Fire-resistance test on fire collars protecting a floor/ceiling system penetrated by services

Test Report

Author: Chris Wojcik
Report number: FSP 1906

Date: 5 September 2018

Client: IG6 Pty Ltd as trustee for the IG6 IP Trust

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5 September 2018	5 September 2018	5 September 2018

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Fire-resistance test on fire collars protecting a floor/ceiling system penetrated by services

Sponsored Investigation No. FSP 1906

1 Introduction

1.1 Identification of specimen

The sponsor identified the specimen as three (3) retrofit fire collars protecting a 230-mm thick floor/ceiling system penetrated by two (2) floor wastes and one (1) stack pipe.

1.2 Sponsor

IG6 Pty Ltd as trustee for the IG6 IP Trust
3 Skirmish Court
Victoria Point Qld 4165

1.3 Manufacturer

Snap Fire Systems Pty Ltd
Building A, 1343 Wynnum Road
Tingalpa QLD 4173

1.4 Test standard

Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2014, Fire-resistance tests of 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 (Incorporating Amendment No.1) Reconfirmed 2016 , Service penetrations and control joints.

1.6 Test number

CSIRO Reference test number: FS 4769/4216

1.7 Test date

The fire-resistance test was conducted on 29 May 2018.

2 Description of specimen

2.1 General

The specimen comprised an 1150-mm x 1150-mm x 230-mm thick plasterboard lined floor/ceiling system penetrated by two (2) floor wastes and one (1) stack pipe protected by retrofit Snap Fire Systems fire collars.

The floor/ceiling system comprised 182-mm steel floor joists, fitted with 38 x 16-mm steel furring channels supporting 2 layers of 16-mm thick CSR Fyrechek plasterboard on the exposed face and with one layer of 15-mm thick CFC floor sheeting on the top. The CSR 6222 system is described in report by EWFA numbered 26162 has an established FRL of 90/90/90.

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)(ISO 7671:2003), MOD'

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

<u>Penetration 1 – LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano stack pipe</u>

The SNAP Retrofit LP100R-D collar comprised a 0.95-mm thick steel casing with a 122-mm inner diameter and a 260-mm x 260-mm square base flange. The 65-mm high collar casing incorporated a layer of 418-mm x 59-mm x 5-mm thick Intumescent material. The closing mechanism comprised 4 x 304 stainless steel springs bound with black nylon fuse links and a 316 stainless steel mesh measuring 415 x 120-mm as shown in drawing numbered LP100R-D-T dated 10 February 2017, by Snap Fire Systems Pty Ltd. . One collar was fixed to the underside of the ceiling lining using M4 Expandable Metal Anchors.

The penetrating service comprised a 110-mm Raupiano Stack Pipe, with a wall thickness of 3.15-mm fitted through the collar's sleeve. The pipe penetrated the floor/ceiling system through a 114-mm diameter opening and projected vertically 2000-mm above the floor and 500-mm into the furnace chamber. The pipe was supported at 500-mm and 1500-mm from the unexposed face of the floor as shown in drawing titled 'Specimen #1 110 Raupiano Stack & LP100R-D', dated 24 May 2018, by Snap Fire Systems Pty Ltd. On the exposed end, the pipe was plugged with Superwool.

Penetration 2 – LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano floorwaste

The SNAP Retrofit LP100R-D collar comprised a 0.95-mm thick steel casing with a 122-mm inner diameter and a 260-mm x 260-mm square base flange. The 65-mm high collar casing incorporated a layer of 418-mm x 59-mm x 5-mm thick Intumescent material. The closing mechanism comprised 4 x 304 stainless steel springs bound with black nylon fuse links and a 316 stainless steel mesh measuring 415 x 120-mm as shown in drawing numbered LP100R-D-T dated 10 February 2017, by Snap Fire Systems Pty Ltd.

The penetrating service comprised a 110-mm diameter Raupiano pipe with a wall thickness of 3.15-mm fitted through the collar's sleeve. A 114-mm diameter opening was cut into the floor/ceiling linings and the collar fixed centrally over the hole. The floor waste system was fitted with a chrome brass grate. On the exposed side of the ceiling lining, a M10 threaded rod was connected to the penetrating pipe coupling, fixed to the concrete slab with M4 expandable metal anchors and a T-bracket.

The floor waste was charged with water to the level shown in drawing titled 'Specimen #2, 110 Raupiano Floorwaste & LP100-R-D', dated 24 May 2018, provided by Snap Fire Systems Pty Ltd.

Penetration 3 – LP50R Retrofit collar protecting a nominal 50-mm Raupiano floorwaste

The SNAP retrofit LP50R fire collar comprised a 0.75-mm steel case with a 69-mm inner diameter and a 203-mm diameter base flange. The 62-mm high collar casing incorporated a 255-mm x 58-mm x 4-mm thick Intumesh intumescent material. The closing mechanism incorporated three stainless steel springs, with nylon fuse links and a 260-mm x 58-mm stainless steel mesh as shown in drawing numbered LP50R-T dated 14 January 2015, by SNAP Fire Systems Pty Ltd.

The penetrating service comprised a 50-mm diameter Raupiano pipe with a wall thickness of 2.14-mm fitted through the collar's sleeve.

A 114-mm diameter opening was cut into the floor and ceiling linings and the collar fixed centrally over the hole. The floor waste system was fitted with an ABS Puddle Flange and chrome brass grate. On the exposed side of the ceiling lining, a M10 threaded rod was connected to the penetrating pipe coupling, fixed to the floor/ceiling with M4 expandable metal anchors and a T-bracket. The pipe was capped with a plastic end cap.

2.2 Dimensions

The overall dimension of the concrete slab was 1150-mm wide x 1150-mm long x 230-mm thick, to suit the opening in the specimen containing frame.

2.3 Orientation

The floor/ceiling system was placed horizontally on top of the furnace chamber, and subjected to fire exposure from the underside.

2.4 Conditioning

The specimen was stored under laboratory conditions prior to the test.

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:

Drawing numbered LP100R-D-T dated 10 February 2017, by Snap Fire Systems Pty Ltd.

Drawing numbered LP50R, dated 14 January 2015, by Snap Fire Systems Pty Ltd.

Drawing titled Specimen #1 110 Raupiano Stack & LP100R-D', dated 24 May 2018, by Snap Fire Systems Pty Ltd.

Drawing titled Specimen #2, 110 Raupiano Floorwaste & LP100-R-D', dated 24 May 2018, provided by Snap Fire Systems Pty Ltd.

Drawing titled Specimen #3 50 Raupiano Floorwaste & LP50R, dated 24 May 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 19^{o}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 121 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 minutes -	Smoke is being emitted from the floorwaste of Penetration 2.
2 minutes -	Cotton Wool Pad Test (CWT) applied to floorwaste of Penetration 2. No ignition.
5 minutes -	Smoke has diminished from floorwaste of Penetration 2.
14 minutes -	A small amount of smoke is fluing from Penetration 1.
43 minutes -	Light smoke is emitted from the grate of Penetration 2.
52 minutes -	Steam/smoke is being emitted from the base of Penetration 1 and at the north east corner of the specimen between the perimeter joist and the flooring.
53 minutes -	A small amount of smoke/steam is visible from floorwaste of Penetration 3.
76 minutes -	Steam/smoke is increasing from floorwaste of Penetration 3.
89 minutes -	CWT applied to floorwaste of Penetration 2. No ignition.
115 minutes -	Steam and smoke is being emitted from both floorwastes, Penetration 2 and Penetration 3.
121 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 maximum temperature versus time associated with Penetration 1.

