

**FIRE-RESISTANCE TEST ON  
FIRE COLLARS PROTECTING A PLASTERBOARD  
WALL PENETRATED BY SERVICES**

**Report number FSP 1360  
CSIRO job number SP3241  
Date of issue 31 JULY 2009**

**Client  
SNAP FIRE SYSTEMS PTY LTD.**

**Commercial-in-confidence**

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**SPONSORED INVESTIGATION No. FSP 1360****FIRE-RESISTANCE TEST ON FIRE COLLARS PROTECTING A  
PLASTERBOARD WALL PENETRATED BY SERVICES****SUMMARY****IDENTIFICATION OF SPECIMEN:**

The sponsor identified the specimen as Snap Retrofitted Fire Collars protecting a plasterboard wall penetrated by six PPR pipes.

**SPONSOR:** Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

**MANUFACTURER:** Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

**TEST STANDARD:** Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2005, Fire-resistance tests of elements of construction.

**TEST NUMBER:** FS 4073/3241

**TEST DATE:** The fire-resistance test was conducted on 18 June 2009.

**DESCRIPTION OF SPECIMEN:****GENERAL**

The wall system, with an established fire-resistance level (FRL) of -/120/120 comprised 64-mm x 0.75-mm steel studs and noggins installed at nominally 600-mm centres, lined on each side with two layers of 16-mm thick CSR Gyprock Fyrchek plasterboard sheets. The plasterboard sheeting was screw fixed to the steel studs using plasterboard screws at nominally 200-mm centres. The wall was penetrated by six Aquatherm Fusiotherm polypropylene fibre pipes protected by retro-fitted Snap Fire System fire collars.

For the purpose of the test, the specimens were referenced as Penetrations 1, 2, 3, 4, 5, and 6.



### Penetration 1 – Retrofit SNAP63R fire collar protecting a nominal 63-mm PPR pipe

The SNAP63R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with a 69-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighing approximately 50 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 63-mm OD PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 10-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

### Penetration 2 – Retrofit SNAP32R fire collar protecting a nominal 20-mm PPR pipe

The SNAP32R fire collar consisted of a 0.7-mm thick steel case, 32-mm high with a 35-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 26-mm wide and weighing approximately 23 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

### Penetration 3 – Retrofit SNAP63R fire collar protecting a nominal 20-mm PPR pipe

The SNAP63R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with a 69-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighing approximately 50 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm PPR-80 fazer composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

#### Penetration 4 – Retrofit SNAP50R fire collar protecting a nominal 20-mm PPR pipe

The SNAP50R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with 58-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighed approx 45 grams each lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm PPR-80 fazer composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

#### Penetration 5 – Retrofit SNAP32R fire collar protecting a nominal 32-mm PPR pipe

The SNAP32R fire collar consisted of a 0.7-mm thick steel case, 32-mm high with a 35-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 26-mm wide and weighing approximately 23 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 32-mm PPR-80 fazer composite pipe of SDR7.4 with a wall thickness of 5-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

### Penetration 6 – Retrofit SNAP50R fire collar protecting a nominal 50-mm PPR pipe

The SNAP50R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with 58-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighed approx 45 grams each lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 50-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 8-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

#### DIMENSIONS

The overall dimension of the plasterboard wall was 1150-mm square, to suit the opening in the specimen containing frame.

#### ORIENTATION

The plasterboard wall was placed vertically against the furnace chamber.

#### DOCUMENTATION:

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

Drawings numbered PPRTESTWALL-1, dated November 2008; PPRWALLINSTALL, dated 8 June 2009; SNAP32R, SNAP50R and SNAP63R, all dated 8 May 2009 by Snap Fire System.

Confidential information about the test specimen has been submitted and is retained at CSIRO Materials Science and Engineering.



**EQUIPMENT:****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 1530.4-2005 and was heated by combustion of a mixture of natural gas and air.

**TEMPERATURE**

The temperature in the furnace chamber was measured by four type K, 3-mm diameter, 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.

