



# Fire-resistance test on retrofit fire collars protecting a plasterboard wall penetrated by services

## Test Report

**Author:** Peter Gordon  
**Report number:** FSP 2242  
**Date:** 13 December 2021  
**Client:** IG6 Pty Ltd

Commercial-in-confidence



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**Inquiries should be addressed to:**

Fire Testing and Assessments  
NATA Registered Laboratory  
14 Julius Avenue  
North Ryde, NSW 2113  
Telephone +61 2 9490 5444




Author  
Infrastructure Technologies  
14 Julius Avenue  
North Ryde, NSW 2113  
Telephone +61 2 9490 5500

The Client  
IG6 Pty Ltd  
1343 Wynnum Road  
Tingalpa QLD 4173  
Telephone: 04 3390 5420

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**Report Authorisation:**

AUTHOR	REVIEWED BY	AUTHORISED BY
Peter Gordon	Glenn Williams	Brett Roddy
		
13 December 2021	13 December 2021	13 December 2021

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# Fire-resistance test on retrofit fire collars protecting a plasterboard wall penetrated by services

## Sponsored Investigation No. FSP 2242

### 1 Introduction

#### 1.1 Identification of specimen

The sponsor identified the specimen as SNAP retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe, a PE100 high-density polyethylene (HDPE) pipe and a polyvinyl chloride sandwich construction (PVC-SC) pipe.

#### 1.2 Sponsor

IG6 Pty Ltd  
1343 Wynnum Road  
Tingalpa QLD 4173  
Australia

#### 1.3 Manufacturer

Snap Fire Systems Pty Ltd  
1343 Wynnum Road  
Tingalpa QLD 4173  
Australia

#### 1.4 Test standard

Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2014, Fire-resistance tests for elements of construction.

Section 10: Service penetrations and control joints

#### 1.5 Reference standard

Australian Standard 4072, Components for the protection of openings in fire-resistant separating elements, Part 1 - 2005, Service penetrations and control joints.

## 1.6 Test number

CSIRO Reference test number FS 5133/4708

## 1.7 Test date

The fire-resistance test was conducted on 26 October 2021.

# 2 Description of specimen

## 2.1 General

The wall system comprised a 116-mm thick plasterboard lined, steel framed wall comprising two layers of 13-mm thick Firestop plasterboard on each side of 64-mm deep steel studs, (Boral reference SB120.1) with an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00.

The pipes used in the test are stated to be manufactured in accordance with:

- AS/NZS 1260 'PVC-U pipes and fittings for drain, waste and vent application';
- AS/NZS 5065:2005 'Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications'; and
- AS/NZS 7671:2010 'Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings— Polypropylene (PP).' and

For the purpose of the test, the specimens are referenced as Specimen 1, 2, and 3. Documents containing a complete description of each specimen were supplied by the sponsor and are retained on file.

### Specimen 1 - SNAP HP150R Retrofit fire collars protecting a DN160 Triplus pipe penetrating a 168-mm diameter aperture

The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175-mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links, and a 590-mm x 109 mm 316 stainless steel mesh as shown in drawing titled "SNAP 150 High Profile Retro" dated 5 October 2017, by Snap Fire Systems Pty Ltd.

One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers.

The penetrating service comprised a Valsir Triplus (polypropylene) pipe with an outside diameter of 159.6-mm and wall thickness of 5.2-mm, fitted through the fire collar's sleeve. The pipe penetrated the wall through a 168-mm diameter cut-out hole as shown in drawing titled 'Specimen #1, 150 Triplus Stack & HP150R', dated 25 October 2021, by Snap Fire Systems Pty Ltd.

The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500-mm into the furnace chamber and was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end.

### Specimen 2 - SNAP HP150R Retrofit fire collars protecting a DN160 Valsir HDPE pipe penetrating a 168-mm diameter aperture

The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175-mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links and a 590-mm x 109 mm 316 stainless steel mesh as shown in drawing titled “SNAP 150 High Profile Retro” dated 5 October 2017, by Snap Fire Systems Pty Ltd.

One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers.

The penetrating service comprised a Valsir DN160 PE100 (HDPE) pipe with an outside diameter of 160.6-mm and wall thickness of 6.54-mm, fitted through the fire collar’s sleeve. The pipe penetrated the wall through a 168-mm diameter cut-out hole as shown in drawing titled ‘Specimen #2 160 HDPE Stack & HP150R’, dated 25 October 2021, by Snap Fire Systems Pty Ltd.

The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500-mm into the furnace chamber and was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end.

### Specimen 3 - SNAP HP150R Retrofit fire collars protecting a nominal 150 PVC(SC) pipe penetrating a 168-mm diameter aperture

The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175-mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links, and a 590-mm x 109 mm 316 stainless steel mesh as shown in drawing titled “SNAP 150 High Profile Retro” dated 5 October 2017, by Snap Fire Systems Pty Ltd.

One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers.

The penetrating service comprised a Iplex PVC(SC) pipe with an outside diameter of 159-mm and wall thickness of 4.45-mm, fitted through the fire collar’s sleeve. The pipe penetrated the wall through a 60-mm diameter cut-out hole as shown in drawing titled ‘Specimen #3, 150 PVC(SC) stack & HP150R’, dated 25 October 2021, by Snap Fire Systems Pty Ltd.

The pipe projected horizontally approximately 2000-mm away from the unexposed face of the wall and 500-mm into the furnace chamber and was supported at 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end.

## 2.2 Dimensions

The plasterboard wall was nominally 1150-mm wide x 1150-mm high x 116-mm thick.

## 2.3 Orientation

The plasterboard wall was placed vertically against the furnace chamber and subjected to fire exposure from one side only.

## 2.4 Conditioning

The specimen was delivered on 19 October 2021 and stored under standard laboratory atmospheric conditions until the test date.

## 2.5 Selection, construction and installation of the specimen and the supporting construction

The supporting wall construction and specimen installation was organised by the sponsor. CSIRO was not involved in the selection of the materials.

# 3 Documentation

The following documents were supplied or referenced by the sponsor as a complete description of the specimen and should be read in conjunction with this report:

Documents titled 'Plasterboard Fire and Acoustic Systems Australia', revision UB1231-SYS 12/18, by USG Boral Building Products Pty Ltd.

Drawing titled 'Test Wall W-21-A2 Layout', dated 29 July 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #1, 160 Triplus Stack & HP150R', dated 25 October 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #2 160 HDPE Stack & HP150R', dated 25 October 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #3, 150 PVC(SC) Pipe & HP150R', dated 25 October 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'SNAP HP150 High Profile Retro', dated 5 October 2017, by Snap Fire Systems Pty Ltd.

# 4 Equipment

## 4.1 Furnace

The furnace had a nominal opening of 1000-mm x 1000-mm for attachment of vertical or horizontal specimens.

The furnace was lined with refractory bricks and materials with the thermal properties as specified in AS 1530.4-2014 and was heated by combustion of a mixture of natural gas and air.

## 4.2 Temperature

The temperature in the furnace chamber was measured by four type K, 3-mm diameter, and 310 stainless steel Mineral Insulated Metal Sheathed (MIMS) thermocouples. Each thermocouple was housed in high-nickel steel tubes opened at the exposed end.

The temperatures of the specimen were measured by glass-fibre insulated and sheathed K-type thermocouples with a wire diameter of 0.5-mm.

Location of the thermocouples on the unexposed face of the specimen are described in Appendix A.

## 4.3 Measurement system

The primary measurement system comprised a multiple-channel data logger, scanning at one-minute intervals during the test.

# 5 Ambient temperature

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

# 6 Departure from standard

There were no departures from the requirements of AS 1530.4-2014.

# 7 Termination of test

The test was terminated at 161 minutes by the agreement with the sponsor.

## 8 Test results

### 8.1 Critical observations

The following observations were made during the fire-resistance test:

Time	Observation
1 minute -	Smoke is being emitted between the collar and the pipe at the base of Specimens 1, 2 and 3.
2 minutes -	Smoke has started to flue from the end of the pipe of Specimen 3.
3 minutes -	The level of smoke being emitted between the collar and the pipe at the base of Specimens 1, 2 and 3 has intensified.
4 minutes -	Smoke has started to flue from the end of the pipe of Specimen 1. A glow of the furnace can be seen through the pipe of Specimen 1, intumescent material from the collar can be seen swelling and choking the pipe – Photograph 3.
5 minutes -	Smoke has started to flue from the end of the pipe of Specimen 2.
9 minutes -	The level of smoke being emitted between the collar and the pipe at the base of Specimens 1, 2 and 3 has reduced significantly.
11 minutes -	The level of smoke fluing from the pipes of Specimens 1, 2 and 3 has reduced significantly.
13 minutes -	Smoke has ceased fluing from the pipe of Specimen 2.
14 minutes -	Smoke staining is visible around the base of the PVC(SC) pipe of Specimen 3.
25 minutes -	Smoke has ceased fluing from the pipe of Specimen 1.
44 minutes -	Light smoke has resumed fluing from the pipe of Specimens 1 and 2.
82 minutes -	The level of smoke being emitted between the collar and the pipe at the base of Specimen 2 has intensified. Smoke stains are visible on the metal fire collar casing of all three specimens.
98 minutes -	The top of the pipe inside the collar of Specimen 2 has soften and collapsed, a red glow to the furnace can be seen from the gap between pipe and collar. Cotton pad test applied over the gap between the deformed pipe and the collar at the base of Specimen 2, no ignition of cotton pad noted at this time.
106 minutes -	Cotton pad test applied over the gap between the deformed pipe and the collar at the base of Specimen 2, no ignition of cotton pad noted at this time.
112 minutes -	The level of smoke being emitted between the collar and the pipe at the base of Specimen 2 has reduced, intumescent material is being emitted from the gap between the pipe and the collar.

- 114 minutes - Cotton pad test applied over the gap between the deformed pipe and the collar at the base of Specimen 2, no ignition of cotton pad noted at this time.
- 116 minutes - The intumescent material has swollen and filled the gap between the pipe and the collar of Specimen 2.
- 129 minutes - The top of the pipe inside the collar of Specimen 3 has soften and collapsed, the level of smoke being emitted from the collar at the base of the specimen has increased. Cotton pad test applied over the gap between the deformed pipe and the collar at the base of Specimen 3, no ignition of cotton pad noted at this time.
- 130 minutes - Insulation failure of Specimen 2 – maximum temperature rise of 180K is exceeded on the top of the collar, 25-mm from the wall.
- 133 minutes - Insulation failure of Specimen 3 – maximum temperature rise of 180K is exceeded on the top of the pipe, 25-mm from the collar.  
A red glow of the furnace can be seen between the collar and the pipe at the base of specimen 3.
- 136 minutes - A red glow of the furnace remains visible between the collar and the pipe at the base of specimen 3. The level of smoke fluing from the collar has increased. Cotton pad test applied over the gap between the deformed pipe and the collar at the base of Specimen 3, no ignition of cotton pad noted at this time.
- 138 minutes - The level of smoke being emitted between the collar and the pipe at the base of Specimen 3 has reduced.
- 156 minutes - The plasterboard wall at the base of Specimens 2 and 3 has begun to discolour and char.
- 162 minutes - A red glow can be seen on the plasterboard at the base of Specimen 2, adjacent to the top of the collar.  
Cotton pad test applied over the red glow between the plasterboard wall and the top of the collar at the base of Specimen 2, no ignition of cotton pad noted at this time.
- 170 minutes - A loud click was emitted from the unexposed collar of Specimen 2, indicating the release of the top left fusible link.
- 177 minutes - Smoke has resumed being emitted between the collar and the pipe at the base of Specimen 1.
- 178 minutes - Intumescent material has swollen and filled the gap between the pipe and the collar of Specimen 3.
- 181 minutes - Test terminated.

