

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

## Test Report

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**Report number:** FSP 2238  
**Date:** 22 December 2021  
**Client:** IG6 Pty Ltd

Commercial-in-confidence

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22 December 2021	22 December 2021	22 December 2021

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# Contents

1	Introduction .....	5
1.1	Identification of specimen .....	5
1.2	Sponsor .....	5
1.3	Manufacturer .....	5
1.4	Test standard .....	5
1.5	Reference standard.....	5
1.6	Test number.....	5
1.7	Test date .....	6
2	Description of specimen .....	6
2.1	General.....	6
2.2	Dimensions .....	7
2.3	Orientation.....	7
2.4	Conditioning.....	8
2.5	Selection, construction and installation of the specimen and the supporting construction	8
3	Documentation .....	8
4	Equipment.....	8
4.1	Furnace .....	8
4.2	Temperature .....	9
4.3	Measurement system .....	9
5	Ambient temperature .....	9
6	Departure from standard .....	9
7	Termination of test .....	9
8	Test results .....	9
8.1	Critical observations .....	9
8.2	Furnace temperature.....	10
8.3	Furnace severity.....	11
8.4	Specimen temperature.....	11
8.5	Performance .....	11
9	Fire-resistance level (FRL) .....	12
10	Field of direct application of test results .....	12
11	Tested by.....	12
	Appendices .....	13
	Appendix A – Measurement location .....	13
	Appendix B – Photographs.....	14
	Appendix C – Test data charts.....	23
	Appendix D – Layout and installation drawings.....	28
	Appendix E – Specimen Drawings .....	32
	Appendix F – Certificate(s) of Test .....	35
	References.....	38

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

## Sponsored Investigation No. FSP 2238

### 1 Introduction

#### 1.1 Identification of specimen

The sponsor identified the specimen as retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe and two PE100 high-density polyethylene (HDPE) pipes.

#### 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 5130/4707

## 1.7 Test date

The fire-resistance test was conducted on 12 October 2021.

# 2 Description of specimen

## 2.1 General

The supporting construction wall system (Boral reference SB120.1) comprised a 64-mm deep Rondo steel frame lined on each side with two layers of 13 mm thick Boral Firestop plasterboard with the wall cavity left unfilled, having 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 7671:2010 'Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings— Polypropylene (PP).' and
- AS/NZS 4130:2018 'Polyethylene (PE) pipes for pressure applications.'

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 110R Retrofit fire collars protecting a nominal 110-mm polypropylene Triplus pipe penetrating a 114-mm diameter aperture

The SNAP 110R Retrofit fire collar comprised a 0.75-mm steel casing with a 122 mm inner diameter and a 206-mm diameter base flange. The 62-mm high fire collar casing incorporated a closing mechanism which comprised three soft Intumesch intumescent wraps and wire meshes lined within the internal circumference of the collar. Intumescent A was 2.5-mm thick x 58-mm wide x 424-mm long, Intumescent B was 2.5-mm thick x 58-mm wide x 407-mm long and Intumescent C was 2.5-mm thick x 58-mm wide x 389-mm long. Between intumescent strips A and B was a layer of 316 stainless steel mesh 415-mm long x 58-mm wide and between intumescent strips B and C was a layer of 316 stainless steel mesh 398-mm long x 58-mm wide. Both had wire mesh diameters of 0.15-mm, as shown in drawing titled 'SNAP 110 Retro', dated 16 January 2019, by Snap Fire Systems Pty Ltd.

One SNAP 110R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 10g x 38-mm course thread plasterboard screws.

The penetrating service comprised a Valsir Triplus (polypropylene) pipe with an outside diameter of 110-mm and wall thickness of 3.43-mm, fitted through the fire collar sleeve. The pipe penetrated the wall through a 114-mm diameter cut-out hole as shown in drawing titled 'Specimen #1, 110 Triplus Stack & 110R', dated 13 September 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 LP50R Retrofit fire collars protecting a DN50 PE100 pipe penetrating a 60-mm diameter aperture

The SNAP LP50R Low Profile Retrofit fire collar comprised a 0.75-mm steel casing with a 69-mm inner diameter and a 203-mm diameter base flange. The 61.5-mm high collar casing incorporated a closing mechanism which comprised a 252-mm x 58-mm x 4-mm thick Intumesh intumescent wrap lined within the internal circumference of the fire collar casing. The closing mechanism comprised three stainless steel springs, with black nylon fuse links and a 260-mm x 58 mm stainless steel mesh, as shown in drawing titled 'SNAP 50 Low Profile Retro', dated 25 March 2019, by Snap Fire Systems Pty Ltd.

One SNAP LP50R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 50-mm long M4 expandable steel hollow wall anchors with stainless steel washers.

The penetrating service comprised a David Moss DN50 PE100 (HDPE) pipe with an outside diameter of 50.2-mm and wall thickness of 5.3-mm, fitted through the fire collar sleeve. The pipe penetrated the wall through a 60-mm diameter cut-out hole as shown in drawing titled 'Specimen #2 50 PN16 PE100 Stack & LP50R', dated 16 August 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 LP200R Retrofit fire collars protecting a nominal 200 PE100 pipe penetrating a 210-mm diameter aperture

The SNAP LP200R Retrofit fire collar comprised a 0.95-mm steel casing with a 225-mm inner diameter and a 370-mm diameter base flange. The 117-mm high collar casing incorporated 760-mm x 112-mm x 6-mm thick Intumesh intumescent material. The closing mechanism comprised five stainless steel springs, with nylon fuse links and a 764-mm x 107-mm stainless steel mesh as shown in drawing titled LP200R dated 24 April 2018, by SNAP Fire Systems.

A SNAP LP200R Low Profile Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration through the collar's five mounting brackets using five 8-mm threaded rods and ten M8 nuts with flat washes.

The penetrating service comprised a PE100 (HDPE) with an outside diameter of 200.2-mm and wall thickness of 6.7-mm, fitted through the fire collar sleeve. The pipe penetrated the wall through a 60-mm diameter cut-out hole as shown in drawing titled 'Specimen #3, 200 HDPE Pipe & LP200R', dated 16 August 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 17 September 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-A1 Layout', dated 29 July 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #1, 110 Triplus Stack & 110R', dated 13 September 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #2 50 PN16 PE100 Stack & LP50R', dated 16 August 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'Specimen #3, 200 HDPE Pipe & LP200R', dated 16 August 2021, by Snap Fire Systems Pty Ltd.

Drawing titled 'SNAP 110 Retro', dated 16 January 2019, by Snap Fire Systems Pty Ltd.

Drawing titled 'SNAP 50 Low Profile Retro', dated 25 March 2019, by Snap Fire Systems Pty Ltd.

Drawing title 'SNAP 200 Low Profile Retro', dated 24 April 2018, 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 17°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 has started to flue from the end of the pipe of specimen 1.
2 minutes -	Loud clicks were emitted from the specimen wall, indicating the release a fusible link from one or more of the fire collars. The pipe inside the furnace of specimen 1 has melted with intumescent material swelling to close off the open pipe - photograph 3.
3 minutes -	Smoke is being emitted between the collar and the pipe at the base of specimens 1, 2 and 3 - photograph 4. The pipe inside the furnace of specimen 1 has closed off - photograph 5.

- 4 minutes - The west side of the pipe inside the collar of specimen 1 has begun to deform with a small quantity of black intumescent material expelled from the collar - photograph 6.  
Smoke has ceased fluing from the end of the pipe of specimen 1.  
Condensation has formed around the base of the pipe of specimen 3.
- 5 minutes - Smoke has started to flue from the end of the pipe of specimen 3.
- 6 minutes - The east side of the pipe inside the collar of specimen 1 has begun to deform.
- 9 minutes - The level of smoke fluing from the end of the pipe of specimen 3 has intensified.
- 10 minutes - Smoke has ceased being emitted between the pipe and collar at the base of specimen 2.
- 11 minutes - Cotton pad test applied over the gap between the deformed pipe and the collar at the base of specimen 1, no ignition of cotton pad noted at this time.  
Smoke has ceased fluing from the end of the pipe of specimen 3.
- 13 minutes - The condensation on the pipe at the base of specimen 3 has evaporated.
- 17 minutes - Light smoke has resumed fluing at the end of the pipe of specimen 3.
- 23 minutes - Black intumescent material is visible on top of the pipe of specimen 3.
- 90 minutes - Smoke is being emitted between the collar and the pipe at the base of specimens 1 and 3.
- 91 minutes - The pipe inside the collar of specimen 1 continues to deform.
- 98 minutes - The level of smoke being emitted between the collar and the pipe at the base of specimen 3 has intensified, with visible smoke staining on the metal fire collar casing.
- 119 minutes - Smoke has resumed being emitted between the collar and the pipe at the base of specimen 2.
- 125 minutes - Cotton pad test applied over the gap between the deformed pipe and the collar at the base of specimen 1, no ignition of cotton pad noted at this time.
- 127 minutes - The level of smoke being emitted between the collar and the pipe at the base of specimens 1 and 3 has intensified.
- 130 minutes - The top side of the pipe inside the collar of specimen 3 has softened and collapsed. The red glow of the furnace can be seen from the gap between the top of the collar and the pipe of specimen 3.
- 134 minutes - 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.
- 139 minutes - Smoke has resumed fluing at the end of the pipe of specimen 1.
- 150 minutes - The top side of the pipe inside the collar of specimen 3 continues to collapse, with the plasterboard wall around the fire collar beginning to char.
- 153 minutes - Integrity failure of Specimen 3 - Cotton pad test applied over the gap between the pipe and collar of specimen 3, ignition of cotton pad noted at this time.
- 155 minutes - Insulation failure of Specimen 3 – maximum temperature rise of 180K is exceeded on the top of the pipe, 25-mm from the collar.
- 157 minutes - The pipe at the base of specimen 3 has sustained flaming for greater than 10 seconds. The pipe and collar at the base of specimen 3 has been covered with ceramic fibre and flames extinguished.
- 161 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 110R Retrofit fire collars protecting a nominal 110-mm polypropylene Triplus pipe penetrating a 114-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	no failure at 161 minutes
Insulation	-	no failure at 161 minutes

Specimen 2 - SNAP LP50R Retrofit fire collars protecting a DN50 PN16 PE100 pipe penetrating a 60-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	no failure at 161 minutes
Insulation	-	no failure at 161 minutes

Specimen 3 - SNAP LP200R Retrofit fire collars protecting a 200-mm OD PE100 pipe penetrating a 210-mm diameter aperture

Structural adequacy	-	not applicable
Integrity	-	153 minutes
Insulation	-	155 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



