TEST REPORT
FIRE RESISTANCE TEST OF CONSTRUCTION ASSEMBLIES

Test Sponsor:

Abanos Furniture & Decoration Industry L.L.C.
P.O.Box: 114480
Dubai, UAE
T: +971 4 899 6111 | F: +971 4 885 9966
Website: www.abanos.ae

Test Assembly:

Two Nos. of Latched, Single Acting, Single Leaf Wooden Doorset.

Test Standard:

UL 10C: Edition 3 June 9, 2016 (R2021); Positive Pressure Fire Tests of Door Assemblies.

THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

Test Date: 20-Dec-23
Issue Date: 29-Jan-24
Test Reference No: XK120-1A&2A

PO BOX 26385, DUBAI UAE T +971 (0) 4 821 5777 fire@bell-wright.com www.bell-wright.com

DUBAI ABU DHABI DOHA RIYADH

Accreditation

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories with:

United Kingdom Accreditation Service (UKAS) - Testing Laboratory: **4439**
www.ukas.com

Emirates National Accreditation System – Testing Laboratory **NAL 159**
www.enas.gov.ae

Testing - NAL 159

GCC Accreditation Center (GAC) – Testing Laboratory: **ATL-0017**
www.GCC-accreditation.org

Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

Member of Association for Specialist Fire Protection

www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk

The work which is the subject of this report falls under the accreditations of **ISO 17025 UKAS, ISO/IEC 17025 ENAS, and ISO 17025 GAC.**

Table of Contents

1. INTRODUCTION

Determination of the fire resistance of two doorsets according to:

UL 10C: Edition 3 June 9, 2016; Positive Pressure Fire Tests of Door Assemblies

This report has been written to encompass the results of two separate doorsets which were tested simultaneously in the same test frame, at the same time. The specimen type, their notation for the purpose of this report are outlined in the following table:

TBW Test Ref.	Report Notation	Description
XK120-1	Doorset A	Latched. single acting, single leaf wooden doorset with 9mm Fire Pro board on the exposed face of the door frame.
XK120-2	Doorset B	Latched, single acting, single leaf wooden doorset incorporating stiles and rails within the door leaf.

2. SPONSOR

Name: Abanos Furniture & Decoration Industry L.L.C.
Address: P.O.Box: 114480
Dubai, UAE
T: +971 4 899 6111 | F: +971 4 885 9966
Website: www.abanos.ae

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th streets, Jebel Ali Industrial Area 1
P.O. Box 26385, Dubai, U.A.E.
T: +971 (0) 4 821 5777
Website: www.bell-wright.com

4. DATE OF TEST

Fire Test Date: 20-Dec-23

The test has been witnessed by:

Name	Company	Contact Number
Mr. Sam Sancho Thomas	Intertek Middle East	+971 54 583 2235
Mr. Salman	Abanos Furniture & Decoration Industry L.L.C	+971 58 145 0286

5. CONSTRUCTION

5.1. General Description of the Assembly

Doorset A: Latched, single acting, single leaf wooden doorset with 9mm Fire Pro board on the exposed face of the frame. The overall dimensions of the doorset were 1084 x 2350 x 150mm (w x h x jamb depth).

Doorset B: Latched, single acting, single leaf wooden doorset incorporating stiles and rails within the door leaf. The overall dimensions of the doorset were 1084 x 2350 x 150mm (w x h x jamb depth).

For full details of the test specimen, refer to Appendix 1 and Appendix 2.

5.2. Supporting Construction

The specimens were installed within a rigid supporting construction made of solid blocks with a nominal density of 2350kg/m^3 and a structural opening of size 1104 x 2360 x 150mm, (w x h x thk.) for each specimen. A 150 x 200mm (thk x depth) reinforced concrete lintel was used along the head of the structural opening. The space between the lintel and test frame head was filled with aerated concrete blocks of density 550kg/m^3.

The supporting construction was in turn installed within a rigid test frame made of steel and dense refractory castable with a density of 2000kg/m^3 and opening size of 3050 x 3050 x 300mm (w x h x thk).

5.3. Conditions and Test Situation

In accordance with section 9.1 of UL 10C:2016, the doors were installed with the leaves opening into the furnace.

Both doors were latched but not locked with a single point latch. The latch of doorset A had a total throw of 19.4mm and engaged at 16.4mm into the catch. The latch of doorset B had a total throw of 19.4mm and engaged at 15.8mm into the catch. Door handles were installed on both the exposed and unexposed faces of both the doorsets and a double lock cylinder was installed on the unexposed face of both doorsets.

A nominal 10mm gap was maintained between the fixed edges of the framing system and the supporting construction and filled with expanding foam and topped off with sealant.

The moisture content, prior to the test, of the doorset A & B were measured and the values are as tabulated below:

Location	Moisture Measurements (in %)				
	Leaf	Frame	Lipping	Door stop	Architrave
Doorset A	13.7	11.9	7.3	10.9	12.2
Doorset B	12.4	12.2	6.7	10.5	10.4

A surface mounted door closer was installed on the door leaves of both the doorset on the exposed face as decided by the sponsor of the test. The average value of retention force measure on the door leaf of the doorset A was 92.9N, and on the door leaf of doorset B was 83N.

Gaps between the fixed and moveable components of the specimen have been measured in accordance with section 9.3 of UL 10C:2016 as also mentioned in section 7.2 of this report, and certain measurements were found to fall outside of the tolerances specified within the standard. Details can be found in section 13.2 - Door Gaps, of this report. It was agreed upon with the sponsor to proceed with the test.

6. SPECIMEN VERIFICATION

6.1. Specimen Definition & Verification of the Test Specimen.

TBWIC testing laboratory has not been involved in the selection or design of the specimen. However, the materials were selected, marked, and signed by Mr. Deepesh Srivastava from Intertek Middle East (Certification Body) on 24-Nov-23 as shown below.

There are contexts where information has been provided by the sponsor and verification of information has been done through either technical datasheet or other document submission, or as indicated directly by the sponsor. For this reason, materials have been tested in an as-received condition and TBWIC bears no liability for the legitimacy of the submitted information. Similarly, the results of the test apply only to the samples as received.

6.2. Specimen Installation & Conditioning

Installation of the specimen: Abanos Furniture & Decoration Industry L.L.C.

The specimen was delivered on 13-Dec-23 and installed between 13-Dec-23 and 14-Dec-23. The specimen stored in ambient conditions after installation at temperatures ranging between 18°C and 29°C and 25% to 65% humidity.

7. METHOD OF TEST

7.1. Performance Criteria

The specimen has been evaluated against the performance criteria with respect to sustained flaming and the development of openings anywhere in the assembly, as outlined in sections 14 and 15 of UL 10C.

7.2. Measurements (for graphs and data, refer to Appendix 3 & 4)

The time-temperature curve has been controlled using nine thermocouples distributed in the furnace.

The furnace thermocouples were placed at 6in. (152mm) from the exposed face of the specimen and this distance has been maintained throughout the entire test duration.

Unexposed surface thermocouple measurements have been recorded in accordance with section 6 of UL 10C:2016.

The neutral pressure plane in the furnace has been established at 40 inches (1016mm) from the sill with an additional reference probe placed at the head top of the doorset, in accordance with sections 7 and 11.2 of UL 10C:2016, and measurements are given in Appendix 3.

Oxygen percentage reading have been recorded and are given in Appendix 3.

Deflections have been measured before and during the test, as well as gaps between the fixed and moveable components before the test and warpage after the test, and are given (in mm) in Appendix 4.

7.3. Hose Stream Test

Following the fire endurance test within 3 minutes, in accordance with section 12 of the UL 10C:2016 standard, the specimen was subjected to the impact, erosion, and cooling effects of a

hose stream directed first to the bottom center of the exposed face of the specimen and then to all parts of the exposed face of the specimen.

As per section 12 of the UL 10C standard, the hose stream was delivered through a 2.5in (63.5mm) hose discharging through a play pipe as described in the Standard for Play Pipes for Water Supply Testing in Fire Protection Service, UL 385. The minimum water pressure at the base of the play pipe was 30 psi and the duration of application was 1 minute 3 seconds as prescribed in table 12.1 of UL 10C:2016. The total hose stream application area was measured as 6.3m².

7.4. Method Variations

As a supplement to section 5.3 which outlines specific test requirements and their respective sections in the test standard, this section outlines any applicable method variation from the standard which relate to the operation and execution of the test.

With respect to section 6.4 and Table 6.1 of UL 10C:2016, there is a requirement that the felted pads used in the test are of a type with a specific thermal insulation and Brinnel hardness. The laboratory has been unable to source the required Brinnel hardness and thermal insulation, and instead used felted pads which are standard practice and acceptable across other fire testing standards and jurisdictions.

Additionally, as referenced in section 5.3 and 13.2 of this report, certain measured door gaps were not within the tolerances specified in the standard.

Method Variations	2

8. OBSERVATION

8.1. Ambient Conditions & Test Situation

The ambient temperature at the commencement of the test was 20°C.

8.2. Pre-Test Observations

The specimen was found satisfactory and fit to be tested.

8.3. Fire Test Observations

Time (mm:ss)	Doorset A/B	Test Observations *(All observations are from the unexposed face unless specified otherwise)*
0:00	**A & B**	**The test was started.**
01:26	A & B	Light smoke was observed issuing from the top right corner of the door leaf.
02:14	A & B	Light smoke was observed issuing from the latch stile edge of both the doorsets from above mid height.
03:51	A & B	The light smoke observed at 02:14 minutes was observed to have ceased.
04:45	A & B	The light smoke observed at 01:26 minutes was observed to have ceased.
07:01	A & B	Light smoke was observed issuing from the top of the hinge stile edge of both the door leaves.
07:46	A & B	Light smoke was observed issuing from the latch stile edges from below mid height.
10:00	A & B	The specimen was stable.
13:13	A & B	Light smoke was observed issuing from the cylinder keyhole.
13:20	A & B	On the exposed face, when viewed from the left and right vision panels, the sub facing was observed to have deteriorated and the core was visible.
16:37	A & B	Smoke stains were observed forming at the smoke issue location mentioned at 01:26 minutes.

20:00	A & B	The specimen was stable.
22:00	A	Moisture content was observed forming near the keyhole and the door handle.
24:00	A & B	Exposed face cracks are visible on specimens and also screws are visible
30:00	A & B	The specimen was stable.
37:08	A & B	Gaps are increasing at 24:00.
41:00	A & B	Both Door leaves observed deflecting away from furnace.
45:00	A & B	The specimen was stable.
51:00	A	Light smoke started emerging from underside of doo leaf.
55:00	A & B	The specimen was stable.
60:00	**A & B**	**The specimen was still intact and the fire endurance test was ended, as agreed upon with the test sponsor and the preparation of the hose stream test was started.**

8.4. Hose Stream Test Observations

Time (mm:ss)	Specimen Observations
0:00	**The hose stream test was started.**
01:03	**The doorsets A & B were still intact and the fire endurance test was ended, as agreed upon with the test sponsor. The hose stream was started within 180 seconds, in accordance with section 12.1 of UL 10C.** No through gaps were observed to have formed.
END OF UL 10C TEST AS AGREED WITH THE SPONSOR OF THE TEST.	

8.5. Post Hose Stream Test Observations

8.5.1. Unexposed Face Observations

Doorset A & B: The door frames and the door leaves were intact. Smoke stains were observed to have formed at the top corners of the door leaves. No through gaps were observed.

8.5.2. Exposed Face Observations

Doorset A: The door frame was observed to have completely charred. The facings and the subfacings of the door leaf was observed to have deteriorated exposing the core of the door leaf. The door closer was observed to have deteriorated. The door handle was observed to have deflected.

Doorset B: The door frame was observed to have completely charred. The facings and the subfacings of the door leaf was observed to have deteriorated exposing the rails and the stiles and the core of the door leaves. The door closer was observed to have deteriorated. The door handle was observed to have deflected.

9. SUMMARY OF RESULTS

Both the doorsets have been evaluated in accordance with UL 10C: Edition 3 June 9, 2016; Positive Pressure Fire Tests of Door Assemblies.

The requirements of the standards were satisfied for:

FIRE PROTECTION RATING
1 HOURS

This report and all records of the test to which it relates may not be retained by TBWIC beyond 5 years from the date of testing. This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

Prepared By:

Rakhesh Raveendran
Fire Testing Engineer

Reviewed By:

Kevin Zachariah
Projects & Laboratory Operations Manager

Authorized By:

Daisan Dippi, AIFireE
Fire Testing Director

P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

Report Revision Tracking		
Revision No.	**Date Issued**	**Notes & Amendments**
Rev. 00	29-Jan-24	This is the first issue of the report. No revisions are included.

At the request of the sponsor, this report has been issued as duplicate versions under separate stakeholder names. To maintain continuity of detail, the versions issued, and their respective parties are expressed below.