## 8.2 Furnace temperature

Figure 1 shows the standard curves of temperature versus time for heating the furnace chamber and the actual curves of average and maximum temperature versus time recorded during the heating period.

## 8.3 Furnace severity

Figure 2 shows the curve of furnace severity versus time during the heating period.

## 8.4 Specimen temperature

Figure 3 shows the curve of temperature versus time associated with Specimen 1.

Figure 4 shows the curve of temperature versus time associated with Specimen 2.

Figure 5 shows the curve of temperature versus time associated with Specimen 3.

## 8.5 Performance

Performance observed in respect of the following AS 1530.4-2014 criteria:

Specimen 1 - SNAP HP150R Retrofit fire collars protecting a DN160 Triplus pipe penetrating a 168-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	no failure at 181 minutes
Insulation	-	no failure at 181 minutes

Specimen 2 - SNAP HP150R Retrofit fire collars protecting a DN160 Valsir HDPE pipe penetrating a 168-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	no failure at 181 minutes
Insulation	-	130 minutes

Specimen 3 - SNAP HP150R Retrofit fire collars protecting a nominal 150 PVC(SC) pipe penetrating a 168-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	181 minutes
Insulation	-	133 minutes

This report details methods of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in AS 1530.4. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than those allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.



## 9 Fire-resistance level (FRL)

For the purpose of building regulations in Australia, the FRL's of the test specimens were as follows:

Specimen 1    -/120/120

Specimen 2    -/120/120

Specimen 3    -/120/120

The fire-resistance level is applicable when the system is exposed to fire from either direction.

The test was conducted on a wall system with an established FRL of -/120/120. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed.

For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be noted that a single test method will not provide a full assessment of fire hazard under all fire conditions.

## 10 Field of direct application of test results

The results of the fire test contained in this test report are directly applicable, without reference to the testing authority, to similar constructions where one or more changes listed in Clause 10.12 of AS 1530.4-2014, have been made provided no individual component is removed or reduced.

## 11 Tested by



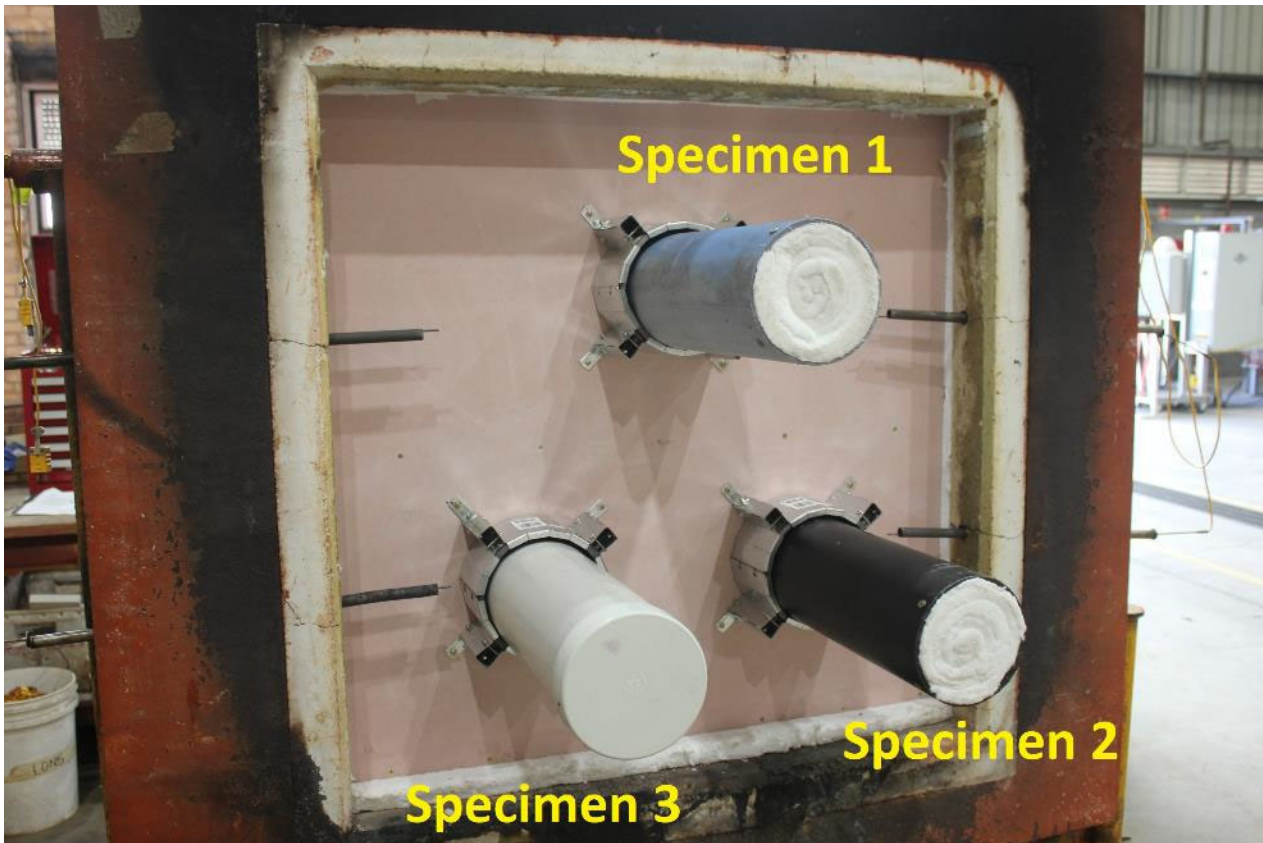
Peter Gordon  
Testing Officer

# Appendices

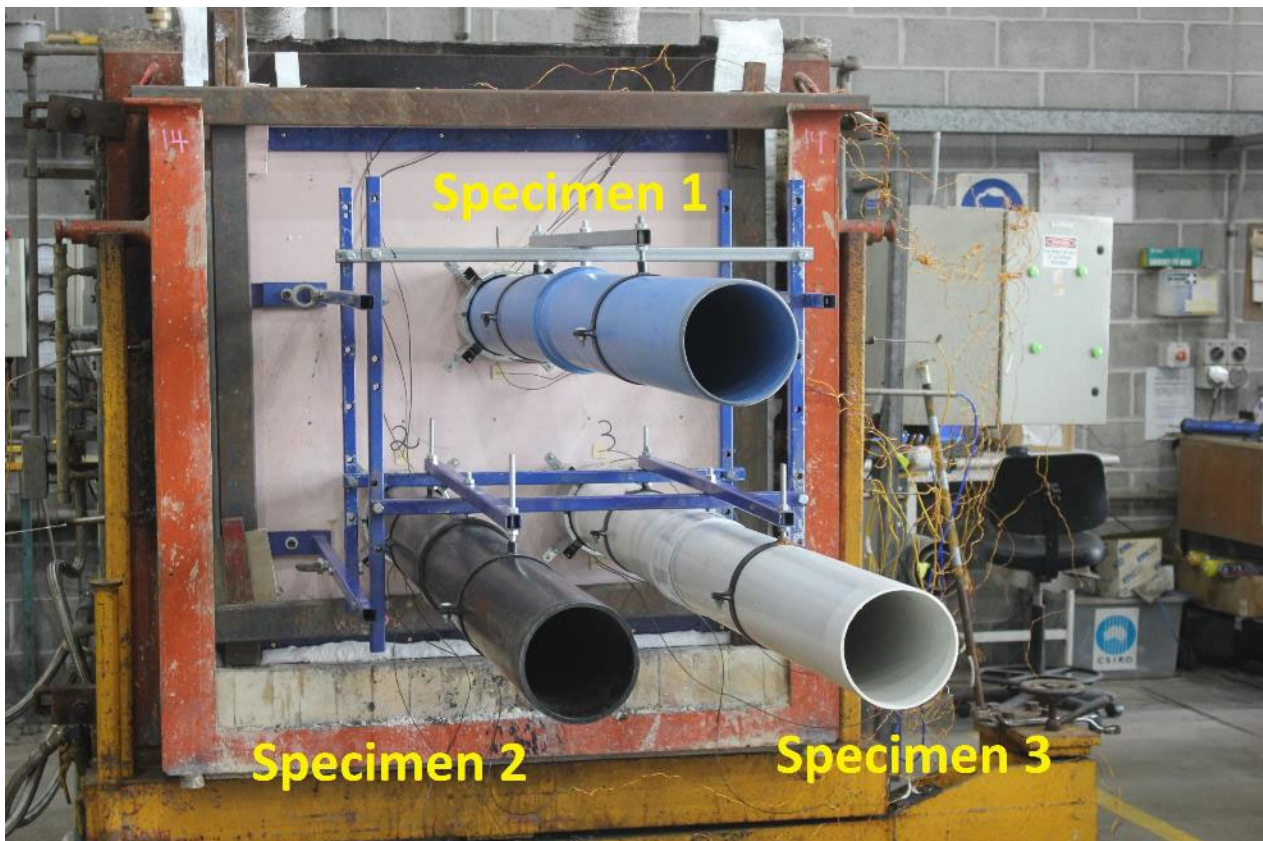
## Appendix A – Measurement location

SPECIMEN	THERMOCOUPLE POSITION	DESIGNATION
Specimen 1 - SNAP HP150R Retrofit fire collars protecting a DN160 Triplus pipe penetrating a 168-mm diameter aperture.	On P/B wall , 25 mm above of collar	S1
	On P/B wall, 25 mm below collar	S2
	On top of the collar, 25 mm from P/B wall	S3
	On the underside of the collar, 25 mm from P/B wall	S4
	On top of the pipe, 25-mm from collar	S5
	On the underside of the pipe, 25-mm from collar	S6
Specimen 2 - SNAP HP150R Retrofit fire collars protecting a DN160 Valsir PE100 pipe penetrating a 168-mm diameter aperture.	On P/B wall, 25 mm above of collar	S7
	On P/B wall, 25 mm below collar	S8
	On top of the collar, 25 mm from P/B wall	S9
	On the underside of the collar, 25 mm from P/B wall	S10
	On top of the pipe, 25-mm from collar	S11
	On the underside of the pipe, 25-mm from collar	S12
Specimen 3 - SNAP HP150R Retrofit fire collars protecting a nominal 150 PVC(SC) pipe penetrating a 168-mm diameter aperture.	On P/B wall, 25 mm above of collar	S13
	On P/B wall, 25 mm below collar	S14
	On top of the collar, 25 mm from P/B wall	S15
	On the underside of the collar, 25 mm from P/B wall	S16
	On top of the pipe, 25-mm from collar	S17
	On the underside of the pipe, 25-mm from collar	S18
Rover		S19
Ambient		S20