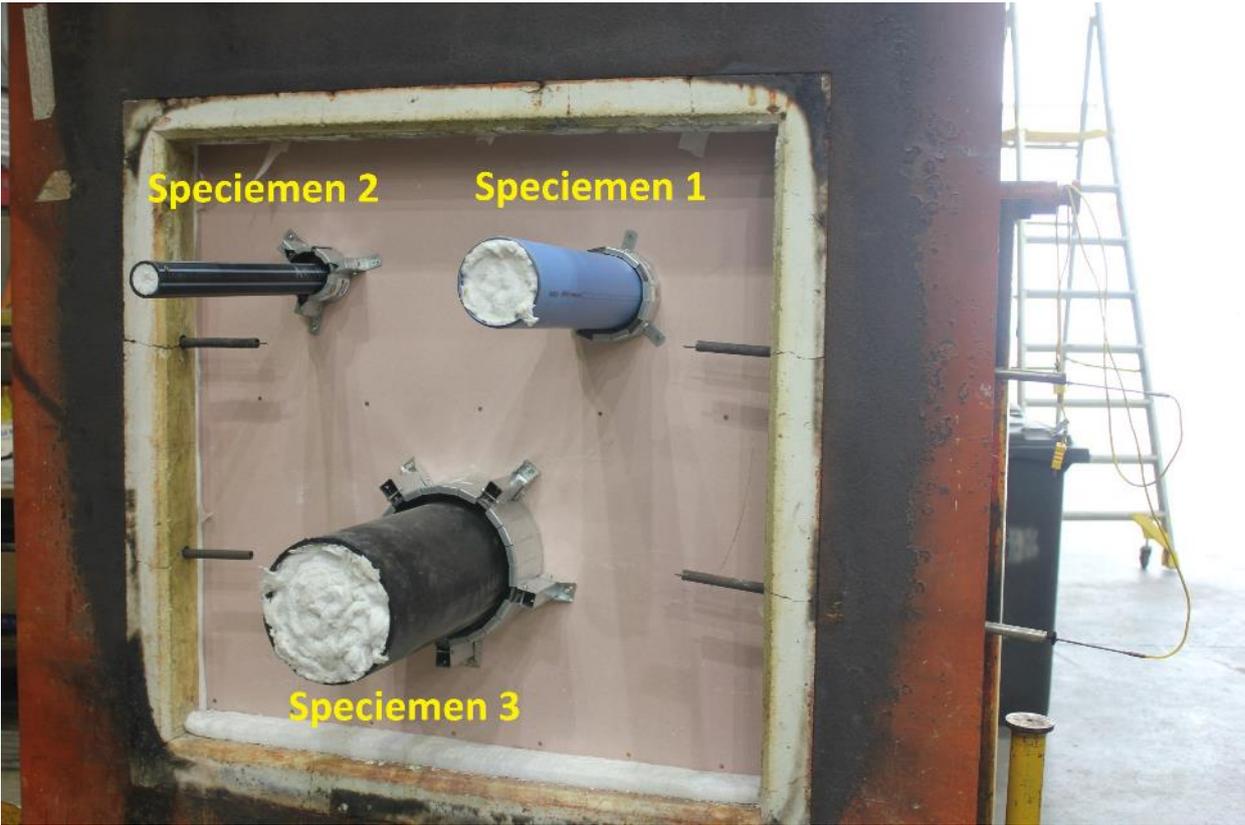
Peter Gordon  
Testing Officer

# Appendices

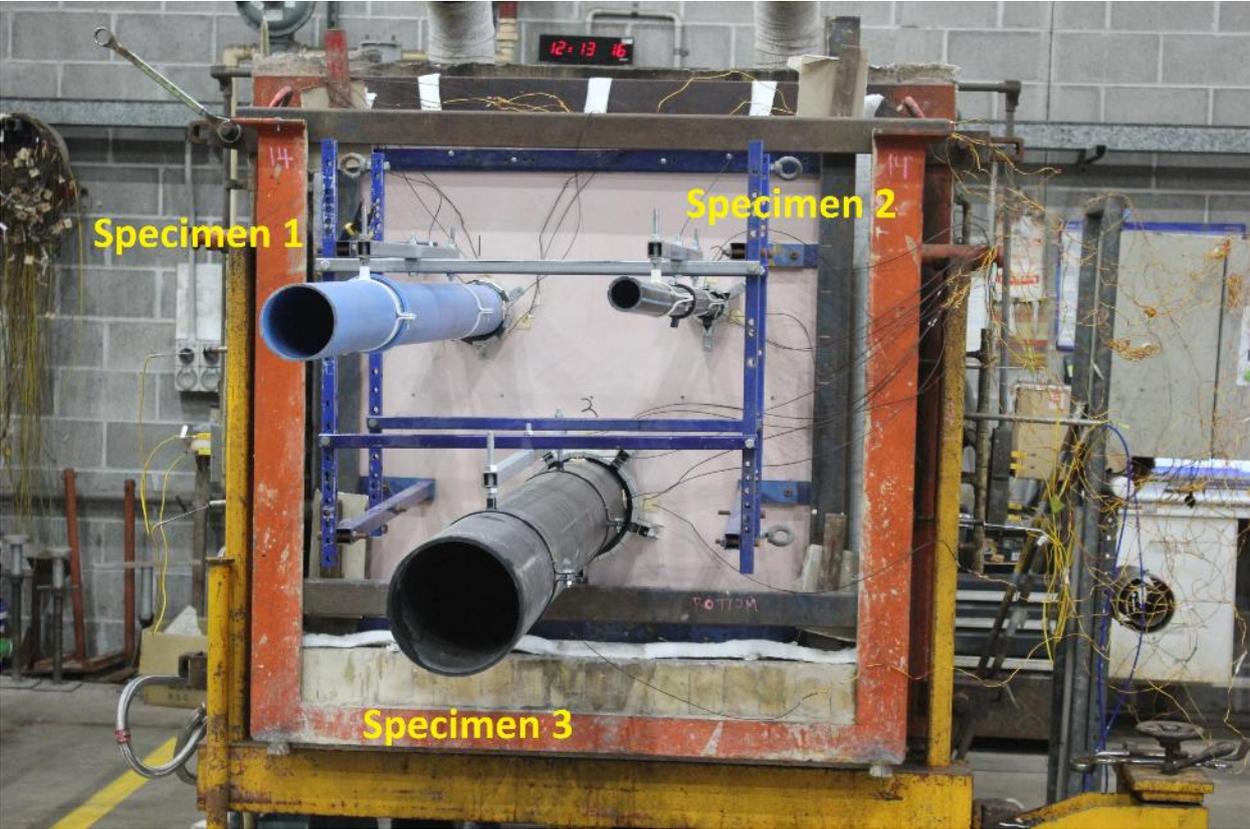
## Appendix A – Measurement location

SPECIMEN	THERMCOUPLE POSITION	DESIGNATION
Specimen 1 - SNAP 110R Retrofit fire collars protecting a nominal 110-mm polypropylene Triplus pipe penetrating a 114-mm diameter aperture.	On P/B wall, 25 mm above of collar	S1
	On P/B wall, 25 mm right of collar	S2
	On top of collar, 25-mm from the P/B wall	S3
	On RHS of collar, 25-mm from the P/B wall	S4
	On top of pipe, 25-mm from collar	S5
	On bottom right of pipe, 25-mm from collar	S6
Specimen 2 - SNAP LP50R Retrofit fire collars protecting a 50-mm OD PE100 pipe penetrating a 60-mm diameter aperture.	On P/B wall, 25 mm above of collar	S7
	On P/B wall, 25 mm right of collar	S8
	On top of collar, 25-mm from the P/B wall	S9
	On RHS of collar, 25-mm from the P/B wall	S10
	On top of pipe, 25-mm from collar	S11
	On bottom right of pipe, 25-mm from collar	S12
Specimen 3 - SNAP LP200R Retrofit fire collars protecting a 200-mm OD PE100 pipe penetrating a 210-mm diameter aperture.	On P/B wall , 25 mm above of collar	S13
	On P/B wall, 25 mm right of collar	S14
	On top of collar, 25-mm from the P/B wall	S15
	On RHS of collar, 25-mm from the P/B wall	S16
	On left side of pipe, 25-mm from collar	S17
	On top of pipe, 25-mm from collar	S18
	On right side of pipe, 25-mm from collar	S19
Rover 1		S20
Ambient		S21

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 2 MINUTES OF TESTING**



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



**PHOTOGRAPH 5 – SPECIMEN 1 AFTER 3 MINUTES OF TESTING**



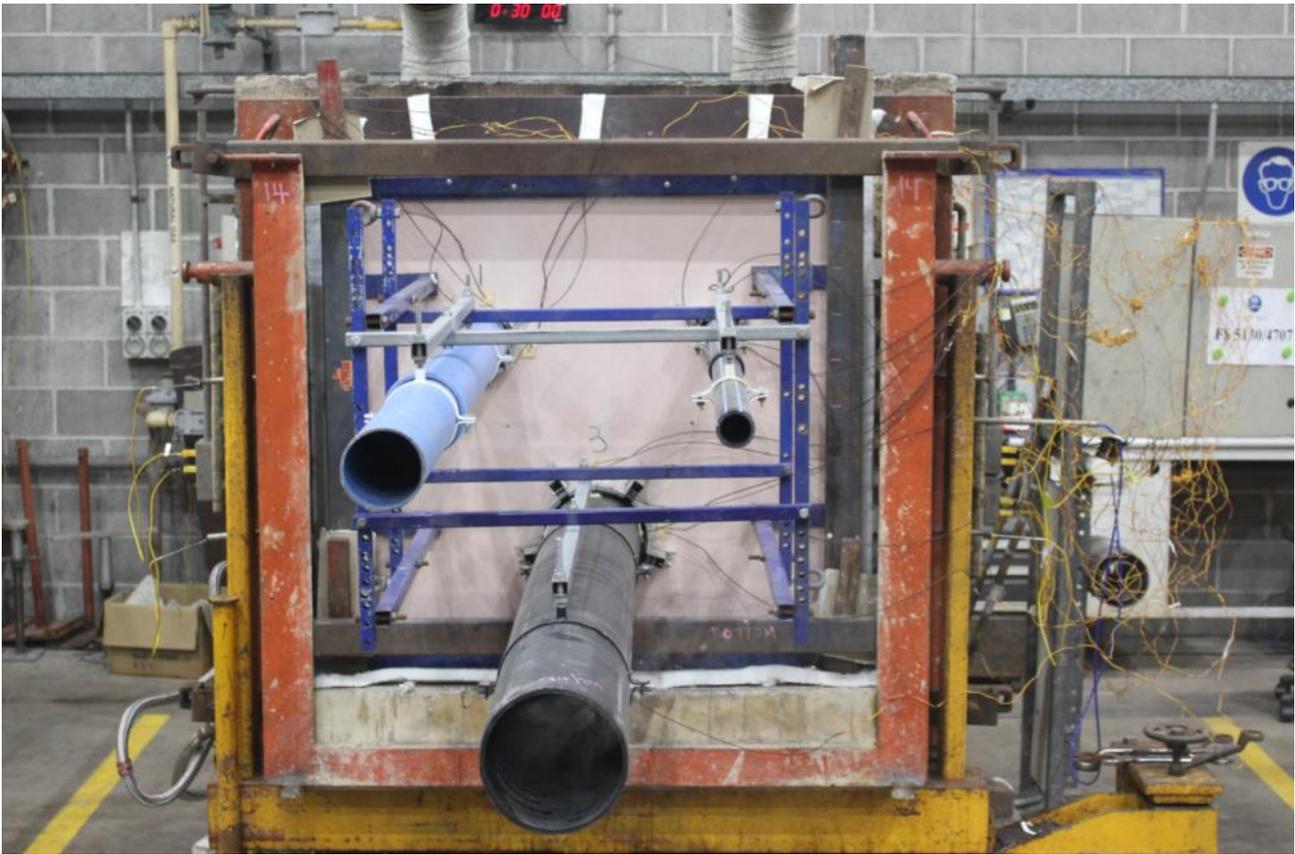
**PHOTOGRAPH 6 – SPECIMEN 1 AFTER 4 MINUTES OF TESTING**



