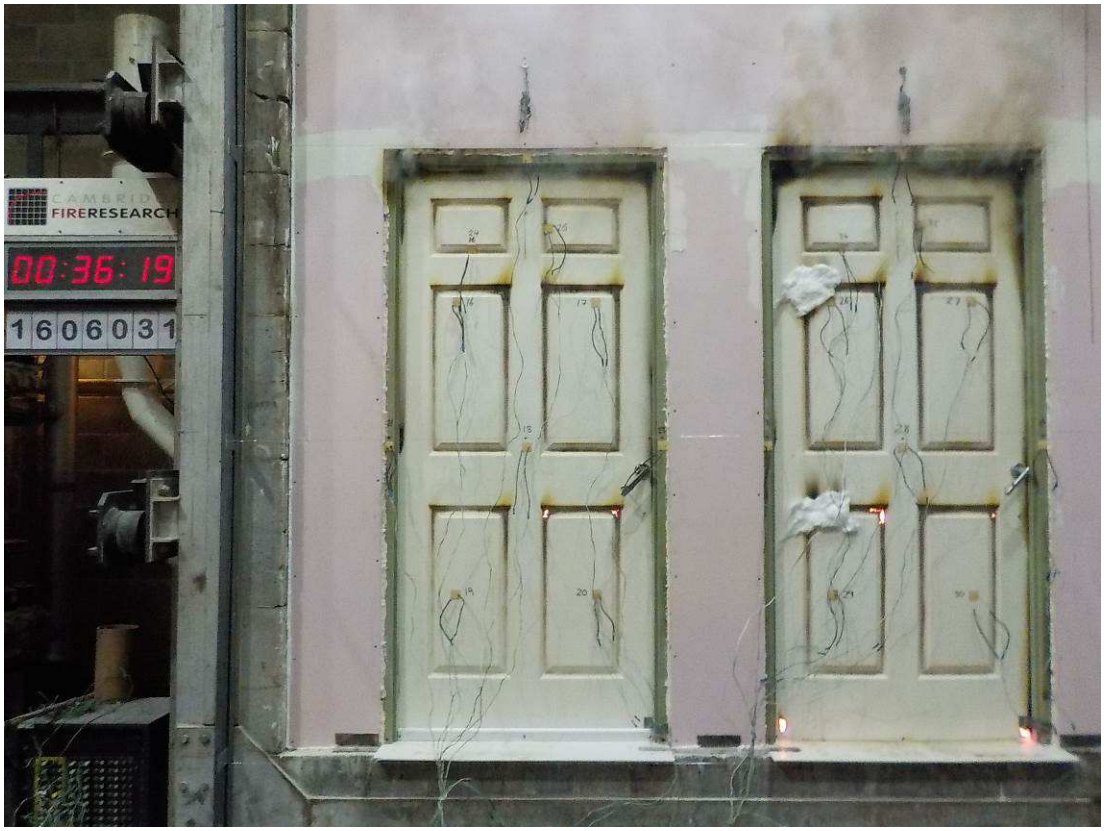


Photo 2.2.4

Photo 2.2.5



Appendix 2.3 Post test photos