## Appendix B – Photographs



**PHOTOGRAPH 1 – EXPOSED FACE OF SPECIMENS PRIOR TO TESTING**



**PHOTOGRAPH 2 – UNEXPOSED FACE OF SPECIMENS PRIOR TO TESTING**





**PHOTOGRAPH 3 – SPECIMEN 1 AFTER 4 MINUTES OF TESTING**



**PHOTOGRAPH 4 – SPECIMENS AFTER 6 MINUTES OF TESTING**



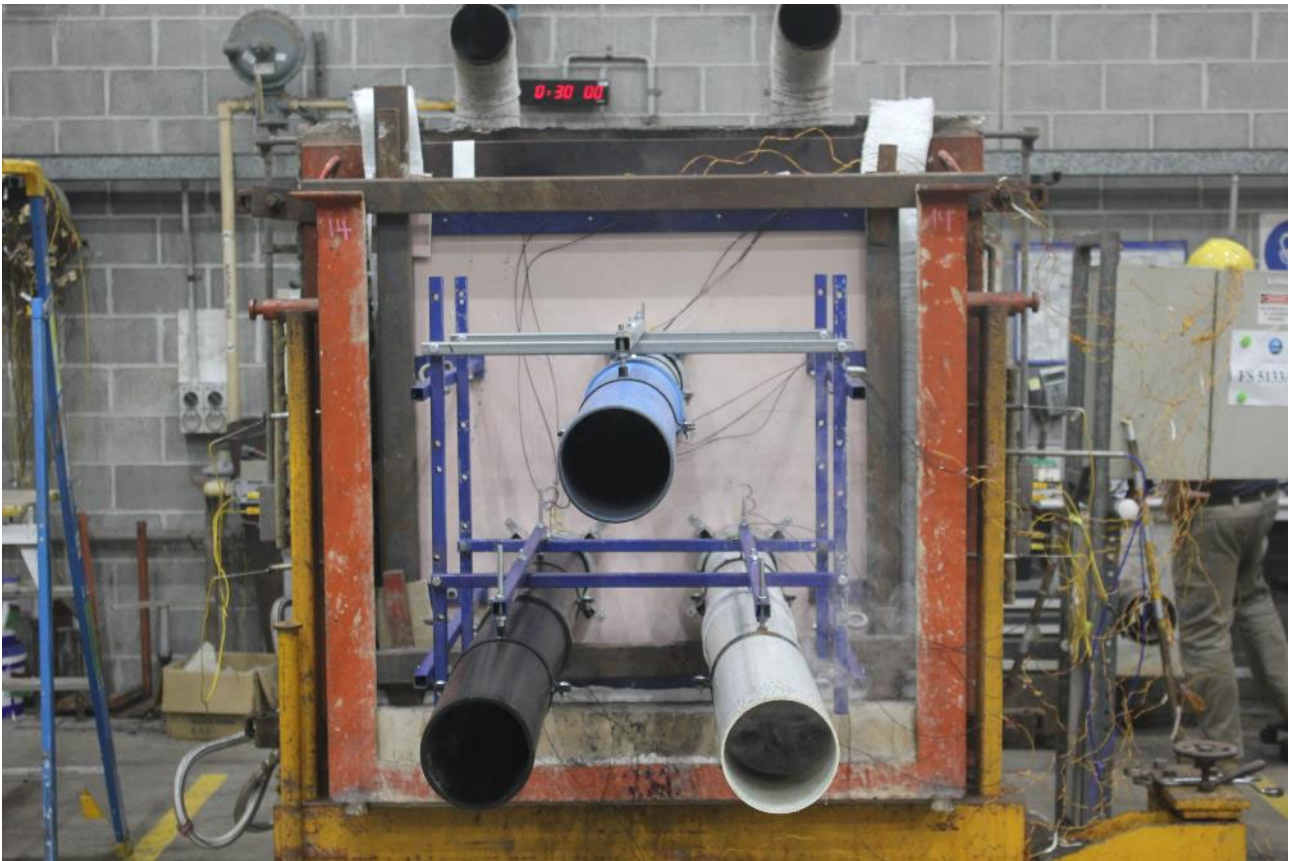


**PHOTOGRAPH 5 – SPECIMENS AFTER 9 MINUTES OF TESTING**

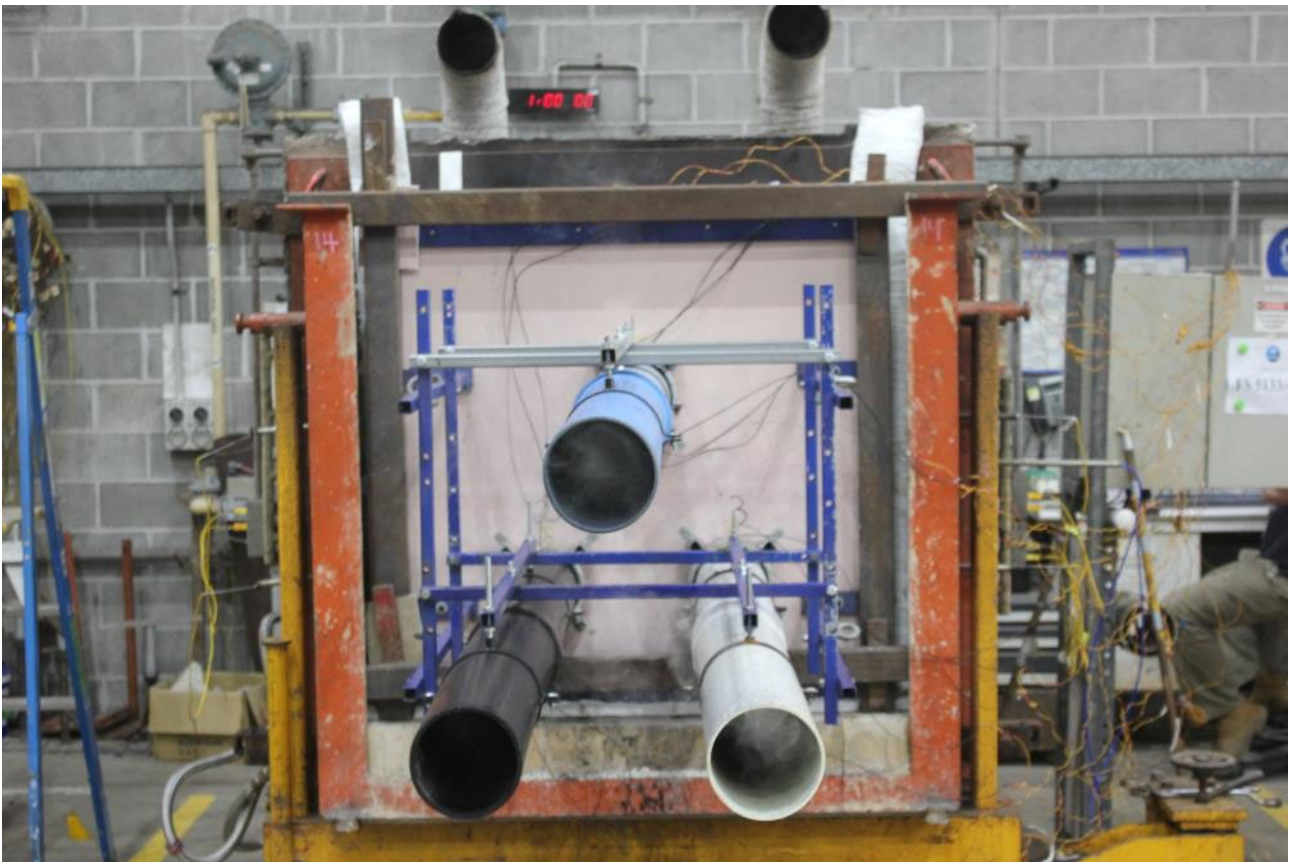


**PHOTOGRAPH 6 – SPECIMENS AFTER 11 MINUTES OF TESTING**





**PHOTOGRAPH 7 – SPECIMENS AFTER 30 MINUTES OF TESTING**



**PHOTOGRAPH 8 – SPECIMENS AFTER 