XK120-1A&2A	XK120-1B&1B
Abanos Furniture & Decoration Industry L.L.C. P.O.Box: 114480 Dubai, UAE T: +971 4 899 6111 | F: +971 4 885 9966 Website: www.abanos.ae	Al Talah Board Manufacturing Co. LTD Abu Dhabi Free Zone (KIZAD), Plot No.: KHIA4-05 Taweelah, Abu Dhabi United Arab Emirates T: +971 2 246 7042

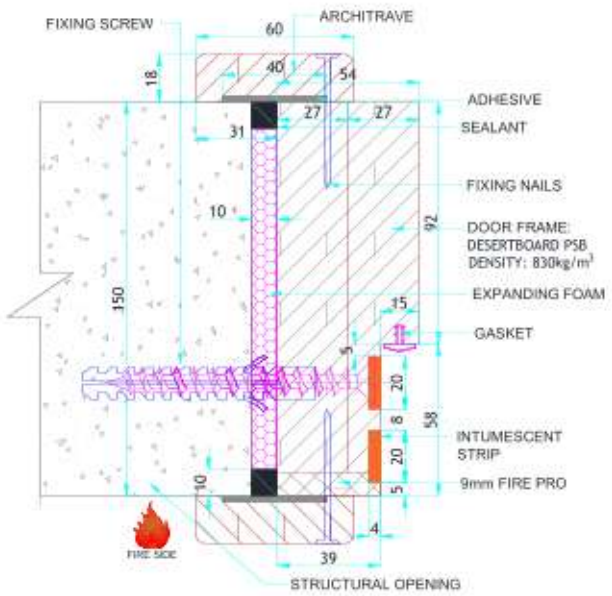
10. APPENDIX 1 – DESCRIPTION OF SPECIMEN

Note: All information provided herein Appendix 1 has been provided either by TBWIC or Test Sponsor. Information marked with a single asterisk indicates information provided by the Test Sponsor which has been checked against the materials used in the test where appropriate, however does not fall under the responsibility of TBWIC . All dimensions are expressed in millimetres (mm), unless otherwise specified.

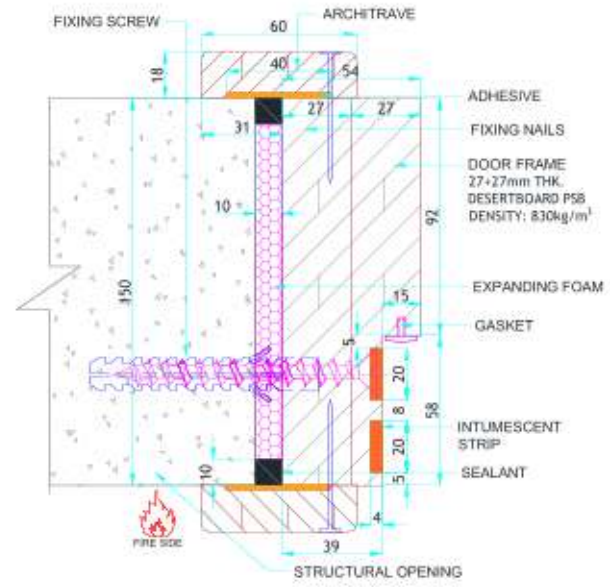
Overall – Doorset A & B		
	Doorset A	**Doorset B**
Type	Latched. single acting, single leaf wooden doorset with 9mm Fire Pro board on the exposed face of the door frame.	Latched, single acting, single leaf wooden doorset incorporating stiles and rails within the door leaf.
Dimensions	1084 x 2350 x 150mm (w x h x jamb)	1084 x 2350 x 150mm (w x h x jamb)

A. Framing System – Doorset A & B

Door Frame & Accessories – Doorset A & B



Door Frame – Doorset A

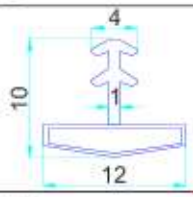


Door Frame – Doorset B

	Door Frame Profile	**Architrave**	**Fire Pro Board – Doorset A**	**Fixing anchors**	**Adhesive**
Material	Desert Board PSB*	Desert Board PSB*	Fire Protection Board*	Stainless Steel*	Kleiberit 501 PUR Glue*
Supplier	Al Talah Board Manufacturing Company Ltd.*	Al Talah Board Manufacturing Company Ltd.*	Soben International (Asia Pacific) Ltd*	ABC SCREWS WITH PLASTIC PLUG*	Ultimate Hardware Solutions LLC.*
Dimension	As shown Above	As shown Above	39 x 9mm (w x thk.)	M8 x 120mm	N/A
Density	830kg/m³ (stated)*	830kg/m³ (stated)*	900kg/m³ (stated)*	N/A	N/A
Moisture Content	12% (stated)*	12% (stated)*	15% (stated)*	N/A	N/A
Fixing Method & Application*	The vertical and horizontal frame jambs of both the doorsets were joined together by applying the adhesive at the interface of each jamb and were screwed using 3 Nos. of				

	screws of size M4.8 x 50mm at each interface. A 9mm Fire Pro board was fixed on the exposed face of the door frame of the doorset A using the same adhesive. The door frames of both the doorsets were fixed onto the supporting construction on both the jambs and the top horizontal edge for the doorset A & B using counter sunk stainless steel screws of size M8 x 120mm with plastic plugs. Refer drawing 2 & 6 of appendix 2 for spacing of anchors. The architrave was fixed to the door frame of both the doorsets on both the exposed and unexposed faces using Ø2.2 x 50mm steel nails. Refer drawing 2 & 6 of appendix 2 for spacing. A thin layer of adhesive was applied to inner surface of the architrave prior to fixation.

Intumescent Seal & Gaskets – Doorset A & B



	Intumescent Seal	Gaskets
Material	PVC encapsulated graphite*	Elastomer Silicone Synthetic Rubber*
Supplier	Lorient*	Emirates Technotrade*
Reference	LP2004*	ETT 4718*
Dimension	20 x 4mm (w x thk.)	As shown above.
Fixing Method	The intumescent seals were inserted into the slots on the door frame rebate along the top horizontal and both vertical jambs of both the doorsets. The intumescent seal was inserted into the slot at the top and both vertical edges of the door leaves. The fire pro boards were bonded to the exposed face of the door frame of the doorset B using the adhesive.	

Expanding Foam & Sealant – Doorset A & B

	Expanding Foam	Sealant
Material	Polyurethane	Acrylic Sealant
Supplier	Asmaco	Lorient
Reference	Gold B2	Intumescent Sealant
Fixing Method & Application	The expanding foam was applied at the door frame jamb depth along the perimeter gaps of 10mm between the door frame and supporting construction on both the exposed and unexposed faces of both the doorsets. Once the foam had dried, the foam was pushed back 10mm on both the exposed and unexposed faces as shown in drawing 4, 5 , 8 & 9 of appendix 2 and sealant was applied over the foam on both the exposed and unexposed faces of both the doorsets at a width and depth of 10mm.	

B. Door Leaf – Doorset A & B

	Overall – Doorset A	Overall – Doorset B
Dimensions	1000 x 2300 x 54mm (w x h x thk.) (stated) 1000 x 2300 x 54.7mm (w x h x thk.) (measured)	1000 x 2300 x 54mm (w x h x thk.) (stated) 1000 x 2300 x 54.9mm (w x h x thk.) (measured)

Door Leaf

Hinge & Latch Stile Edge and Top & Bottom Horizontal Detail – Doorset A

Hinge & Latch Stile Edge and Top & Bottom Horizontal Detail – Doorset B

	Leaf Core – Doorset A	Leaf Core – Doorset B	Lipping – Doorset A	Lipping – Doorset B	Facings – Doorset A & B	Stile & Rail – Doorset B
Material	Soben Board*	PSB Composite Fire Rated Core*	Hardwood*	Mahagony*	PSB Composite Fire Rated Core*	Soben Board*
Supplier	Soben International (Asia Pacific) Ltd*	Al Talah Board Manufacturing Company Ltd.*	Al Danube LLC.*	Al Danube LLC.*	Al Talah Board Manufacturing Company Ltd.*	Soben International (Asia Pacific) Ltd*
Reference	9mm FR Soben Board*	18mm Fire PSB	N/A	N/A	9mm FR Soban Board*	9mm FR Soban Board*
Dimension	As shown above	18mm thick, cut to required size	5mm thick	5mm thick	As shown above	As shown above
Density	900kg/m³ (stated)*	830kg/m³ (stated)*	640kg/m³ (stated)*	640kg/m³ (stated)*	830kg/m³ (stated)*	900kg/m³ (stated)*
Moisture Content	15% (stated)*	12% (stated)*	12% (stated)*	12% (stated)*	12% (stated)*	15% (stated)*

Fixing Method*	The core of doorset A was formed by bonding 4 Nos. of 9mm FR Soban Board which was bonded to the facings and lippings using adhesive 2 and pressure pressed against each other using a hydraulic pressing machine and was done in the factory prior to delivery to the laboratory. The core of doorset B was bonded to the stiles, rails, facings and lippings using the same adhesive and pressure pressed against each other using a hydraulic pressing machine. #6 x 1'' drywall screws are used to additionally fix the internal Soben board layers of the doors at a nominal spacing of 60mm from ends, 200mm C/C vertically and horizontally (5 vertical rows of screw per leaf on each side). The door leaves were fabricated in the factory prior to delivery to the laboratory.

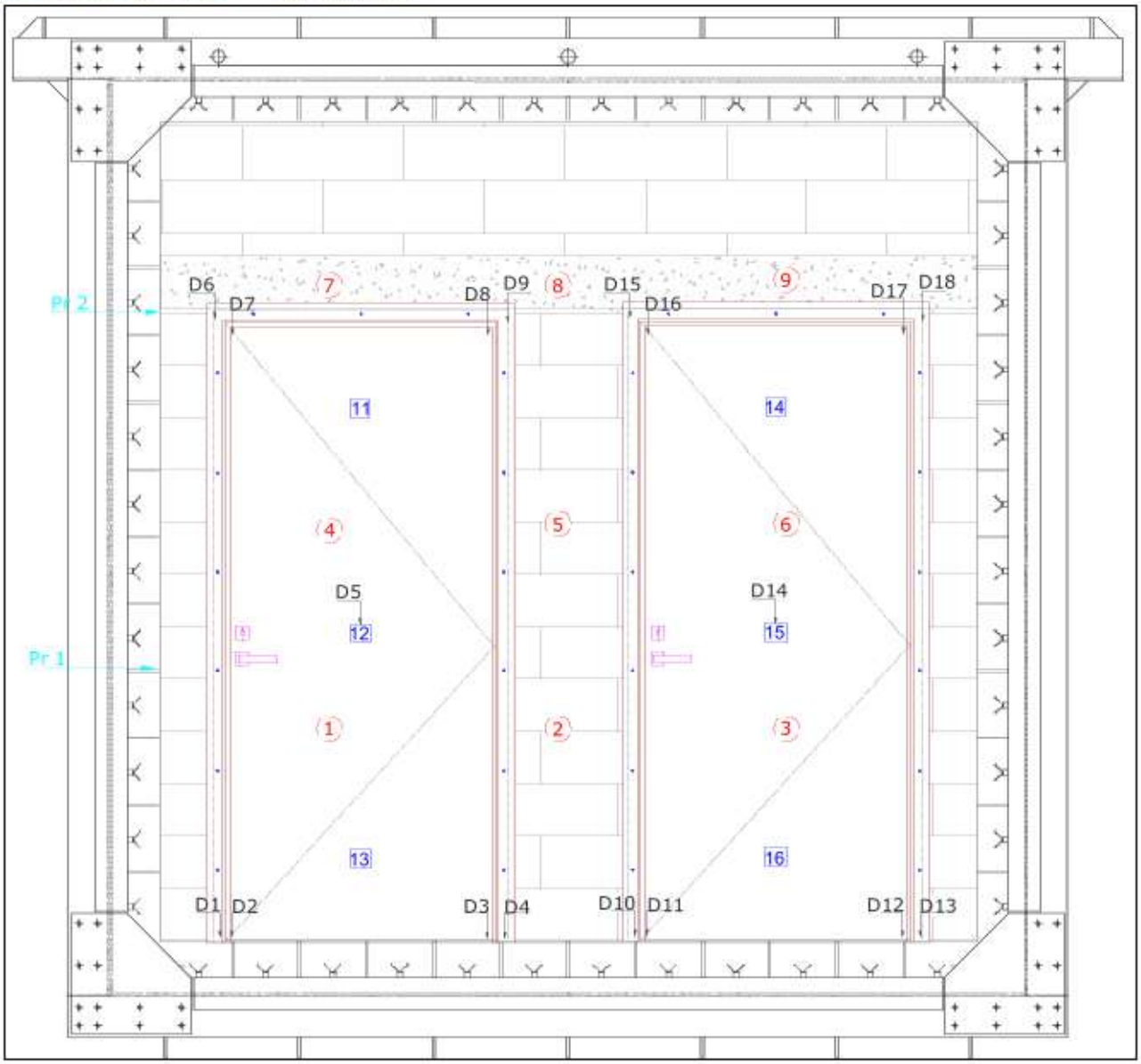
C. Ironmongeries – Doorset A & B

Door Hinges - Doorset A & B		
	Door Hinges	**Door Hinge Pad**
Material	Stainless Steel*	2mm thick Fire Protection Pad*
Supplier	IVES*	Lorient*
Reference	5BB1*	LP12000*
Dimension	101.6 x 114.3 x 3mm	Same size as Hinge Blade.
Quantity	4 Nos. on each doorset	2 Nos. per set
Fixing Method & Application	Four Nos. of door hinges were installed on to the door leaf of each doorset on the exposed face. The hinge blades were fixed to both the door leaf and the frame using 4 Nos. of Ø4.8 x 42mm counter sunk stainless steel screws on either blade. The hinge pads were applied on the backside of the hinge blades on each set. Refer drawing 3 & 7 of appendix 2 for spacing.	