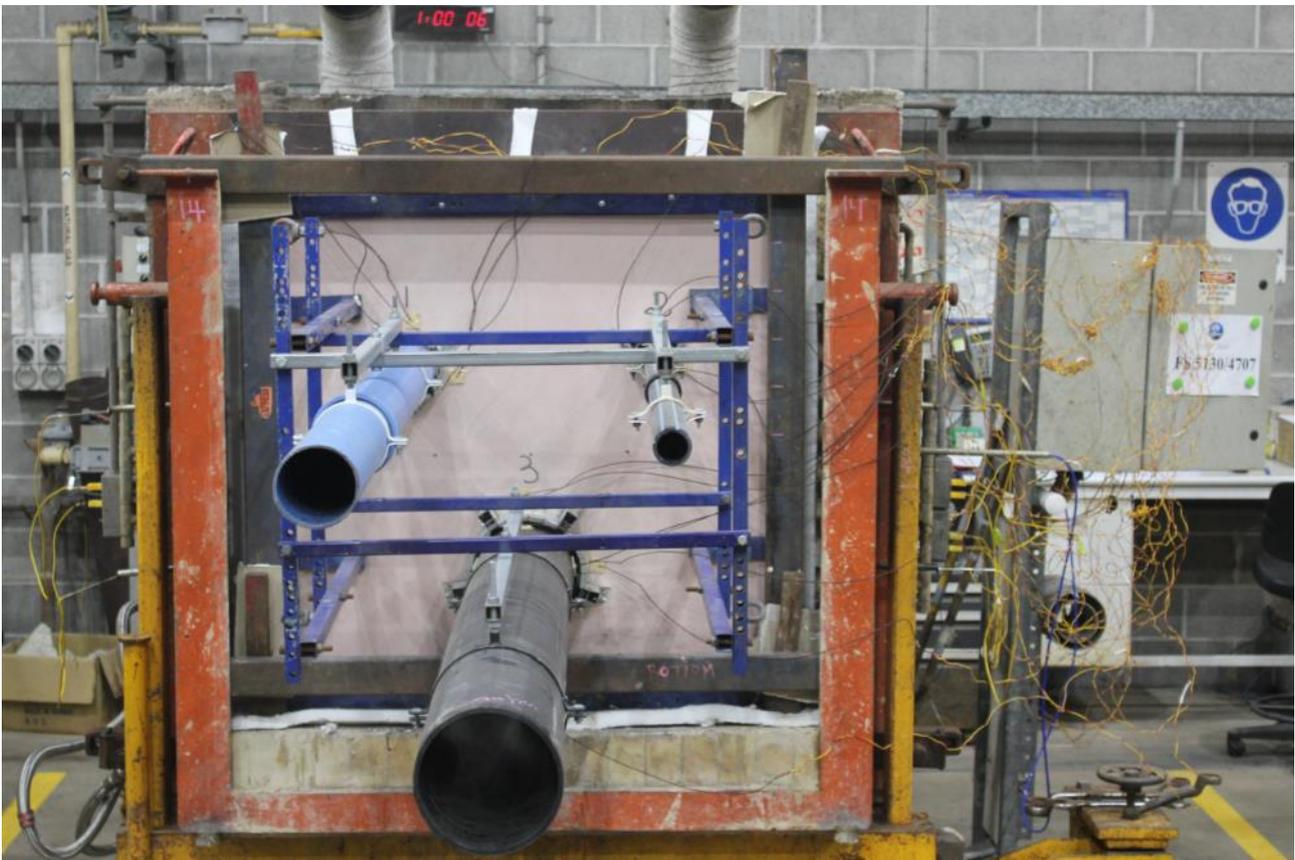
**PHOTOGRAPH 7 – SPECIMENS AFTER 6 MINUTES OF TESTING**



**PHOTOGRAPH 8 – SPECIMENS AFTER 10 MINUTES OF TESTING**



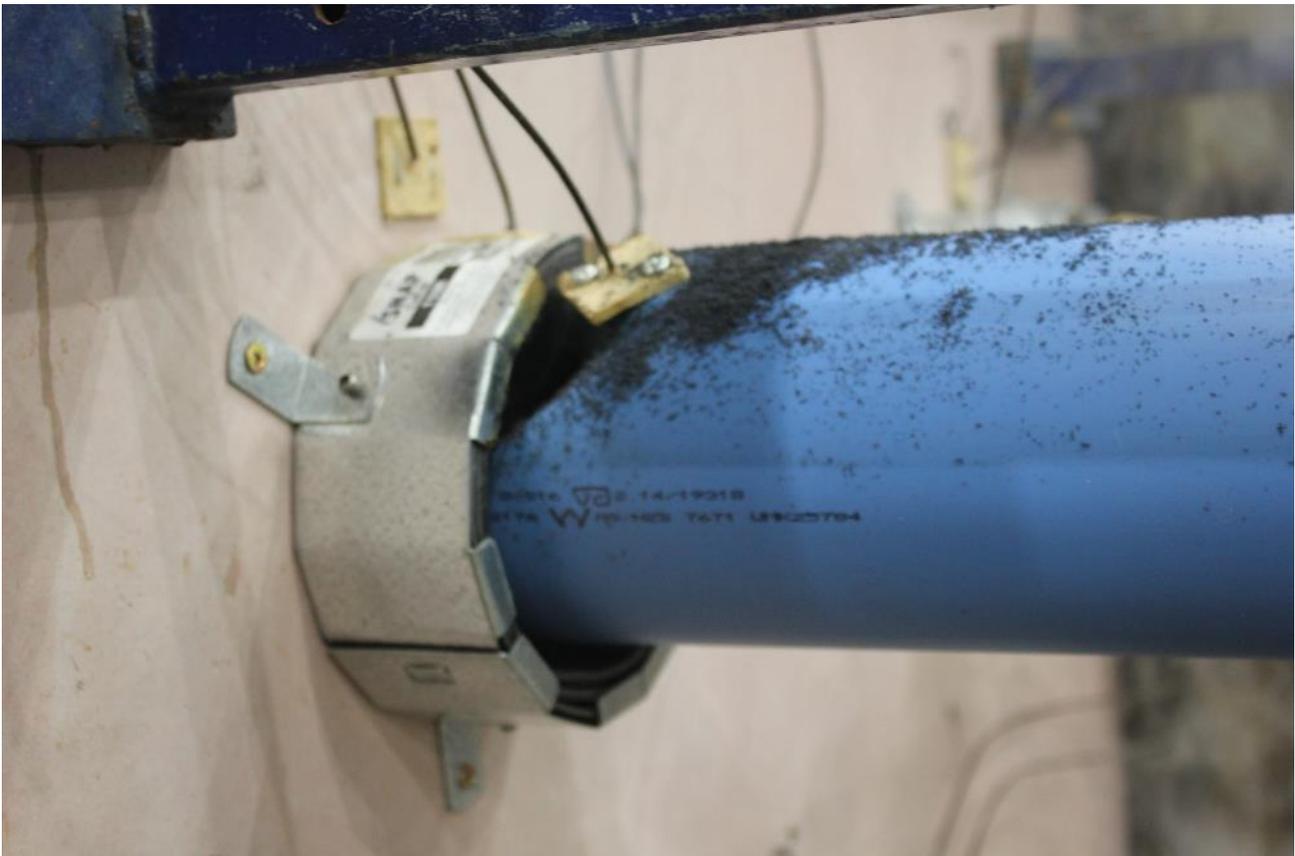
**PHOTOGRAPH 9 – SPECIMENS AFTER 30 MINUTES OF TESTING**



**PHOTOGRAPH 10 – SPECIMENS AFTER 60 MINUTES OF TESTING**



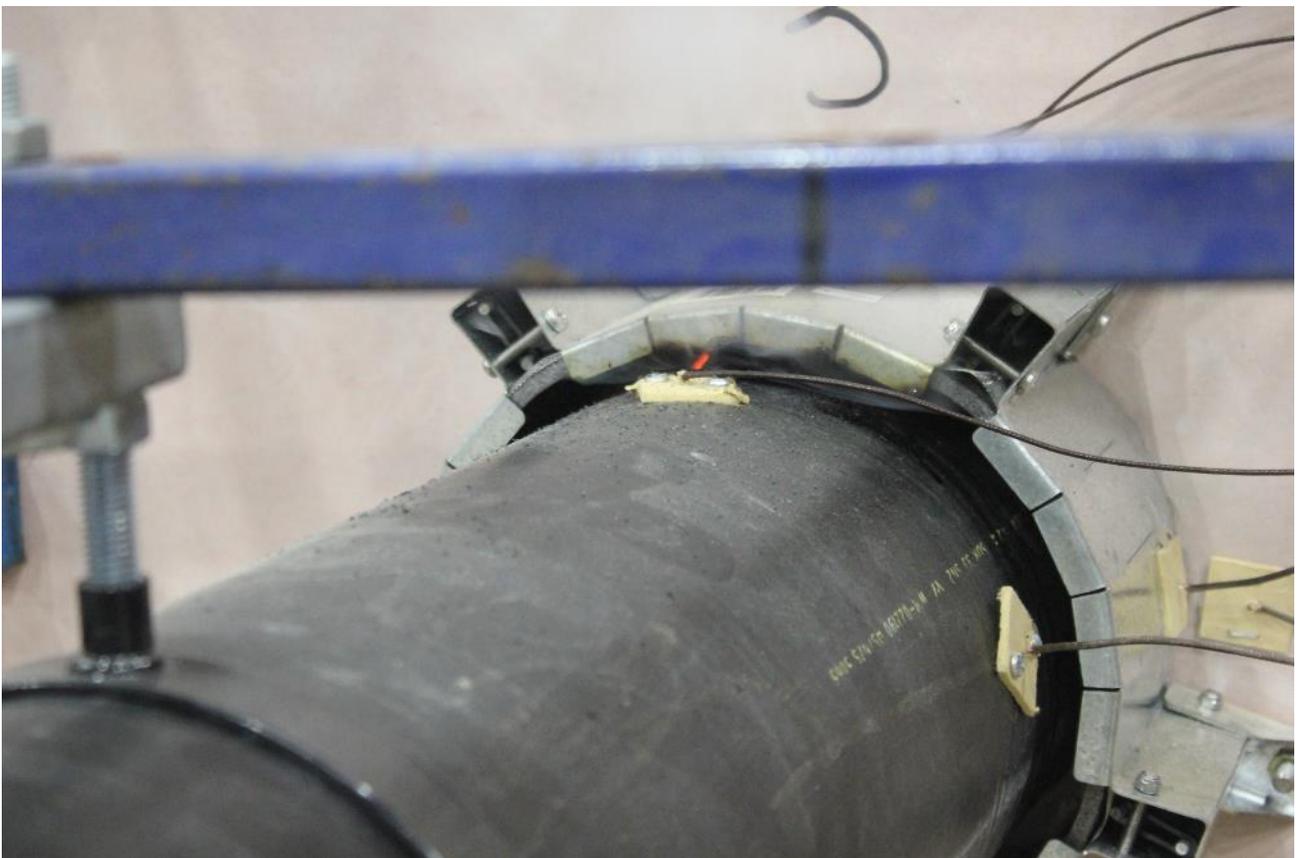
**PHOTOGRAPH 11 – SPECIMENS AFTER 90 MINUTES OF TESTING**



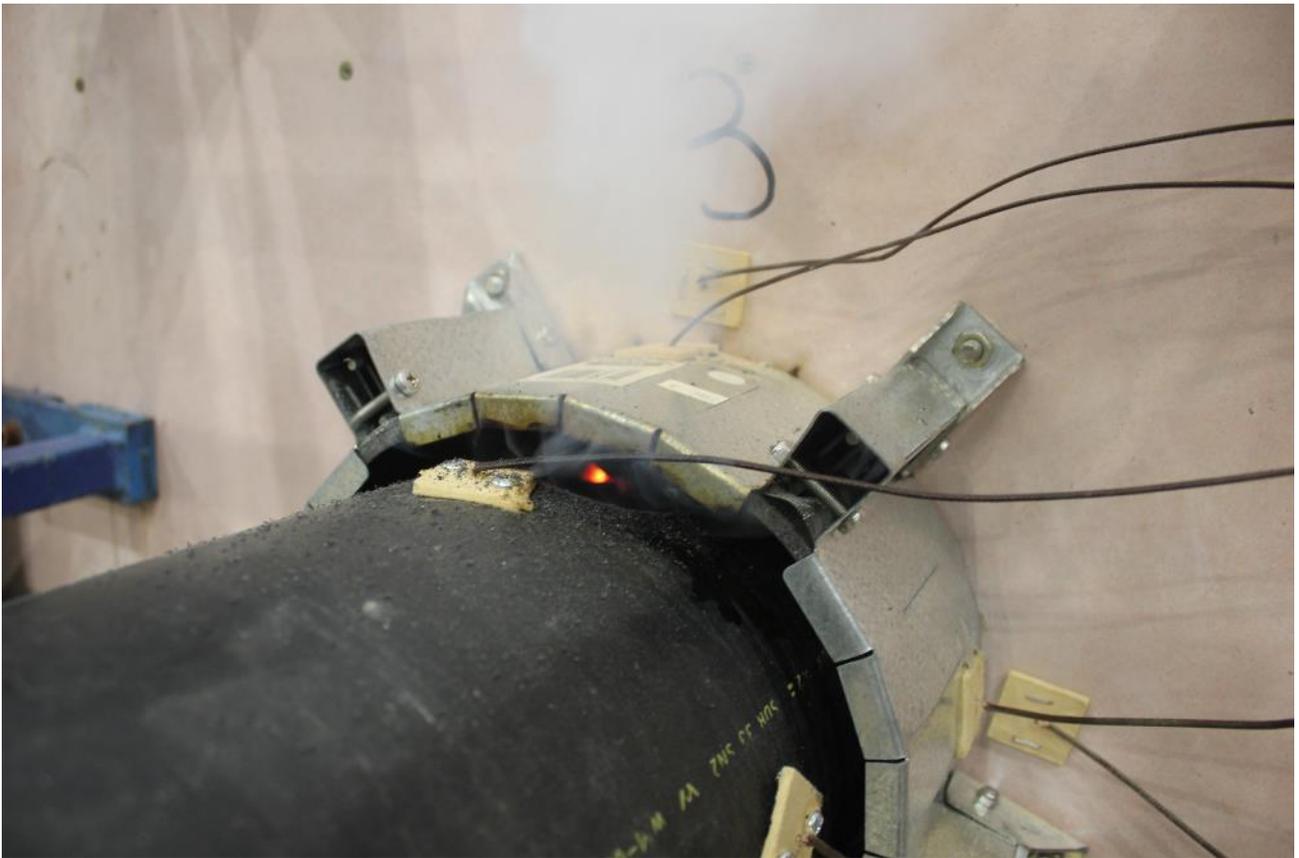
**PHOTOGRAPH 12 –SPECIMEN 1 AFTER 91 MINUTES OF TESTING**