60 MINUTES OF TESTING**





**PHOTOGRAPH 9 – SPECIMEN 2 AFTER 112 MINUTES OF TESTING**



**PHOTOGRAPH 10 – SPECIMENS AFTER 90 MINUTES OF TESTING**



**PHOTOGRAPH 11 – SPECIMEN 2 AFTER 98 MINUTES OF TESTING**



**PHOTOGRAPH 12 –SPECIMEN 2 AFTER 116 MINUTES OF TESTING**

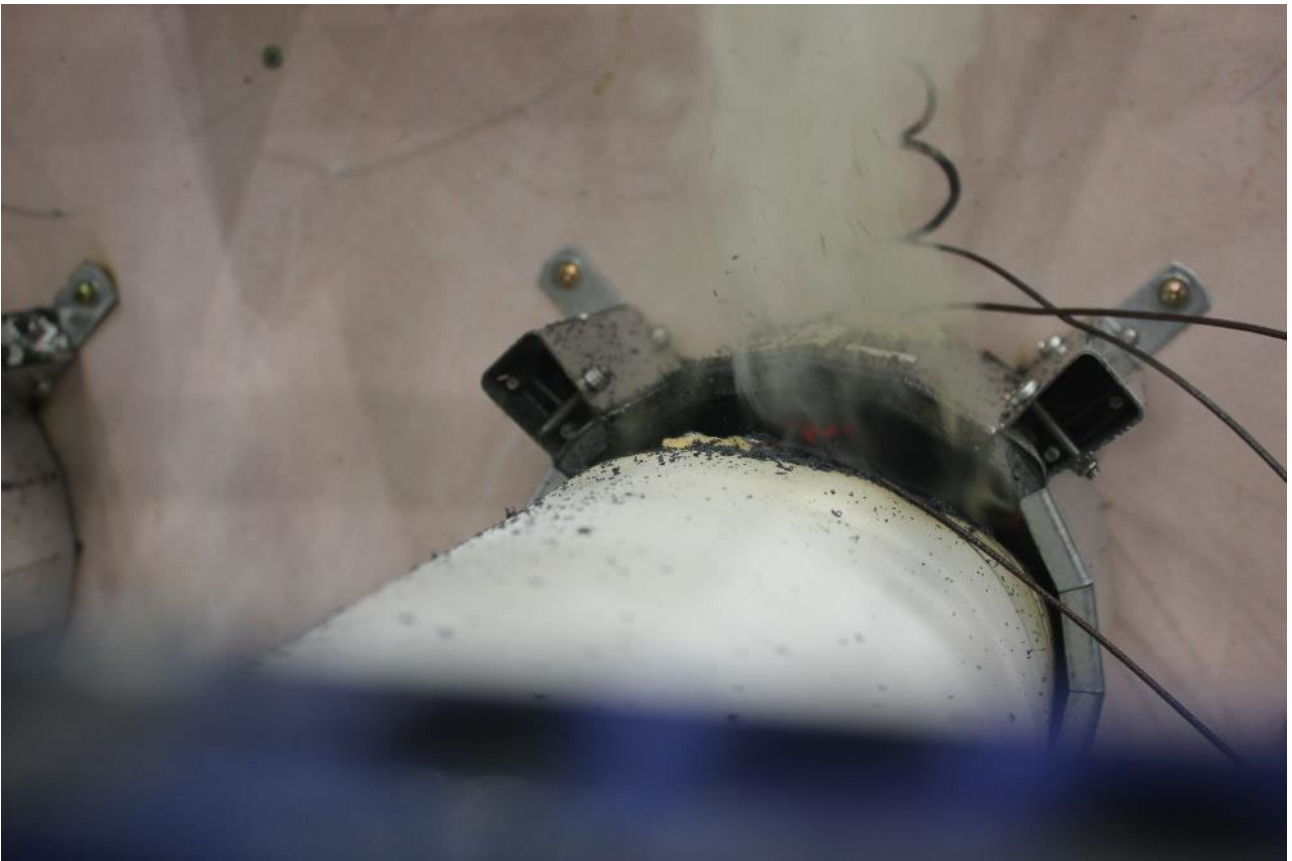




**PHOTOGRAPH 13 –SPECIMENS AFTER 120 MINUTES OF TESTING**



**PHOTOGRAPH 14 –SPECIMEN 2 AFTER 129 MINUTES OF TESTING**



**PHOTOGRAPH 15 –SPECIMEN 3 AFTER 133 MINUTES OF TESTING**



**PHOTOGRAPH 16 – COTON PAD TEST APPLIED TO SPECIMEN 3 AFTER 136 MINUTES OF