Door Handle & Mortise Lock - Doorset A & B			
	Handle & Mortise Lock	**Lock Cylinder**	**Protection Kit**
Material	Stainless Steel*	Stainless Steel*	Palusol*
Supplier	FALCON*	FALCON*	Lorient*
Reference	M Series Mortise Lock with Handle*	M.CONV CYLINDERÑ 38.2K.1R*	LP12000*
Fixing Method & Application	The door handles were fixed onto either face of the door leaf at the latch stile edge at a nominal height of 1045mm from the bottom edge of the door leaf of the doorset A & B. The lockset along with the lock cylinder was fixed onto the latch stile edge of the door leaf at a nominal height of 1045mm from the bottom edge of the door leaf of the doorset A & B. The protection kit was applied on the faces of the lockset case, under the latch as well as on the strike plate.		

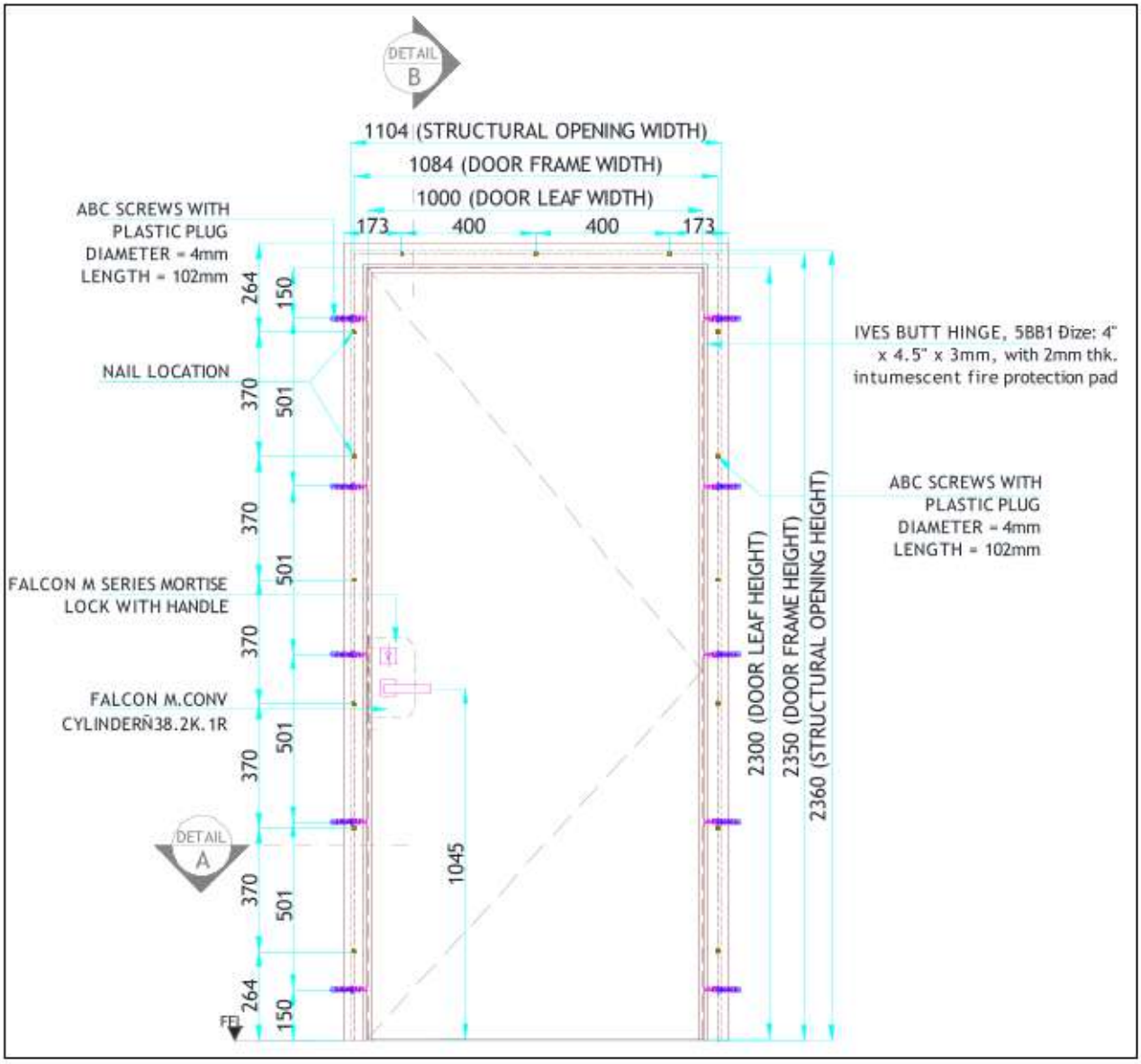
Door Closer - Doorset A & B	
Supplier	FALCON*
Reference	SC81A*
Fixing Method & Application	The door closer was fixed on to the top of the doorset on the exposed face at a nominal distance of 200mm from the hinge side edge of the door leaf to the center of the door closer. The arm of the door closer was screwed to the frame of the door leaf using 2 Nos. of Ø5 x 12mm and the body to the leaves of the door using 4 Nos. of Ø5 x 12mm fixing screws each.

11. APPENDIX 2 – DRAWINGS

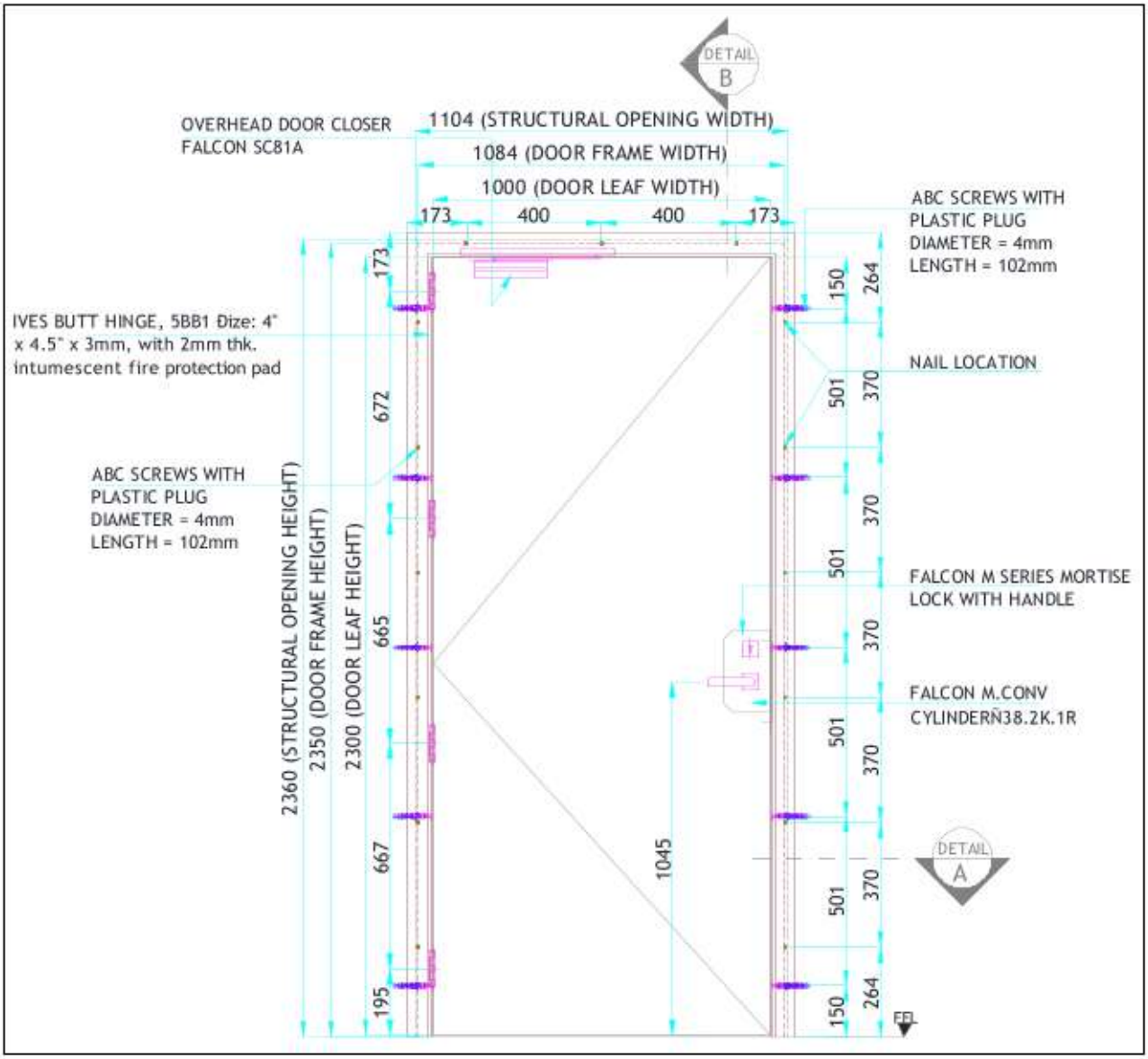


Drawing 1: Overall Instrumentation
(Drawing provided by TBWIC)

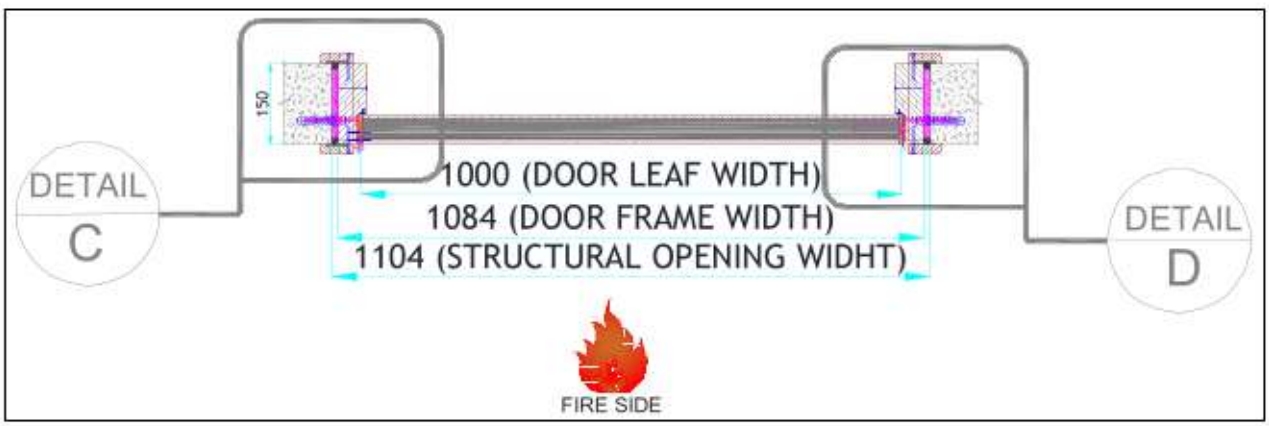
INSTRUMENTATION	
Pr1	Bottom pressure located at 1016mm above the furnace sill and maintained at 0Pa.
Pr2	Top pressure located at the frame head for reference only.
Tc1 - Tc9	Thermocouples to measure furnace temperature
Tc11 – Tc13	Thermocouples to measure the unexposed surface temperature – Doorset A.
Tc14 – Tc16	Thermocouples to measure the unexposed surface temperature – Doorset B.
D1 – D9	Deflection measurement points – Doorset A.
D10 – D18	Deflection measurement points – Doorset B.



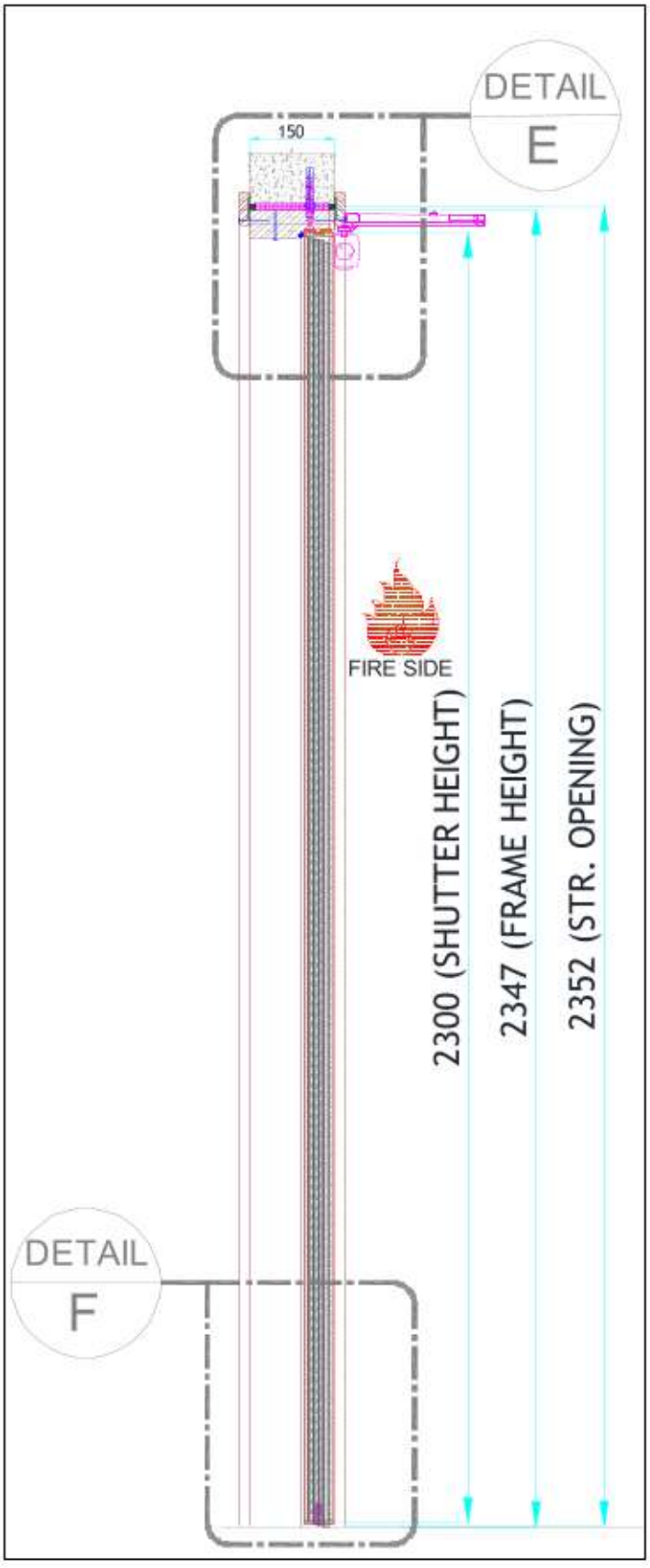
Drawing 2: Elevation view of the doorset A from the unexposed face.
(Drawing provided by the test sponsor)