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



**PHOTOGRAPH 14 –SPECIMEN 3 AFTER 127 MINUTES OF TESTING**



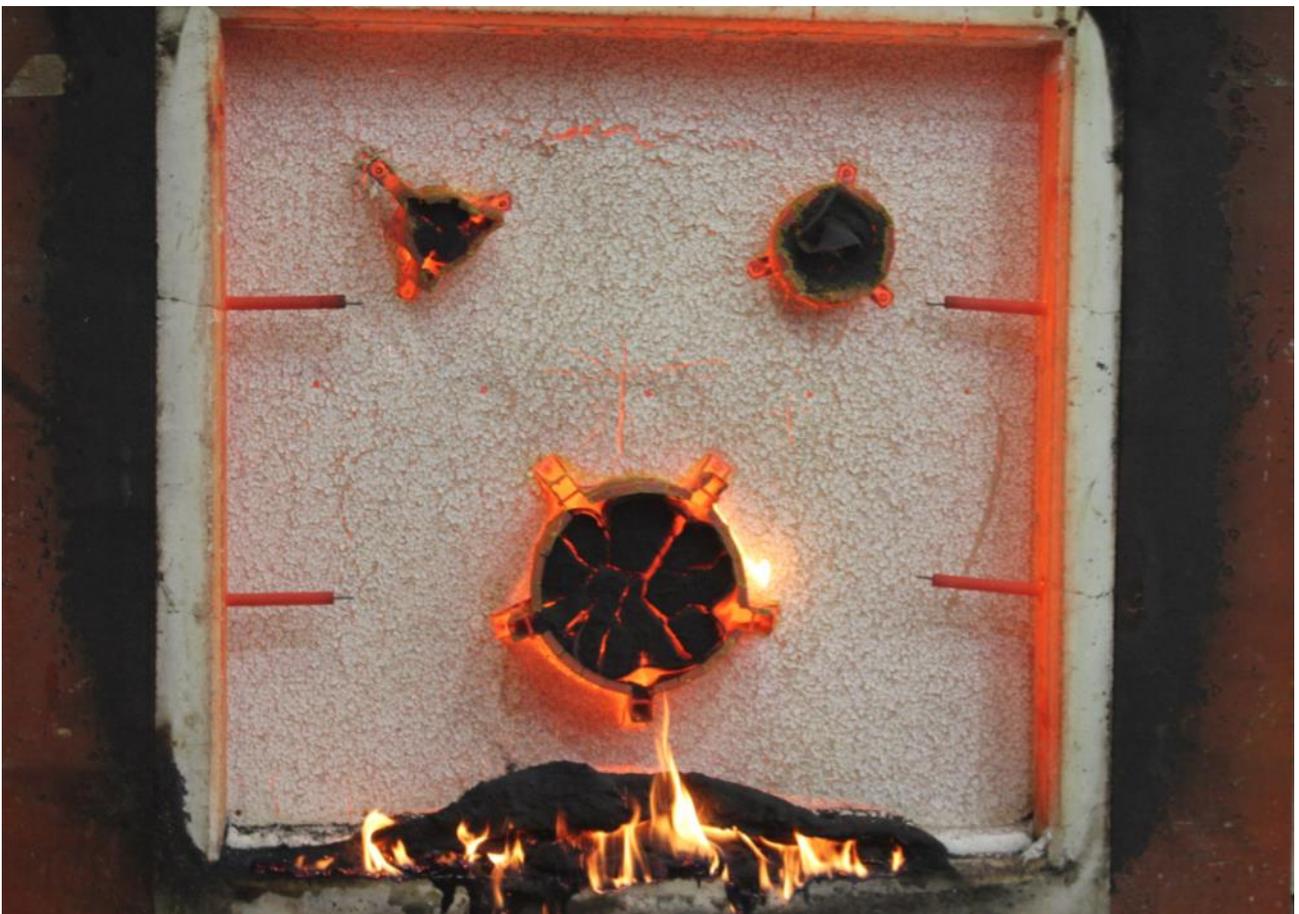
**PHOTOGRAPH 15 –SPECIMEN 3 AFTER 146 MINUTES OF TESTING**