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

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

8.5 Performance

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

Penetration 1 – LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano stack pipe

Structural adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	75 minutes

Penetration 2 – LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano floorwaste

Structural adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	66 minutes

Penetration 3 – LP50R Retrofit collar protecting a nominal 50-mm Raupiano floorwaste

Structural adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	67 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 this standard. 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:

Penetration 1 - -/90/90

Penetration 2 - -/90/90

Penetration 3 - -/90/90

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

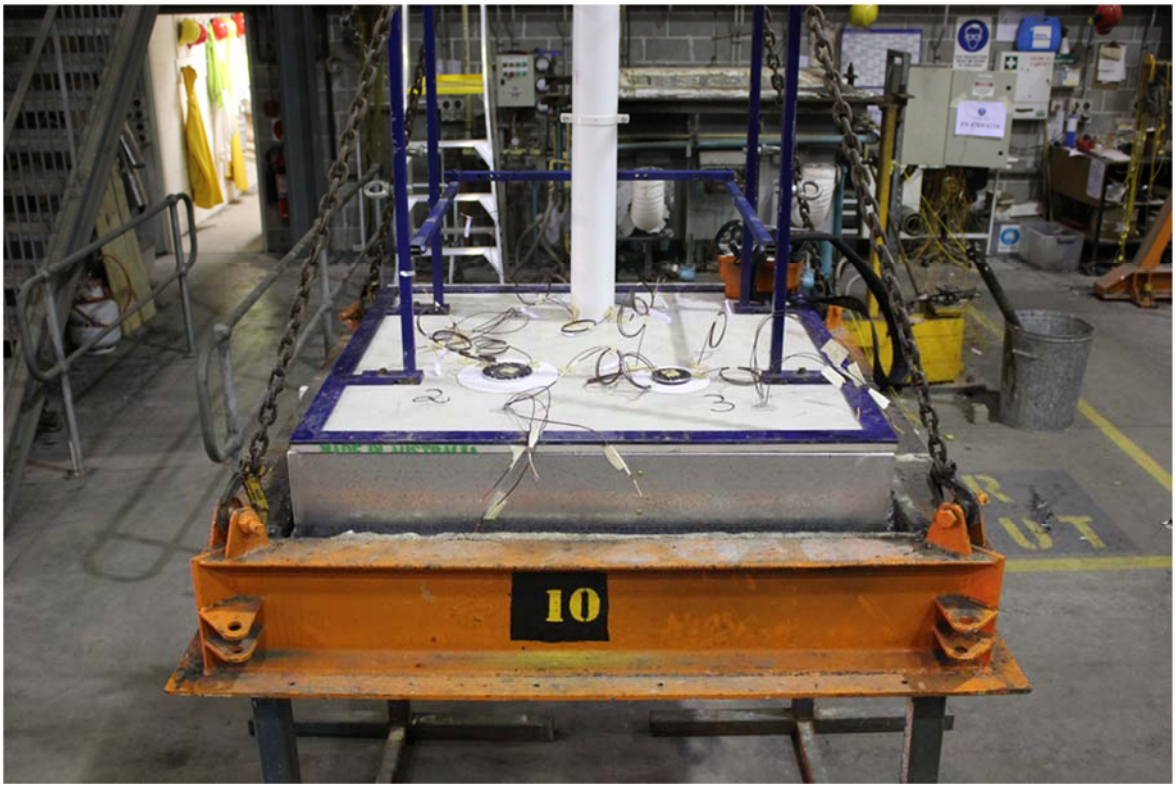
Appendices

Appendix A – Measurement location

Measurement Location		
Group location	**T/C Position**	**T/C designation**
Specimen 1 – Rehau - Raupiano - PP **Stack pipe** 110-mm OD	On CFC – 25-mm from pipe	S1
	On CFC – 25-mm from pipe	S2
	On the pipe - 25-mm from CFC	S3
	On the pipe - 25-mm from CFC	S4
Specimen 2 – Rehau - Raupiano - PP **Floor Waste** 110-mm OD.	On CFC – 25-mm from ABS Puddle Flange	S5
	On CFC – 25-mm from ABS Puddle Flange	S6
	On ABS Puddle Flange 25-mm from CFC	S7
	On ABS Puddle Flange 25-mm from CFC	S8
	On centre of Metal Grate	S9
Specimen 3 Rehau - Raupiano - PP **Floor Waste** 50-mm OD.	On CFC – 25-mm from ABS Puddle Flange	S10
	On CFC – 25-mm from ABS Puddle Flange	S11
	On ABS Puddle Flange 25-mm from CFC	S12
	On ABS Puddle Flange 25-mm from CFC	S13
	On centre of Metal Grate	S14
Incipient fire spread Specimen 1	Mid height of joist near Specimen 1	S15
	On the pipe - 25-mm from P/B	S16
	On the pipe - 25-mm from P/B	S17
	On P/B – 25-mm from pipe	S18
	On P/B – 25-mm from pipe	S19
Incipient fire spread Specimen 2	Mid height of joist near Specimen 2	S20
	On the pipe - 25-mm from P/B	S21
	On the pipe - 25-mm from P/B	S22
	On P/B – 25-mm from pipe	S23
	On P/B – 25-mm from pipe	S24
Incipient fire spread Specimen 3	Mid height of joist near Specimen 3	S25
	On the pipe - 25-mm from P/B	S26
	On the pipe - 25-mm from P/B	S27
	On P/B – 25-mm from pipe	S28
	On P/B – 25-mm from pipe	S29