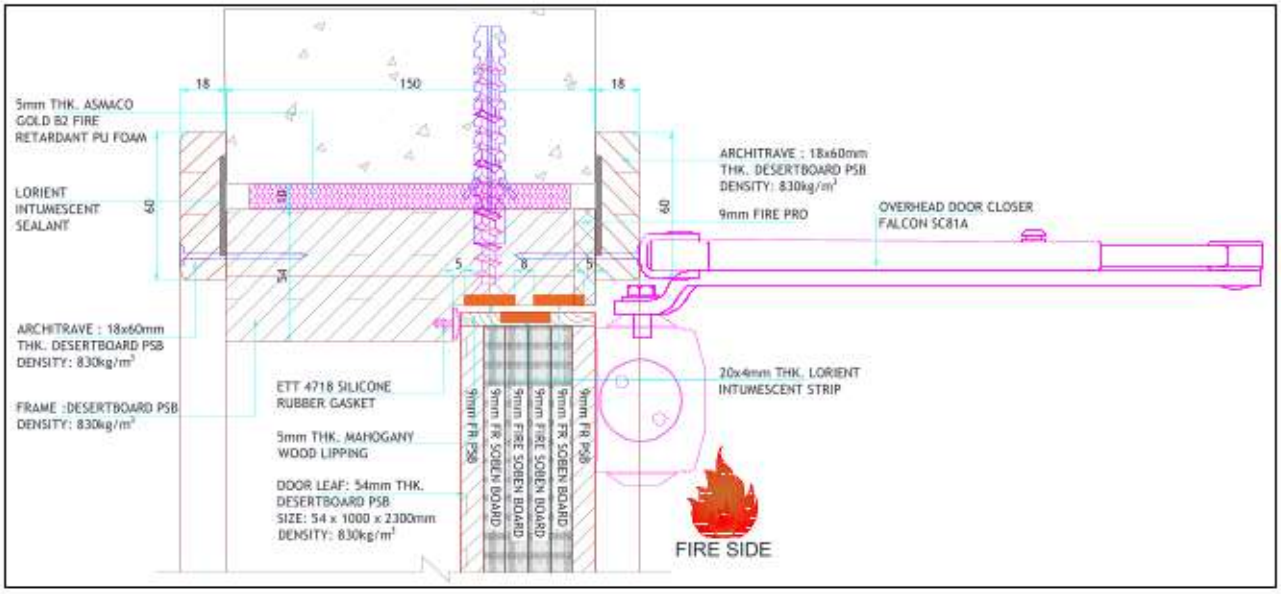
Drawing 3: Elevation view of the doorset A from the exposed face.
(Drawing provided by the test sponsor)



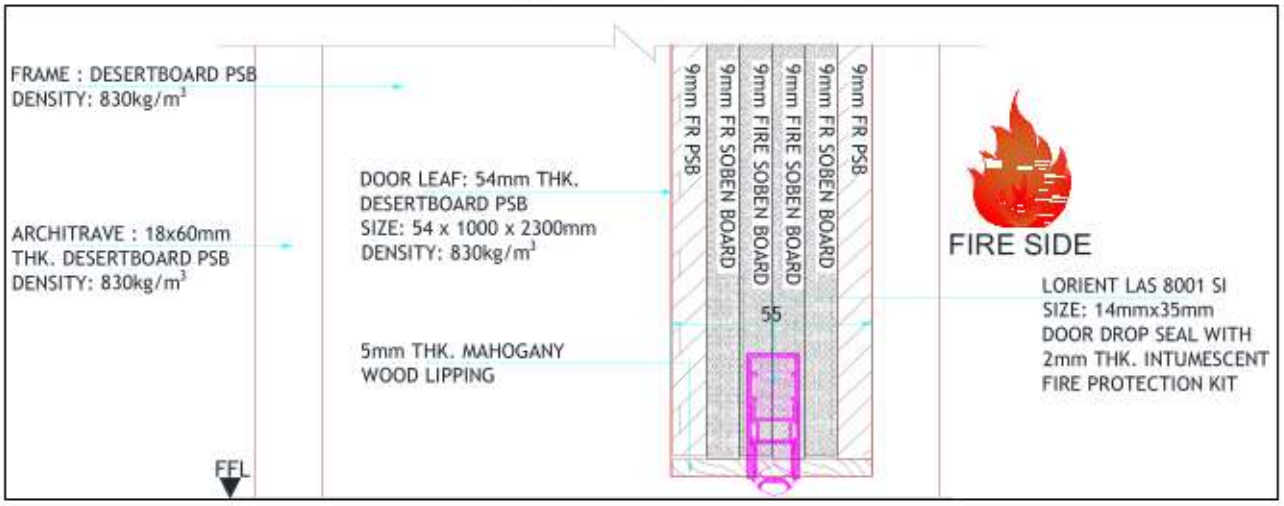
Drawing 4: Horizontal section view of the doorset A.
(Drawing provided by the test sponsor)



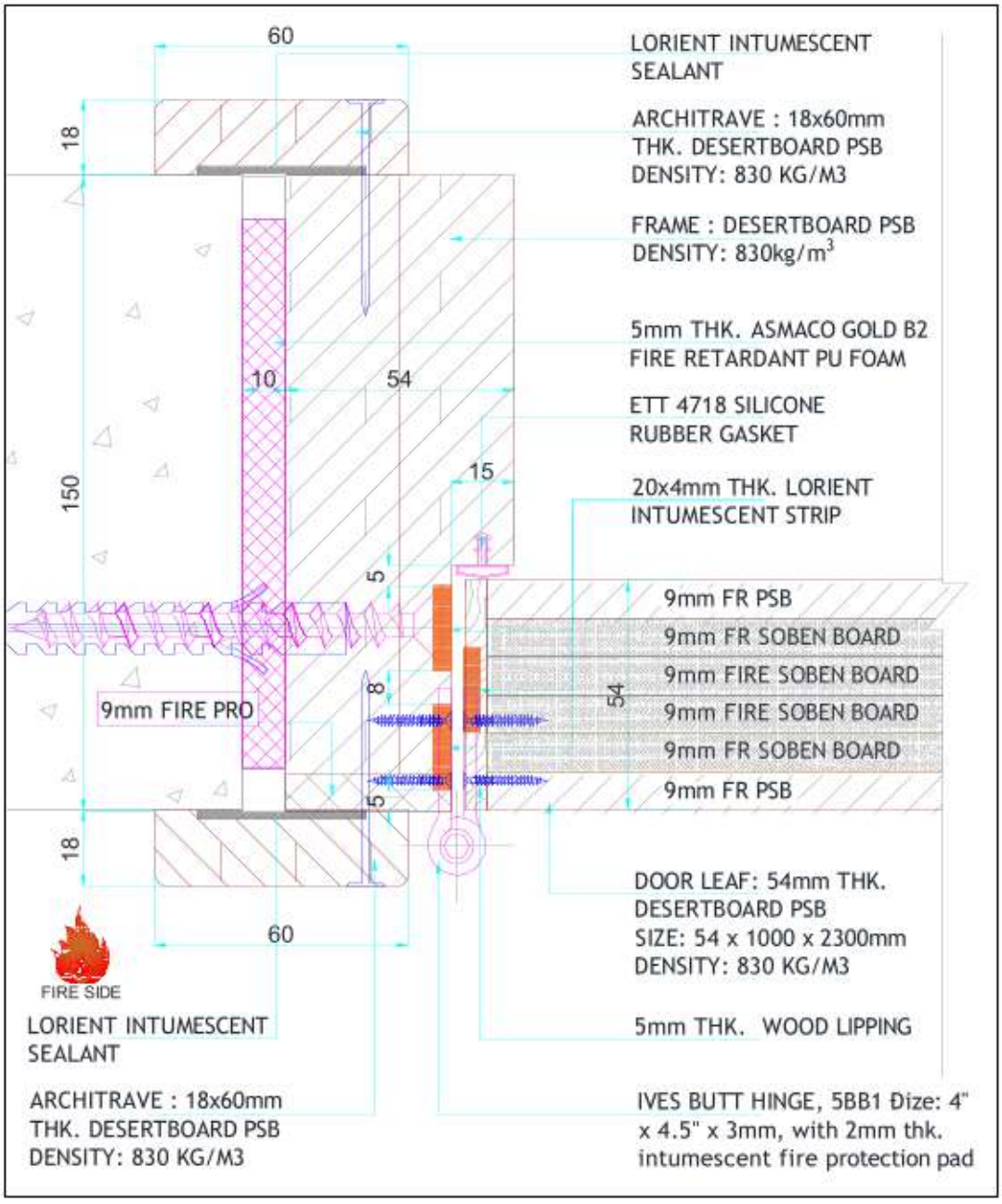
Drawing 5: Vertical section view of the doorset A.
(Drawing provided by the test sponsor)



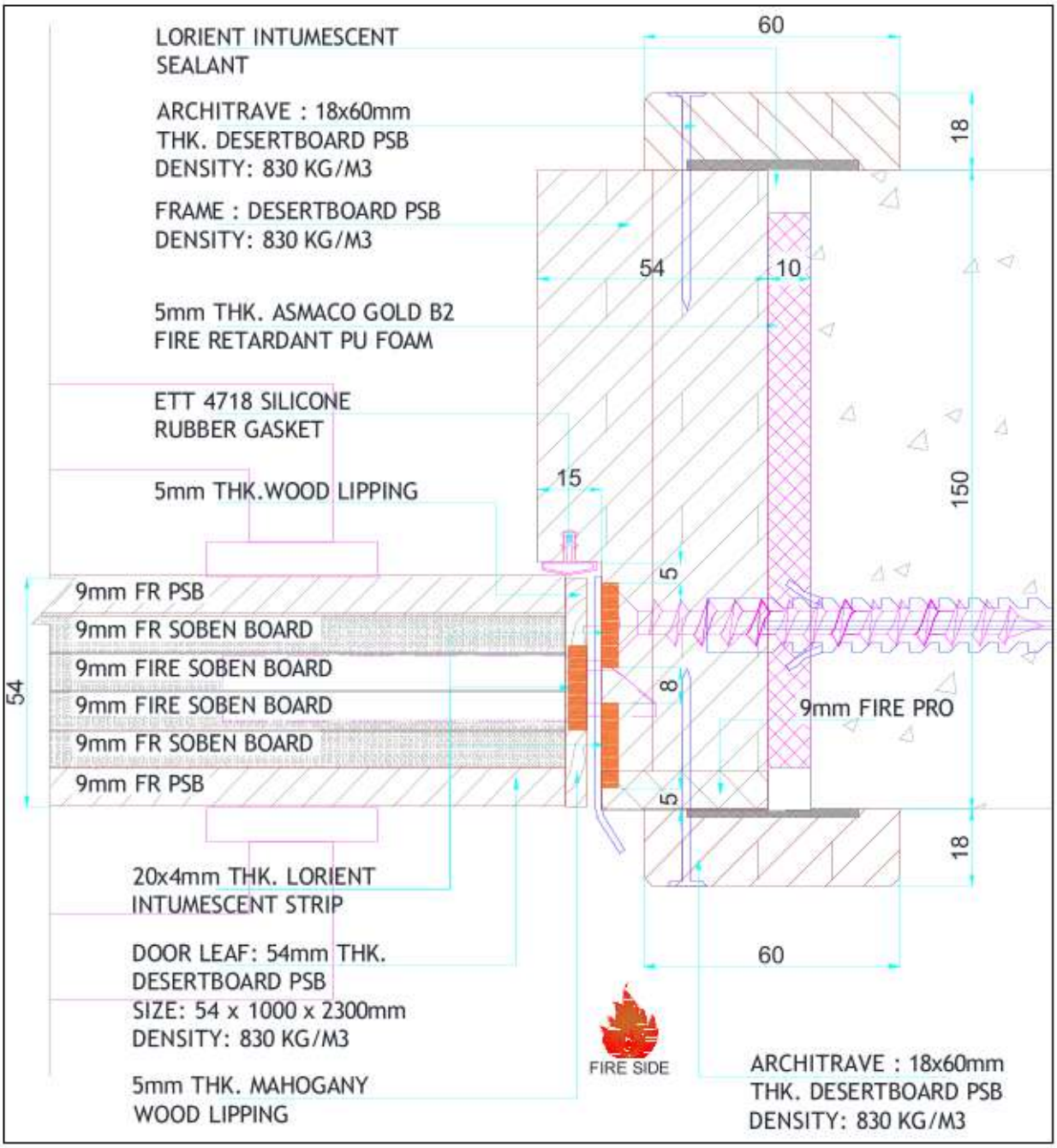
Drawing 6: Detail E of drawing 5).
(Drawing provided by the test sponsor)