**PHOTOGRAPH 16 – COTON PAD TEST APPLIED TO SPECIMEN 3 AFTER 153 MINUTES OF TESTING**



**PHOTOGRAPH 17 – COTTON PAD TEST APPLIED TO SPECIMEN 3 AFTER 153 MINUTES OF TESTING**



**PHOTOGRAPH 18 – EXPOSED FACE OF SPECIMENS AT CONCLUSION OF TESTING**

## Appendix C – Test data charts

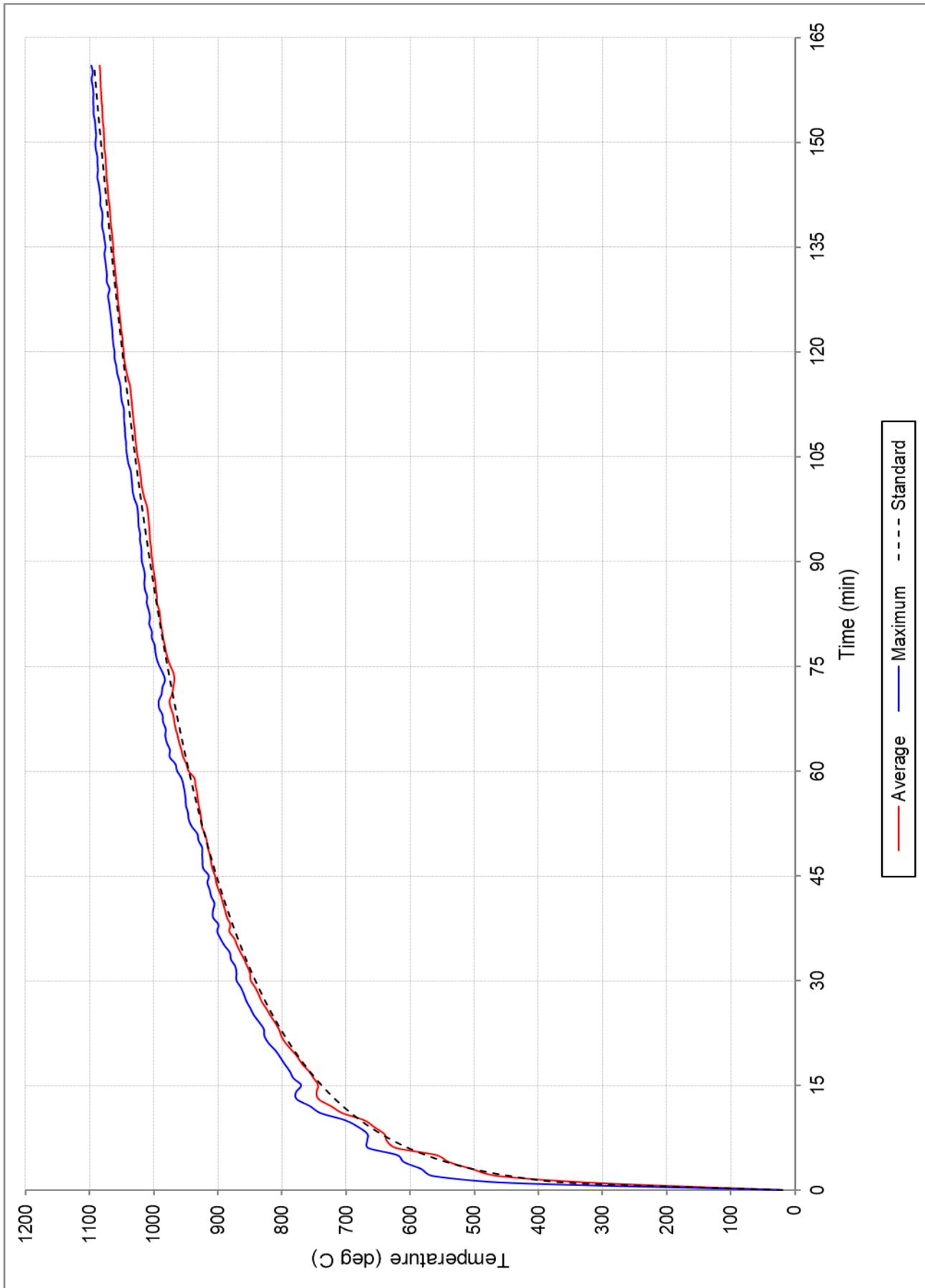


FIGURE 1 – FURNACE TEMPERATURE

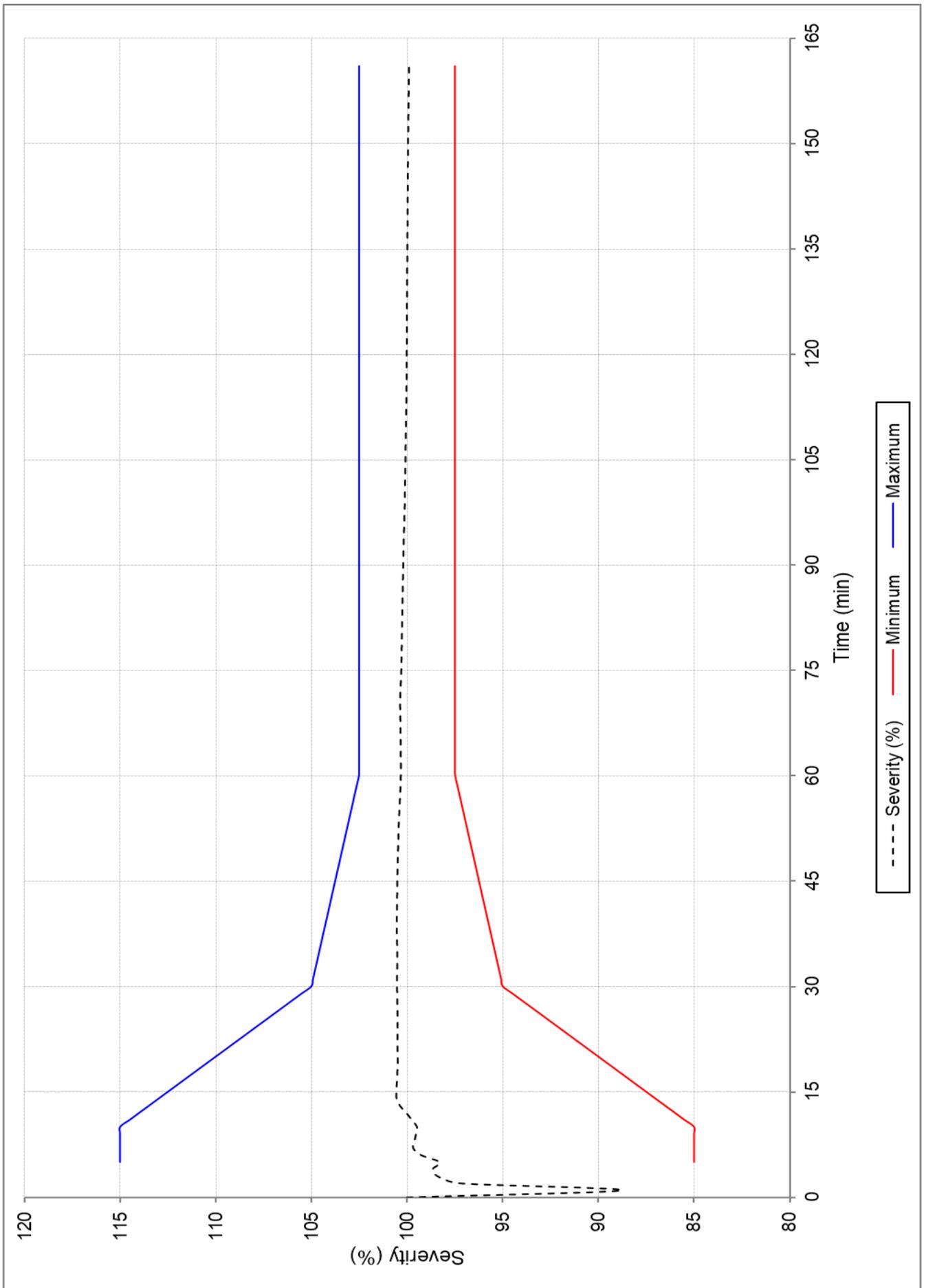


FIGURE 2 – FURNACE SEVERITY

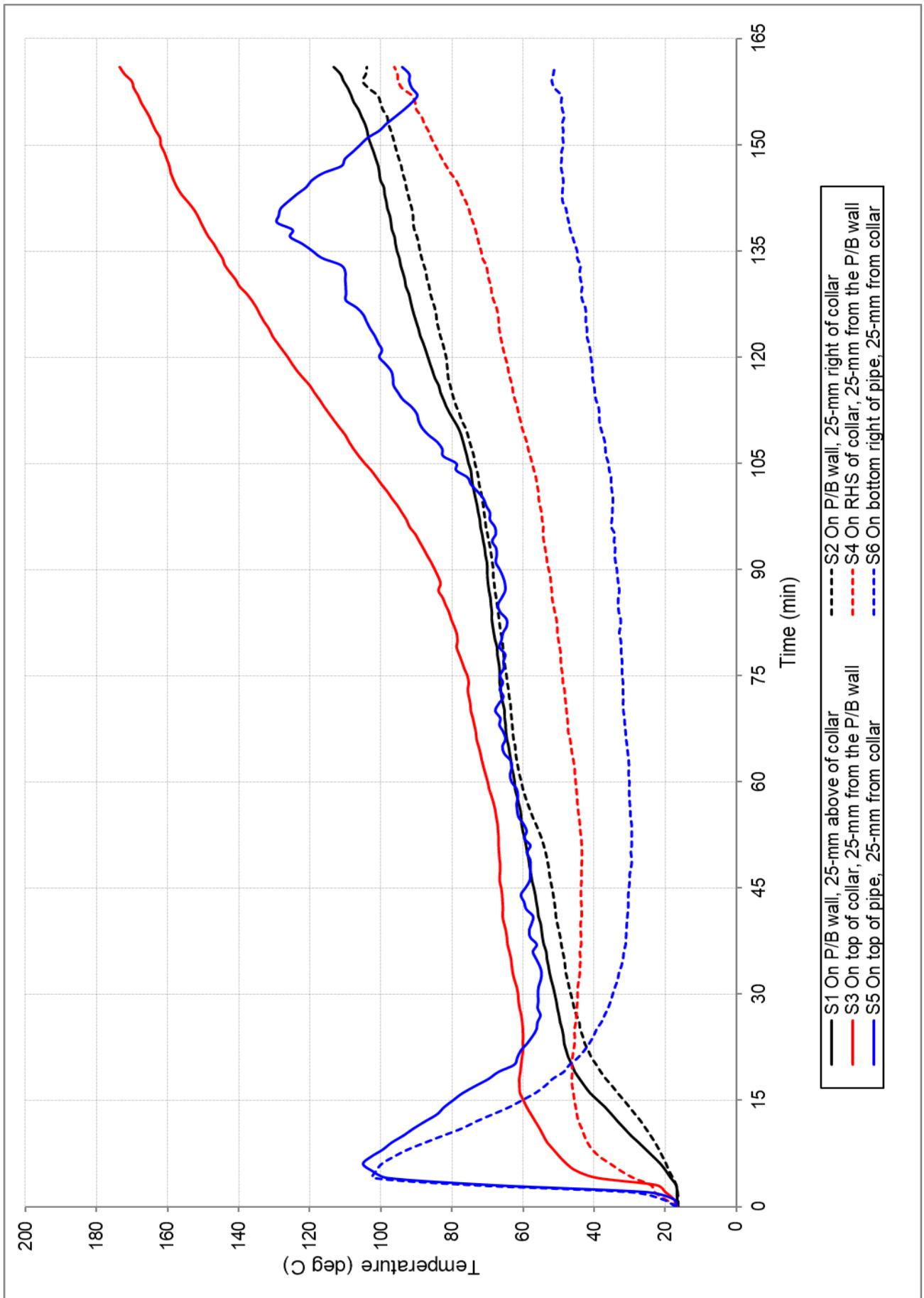
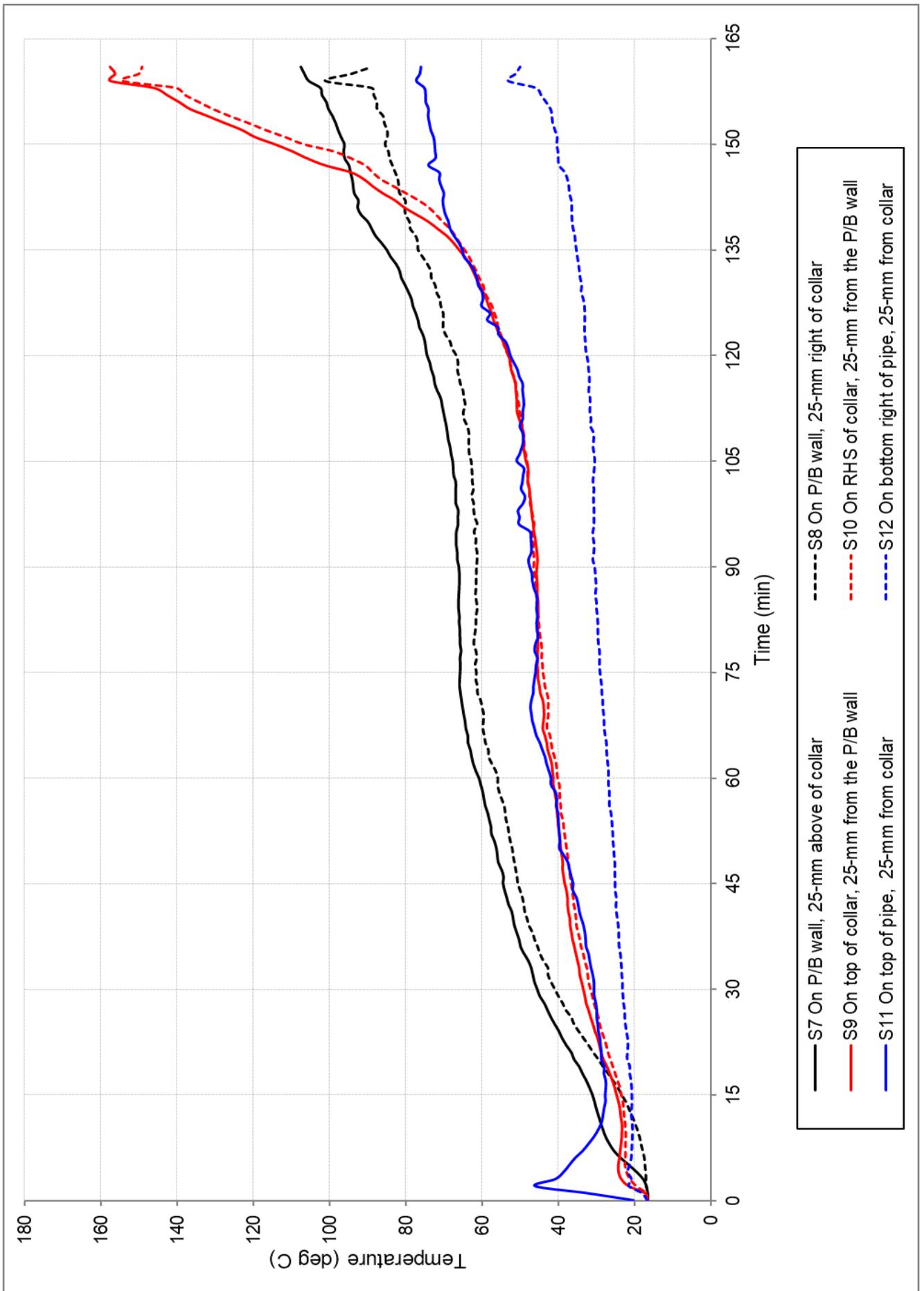