TESTING**





**PHOTOGRAPH 17 – SPECIMENS 2 AND 3 AFTER 138 MINUTES OF TESTING**



**PHOTOGRAPH 18 – SPECIMEN 2 AFTER 162 MINUTES OF TESTING**

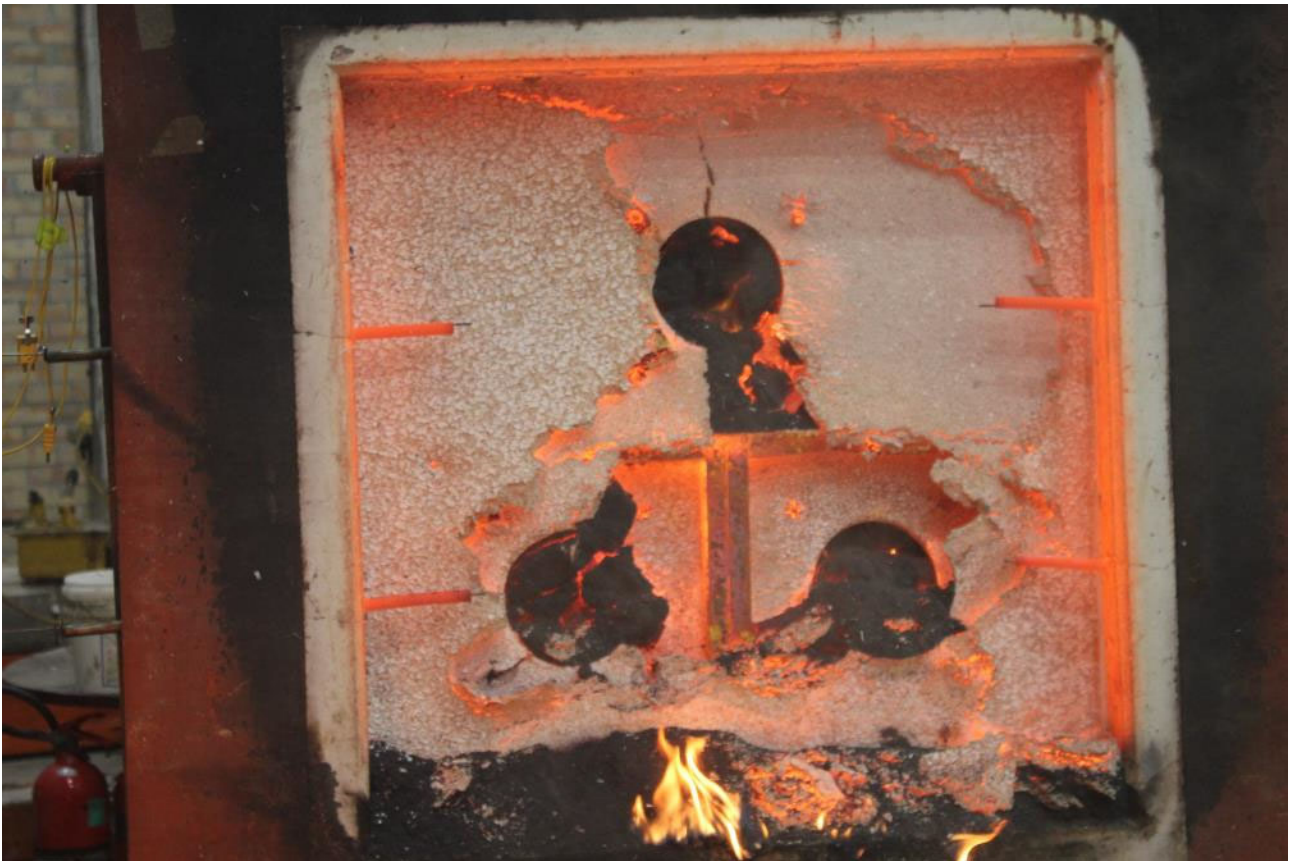


**PHOTOGRAPH 19 – SPECIMENS AFTER 178 MINUTES OF TESTING**



**PHOTOGRAPH 20 – SPECIMENS AFTER 180 MINUTES OF TESTING**





**PHOTOGRAPH 21 – EXPOSED FACE OF SPECIMENS AT CONCLUSION OF TESTING**

## Appendix C – Test data charts

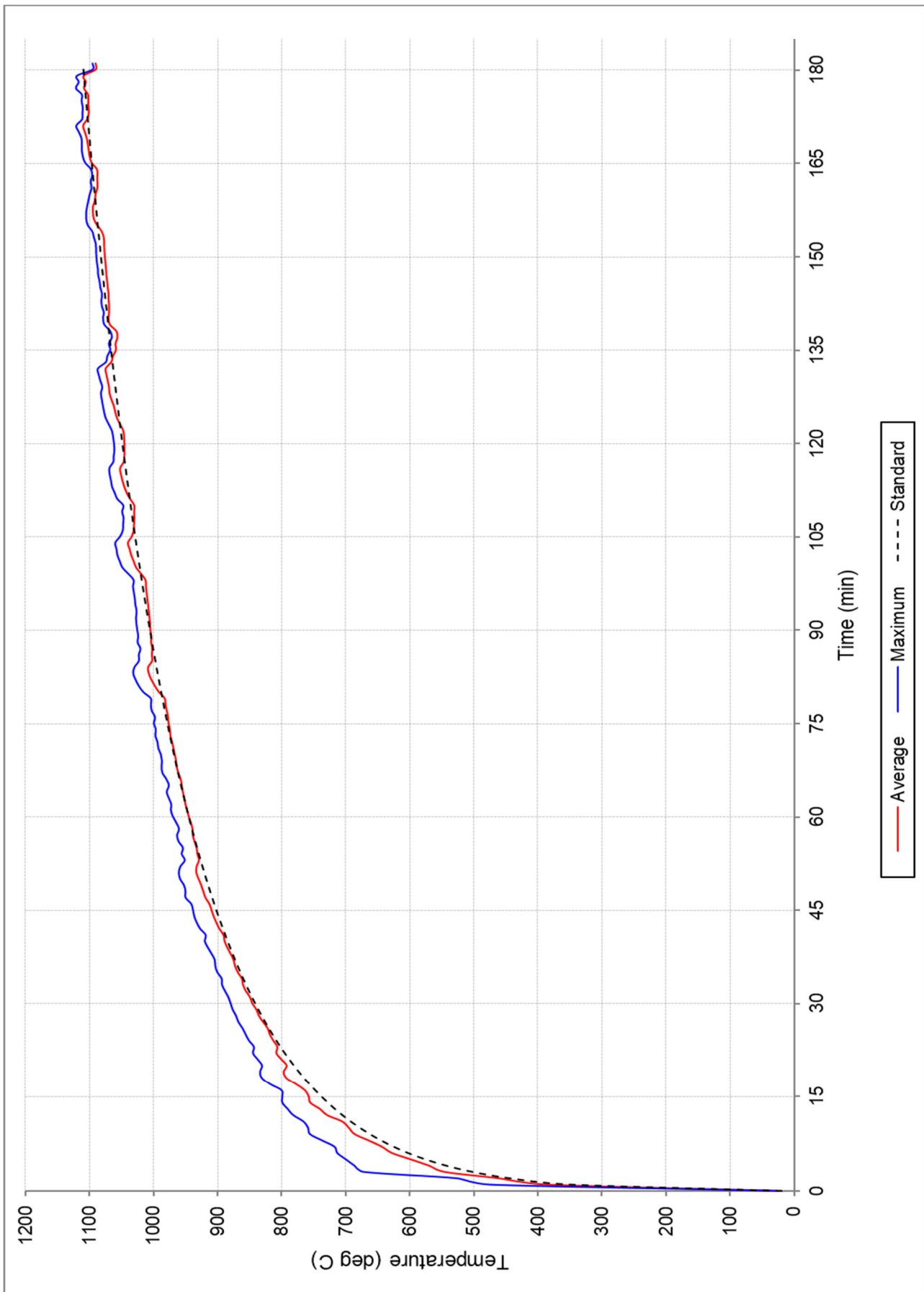


FIGURE 1 – FURNACE TEMPERATURE

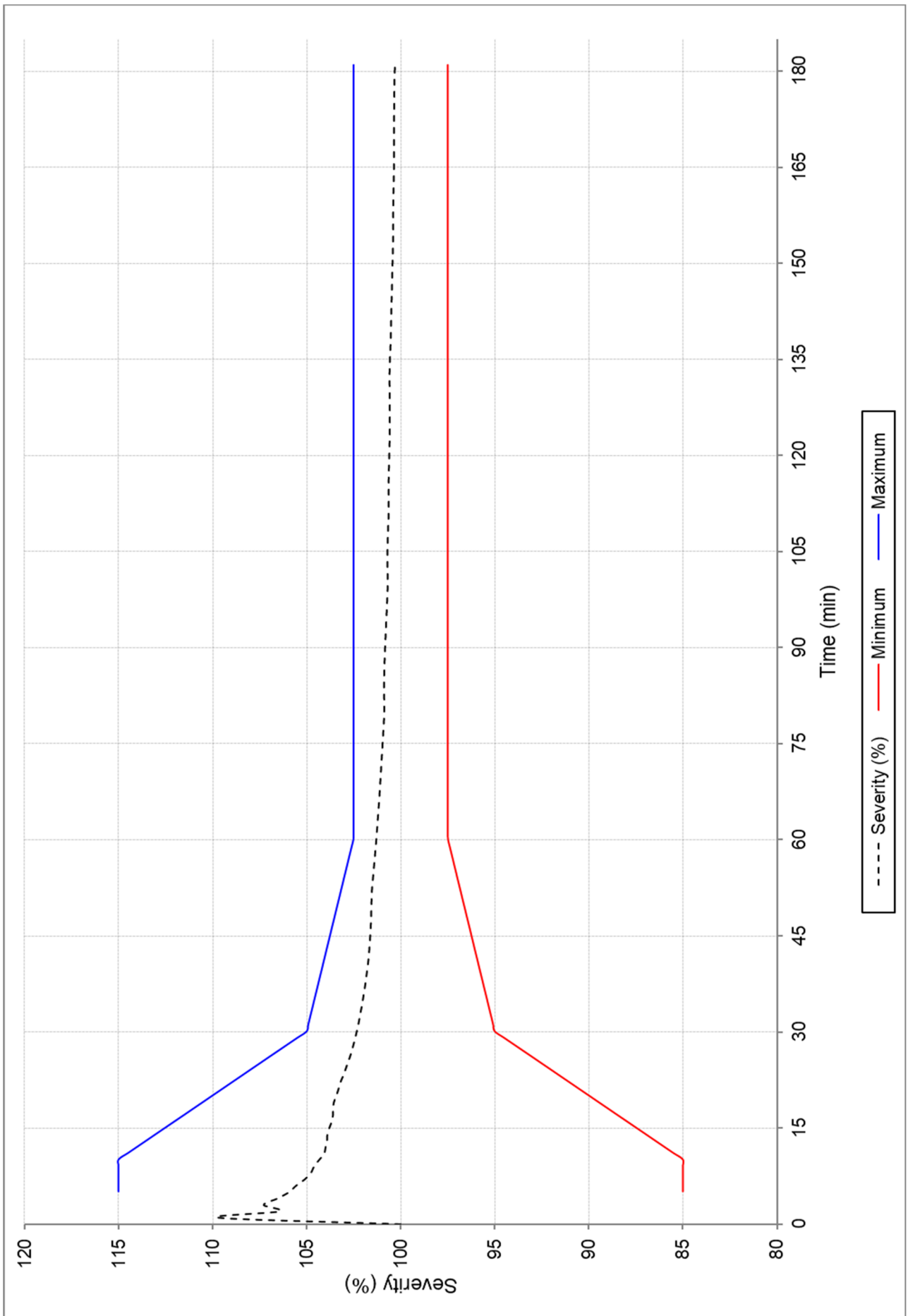
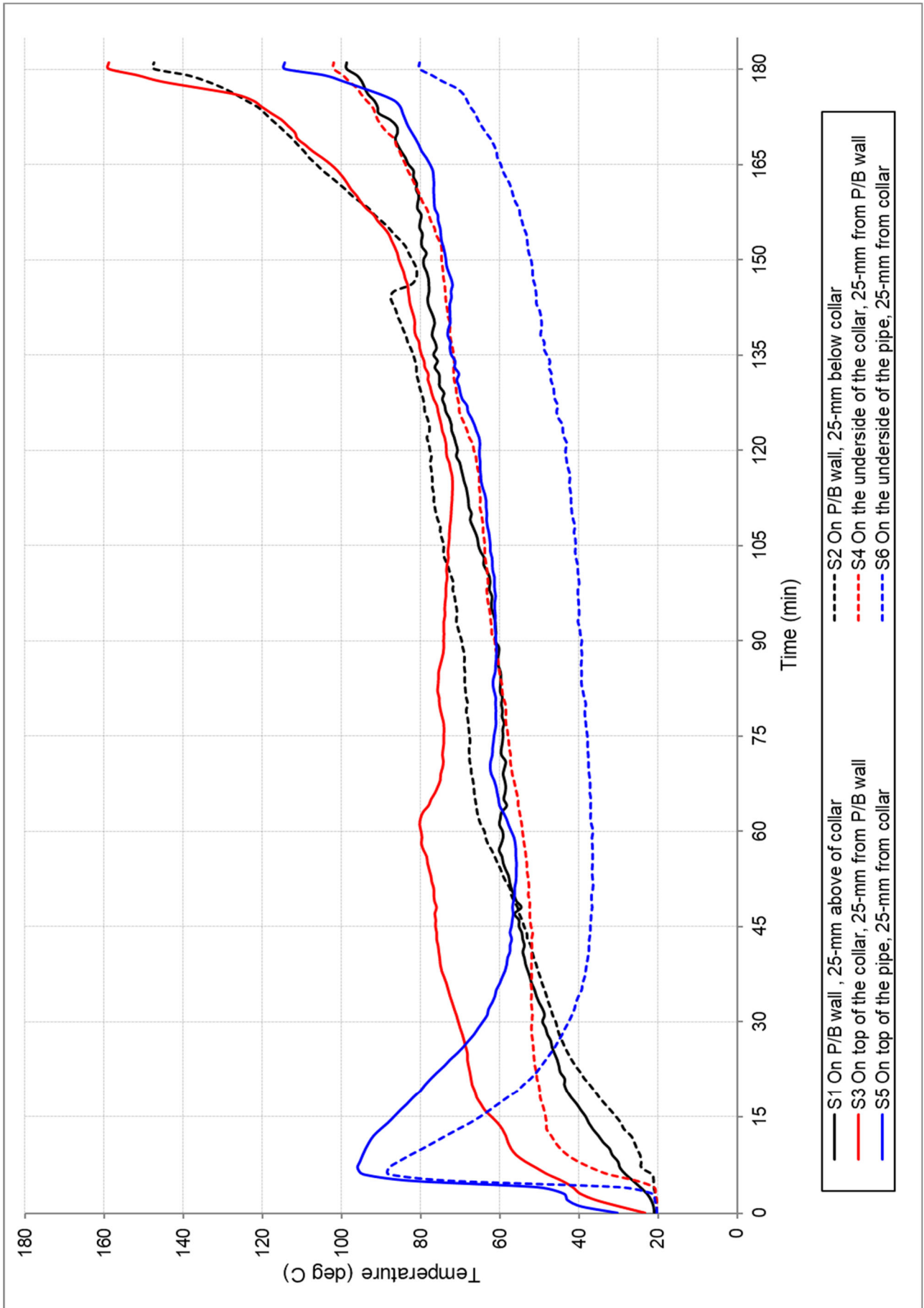