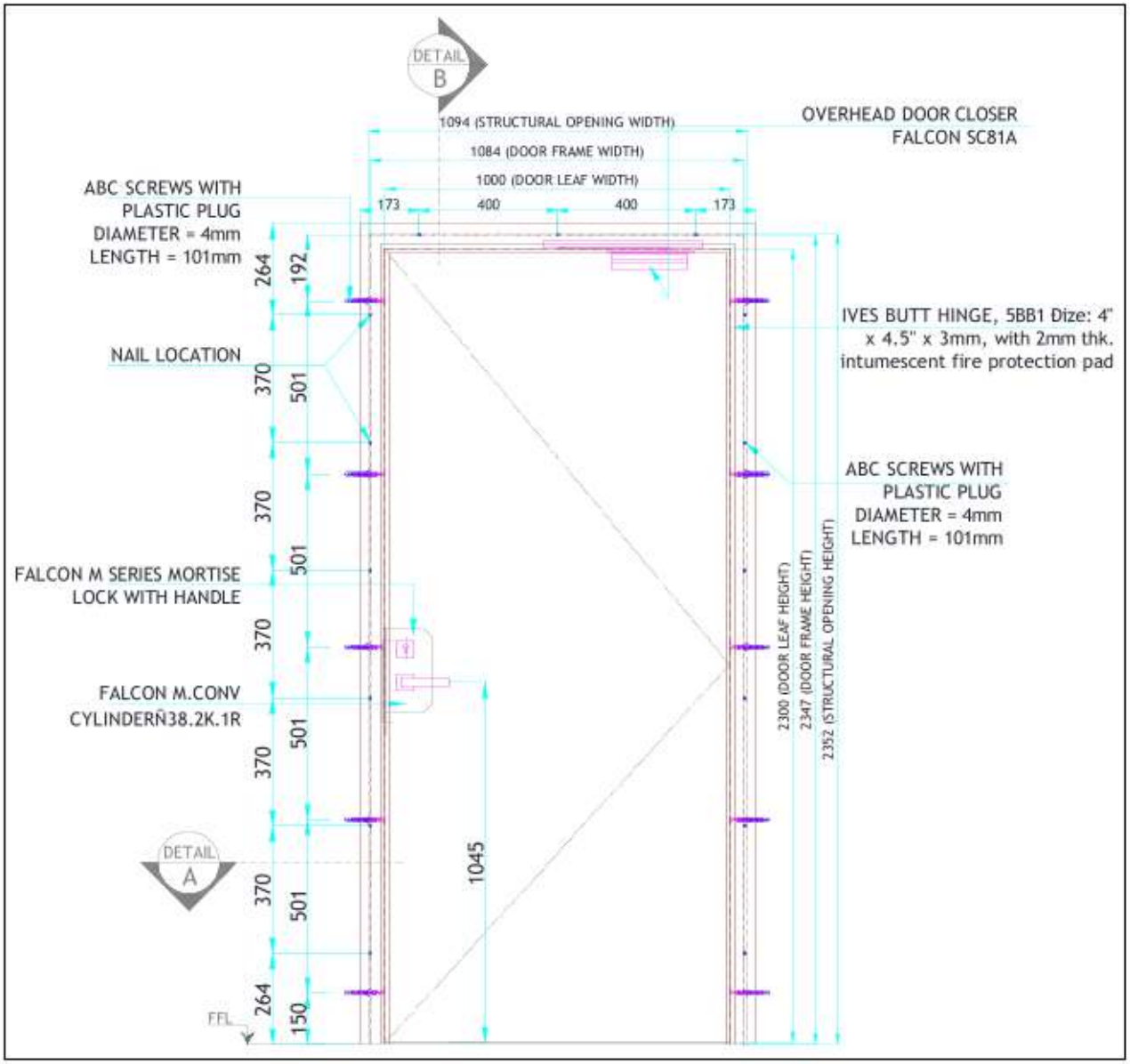
Drawing 7: Detail F of drawing 5).
(Drawing provided by the test sponsor)



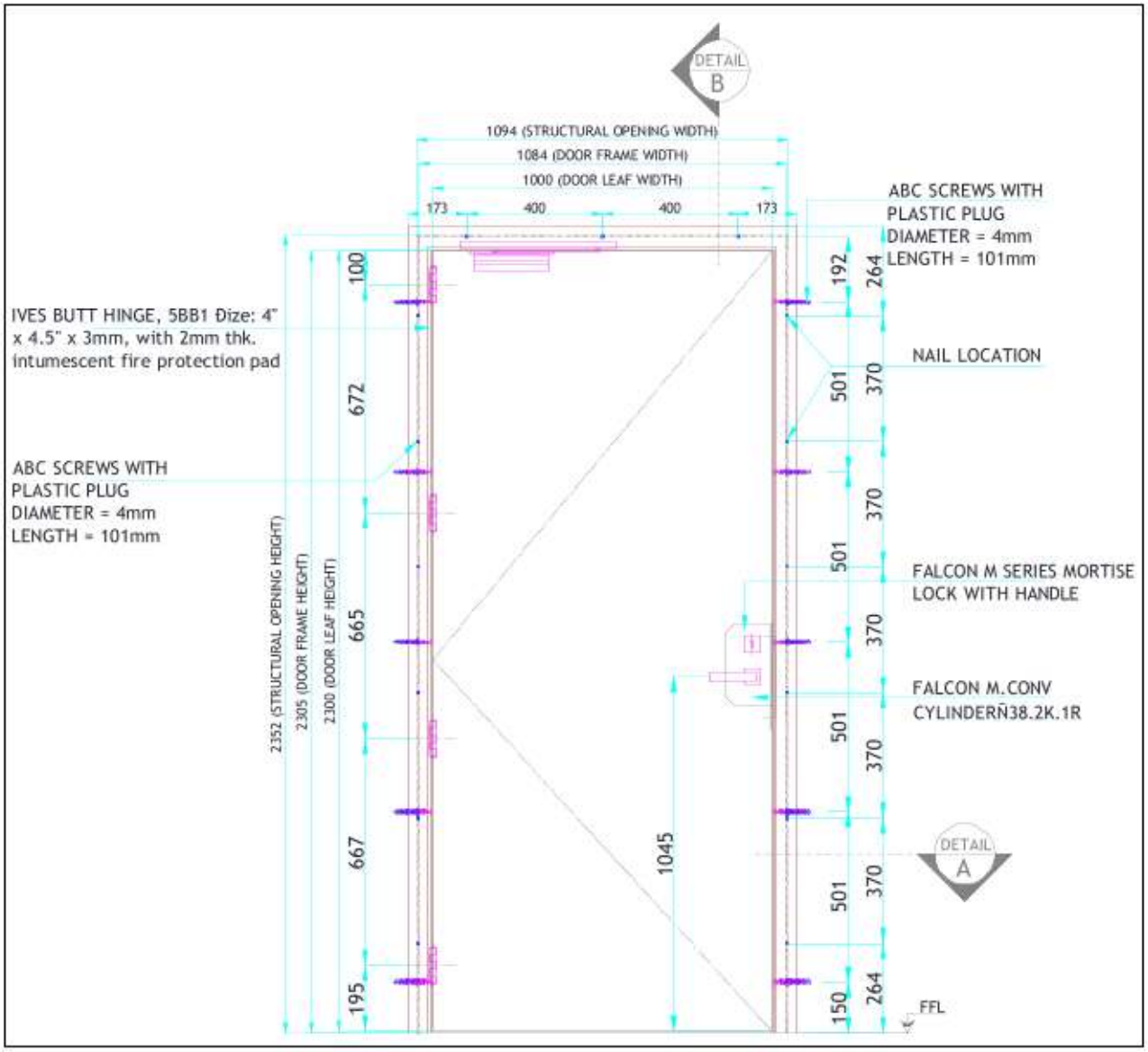
Drawing 8: Detail C of drawing 4).
(Drawing provided by the test sponsor)



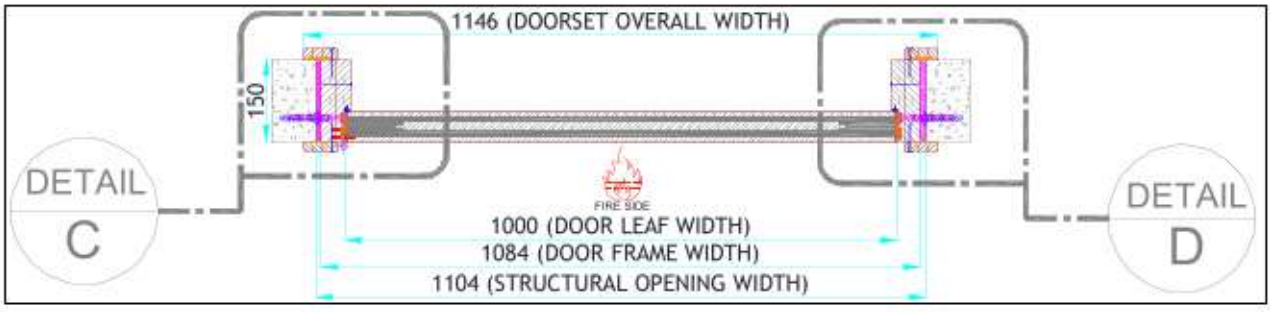
Drawing 9: Detail D of drawing 4).
(Drawing provided by the test sponsor)



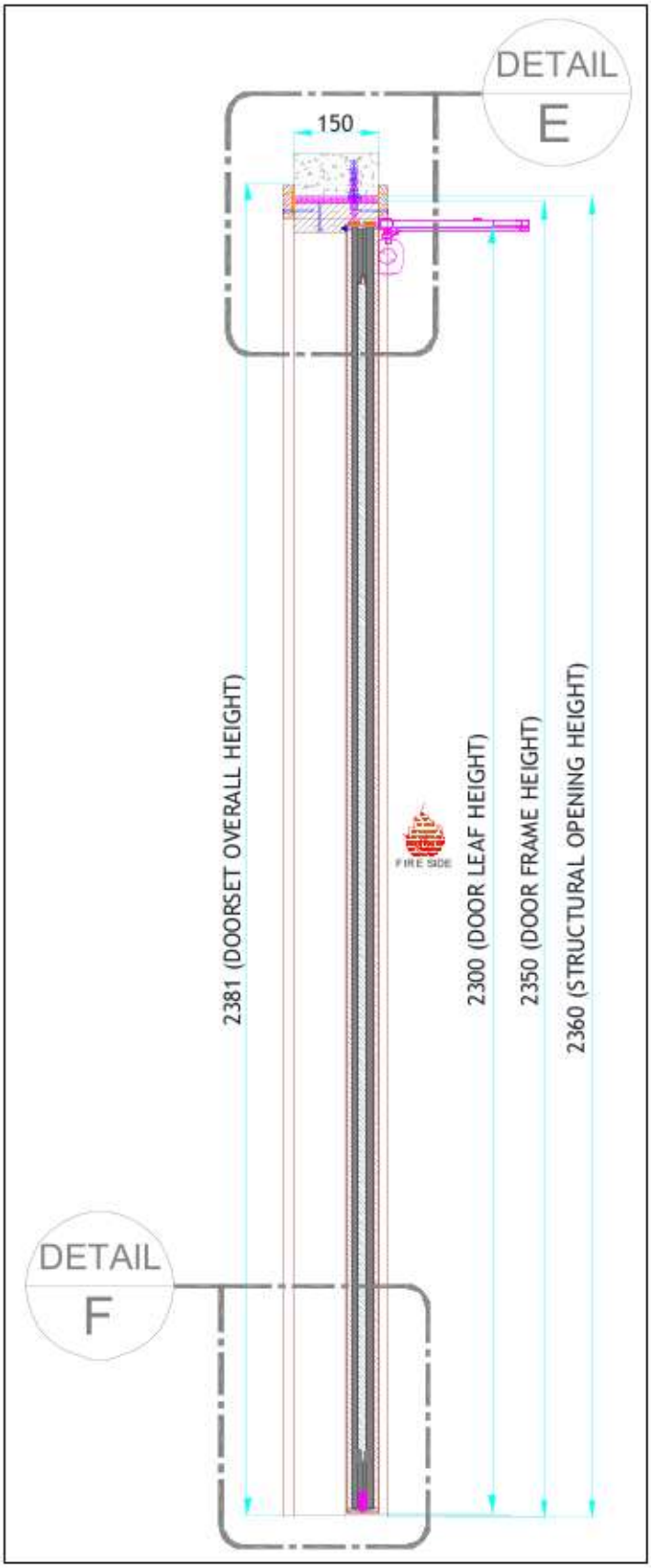
Drawing 10: Elevation view of the doorset B from the unexposed face.
(Drawing provided by the test sponsor)