Photo 2.3.1

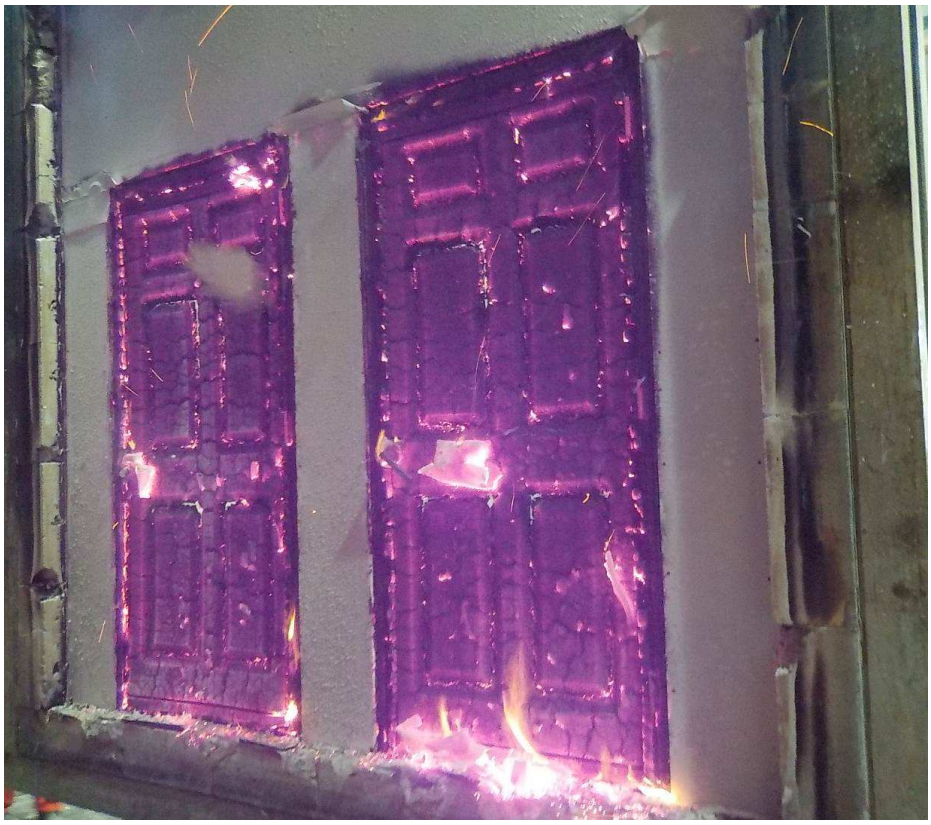
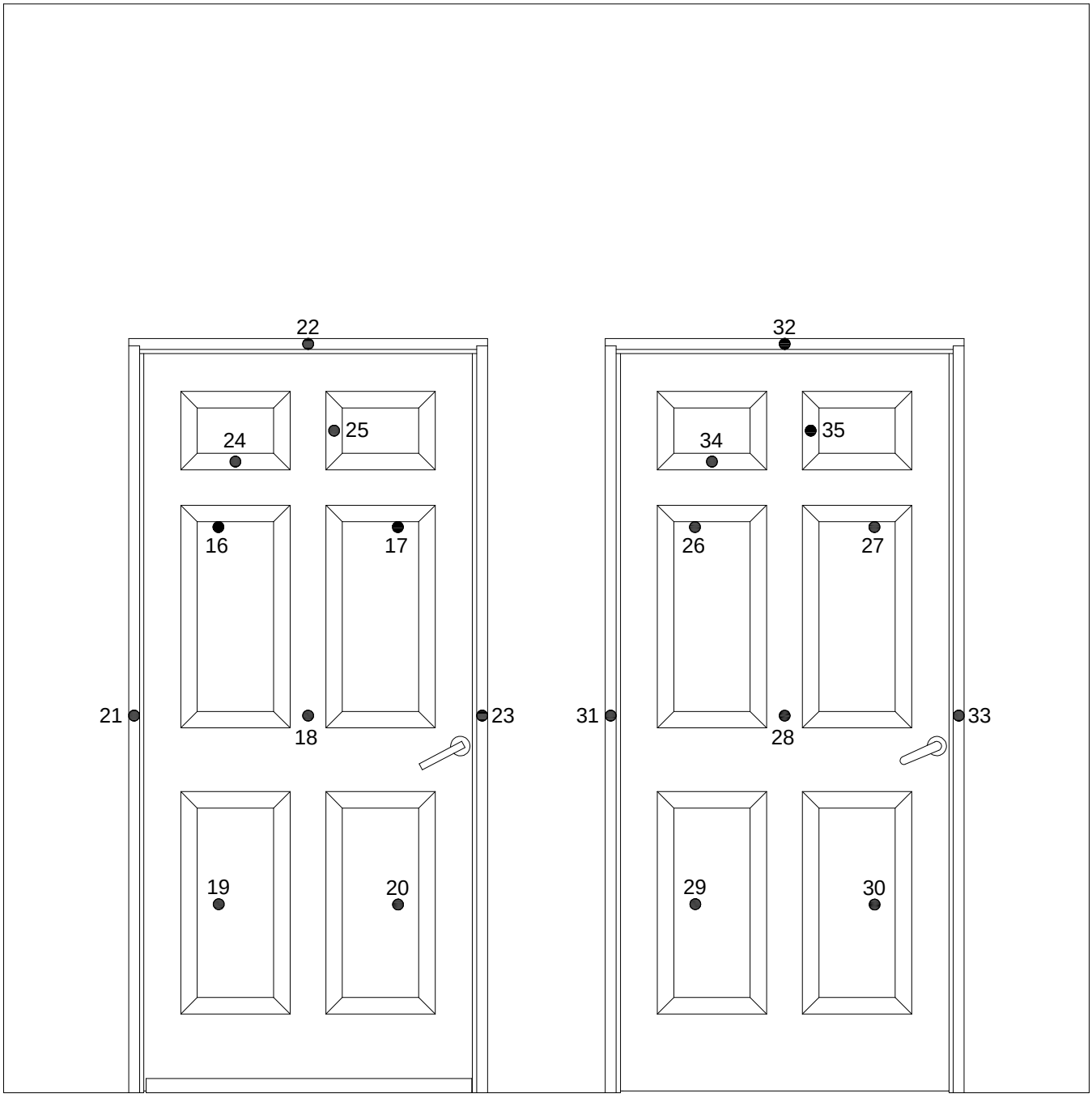