FIGURE 2 – FURNACE SEVERITY



**FIGURE 3 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #1**



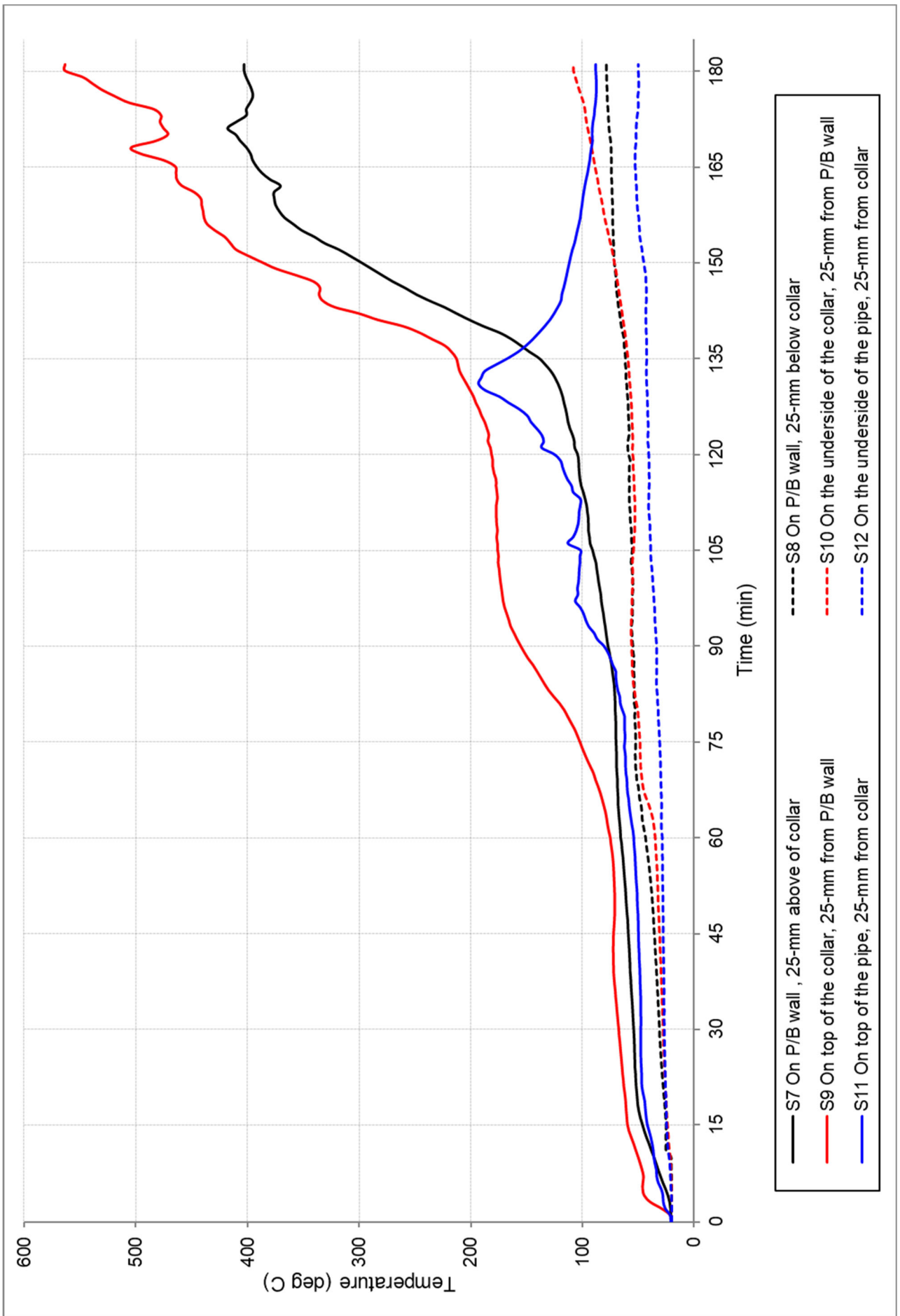


FIGURE 4 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #2

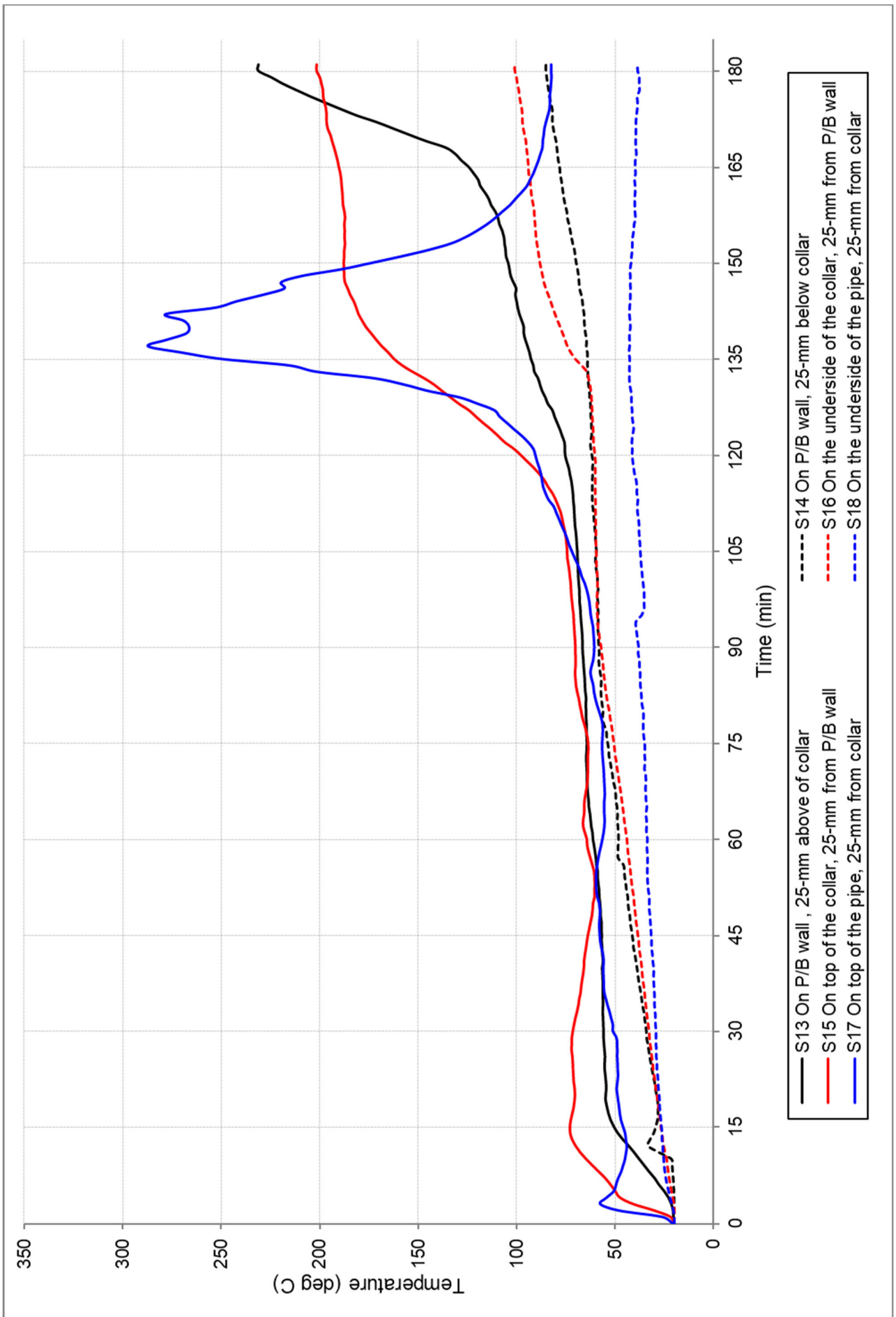
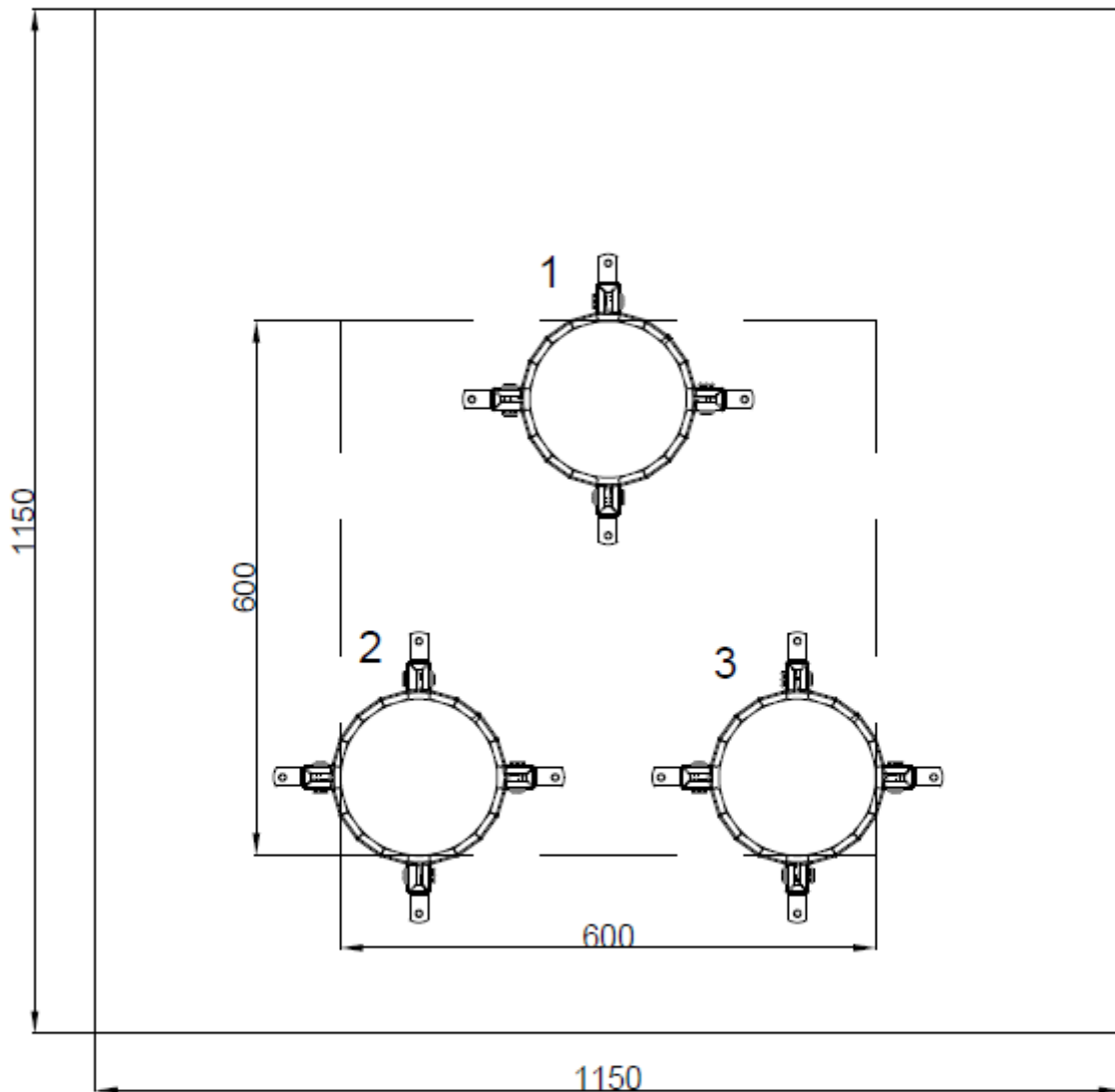


FIGURE 5 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #3

Appendix D – Layout and installation drawings

**Snap Fire Systems Pty Ltd**  
Test Wall W-21-A2 Layout  
Date:29 JUL 2021



Penetration	Collar Code	Pipe Type	Pipe Diameter
1	HP150R	Triplus	160
2	HP150R	HDPE	160
3	HP150R	PVC(SC)	150

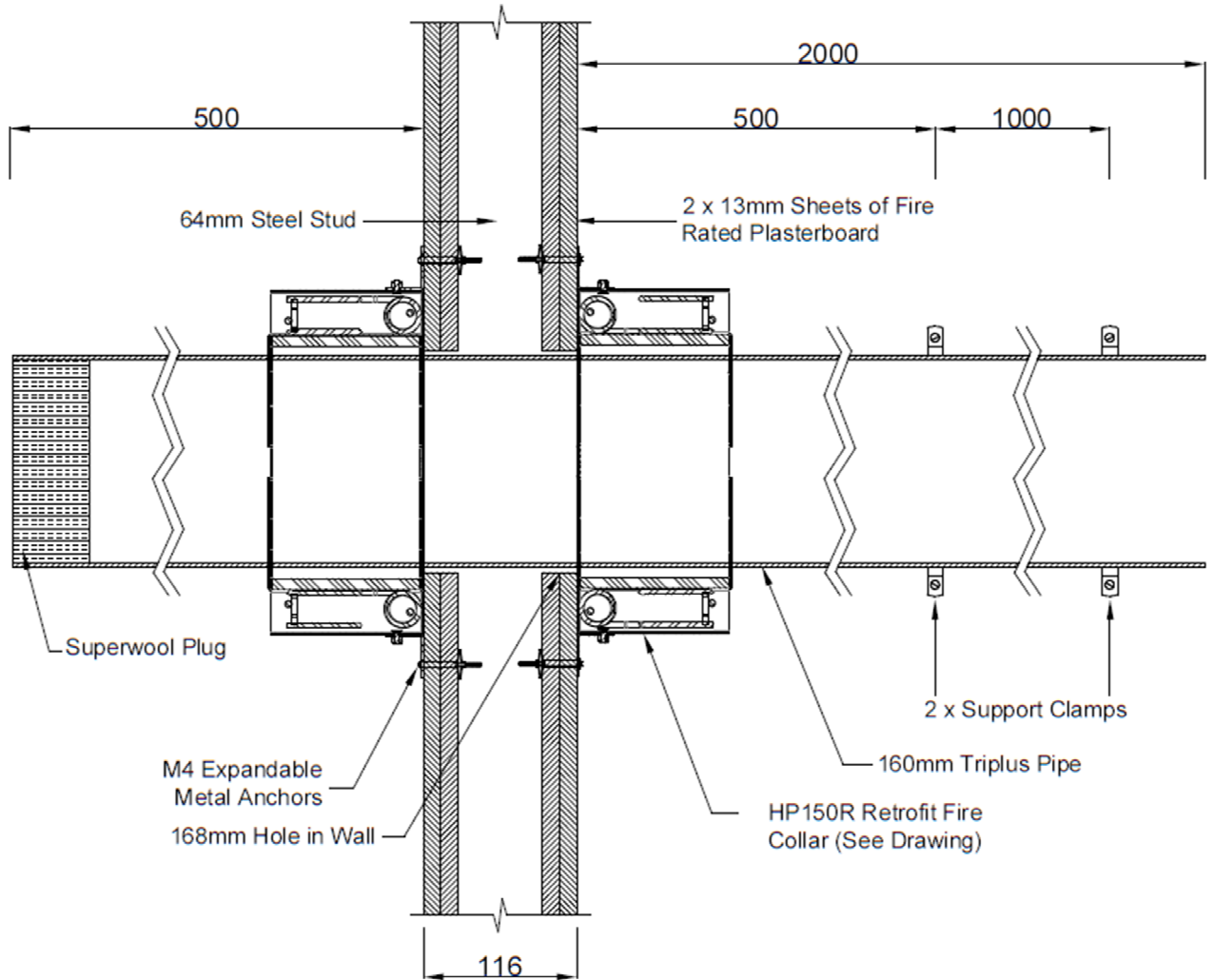
**DRAWING TITLED 'TEST WALL W-21-A2 LAYOUT, DATED 29 JULY 2021, BY SNAP FIRE SYSTEMS PTY LTD.**