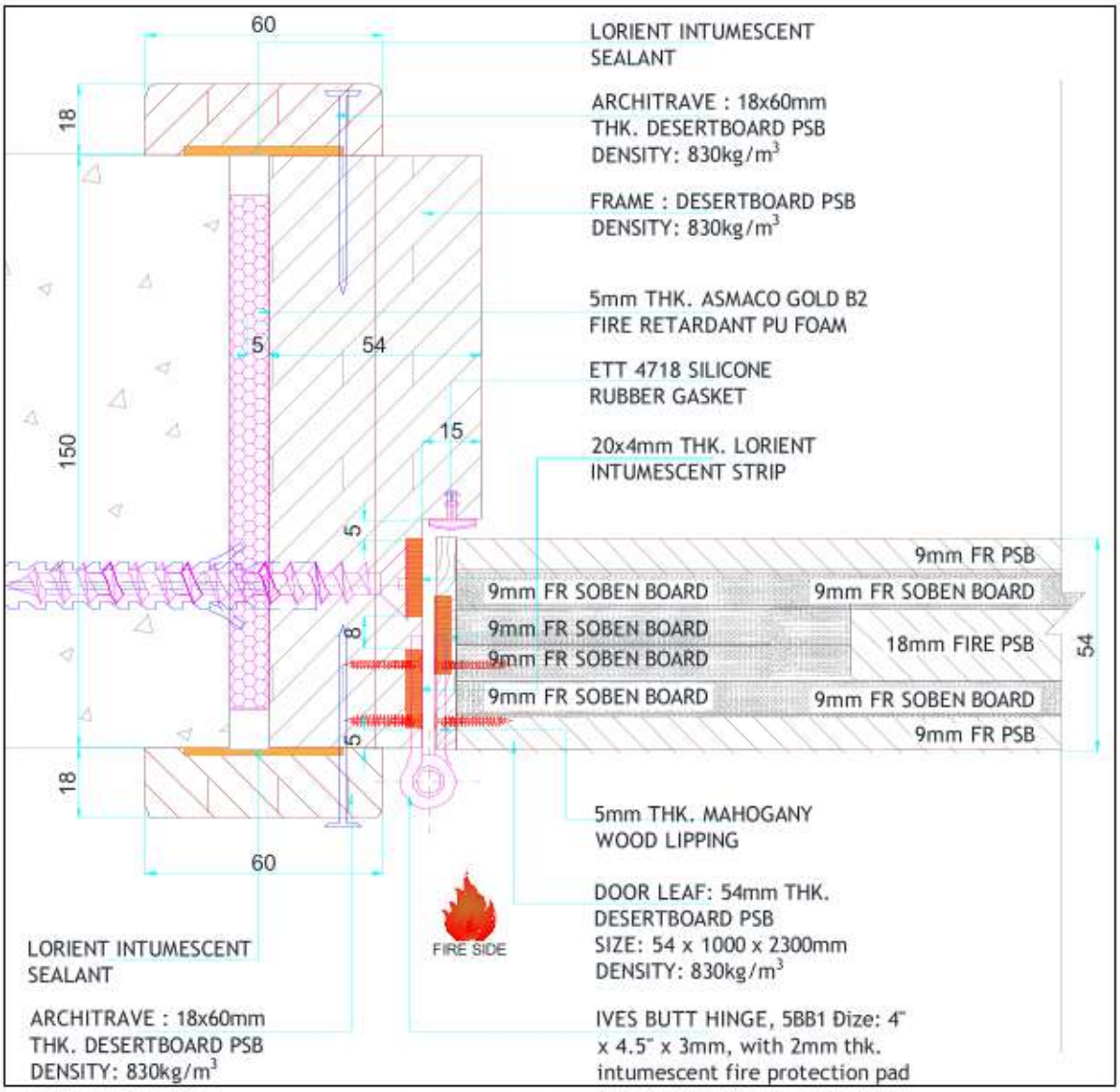
Drawing 11: Elevation view of the doorset B from the exposed face.
(Drawing provided by the test sponsor)



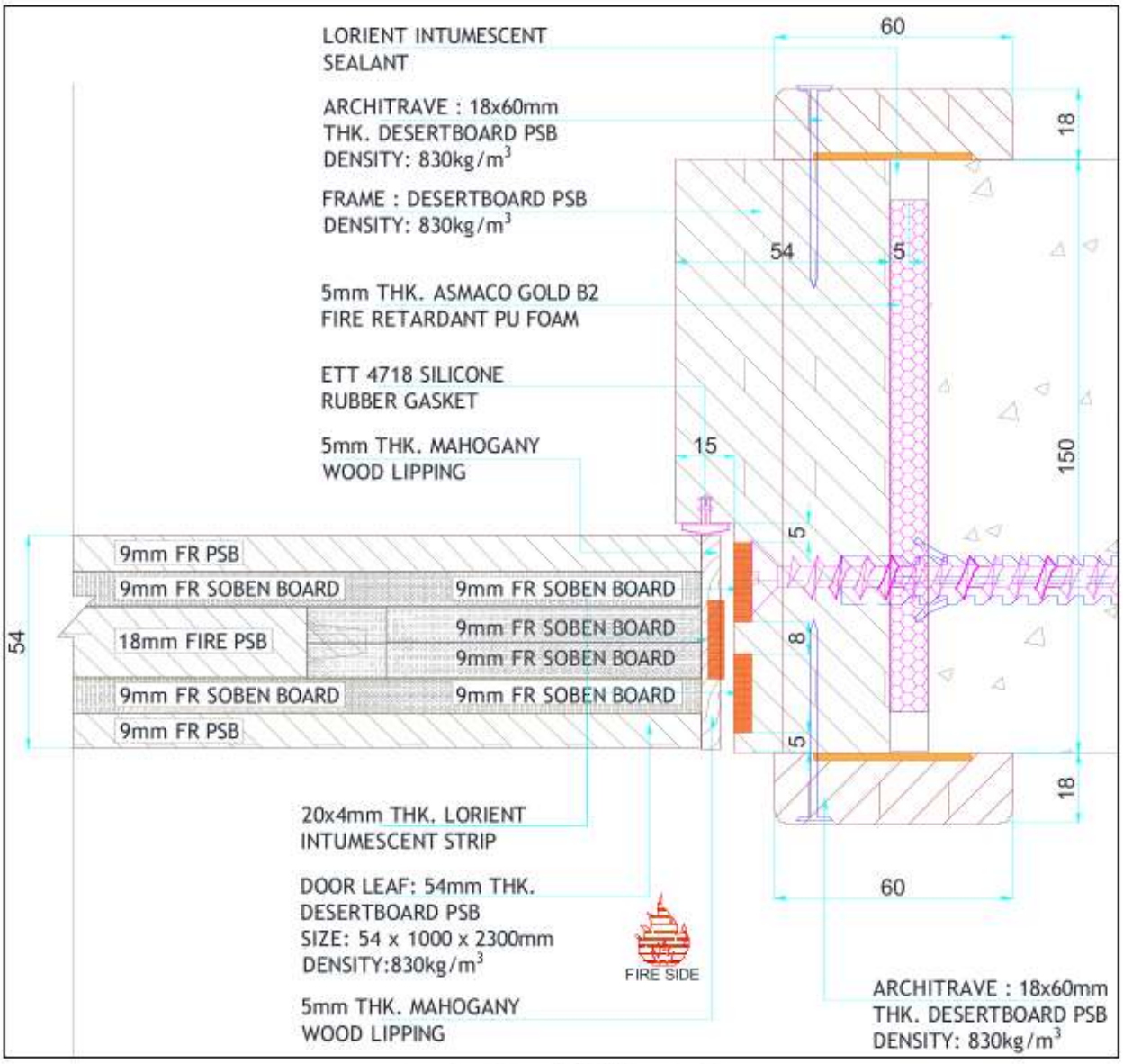
Drawing 12: Horizontal section view of the doorset B.
(Drawing provided by the test sponsor)



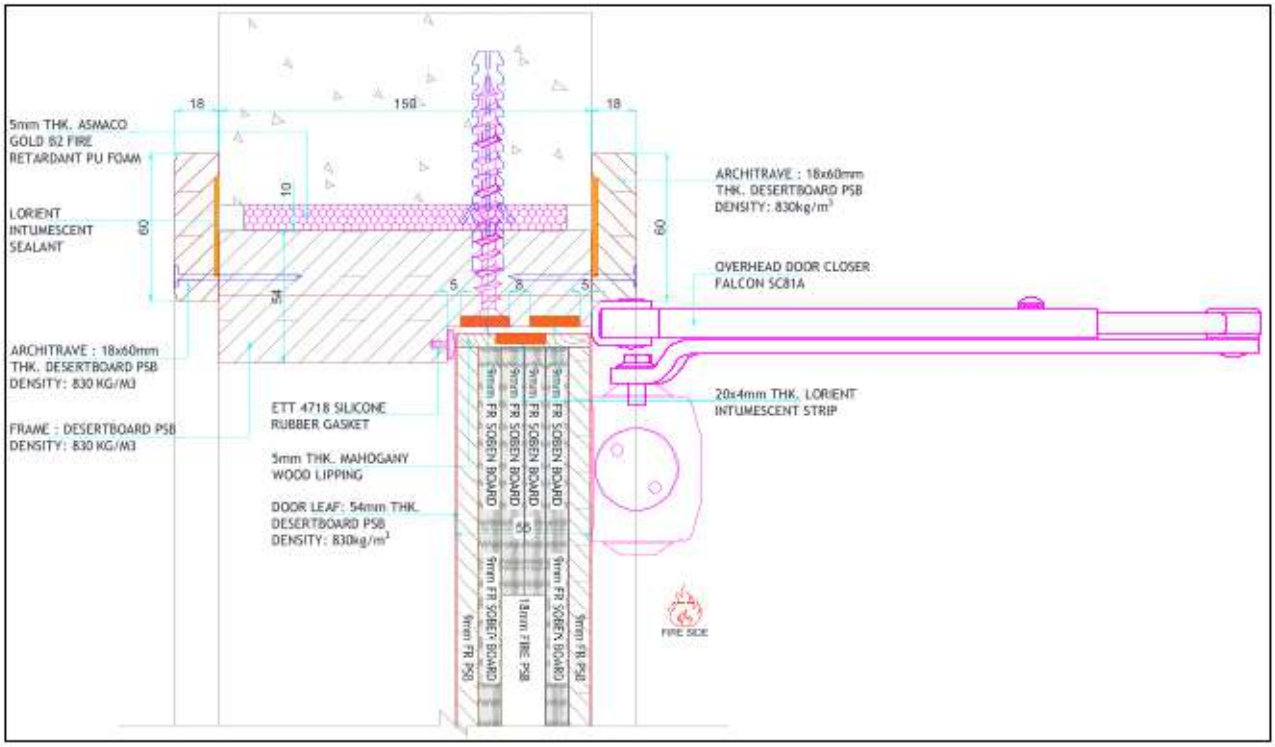
Drawing 13: Vertical section view of the doorset B.
(Drawing provided by the test sponsor)



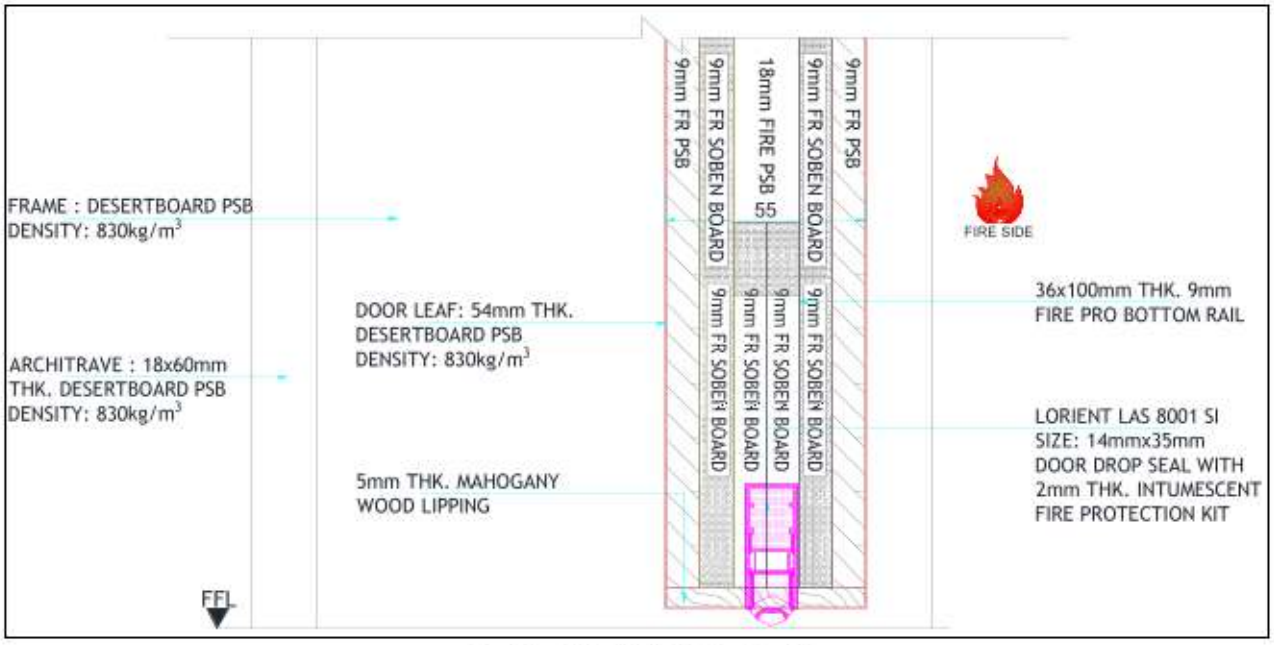
Drawing 14: Detail C of drawing 4).
(Drawing provided by the test sponsor)



Drawing 15: Detail D of drawing 4).
(Drawing provided by the test sponsor)