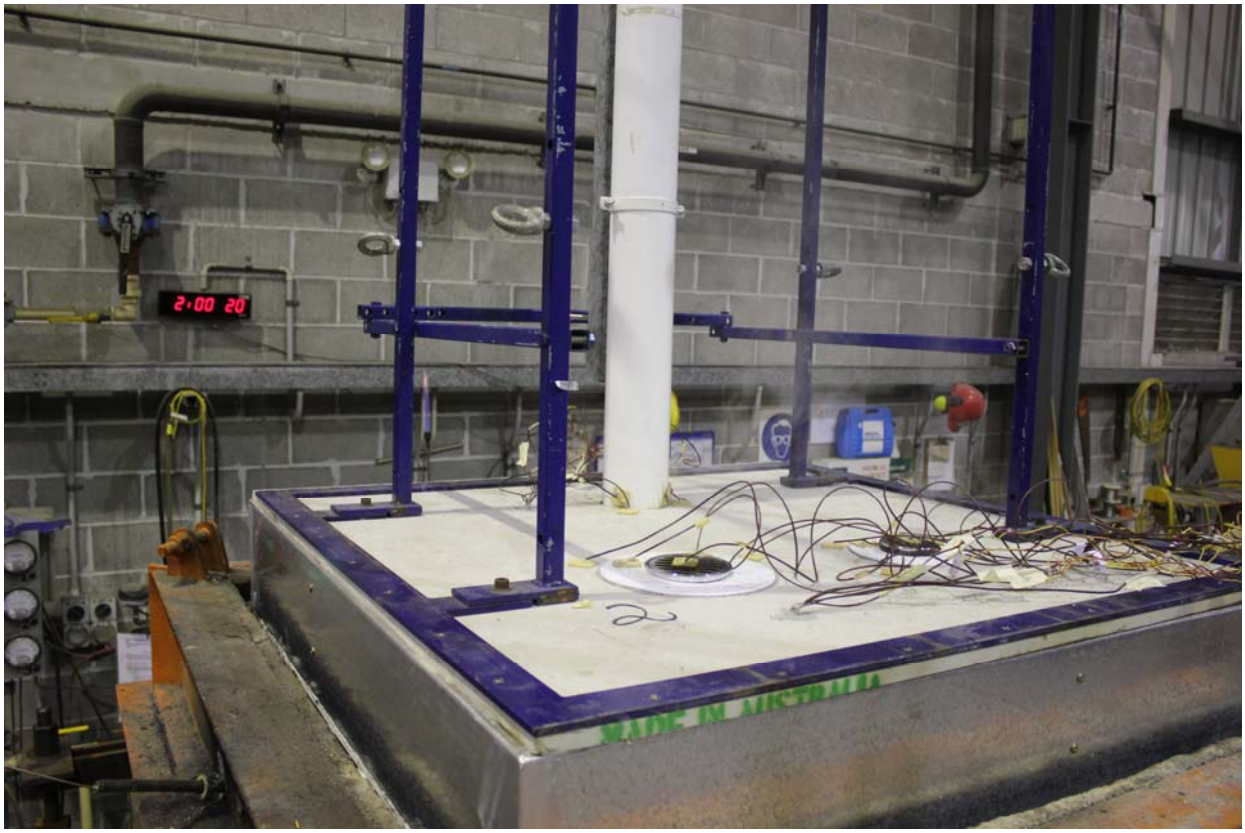
Appendix B – Photographs

PHOTOGRAPH 1 – EXPOSED FACE OF SPECIMENS PRIOR TO TESTING



PHOTOGRAPH 2 – UNEXPOSED FACE OF SPECIMENS PRIOR TO TESTING

PHOTOGRAPH 3 – SPECIMENS AFTER 60 MINUTES OF TESTING



PHOTOGRAPH 4 – UNEXPOSED FACED OF SPECIMEN AT CONCLUSION OF TESTING