# Snap Fire Systems Pty Ltd

Specimen #1

160 Triplus Stack & HP150R

Date: 25 OCT 2021



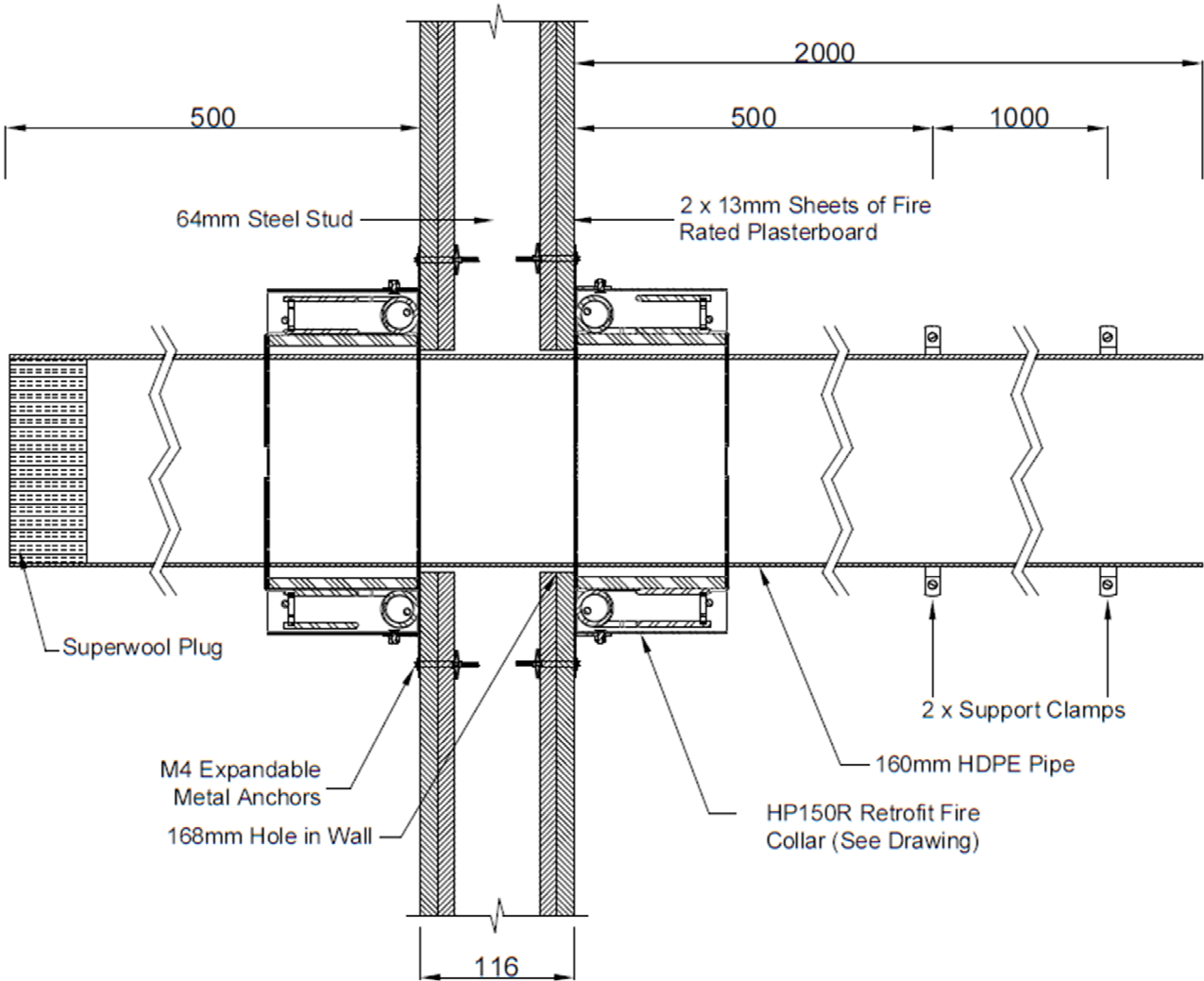
**DRAWING TITLED 'SPECIMEN #1, 160 TRIPLUS STACK & HP150R', DATED 25 OCTOBER 2021, BY SNAP FIRE SYSTEMS PTY LTD.**

# Snap Fire Systems Pty Ltd

Specimen #2

160 HDPE Stack & HP150R

Date: 25 OCT 2021



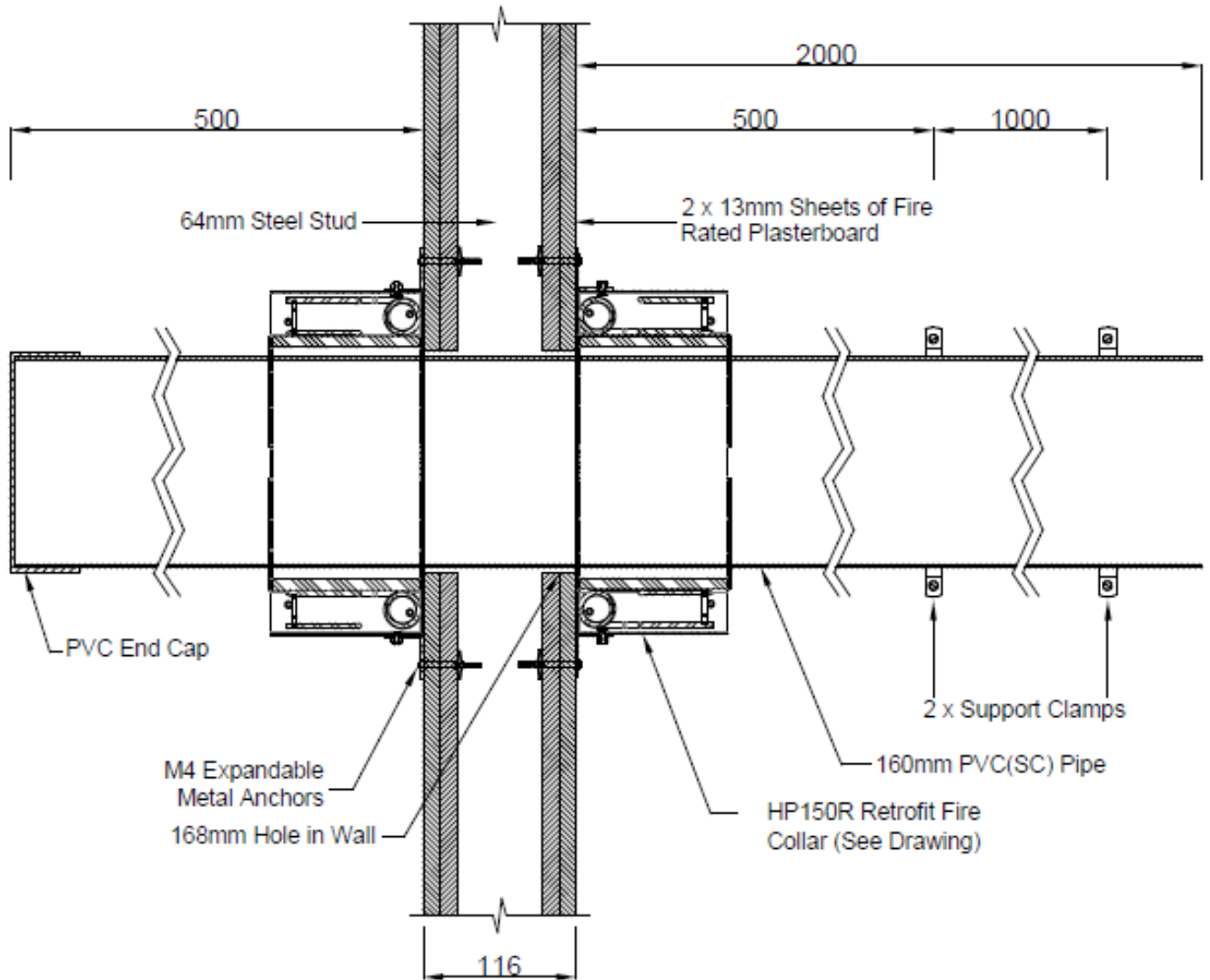
DRAWING TITLED 'SPECIMEN #2 160 HDPE STACK & HP150R', DATED 25 OCTOBER 2021, BY SNAP FIRE SYSTEMS PTY LTD