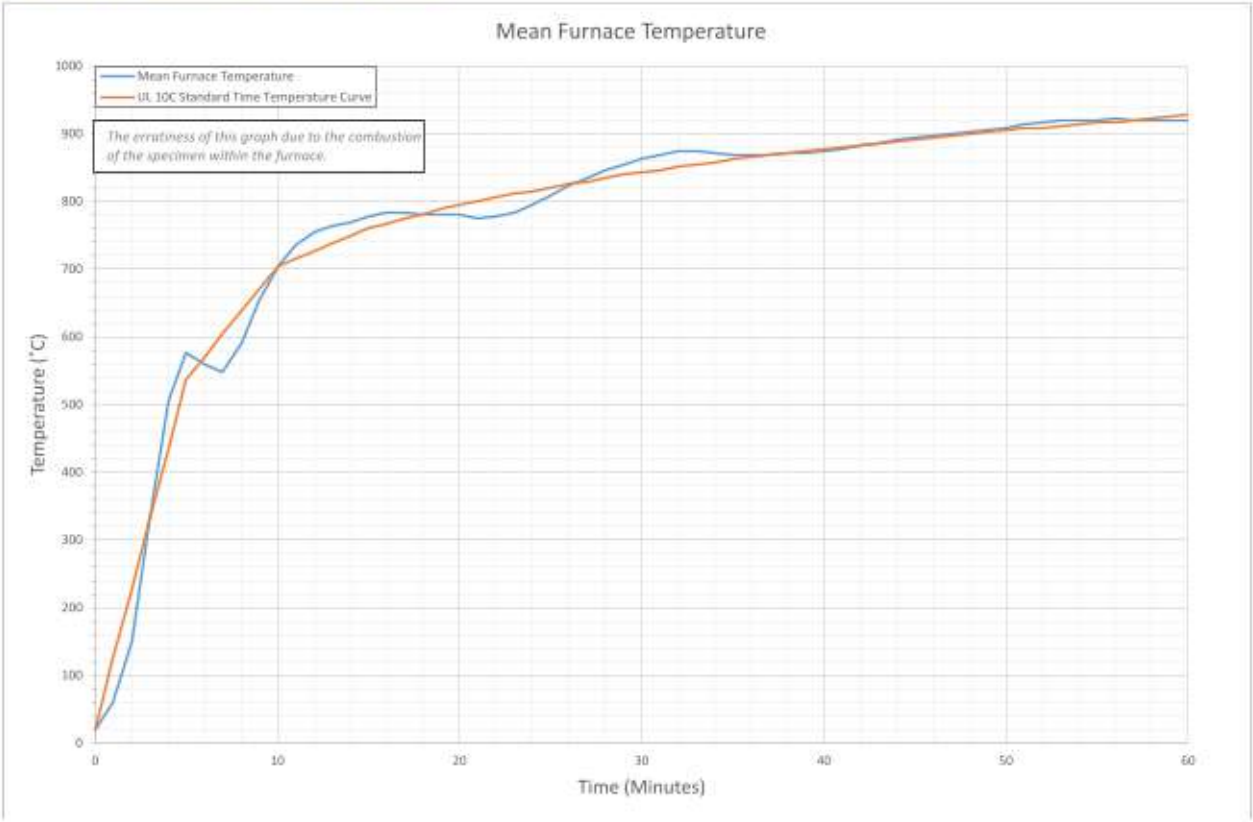


Drawing 16: Detail E of drawing 5).
(Drawing provided by the test sponsor)

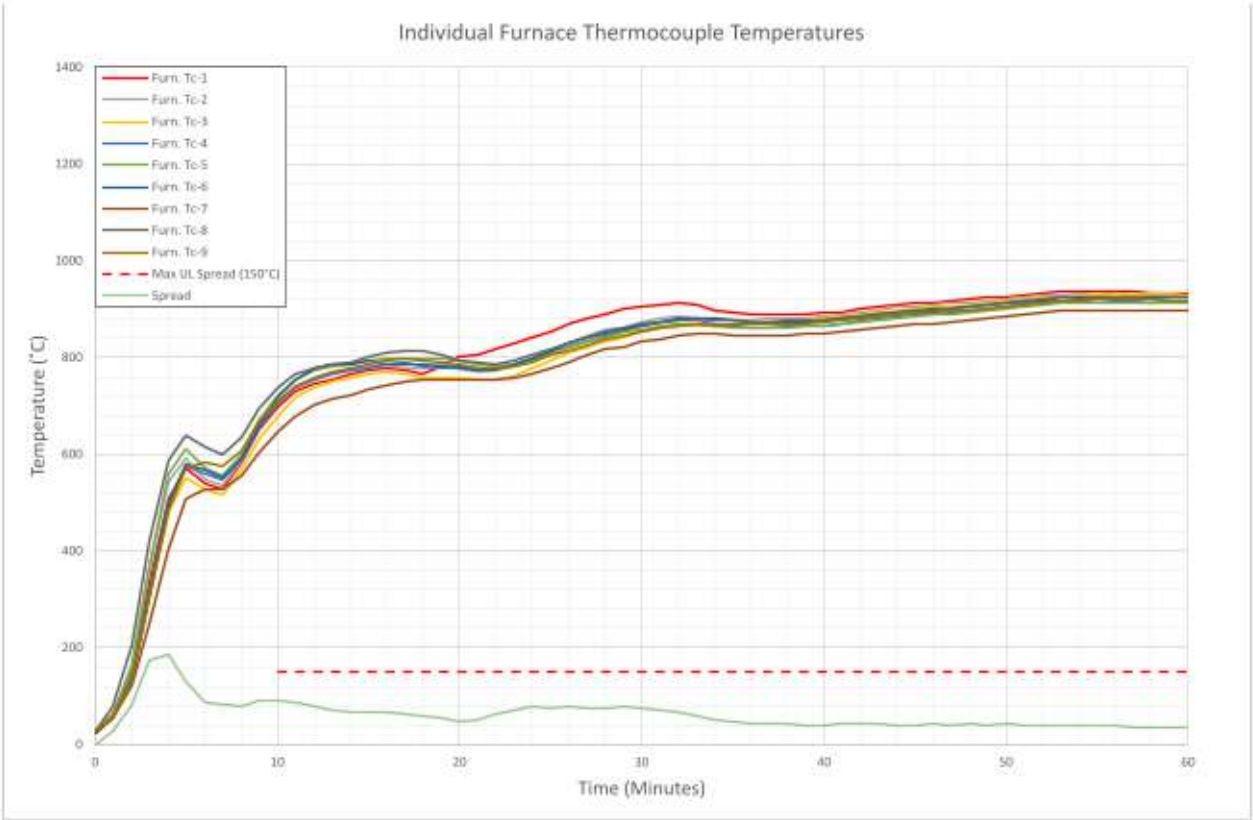


Drawing 17: Detail F of drawing 5).
(Drawing provided by the test sponsor)