PHOTOGRAPH 5 – EXPOSED FACE OF SPECIMENS AT CONCLUSION OF TESTING

Appendix C – Furnace Temperature

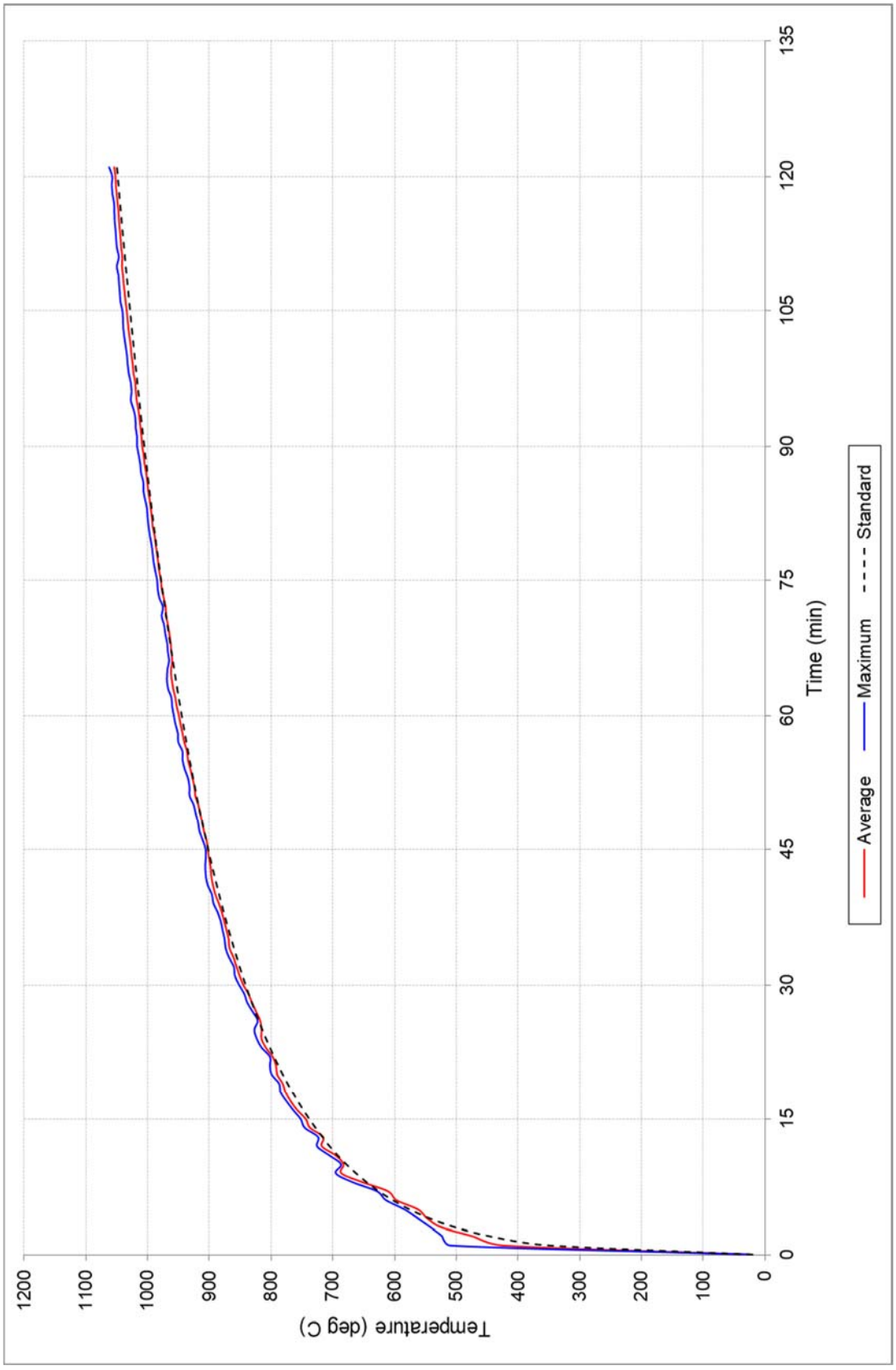


FIGURE 1 – FURNACE TEMPERATURE

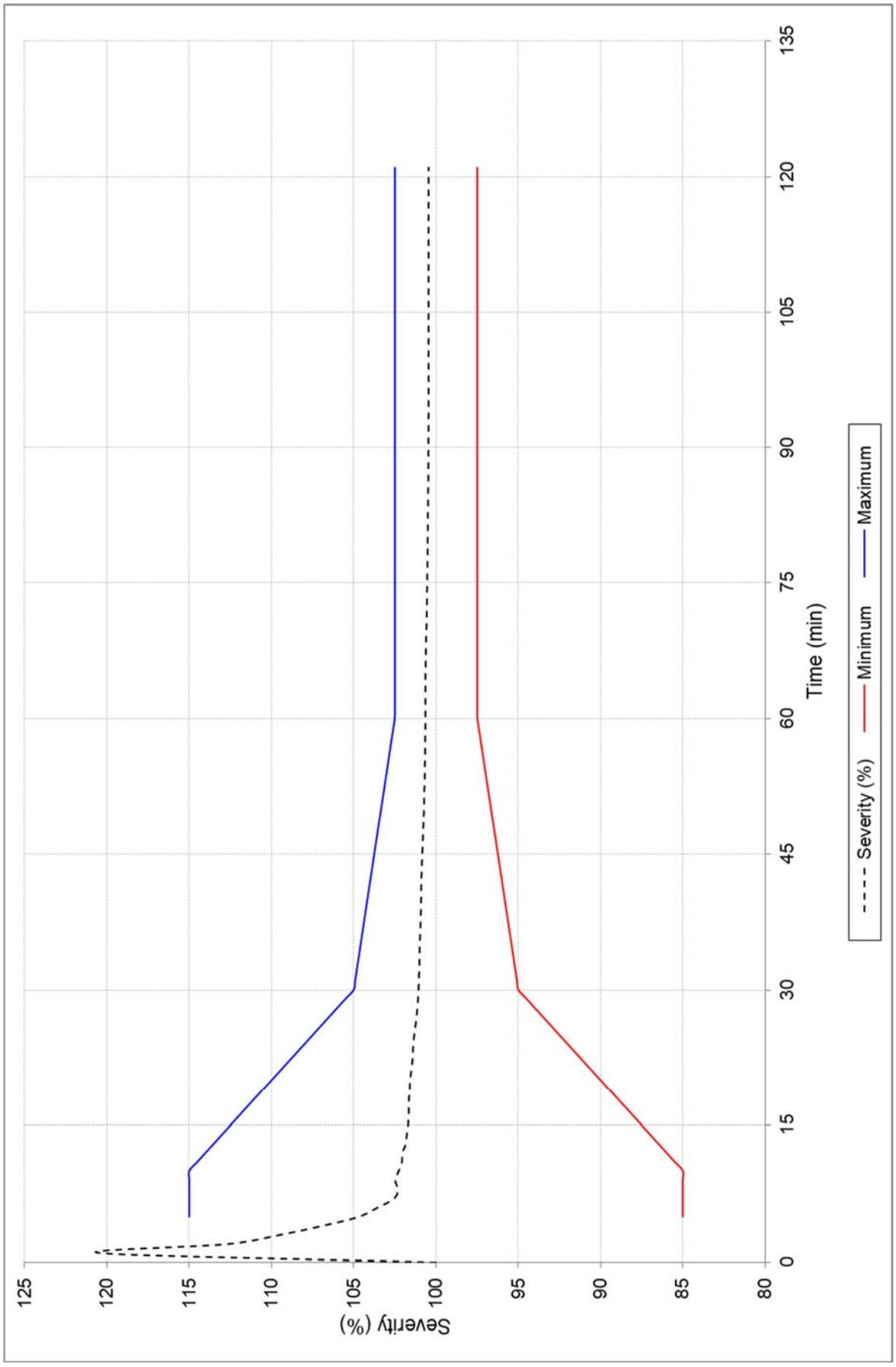


FIGURE 2 – FURNACE SEVERITY