**PRESSURE**

The furnace pressure was measured by a differential low-pressure transducer with a range of  $\pm 50$  Pa.

**MEASUREMENT SYSTEM**

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

**AMBIENT TEMPERATURE:**

The temperature of the test area was 11°C at the commencement of the test.

**DEPARTURE FROM STANDARD:**

There were no departures from the requirements of AS 1530.4-2005.

**TERMINATION OF TEST:**

The test was terminated at 181 minutes by agreement with the sponsor.



**TEST RESULTS:****CRITICAL OBSERVATIONS**

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

- 6 minutes - Smoke is fluing from pipe #1.
- 7 minutes - Amount of smoke fluing from pipe #1 has decreased.
- 9 minutes - Light smoke is fluing from pipe #6.  
Smoke has ceased fluing from pipe #1.
- 12 minutes - Smoke has ceased fluing from pipe #6.
- 60 minutes - No apparent change to the specimen. No smoke is emitted from any of the pipes.
- 120 minutes - No apparent change to the specimen.
- 125 minutes - Smoke is being emitted from the head of the specimen.
- 170 minutes - Pipe #1 starts to melt (Photograph 11).
- 175 minutes - Smoke is being emitted from pipe #5.
- 181 minutes - Test terminated.

**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.

**SPECIMEN TEMPERATURE**

Figure 2 shows the curve of maximum temperature versus time associated with Penetration 1.

Figure 3 shows the curve of maximum temperature versus time associated with Penetration 2.

Figure 4 shows the curve of maximum temperature versus time associated with Penetration 3.

Figure 5 shows the curve of maximum temperature versus time associated with Penetration 4.

Figure 6 shows the curve of maximum temperature versus time associated with Penetration 5.

Figure 7 shows the curve of maximum temperature versus time associated with Penetration 6.



## PERFORMANCE

Performance observed in respect of the following AS 1530.4-2005 criteria:

### Penetration 1 – Retrofit SNAP63R fire collar protecting a nominal 63-mm PPR pipe

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

### Penetration 2 – Retrofit SNAP32R fire collar protecting a nominal 20-mm PPR pipe

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

### Penetration 3 – Retrofit SNAP63R fire collar protecting a nominal 20-mm PPR pipe

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

### Penetration 4 – Retrofit SNAP50R fire collar protecting a nominal 20-mm PPR pipe

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

### Penetration 5 – Retrofit SNAP32R fire collar protecting a nominal 32-mm PPR pipe

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



Penetration 6 – Retrofit SNAP50R fire collar protecting a nominal 50-mm PPR pipe

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

This report details methods of construction, the test conditions and the results obtained when 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.

**FIRE-RESISTANCE LEVEL (FRL):**

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

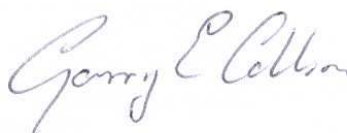
Penetration 1	-	-/120/120;
Penetration 2	-	-/120/120;
Penetration 3	-	-/120/120;
Penetration 4	-	-/120/120;
Penetration 5	-	-/120/120 and
Penetration 6	-	-/120/120;

For the purposes of AS 1530.4-2005 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.

TESTED BY:



Chris Wojcik  
Testing Officer



Garry E Collins  
Manager, Fire Testing and Assessments

31 July 2009

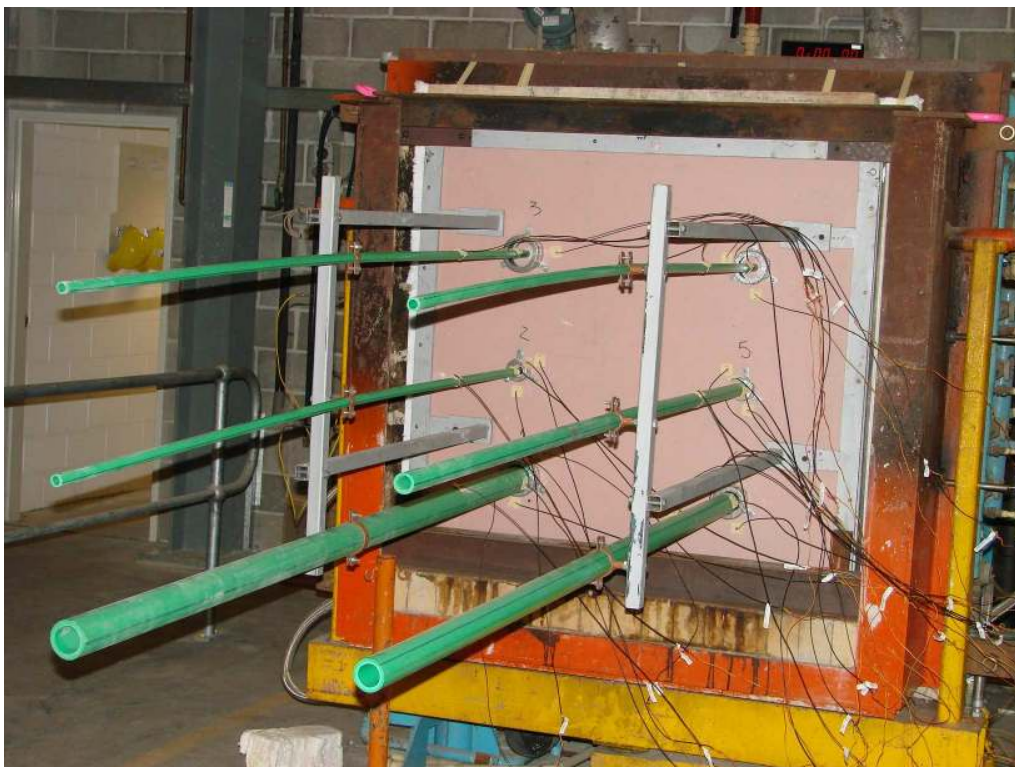


## APPENDICES

### APPENDIX 1



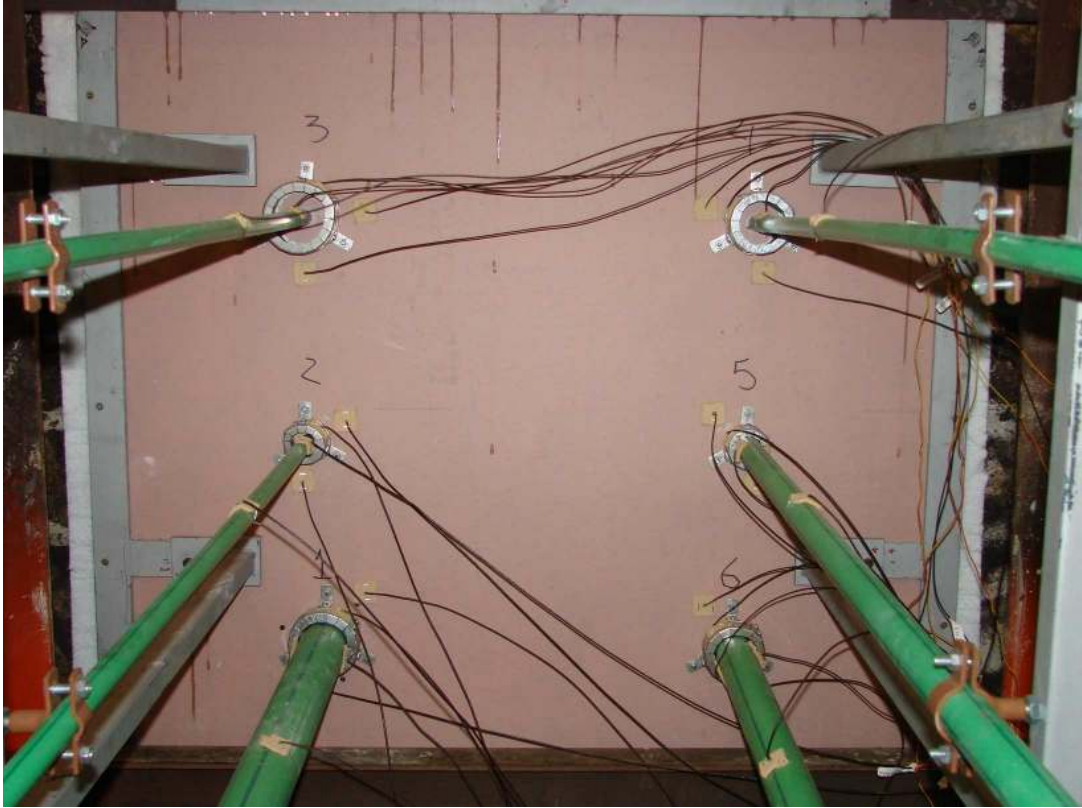
Photograph 1 – Exposed face of the specimen prior to testing