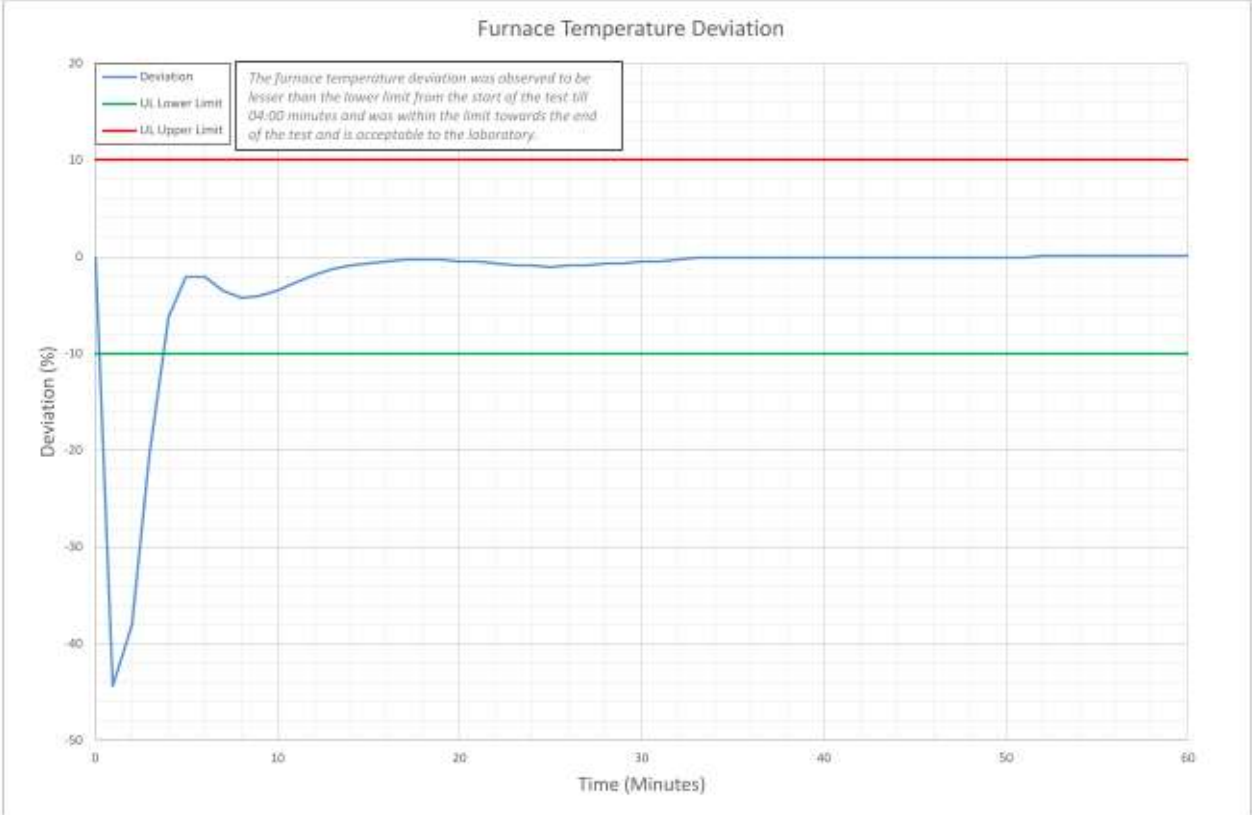
12. APPENDIX 3 – GRAPHS



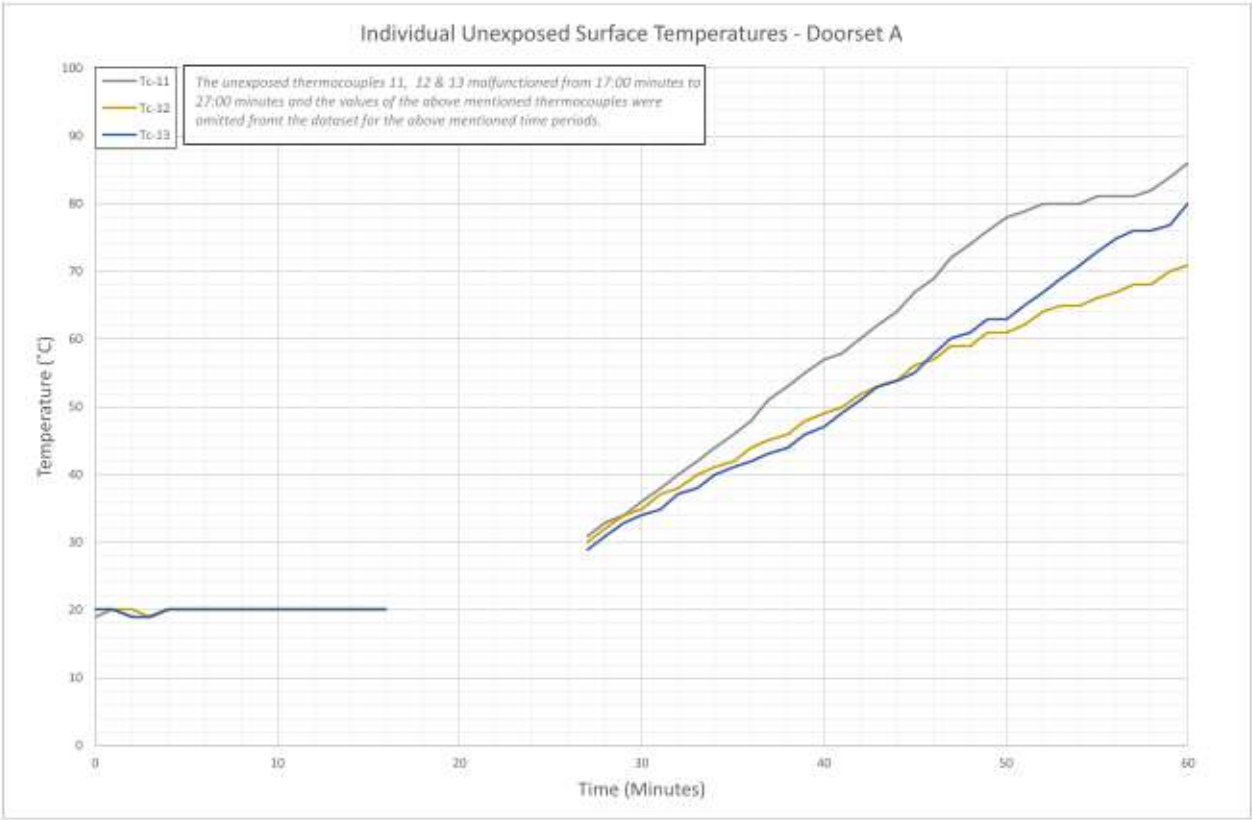
Graph 1: Mean Furnace Temperature



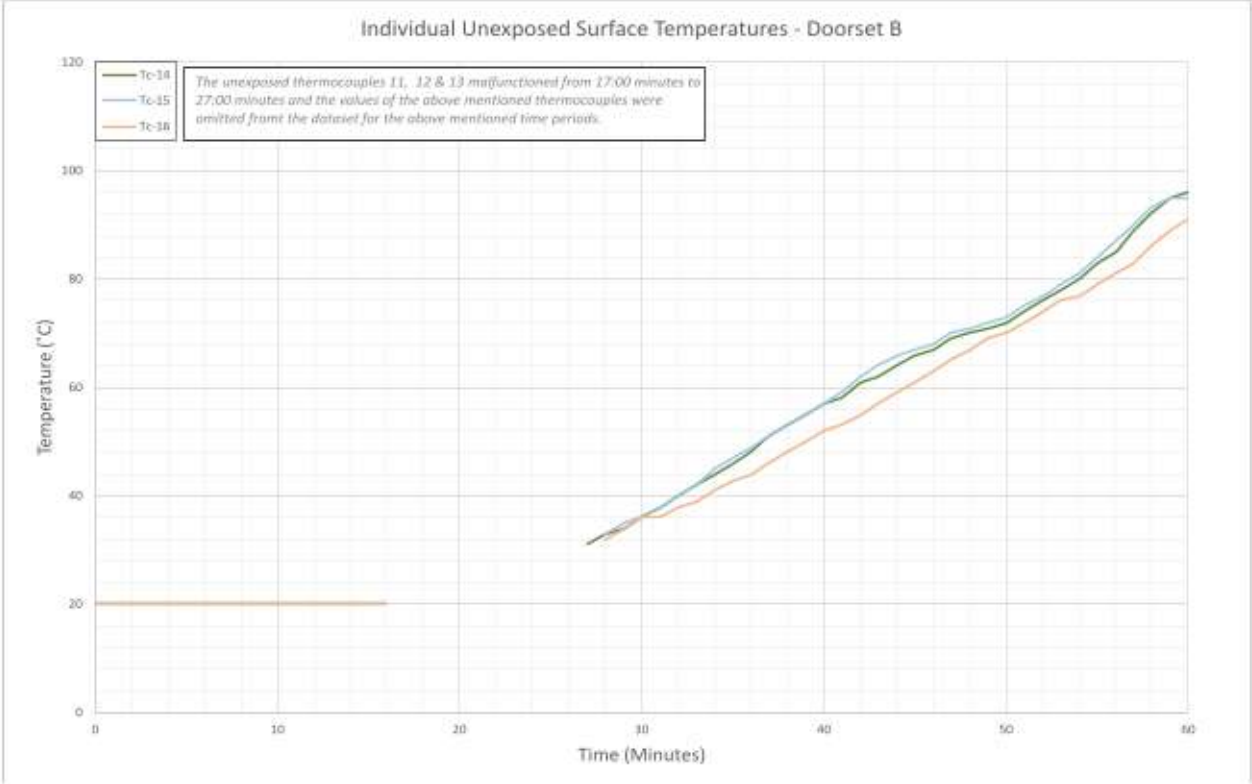
Graph 2: Individual Furnace Temperatures



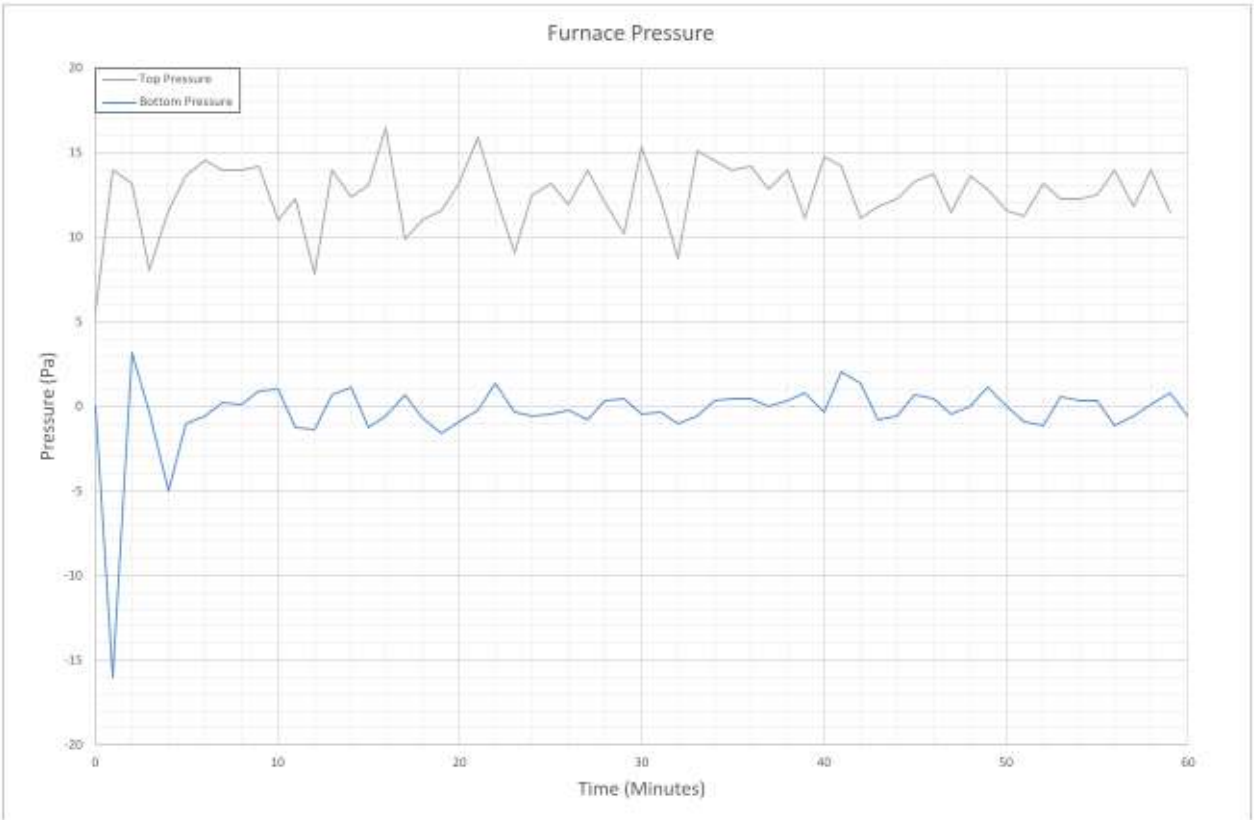
Graph 3: Furnace Temperature Deviation



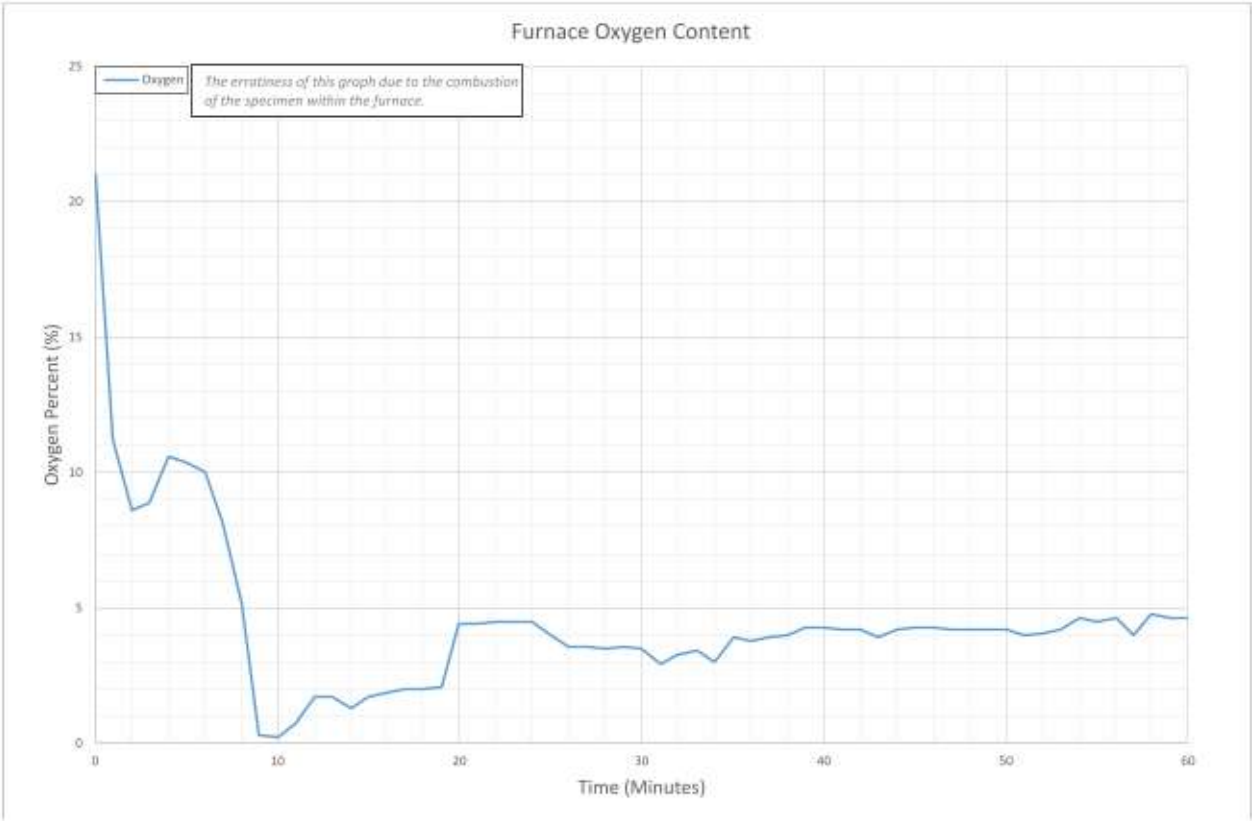
Graph 4: Individual Unexposed Surface Thermocouple Temperature – Doorset A



Graph 5: Individual Unexposed Surface Thermocouple Temperature – Doorset B



Graph 6: Furnace Pressure



Graph 7: Furnace Oxygen Content.

13. APPENDIX 4 – DEFLECTION & DOOR GAPS

13.1. Deflection

The following table shows the deflection measurements in mm. recorded during the test.

(+) are for measurements going into the furnace.

(-) are for measurements coming out of the furnace.

Door deflection measurement:

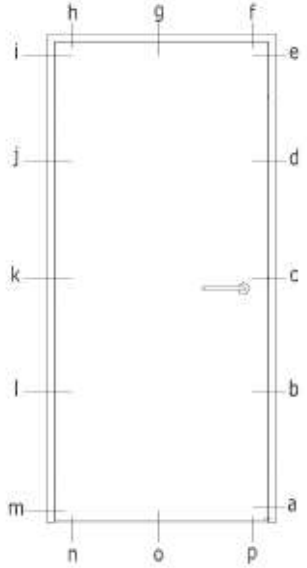
Time (mins)	Deflection Points – Doorset A								
	D1	D2	D3	D4	D5	D6	D7	D8	D9
0:00	0	0	0	0	0	0	0	0	0
10:00	1	-2	0	0	6	2	3	4	5
20:00	0	-1	0	0	5	3	4	6	7
30:00	3	0	2	1	5	3	6	8	8
45:00	1	1	3	1	1	3	10	12	9
60:00	-4	0	4	3	-3	3	13	13	10

Time (mins)	Deflection Points – Doorset B								
	D10	D11	D12	D13	D14	D15	D16	D17	D18
0:00	0	0	0	0	0	0	0	0	0
10:00	1	0	-1	0	5	5	3	3	2
20:00	2	4	0	0	4	5	8	4	2
30:00	1	5	-1	0	2	8	10	5	3
45:00	1	6	2	1	-3	10	13	7	3
60:00	2	8	1	1	-8	11	13	5	-10

13.2. Door Gaps

Gaps between the fixed and moveable parts of the specimen were measure prior to the test, in accordance with section 9.3 of UL 10C:2016, on both the exposed and unexposed faces. Measurements are given in the table below, with reference to the figure below.

All measurements are in mm, as viewed from the unexposed face of the specimen.



Doorset A														
Unexposed Face	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	7.25*	5.93*	5.51*	5.38*	5.22*	4.58*	4.53*	4.97*	5.08*	5.38*	4.52*	4.86*	4.56*	7.98
	o	p												
	8.46	8.27												
Exposed Face	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	2.58	1.73*	2.95	2.51	1.98*	3.18	2.61	3.63	2.53	2.3	2.5	2.46	1.53*	8.38
	o	p												
	8.12	8.31												

Doorset B														
Unexposed Face	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	7.91*	7.7*	7.06*	6.53*	6.91*	4.8*	7*	6*	6.14*	4.95*	5.22*	4.82*	4.73*	8.1
	o	p												
	8.31	9.23												
Exposed Face	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	2.58	3.79	3.59	3.19	2.45	2.38	2.82	3.19	3.83	3.40	2.06	2.49	2.35	7.93
	o	p												
	7.97	8.31												

As specified in section 5.3 of this report, the indicated measurements were not within the tolerances specified in section 9.3 of UL 10C:2016. For reference, the requirements are outlined below.

Gap Location	Standard Requirement
Top, Hinge, & Latch Jam	2.1 to 4.1mm
Bottom Edge – Single Leaf Door	7.9 to 9.5mm

14. APPENDIX 5 – PHOTOGRAPHS

Picture 1: Exposed face of the specimen prior to the commencement of the test.

Picture 2: Unexposed face of the specimen prior to the commencement of the test.

Picture 3: Unexposed face of the specimen at the commencement of the test.

Picture 4: The specimen at 10:00 minutes.

Picture 5: The specimen at 20:00 minutes.

Picture 6: The specimen at 30:00 minutes.

Picture 7: The specimen at 45:00 minutes.

Picture 8: Unexposed face of the specimens after the termination of the test at 60:00 minutes.

Picture 9: Exposed face of the specimens after the termination of the test.

Picture 10: Exposed face of the specimens during the hose stream test.

Picture 11: Exposed face of the specimens after the termination of the hose stream test.

Picture 12: Unexposed face of the specimens after the termination of the hose stream test.

----- End of Test Report ----