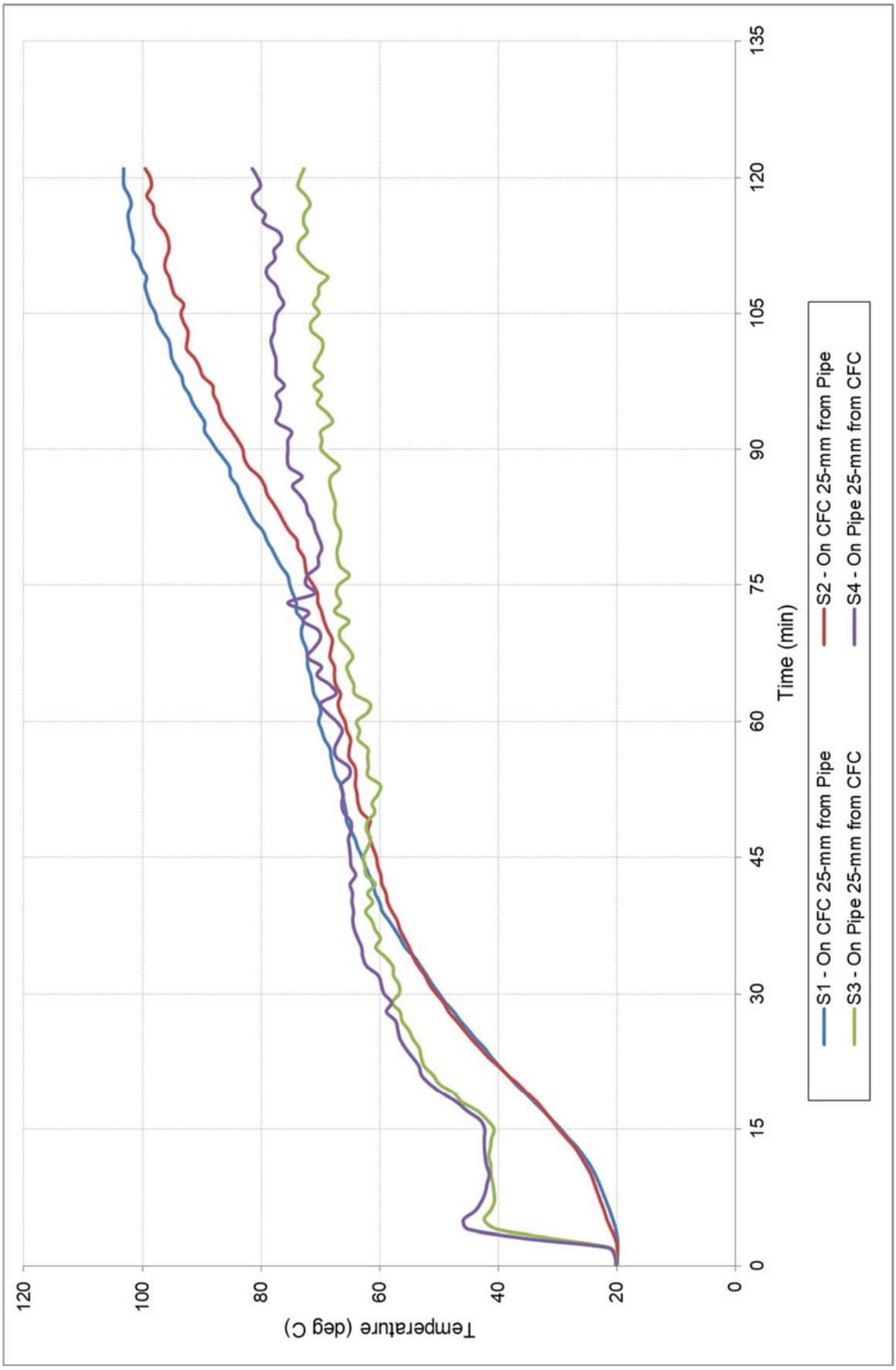


FIGURE 3 – SPECIMEN TEMPERATURE – ASSOCIATED WITH PENETRATION # 1

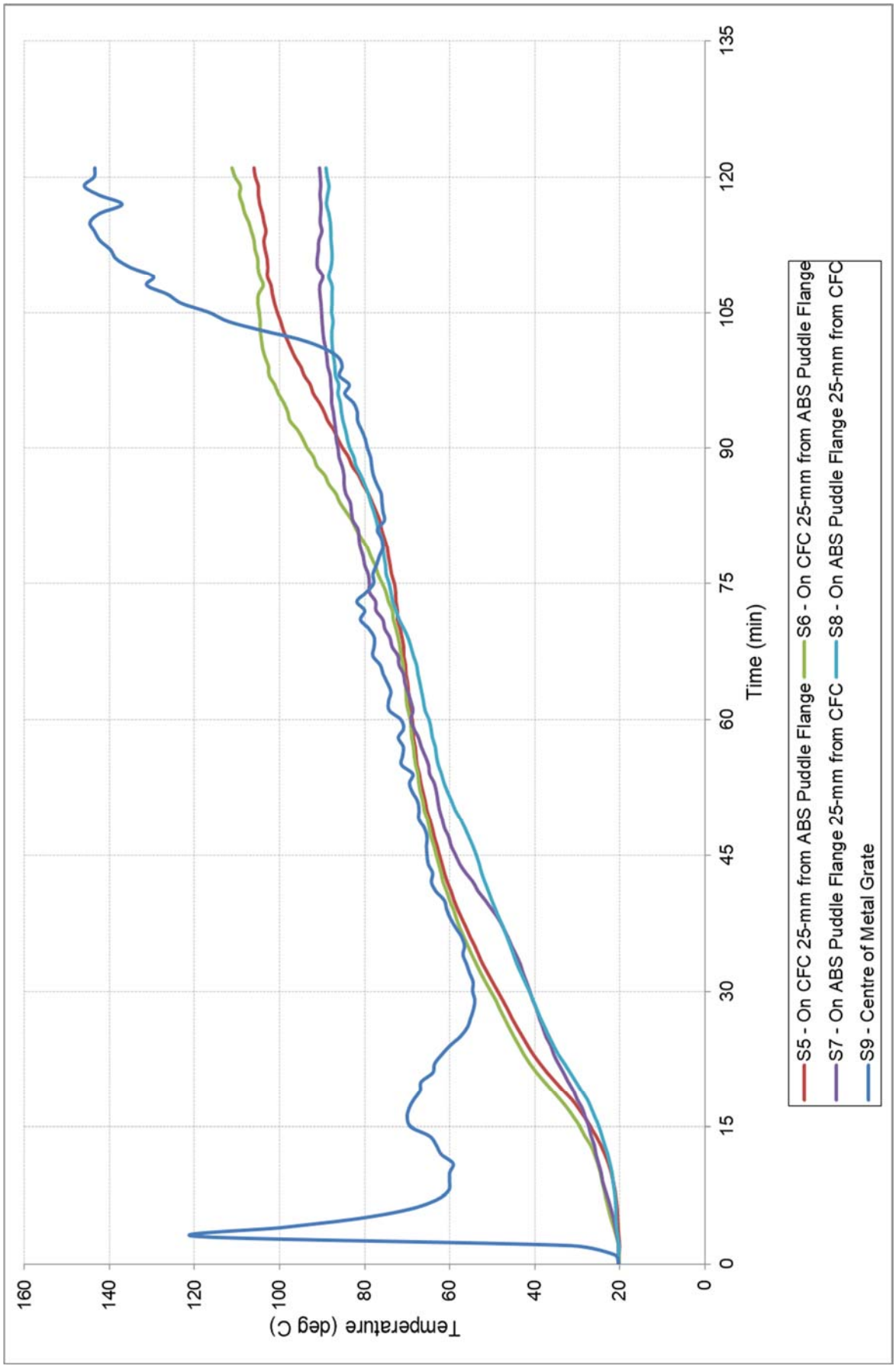


FIGURE 4 – SPECIMEN TEMPERATURE – ASSOCIATED WITH PENETRATION # 2

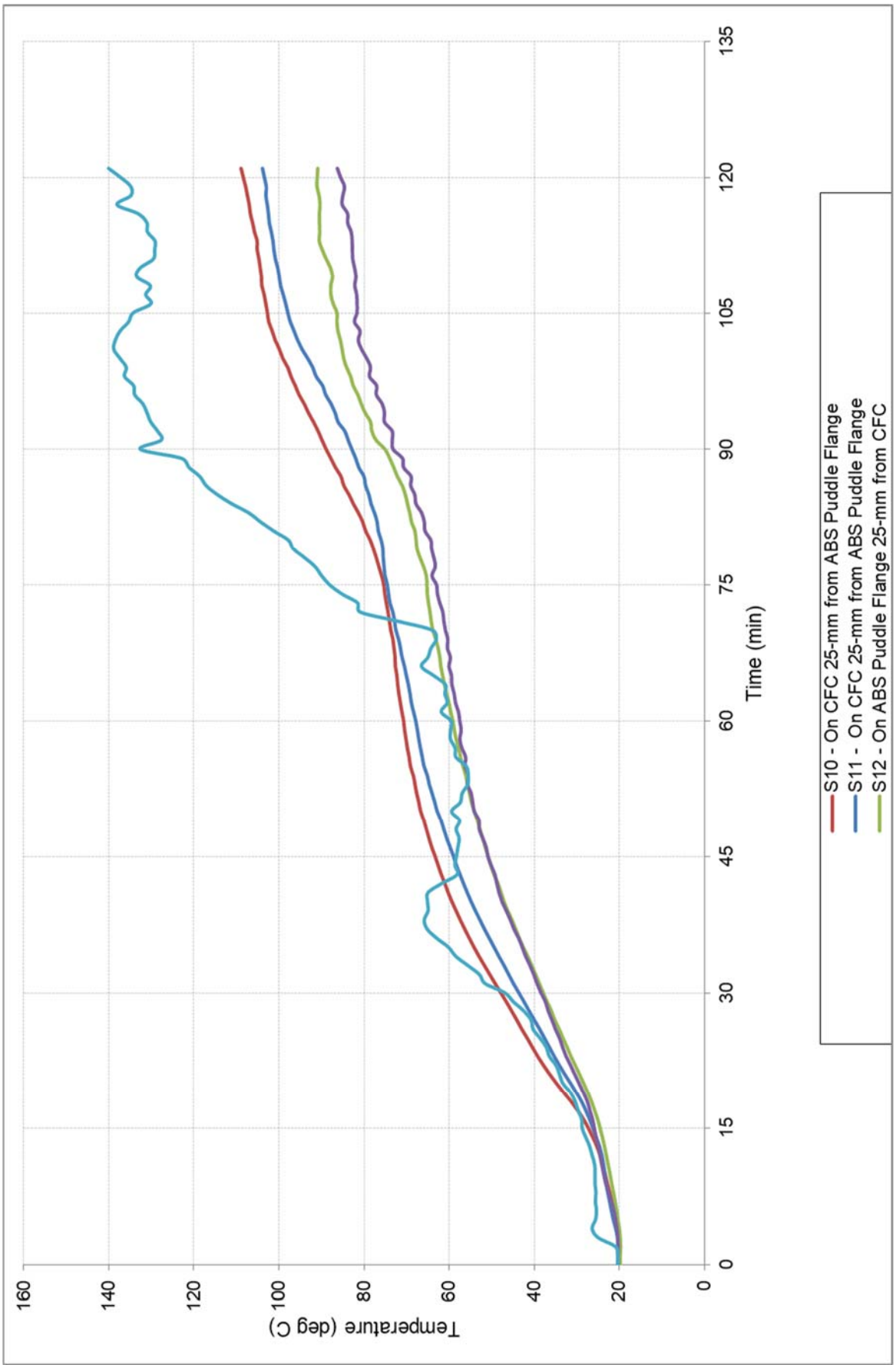
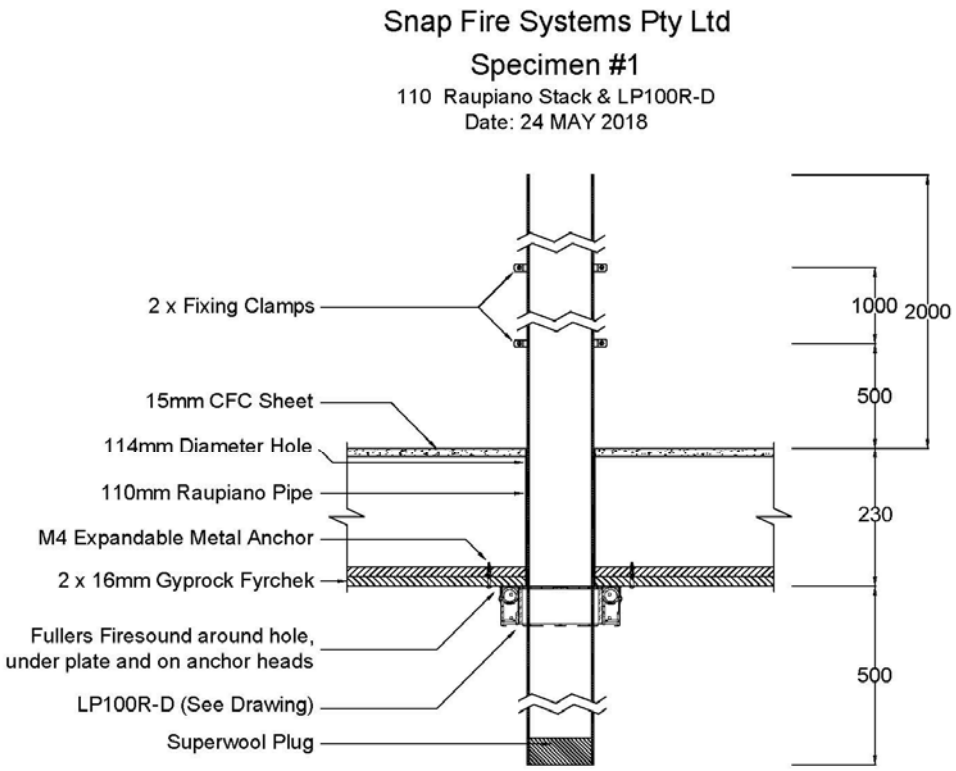