# Snap Fire Systems Pty Ltd

Specimen #3

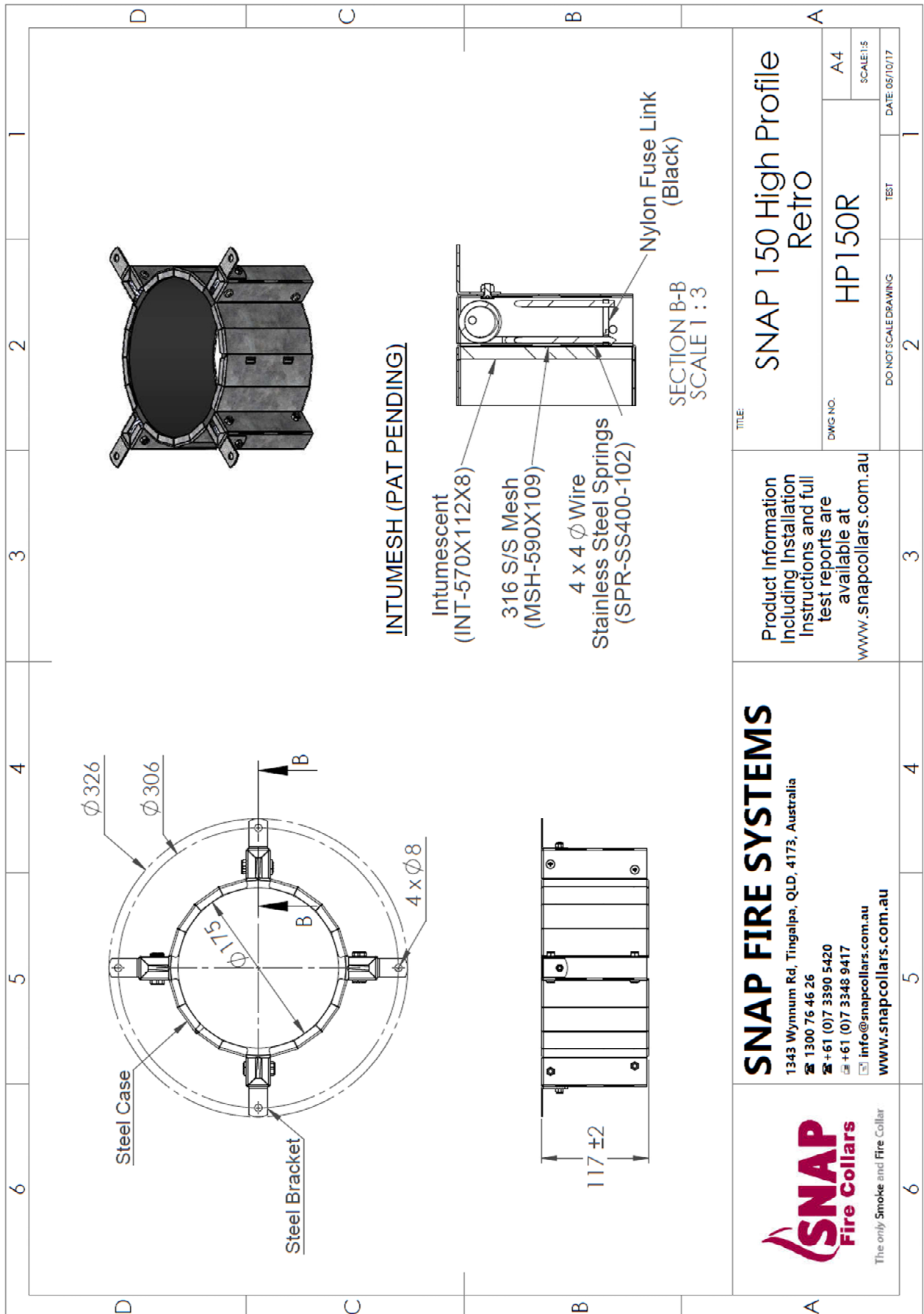
150 PVC(SC) Stack & HP150R

Date: 25 OCT 2021



DRAWING TITLED 'SPECIMEN #3, 150 PVC(SC) STACK & HP150R', DATED 25 OCTOBER 2021, BY SNAP FIRE SYSTEMS PTY LTD




# Appendix E – Specimen Drawing



DRAWING 'SNAP 150 HIGH PROFILE RETRO', DATED 5 OCTOBER 2017, BY SNAP FIRE SYSTEMS PTY LTD



# Appendix F – Certificate(s) of Test

<b>INFRASTRUCTURE TECHNOLOGIES</b> www.csiro.au		
14 Julius Avenue, North Ryde NSW 2113 PO Box 52, North Ryde NSW 1670, Australia T (02) 9490 5444 • ABN 41 687 119 230		
<h2>Certificate of Test</h2>		No. 3655
This is to certify that the element of construction described below was tested by CSIRO Infrastructure Technologies in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4 Fire-resistance tests of elements of construction, 2014, Section 10: Service penetrations and control joints, on behalf of:		
IG6 Pty Ltd 3 Skirmish Court Victoria Point Qld 4165		
A full description of the test specimen and the complete test results are detailed in the Division's report numbered FSP 2242.		
Product Name: SNAP HP150R Retrofit fire collars protecting a DN160 Triplus pipe penetrating a 168 mm diameter aperture (Specimen 1)		
Description: The sponsor identified the specimen as SNAP retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe, a PE100 high-density polyethylene (HDPE) pipe and a polyvinyl chloride sandwich construction (PVC-SC) pipe. The wall system comprised a 116-mm thick plasterboard lined, steel framed wall comprising two layers of 13-mm thick Firestop plasterboard on each side of 64-mm deep steel studs, (Boral reference SB120.1) with an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00. Specimen 1 is the subject of this Certificate. The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175-mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links, and a 590-mm x 109 mm 316 stainless steel mesh. One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers. The penetrating service comprised a Valsir Triplus (polypropylene) pipe with an outside diameter of 159.6-mm and wall thickness of 5.2-mm, fitted through the fire collar's sleeve. The pipe penetrated the wall through a 168 mm diameter cut-out hole. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500 mm into the furnace chamber and was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end. The Sponsor provided drawings titled "SNAP 150 High Profile Retro" dated 5 October 2017 and drawing titled 'Specimen #1, 150 Triplus Stack & HP150R', dated 25 October 2021 as a complete description of the specimen and should be read in conjunction with this Certificate.		
Performance observed in respect of the following AS 1530.4-2014 criteria		
Structural Adequacy	-	not applicable
Integrity	-	no failure at 181 minutes
Insulation	-	no failure at 181 minutes
and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/120/120.		
The fire-resistance level is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of -/120/120. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be noted that a single test method will not provide a full assessment of fire hazard under all fire conditions. This certificate is provided for general information only and does not comply with regulatory requirements for evidence of compliance.		
Testing Officer:	Peter Gordon	Date of Test: 26 October 2021
Issued on the 13 <sup>th</sup> day of December 2021 without alterations or additions.		
 Brett Roddy   Manager, Fire Testing and Assessments		
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	This document is issued in accordance with NATA's accreditation requirements. Accreditation No. 165 – Corporate Site No. 3625 Accredited for compliance with ISO/IEC 17025 - Testing	

**COPY OF CERTIFICATE OF TEST – NO. 3655**





## Certificate of Test

No. 3656

This is to certify that the element of construction described below was tested by CSIRO Infrastructure Technologies in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4 Fire-resistance tests of elements of construction, 2014, Section 10: Service penetrations and control joints, on behalf of:

IG6 Pty Ltd  
3 Skirmish Court  
Victoria Point Qld 4165

A full description of the test specimen and the complete test results are detailed in the Division's report numbered FSP 2242.

Product Name: SNAP HP150R Retrofit fire collars protecting a DN160 Valsir HDPE pipe penetrating a 168-mm diameter aperture (Specimen 2)

Description: The sponsor identified the specimen as SNAP retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe, a PE100 high-density polyethylene (HDPE) pipe and a polyvinyl chloride sandwich construction (PVC-SC) pipe. The wall system comprised a 116-mm thick plasterboard lined, steel framed wall comprising two layers of 13-mm thick Firestop plasterboard on each side of 64-mm deep steel studs, (Boral reference SB120.1) with an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00. Specimen 2 is the subject of this Certificate. The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175 mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links and a 590-mm x 109 mm 316 stainless steel mesh. One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers. The penetrating service comprised a Valsir DN160 PE100 (HDPE) pipe with an outside diameter of 160.6-mm and wall thickness of 6.54-mm, fitted through the fire collar's sleeve. The pipe penetrated the wall through a 168 mm diameter cut-out hole. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500 mm into the furnace chamber and was supported at nominally 500 mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end. The Sponsor provided drawings titled 'Specimen #2 160 HDPE Stack & HP150R', dated 25 October 2021 and "SNAP 150 High Profile Retro" dated 5 October 2017 as a complete description of the specimen and should be read in conjunction with this Certificate.

Performance observed in respect of the following AS 1530.4-2014 criteria

Structural Adequacy	-	not applicable
Integrity	-	no failure at 181 minutes
Insulation	-	130 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/120/120.

The fire-resistance level is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of -/120/120. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be noted that a single test method will not provide a full assessment of fire hazard under all fire conditions. This certificate is provided for general information only and does not comply with regulatory requirements for evidence of compliance.

Testing Officer: Peter Gordon Date of Test: 26 October 2021

Issued on the 13<sup>th</sup> day of December 2021 without alterations or additions.

Brett Roddy | Manager, Fire Testing and Assessments

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Accredited for compliance with ISO/IEC 17025 - Testing

**COPY OF CERTIFICATE OF TEST – NO. 3656**



## Certificate of Test

No. 3657

This is to certify that the element of construction described below was tested by CSIRO Infrastructure Technologies in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4 Fire-resistance tests of elements of construction, 2014, Section 10: Service penetrations and control joints, on behalf of:

IG6 Pty Ltd  
3 Skirmish Court  
Victoria Point Qld 4165

A full description of the test specimen and the complete test results are detailed in the Division's report numbered FSP 2242.

Product Name: SNAP HP150R Retrofit fire collars protecting a nominal 150 PVC(SC) pipe penetrating a 168-mm diameter aperture (Specimen 3)

Description: The sponsor identified the specimen as SNAP retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe, a PE100 high-density polyethylene (HDPE) pipe and a polyvinyl chloride sandwich construction (PVC-SC) pipe. The wall system comprised a 116-mm thick plasterboard lined, steel framed wall comprising two layers of 13-mm thick Firestop plasterboard on each side of 64-mm deep steel studs, (Boral reference SB120.1) with an established FRL of  $-/120/120$  as detailed in Exova Warrington report numbered 27211-00. Specimen 3 is the subject of this Certificate. The SNAP HP150R High Profile Retrofit fire collar comprised a 0.95-mm thick steel casing with a 175 mm inner diameter and a 326-mm base flange. The 117-mm high collar casing incorporated a strip of 570 mm long x 112-mm wide x 8-mm thick Intumesh intumescent material. The closing mechanism comprised four SPR-SS400-102 stainless steel springs bound with nylon fuse links, and a 590-mm x 109 mm 316 stainless steel mesh. One SNAP HP150R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 55-mm M4 expandable steel hollow wall anchors with stainless steel washers. The penetrating service comprised a Iplex PVC(SC) pipe with an outside diameter of 159-mm and wall thickness of 4.45-mm, fitted through the fire collar's sleeve. The pipe penetrated the wall through a 60 mm diameter cut-out hole. The pipe projected horizontally approximately 2000-mm away from the unexposed face of the wall and 500 mm into the furnace chamber and was supported at 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open on the unexposed end and plugged with ceramic fibre (Superwool) on the exposed end. The Sponsor provided drawings titled 'Specimen #3, 150 PVC(SC) stack & HP150R', dated 25 October 2021 and "SNAP 150 High Profile Retro" dated 5 October 2017 as a complete description of the specimen and should be read in conjunction with this Certificate.

Performance observed in respect of the following AS 1530.4-2014 criteria

Structural Adequacy	-	not applicable
Integrity	-	no failure at 181 minutes
Insulation	-	133 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of  $-/120/120$ .

The fire-resistance level is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of  $-/120/120$ . The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be noted that a single test method will not provide a full assessment of fire hazard under all fire conditions. This certificate is provided for general information only and does not comply with regulatory requirements for evidence of compliance.

Testing Officer: Peter Gordon Date of Test: 26 October 2021

Issued on the 13<sup>th</sup> day of December 2021 without alterations or additions.

  
Brett Roddy | Manager, Fire Testing and Assessments

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**COPY OF CERTIFICATE OF TEST – NO. 3657**

# References

The following informative documents are referred to in this Report:

- |                |  |
|----------------|--|
| AS 1530.4-2014 | Methods for fire tests on building materials, components and structures Part 4: Fire-resistance tests for elements of building construction. |
| AS 4072.1-2005 | Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints.            |

#### CONTACT US

**t** 1300 363 400  
+61 3 9545 2176  
**e** [enquiries@csiro.au](mailto:enquiries@csiro.au)  
**w** [www.csiro.au](http://www.csiro.au)

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#### FOR FURTHER INFORMATION

##### **Infrastructure Technologies**

Brett Roddy  
Team Leader, Fire Testing and Assessments  
**t** +61 2 94905449  
**e** [brett.rodny@csiro.au](mailto:brett.rodny@csiro.au)  
**w** <https://www.csiro.au/en/Do-business/Services/Materials-infrastructure/Fire-safety>