FIGURE 3 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #1



**FIGURE 4 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #2**

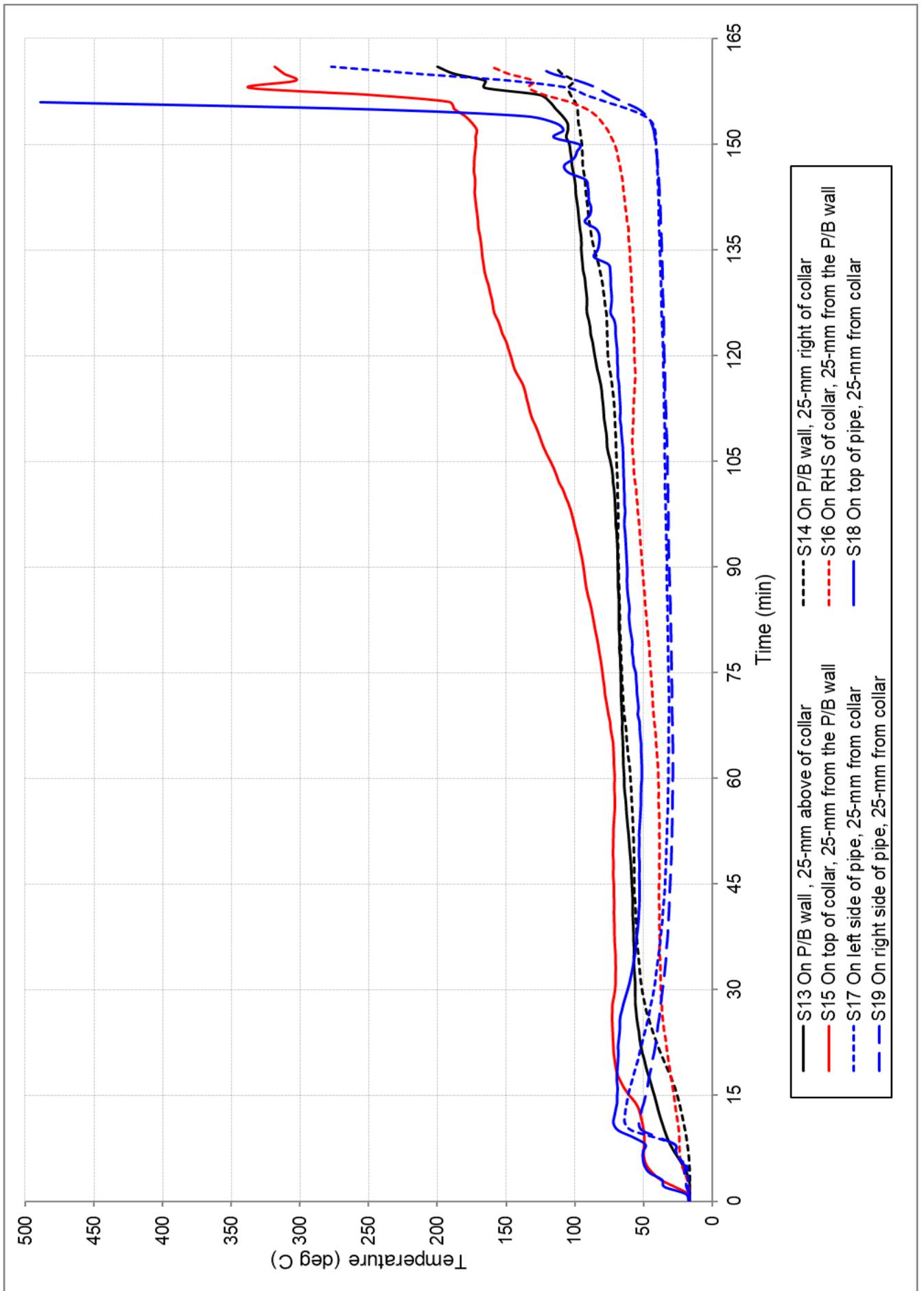


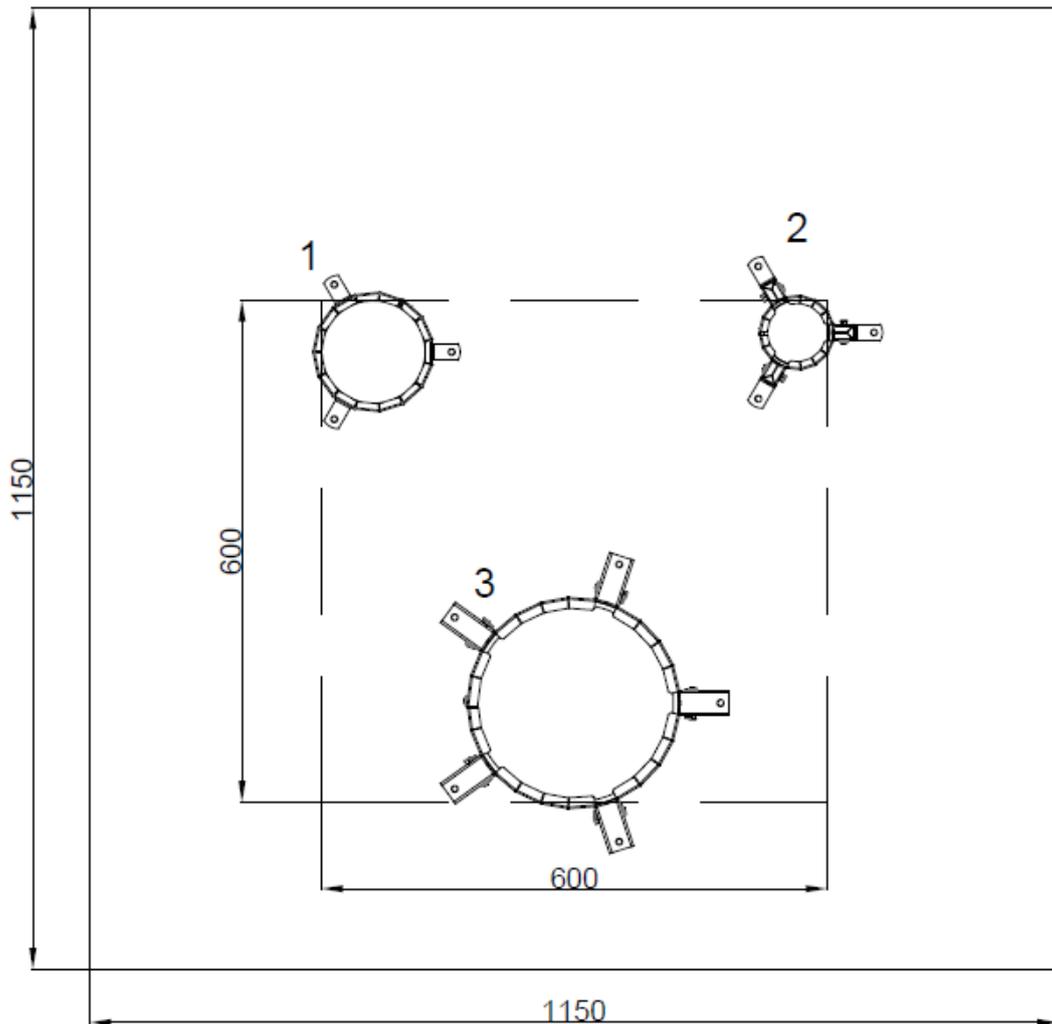
FIGURE 5 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #3

Appendix D – Layout and installation drawings

# Snap Fire Systems Pty Ltd

Test Wall W-21-A1 Layout

Date:29 JUL 2021



Penetration	Collar Code	Pipe Type	Pipe Diameter
1	110R	Triplus	110
2	LP50R	PN16 PE100	50
3	LP200R	HDPE	200

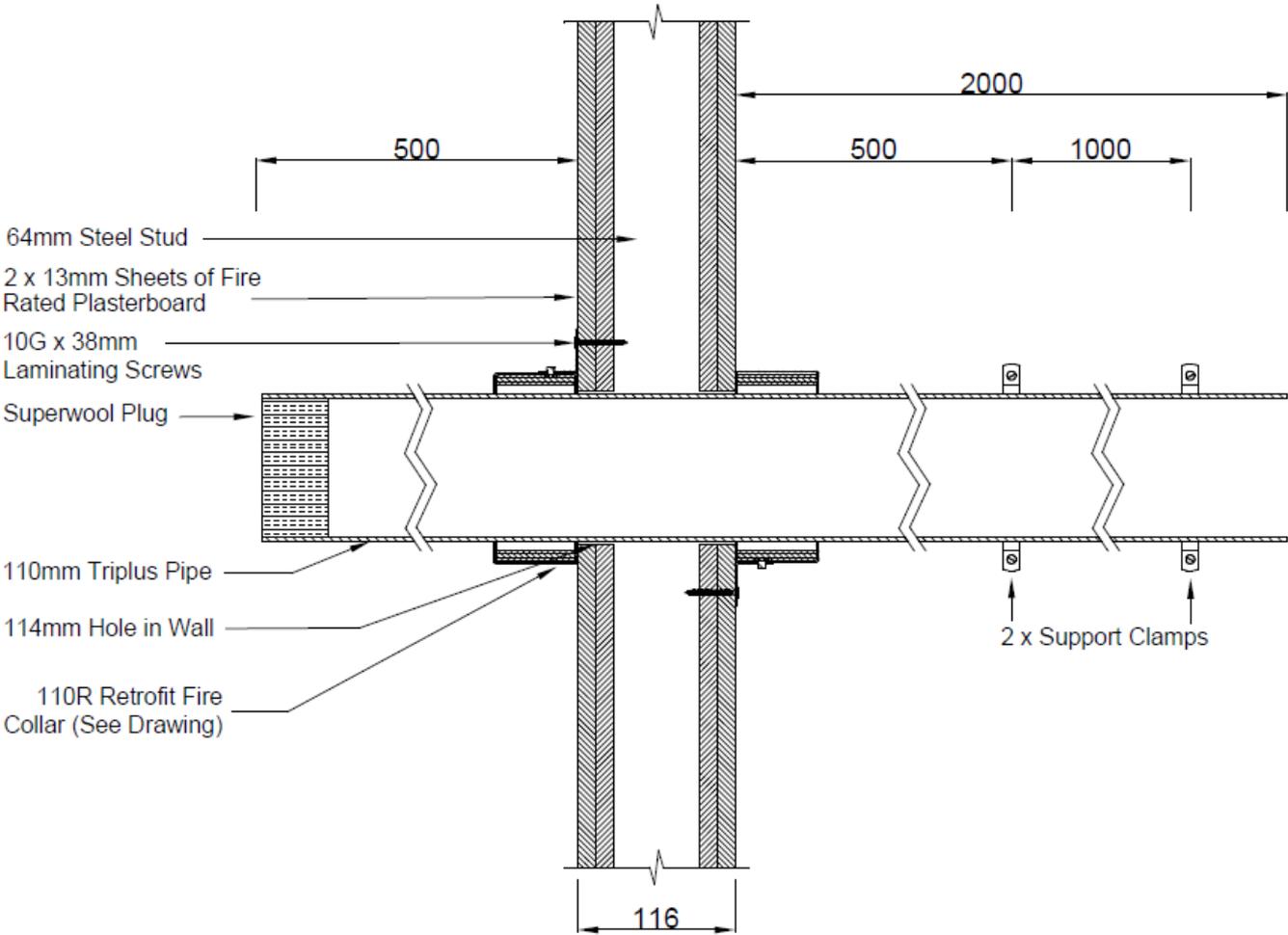
**DRAWING TITLED 'TEST WALL W-21-A1 LAYOUT, DATED 29 JULY 2021, BY SNAP FIRE SYSTEMS PTY LTD.**

# Snap Fire Systems Pty Ltd

Specimen #1

110 Triplus Stack & 110R

Date: 13 SEPT 2021



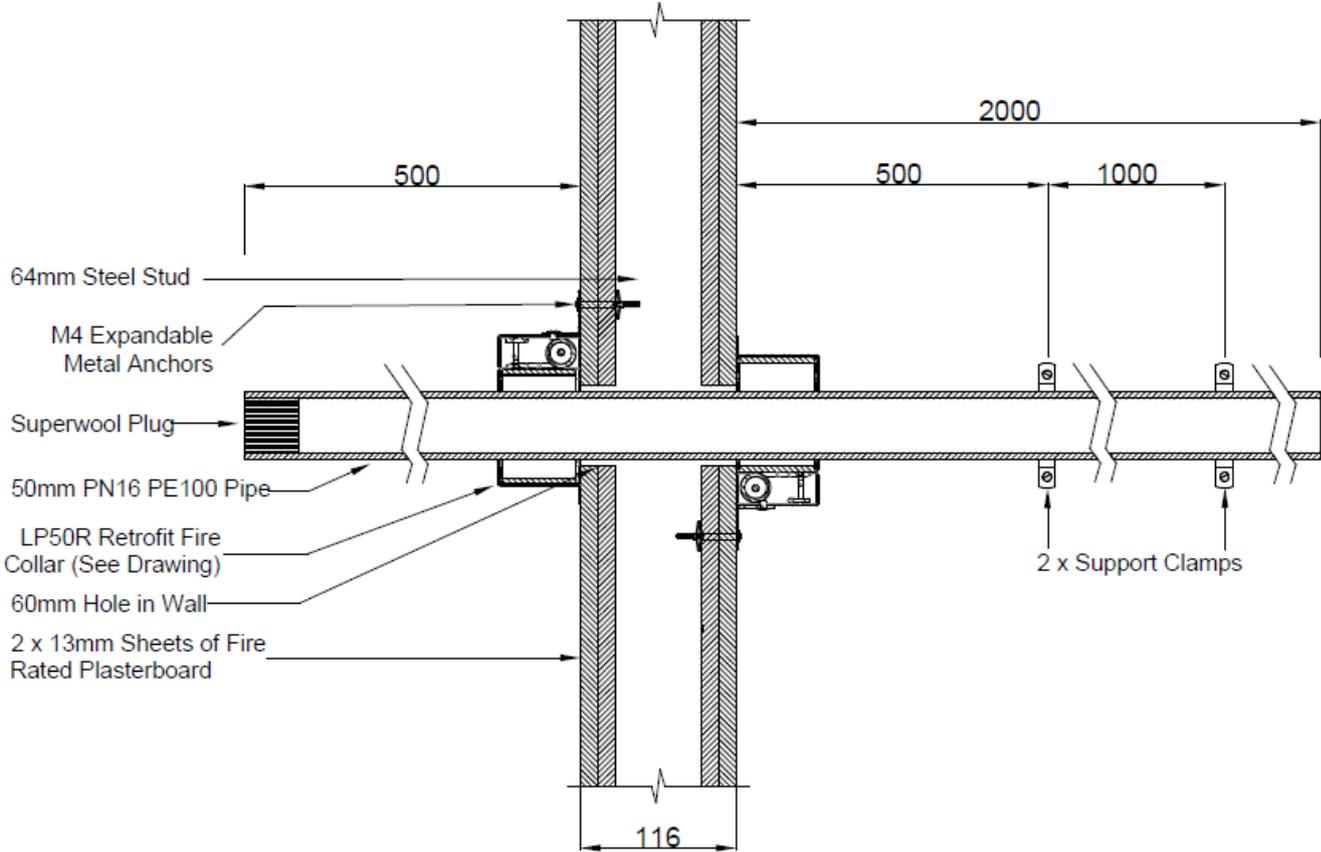
DRAWING TITLED 'SPECIMEN #1, 110 TRIPLUS STACK & 110R', DATED 13 SEPTEMBER 2021, BY SNAP FIRE SYSTEMS PTY LTD.