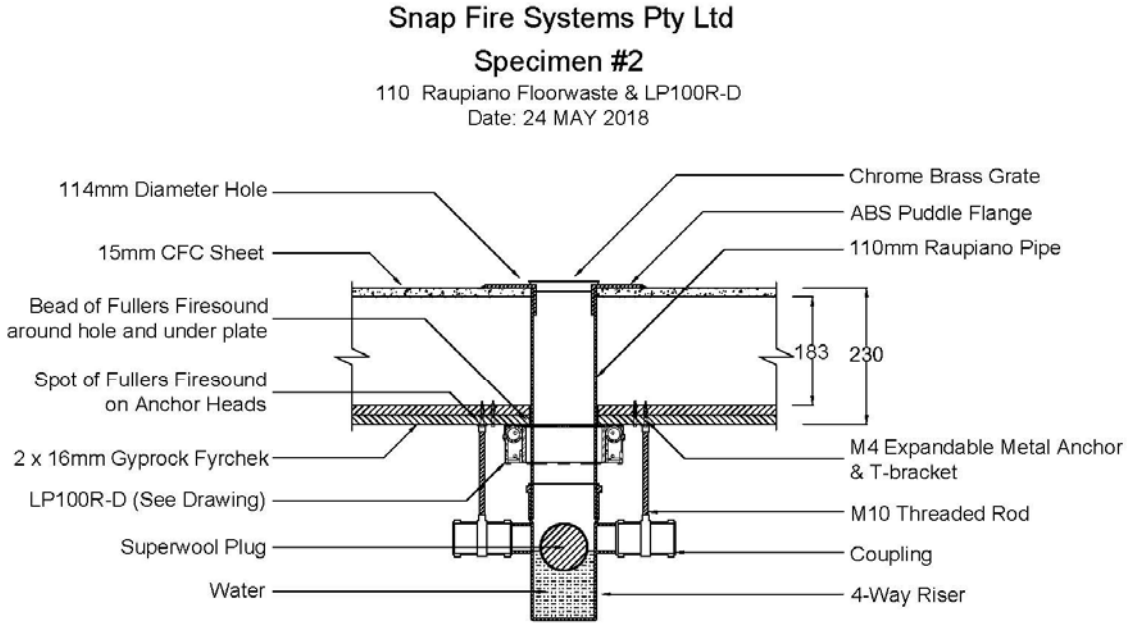


FIGURE 5 – SPECIMEN TEMPERATURE – ASSOCIATED WITH PENETRATION # 3

Appendix D – Installation drawings

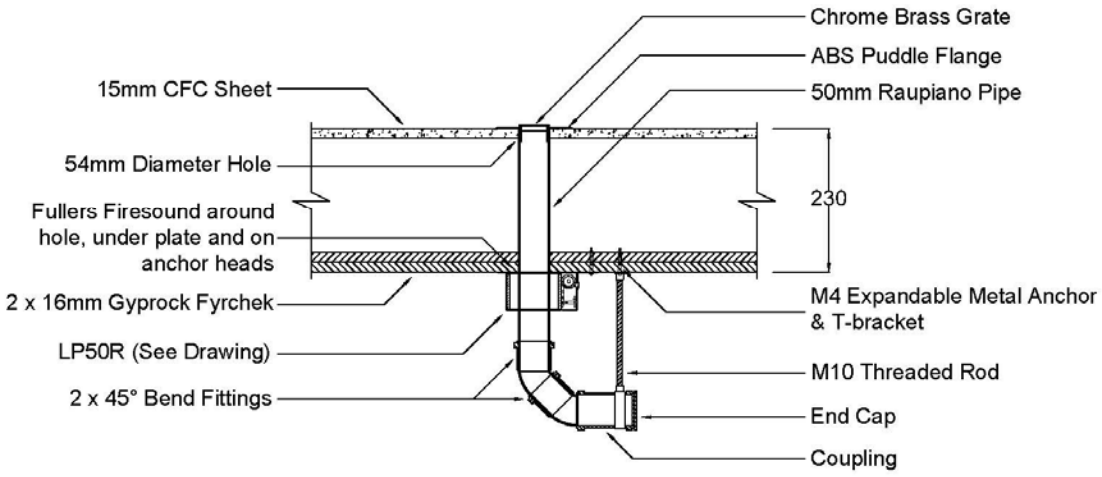


DRAWING TITLED SPECIMEN #1 110 RAUPIANO STACK & LP100R-D', DATED 24 MAY 2018, BY SNAP FIRE SYSTEMS PTY LTD.