Photo 2.3.2

APPENDIX 3 POSITIONING OF INSTRUMENTATION



● Unexposed face specimen thermocouple

CAMBRIDGE FIRERESEARCH

APPENDIX 4 RECORDED THERMOCOUPLE DATA

Time	Chan 16	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22
min	°C	°C	°C	°C	°C	°C	°C
0	15	15	15	14	14	14	15
1	15	15	15	15	15	15	15
2	15	15	15	15	15	15	15
3	15	15	15	15	15	15	15
4	15	15	15	15	14	14	15
5	15	15	15	15	15	15	15
6	16	15	15	15	15	15	15
7	17	15	15	15	15	15	15
8	18	15	15	15	15	15	16
9	19	16	15	15	16	15	16
10	20	17	16	16	17	15	16
11	22	18	17	17	19	15	16
12	24	19	19	20	21	15	17
13	27	22	22	23	23	15	17
14	30	24	24	26	26	15	18
15	33	28	27	29	29	16	18
16	37	31	29	31	31	16	18
17	39	34	32	34	34	16	19
18	42	38	34	37	36	16	20
19	45	41	37	39	39	17	20
20	47	44	39	42	41	17	21
21	49	47	41	44	43	17	21
22	51	49	43	46	45	17	21
23	53	51	45	48	47	17	22
24	55	54	47	49	49	17	23
25	56	56	49	51	51	18	24
26	58	58	51	53	53	18	24
27	60	60	53	55	55	18	25
28	61	62	55	56	56	19	25
29	63	63	57	58	58	19	25
30	65	65	59	60	60	19	26
31	66	66	61	61	61	20	27
32	67	68	63	63	63	21	29
33	68	69	64	64	64	21	29
34	69	70	66	65	66	22	31
35	70	71	67	66	67	22	32
36	72	73	69	68	69	23	33
37	73	74	70	69	69	24	35

CAMBRIDGE FIRERESEARCH

Time	Chan 23	Chan 24	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29
min	°C	°C	°C	°C	°C	°C	°C
0	14	14	14	15	15	15	14
1	15	15	15	15	15	15	15
2	15	15	15	15	15	15	14
3	16	15	15	15	15	15	15
4	15	15	15	15	16	16	15
5	15	28	22	15	16	16	15
6	16	51	36	17	16	16	15
7	15	50	39	18	16	16	15
8	15	48	40	19	16	16	15
9	15	47	42	21	16	16	15
10	15	48	44	23	17	16	16
11	15	49	47	25	18	17	17
12	16	52	51	27	20	19	19
13	16	54	54	30	23	21	21
14	16	57	57	34	26	24	23
15	16	60	60	37	30	26	26
16	16	64	63	41	34	29	29
17	16	67	65	44	37	32	31
18	17	71	68	47	41	35	34
19	17	74	71	49	44	37	36
20	17	77	73	51	48	40	39
21	17	79	76	54	50	42	42
22	17	80	78	56	53	44	44
23	18	82	81	57	55	47	46
24	18	84	84	59	57	49	48
25	19	86	86	61	60	51	50
26	19	89	89	62	61	53	52
27	19	91	90	64	63	54	54
28	20	93	92	65	64	56	56
29	20	96	94	67	65	58	58
30	20	100	96	68	66	59	60
31	20	110	100	69	67	61	62
32	21	124	106	71	69	63	64
33	21	135	114	72	70	64	65
34	22	146	125	73	71	66	66
35	23	158	138	66	72	67	68
36	23	171	153	66	73	69	65
37	24	185	169	68	74	70	62

Time	Chan 30	Chan 31	Chan 32	Chan 33	Chan 34	Chan 35
min	°C	°C	°C	°C	°C	°C
0	14	14	15	14	14	14
1	15	15	15	15	15	14
2	15	15	15	15	14	15
3	16	15	16	15	14	15
4	16	15	16	15	15	15
5	16	15	18	15	21	19
6	16	15	20	15	38	30
7	15	15	20	15	41	33
8	15	15	20	15	42	35
9	16	15	23	15	44	36
10	17	15	22	15	47	39
11	19	15	22	15	51	43
12	21	15	23	15	54	47
13	23	15	23	15	57	51
14	26	16	23	15	61	55
15	29	16	23	15	64	58
16	31	16	23	16	68	61
17	34	16	23	16	71	65
18	37	17	24	16	74	69
19	39	17	24	16	77	72
20	41	18	24	16	79	75
21	43	18	25	16	81	78
22	45	18	25	16	84	81
23	47	18	26	17	86	83
24	49	19	28	17	88	87
25	51	19	28	17	91	90
26	52	20	30	18	93	92
27	54	20	32	18	94	93
28	56	20	33	18	96	94
29	57	21	36	19	98	96
30	59	21	37	19	101	99
31	61	21	39	19	109	107
32	63	22	41	20	120	118
33	64	23	42	20	132	130
34	66	24	43	21	145	141
35	67	24	43	21	159	152
36	68	25	45	22	172	165
37	70	26	47	22	187	177

* Thermocouple malfunction