# Snap Fire Systems Pty Ltd

Specimen #2

50 PN16 PE100 Stack & LP50R

Date: 16 AUG 2021



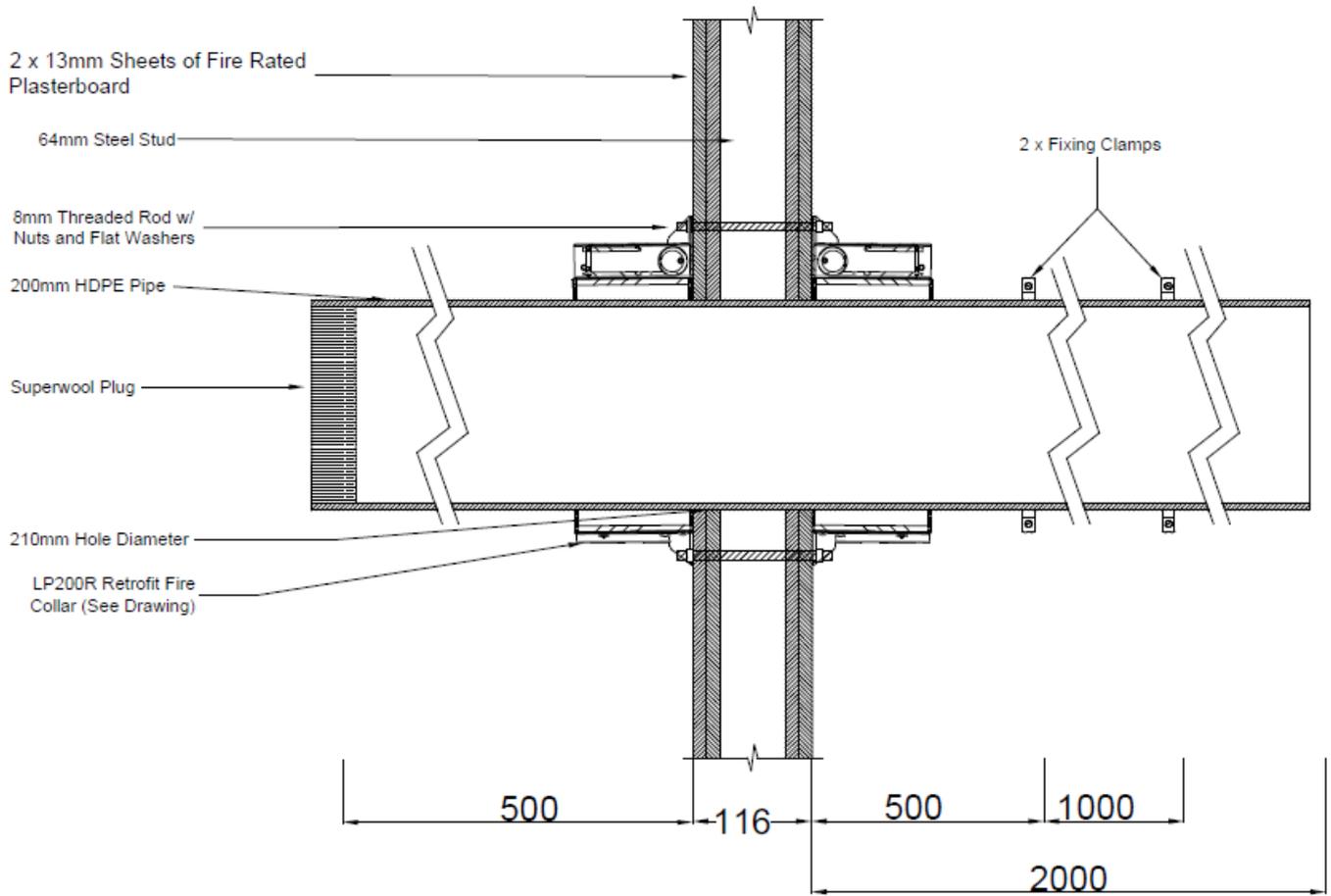
**DRAWING TITLED 'SPECIMEN #2 50 PN16 PE100 PIPE & LP50R', DATED 16 AUGUST 2021, BY SNAP FIRE SYSTEMS PTY LTD**