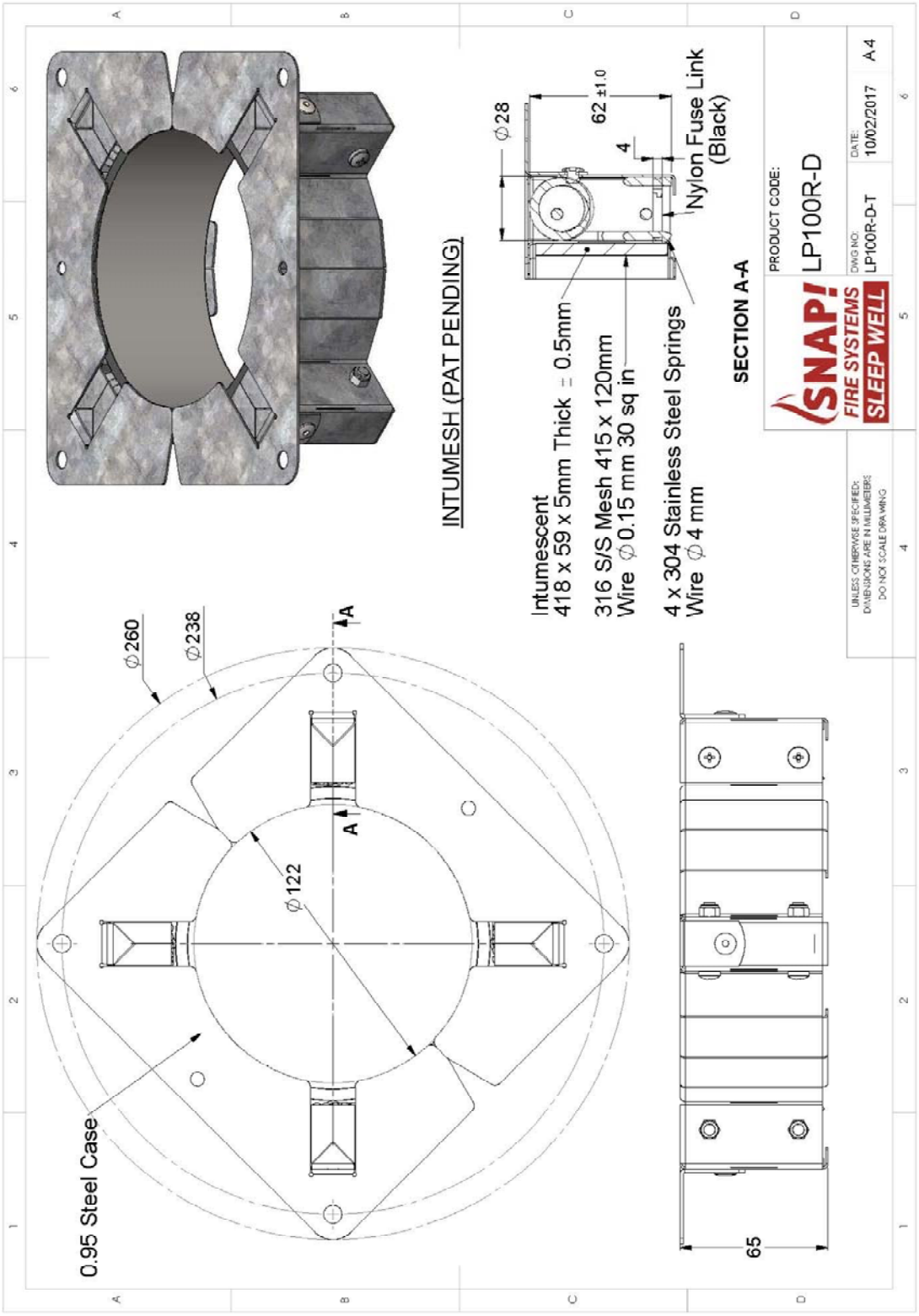
DRAWING TITLED SPECIMEN #2, 110 RAUPIANO FLOORWASTE & LP100-R-D', DATED 24 MAY 2018, PROVIDED BY SNAP FIRE SYSTEMS PTY LTD

Snap Fire Systems Pty Ltd
Specimen #3
50 Raupiano Floorwaste & LP50R
Date: 24 MAY 2018

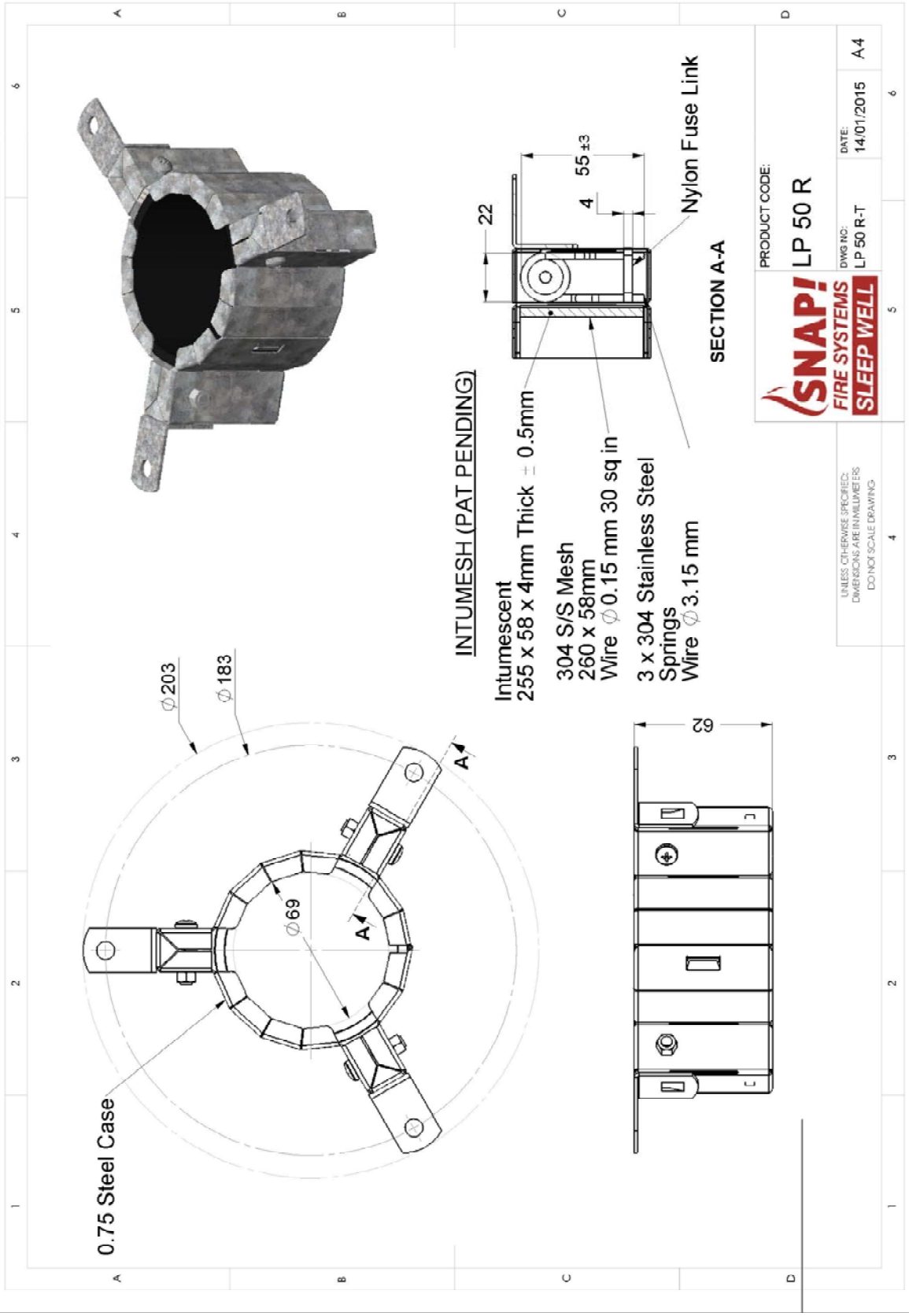


DRAWING TITLED SPECIMEN #3 50 RAUPIANO FLOORWASTE & LP50R, DATED 24 MAY 2018, BY SNAP FIRE SYSTEMS PTY LTD.

Appendix E – Specimen Drawings



DRAWING NUMBERED LP100R-D-T DATED 10 FEBRUARY 2017, BY SNAP FIRE SYSTEMS PTY LTD



DRAWING NUMBERED LP50R, DATED 14 JANUARY 2015, BY SNAP FIRE SYSTEMS PTY LTD.

Appendix F – Copy of Certificate(s) of Test

INFRASTRUCTURE TECHNOLOGIES
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14 Julius Avenue, North Ryde NSW 2113
PO Box 52, North Ryde NSW 1670, Australia
T (02) 9490 5444 • ABN 41 687 119 230

Certificate of Test

No. 3136

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 as trustee for the IG6 IP Trust
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 Sponsored Investigation report numbered FSP 1906.

Product Name: LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano stack pipe

Description: The specimen comprised an 1150-mm x 1150-mm x 230-mm thick plasterboard lined floor/ceiling system penetrated by a nominal 110-mm Raupiano stack pipe protected by LP100R-D Retrofit collar. The floor/ceiling system comprised 182-mm steel floor joists, fitted with 38 x 16-mm steel furring channels supporting 2 layers of 16-mm thick CSR Fyrechek plasterboard on exposed face and with one layer of 15-mm thick CFC floor sheeting on top. CSR 6222 system described in report by EWFA # 26162 has an established FRL of 90/90/90. SNAP Retrofit LP100R-D collar comprised a 0.95-mm thick steel casing with a 122 mm inner dia. and a 260-mm x 260-mm square base flange. The 65-mm high collar casing incorporated a layer of 418 mm x 59 mm x 5-mm thick Intumescent material. The closing mechanism comprised 4 x 304 stainless steel springs bound with black nylon fuse links and a 316 stainless steel mesh measuring 415 x 120-mm as shown in drawing # LP100R-D-T dated 10/02/17, by Snap Fire Systems P/L. One collar was fixed to the underside of ceiling lining using M4 Expandable Metal Anchors. The penetrating service comprised a 110-mm Raupiano Stack Pipe, with a wall thickness of 3.15 mm fitted through collar's sleeve. The pipe penetrated floor/ceiling system through a 114-mm dia. opening and projected vertically 2000-mm above the floor and 500 mm into furnace chamber. Pipe was supported at 500-mm and 1500 mm from unexposed face of floor as shown in drawing 'Specimen #1 110 Raupiano Stack & LP100R-D', dated 24/05/18, by Snap Fire Systems P/L. On exposed end, the pipe was plugged with Superwool.

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

Structural Adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	75 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/90/90.

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 recognized 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: 29 May 2018

Issued on the 5th day of September 2018 without alterations or additions.

Brett Roddy
Manager, Fire Testing and Assessments

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Certificate of Test

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IG6 Pty Ltd as trustee for the IG6 IP Trust
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 Sponsored Investigation report numbered FSP 1906.

Product Name: LP100R-D Retrofit collar protecting a nominal 110-mm Raupiano floorwaste

Description: The specimen comprised an 1150-mm x 1150-mm x 230-mm thick plasterboard lined floor/ceiling system penetrated by a nominal 110-mm Raupiano floorwaste protected by LP100R-D Retrofit collar. The floor/ceiling system comprised 182-mm steel floor joists, fitted with 38 x 16-mm steel furring channels supporting 2 layers of 16-mm thick CSR Fyrechek plasterboard on exposed face and with one layer of 15-mm thick CFC floor sheeting on top. CSR 6222 system described in report by EWFA # 26162 has an established FRL of 90/90/90. SNAP Retrofit LP100R-D collar comprised a 0.95-mm thick steel casing with a 122-mm inner dia. and a 260-mm x 260-mm square base flange. The 65-mm high collar casing incorporated a layer of 418-mm x 59-mm x 5-mm thick Intumescent material. The closing mechanism comprised 4 x 304 stainless steel springs bound with black nylon fuse links and a 316 stainless steel mesh measuring 415 x 120-mm as shown in drawing # LP100R-D-T dated 10/02/17, by Snap Fire Systems P/L. The penetrating service comprised a 110-mm dia. Raupiano pipe with wall thickness of 3.15-mm fitted through collar's sleeve. A 114-mm dia. opening was cut into the floor/ceiling linings and collar fixed centrally over the hole. Floor waste system was fitted with a chrome brass grate. On exposed side of ceiling lining, a M10 threaded rod was connected to penetrating pipe coupling, fixed to the concrete slab with M4 expandable metal anchors and a T-bracket. Floor waste was charged with water to level shown in drawing 'Specimen #2, 110 Raupiano Floorwaste & LP100-R-D', dated 24/05/18, provided by Snap Fire Systems Pty Ltd.

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

Structural Adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	66 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/90/90.

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 recognized 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: 29 May 2018

Issued on the 5th day of September 2018 without alterations or additions.

Brett Roddy
Manager, Fire Testing and Assessments

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. 3137

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Certificate of Test

No. 3138

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 as trustee for the IG6 IP Trust
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 Sponsored Investigation report numbered FSP 1906.

Product Name: LP50R Retrofit collar protecting a nominal 50-mm Raupiano floorwaste

Description: The specimen comprised an 1150-mm x 1150-mm x 230-mm thick plasterboard lined floor/ceiling system penetrated by a nominal 50-mm Raupiano floorwaste protected by LP50R Retrofit collar. The floor/ceiling system comprised 182-mm steel floor joists, fitted with 38 x 16-mm steel furring channels supporting 2 layers of 16-mm thick CSR Fyrechek plasterboard on exposed face and with one layer of 15-mm thick CFC floor sheeting on top. CSR 6222 system described in report by EWFA # 26162 has an established FRL of 90/90/90. SNAP retrofit LP50R fire collar comprised a 0.75-mm steel case with a 69-mm inner diameter and a 203-mm diameter base flange. The 62-mm high collar casing incorporated a 255-mm x 58-mm x 4-mm thick Intumesh intumescent material. The closing mechanism incorporated three stainless steel springs, with nylon fuse links and a 260-mm x 58-mm stainless steel mesh as shown in drawing numbered LP50R-T dated 14 January 2015, by SNAP Fire Systems Pty Ltd. The penetrating service comprised a 50-mm diameter Raupiano pipe with a wall thickness of 2.14-mm fitted through the collar's sleeve. A 114-mm diameter opening was cut into the floor and ceiling linings and the collar fixed centrally over the hole. The floor waste system was fitted with an ABS Puddle Flange and chrome brass grate. On the exposed side of the ceiling lining, a M10 threaded rod was connected to the penetrating pipe coupling, fixed to the floor/ceiling with M4 expandable metal anchors and a T-bracket. The pipe was capped with a plastic end cap.

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

Structural Adequacy	not applicable
Integrity	no failure at 121 minutes
Insulation	no failure at 121 minutes
Incipient Spread of Fire	67 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/90/90.

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 recognized 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: 29 May 2018

Issued on the 5th day of September 2018 without alterations or additions.

B. Roddy

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 of elements of building construction.
AS 4072.1-2005 (Incorporating Amendment No.1) Reconfirmed 2016	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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