# Snap Fire Systems Pty Ltd

Specimen #3

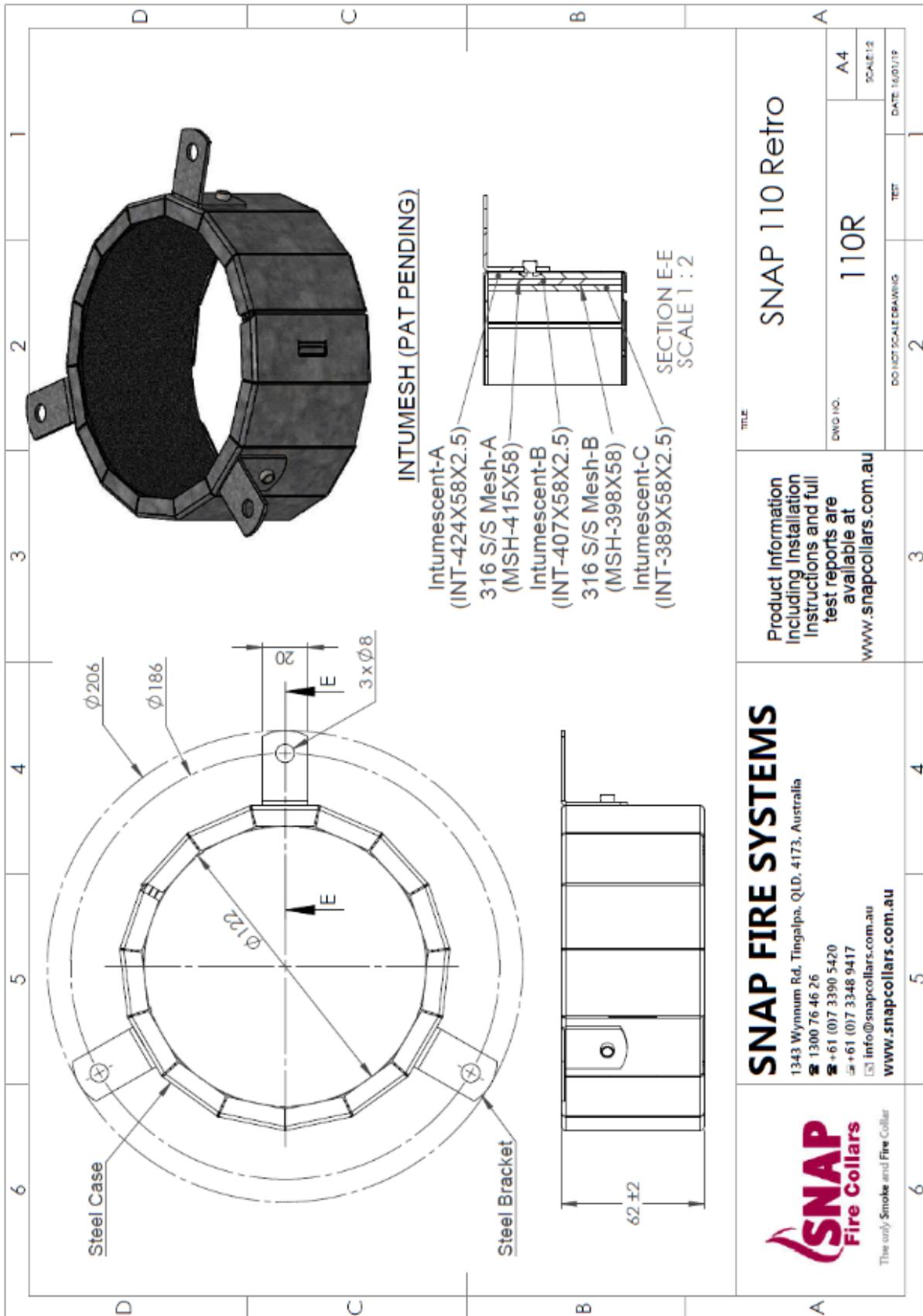
200 HDPE Pipe & LP200R

Date: 16 AUG 2021

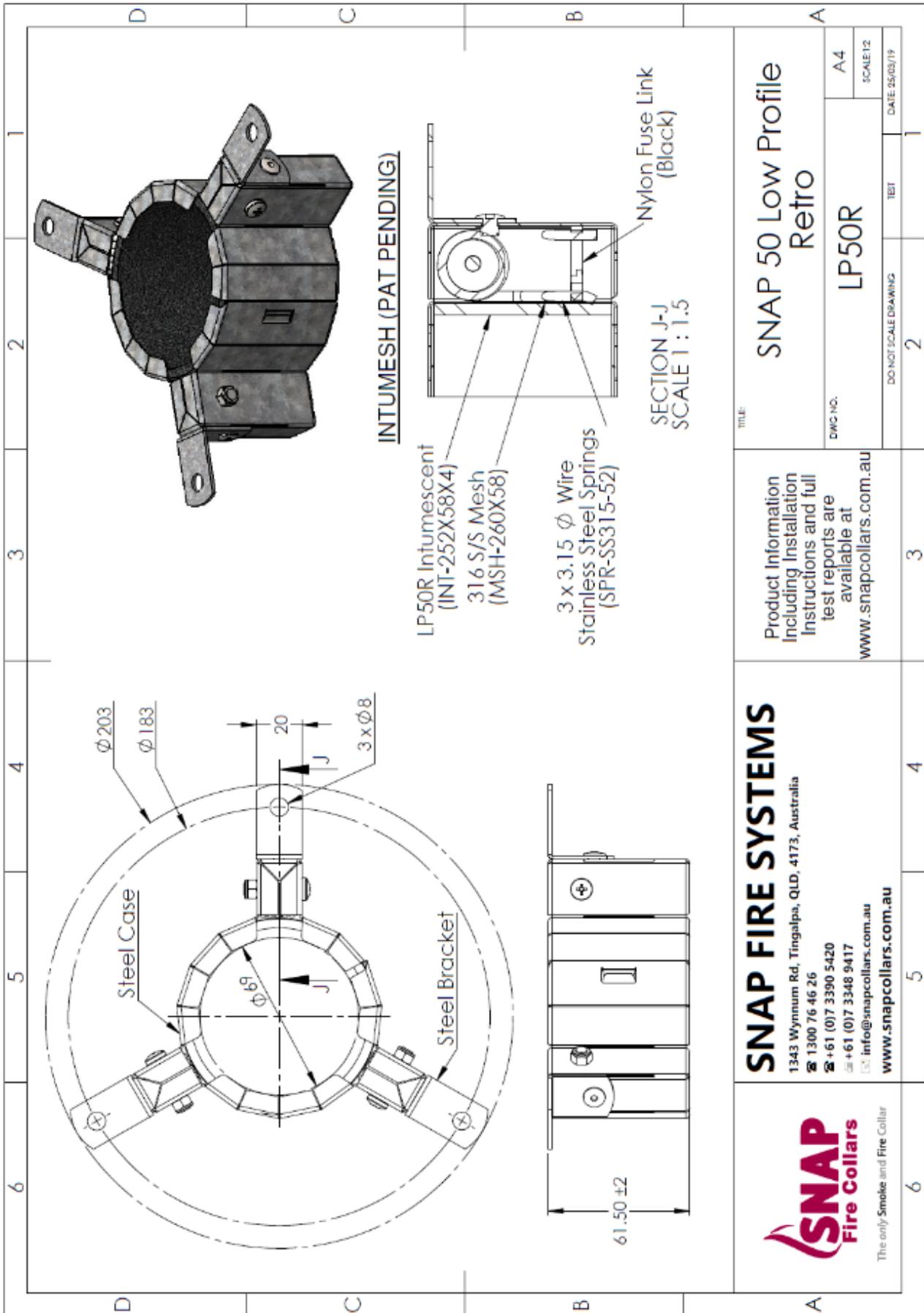


**DRAWING TITLED 'SPECIMEN #3, 200 HDPE PIPE & LP200R', DATED 16 AUGUST 2021, BY SNAP FIRE SYSTEMS PTY LTD**

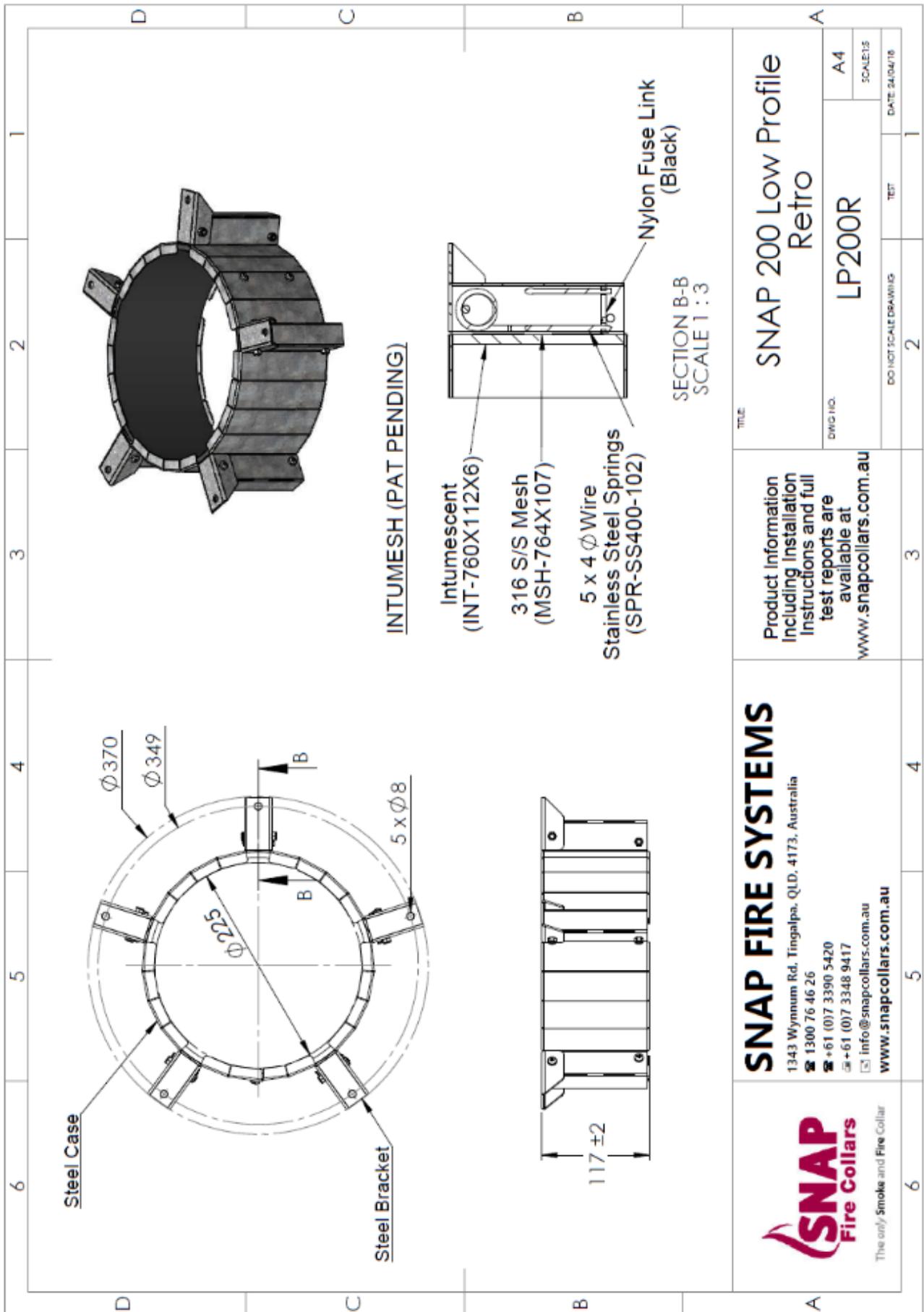
Appendix E – Specimen Drawings



DRAWING TITLED 'SNAP 110 RETRO', DATED 16 JANUARY 2019, BY SNAP FIRE SYSTEMS PTY LTD



DRAWING TITLED 'SNAP 50 LOW PROFILE RETRO', DATED 25 MARCH 2019, BY SNAP FIRE SYSTEMS PTY LTD



**INTUMESH (PAT PENDING)**

- Intumescent (INT-760X112X6)
- 316 S/S Mesh (MSH-764X107)
- 5 x 4  $\phi$  Wire
- Stainless Steel Springs (SPR-SS400-102)
- Nylon Fuse Link (Black)

SECTION B-B  
SCALE 1 : 3

Product Information including installation instructions and full test reports are available at [www.snapcollars.com.au](http://www.snapcollars.com.au)

**SNAP FIRE SYSTEMS**  
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 ☎ 1300 76 46 26  
 ☎ +61 (0)7 3390 5420  
 ☎ +61 (0)7 3348 9417  
 ✉ [info@snapcollars.com.au](mailto:info@snapcollars.com.au)  
[www.snapcollars.com.au](http://www.snapcollars.com.au)



TITLE		SNAP 200 Low Profile Retro	
DWG NO.	LP200R	SCALE	A4
DO NOT SCALE DRAWING		TEST	DATE 24/04/18

DRAWING TITLED 'SNAP 200 LOW PROFILE RETRO', DATED 24 APRIL 2018, 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. 3663
<p>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:</p>		
IG6 Pty Ltd 1343 Wynnum Road Tingalpa QLD		
A full description of the test specimen and the complete test results are detailed in the Division's report FSP 2238.		
Product Name:	SNAP 110R Retrofit fire collars protecting a nominal 110-mm polypropylene Triplus pipe penetrating a 114-mm diameter aperture (Specimen 1)	
Description:	<p>The sponsor identified the specimen as retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe and two PE100 high-density polyethylene (HDPE) pipes. The supporting construction wall system (Boral reference SB120.1) comprised a 64-mm deep Rondo steel frame lined on each side with two layers of 13 mm thick Boral Firestop plasterboard with the wall cavity left unfilled, having an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00. For the purpose of the test, the specimens are referenced as Specimen 1, 2 and 3. Specimen 1 is the subject of this Certificate. The SNAP 110R Retrofit fire collar comprised a 0.75-mm steel casing with a 122 mm inner diameter and a 206-mm diameter base flange. The 62-mm high fire collar casing incorporated a closing mechanism which comprised three soft Intumesh intumescent wraps and wire meshes lined within the internal circumference of the collar. Intumescent A was 2.5-mm thick x 58-mm wide x 424-mm long, Intumescent B was 2.5-mm thick x 58-mm wide x 407-mm long and Intumescent C was 2.5-mm thick x 58-mm wide x 389-mm long. Between intumescent strips A and B was a layer of 316 stainless steel mesh 415-mm long x 58-mm wide and between intumescent strips B and C was a layer of 316 stainless steel mesh 398-mm long x 58-mm wide. Both had wire mesh diameters of 0.15-mm. One SNAP 110R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 10g x 38-mm course thread plasterboard screws. The penetrating service comprised a Valsir Triplus (polypropylene) pipe with an outside diameter of 110-mm and wall thickness of 3.43-mm, fitted through the fire collar sleeve. The pipe penetrated the wall through a 114 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. Drawing titled 'SNAP 110 Retro', dated 16 January 2019 and drawing titled 'Specimen #1, 110 Triplus Stack &amp; 110R', dated 13 September 2021, by Snap Fire Systems Pty Ltd were supplied by the sponsor as a complete description of the specimen and should be read in conjunction with this Certificate.</p>	
Performance observed in respect of the following AS 1530.4-2014 criteria		
Structural Adequacy	-	not applicable
Integrity	-	no failure at 161 minutes
Insulation	-	no failure at 161 minutes
and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/120/120.		
<p>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.</p>		
Testing Officer:	Peter Gordon	Date of Test: 12 October 2021
Issued on the 22 <sup>nd</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. 3663**



## Certificate of Test

No. 3664

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  
 1343 Wynnum Road  
 Tingalpa QLD

A full description of the test specimen and the complete test results are detailed in the Division's report FSP 2238.

Product Name: SNAP LP50R Retrofit fire collars protecting a DN50 PE100 pipe penetrating a 60-mm diameter aperture (Specimen 2)

Description: The sponsor identified the specimen as retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe and two PE100 high-density polyethylene (HDPE) pipes. The supporting construction wall system (Boral reference SB120.1) comprised a 64-mm deep Rondo steel frame lined on each side with two layers of 13 mm thick Boral Firestop plasterboard with the wall cavity left unfilled, having an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00. For the purpose of the test, the specimens are referenced as Specimen 1, 2 and 3. Specimen 2 is the subject of this Certificate. The SNAP LP50R Low Profile Retrofit fire collar comprised a 0.75-mm steel casing with a 69-mm inner diameter and a 203-mm diameter base flange. The 61.5-mm high collar casing incorporated a closing mechanism which comprised a 252-mm x 58-mm x 4-mm thick Intumesh intumescent wrap lined within the internal circumference of the fire collar casing. The closing mechanism comprised three stainless steel springs, with black nylon fuse links and a 260-mm x 58 mm stainless steel mesh. One SNAP LP50R Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 50-mm long M4 expandable steel hollow wall anchors with stainless steel washers. The penetrating service comprised a David Moss DN50 PE100 (HDPE) pipe with an outside diameter of 50.2-mm and wall thickness of 5.3-mm, fitted through the fire collar sleeve. The pipe penetrated the wall through a 60 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. Drawing titled 'SNAP 50 Low Profile Retro', dated 25 March 2019 by Snap Fire Systems Pty Ltd and drawing titled Specimen #2 50 PN16 PE100 Stack & LP50R', dated 16 August 2021 by Snap Fire Systems Pty Ltd were supplied by the sponsor 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 161 minutes
Insulation	-	no failure at 161 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: 12 October 2021

Issued on the 22<sup>nd</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. 3664**



## Certificate of Test

No. 3665

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  
1343 Wynnum Road  
Tingalpa QLD

A full description of the test specimen and the complete test results are detailed in the Division's report FSP 2238.

Product Name: SNAP LP200R Retrofit fire collars protecting a nominal 200 PE100 pipe penetrating a 210-mm diameter aperture (Specimen 3)

Description: The sponsor identified the specimen as retrofit fire collars protecting a steel framed plasterboard wall penetrated by a polypropylene pipe and two PE100 high-density polyethylene (HDPE) pipes. The supporting construction wall system (Boral reference SB120.1) comprised a 64-mm deep Rondo steel frame lined on each side with two layers of 13 mm thick Boral Firestop plasterboard with the wall cavity left unfilled, having an established FRL of -/120/120 as detailed in Exova Warrington report numbered 27211-00. For the purpose of the test, the specimens are referenced as Specimen 1, 2 and 3. Specimen 3 is the subject of this Certificate. The SNAP LP200R Retrofit fire collar comprised a 0.95-mm steel casing with a 225-mm inner diameter and a 370-mm diameter base flange. The 117-mm high collar casing incorporated 760 mm x 112-mm x 6-mm thick Intumescent material. The closing mechanism comprised five stainless steel springs, with nylon fuse links and a 764-mm x 107-mm stainless steel mesh. A SNAP LP200R Low Profile Retrofit fire collar was fixed to each side of the plasterboard wall in a back-to-back configuration through the collar's five mounting brackets using five 8-mm threaded rods and ten M8 nuts with flat washes. The penetrating service comprised a PE100 (HDPE) with an outside diameter of 200.2-mm and wall thickness of 6.7-mm, fitted through the fire collar 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. Drawings titled LP200R dated 24 April 2018, by SNAP Fire Systems and Specimen #3, 200 HDPE Pipe & LP200R', dated 16 August 2021, by Snap Fire Systems Pty Ltd were supplied by the sponsor 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	-	153 minutes
Insulation	-	155 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: 12 October 2021

Issued on the 22<sup>nd</sup> day of December 2021 without alterations or additions.

Brett Roddy | Manager, Fire Testing and Assessments

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# 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.            |

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#### FOR FURTHER INFORMATION

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