Photograph 2 – Unexposed face of the specimen prior to testing



Photograph 3 – Specimen after 60 minutes of testing

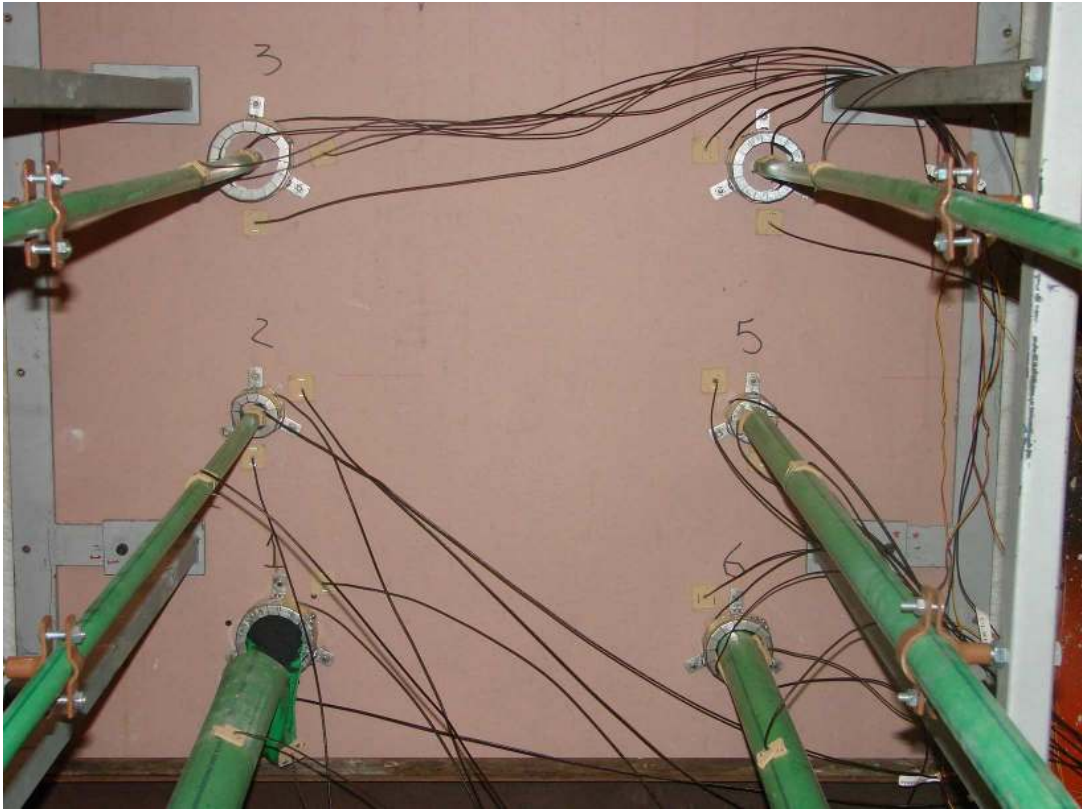


Photograph 4 – Specimen after 120 minutes of testing





Photograph 5 – Pipe #1 after 170 minutes of testing



Photograph 6 – Specimen at the conclusion of testing





Photograph 7 – Exposed face of the specimen after the conclusion of testing



APPENDIX 2

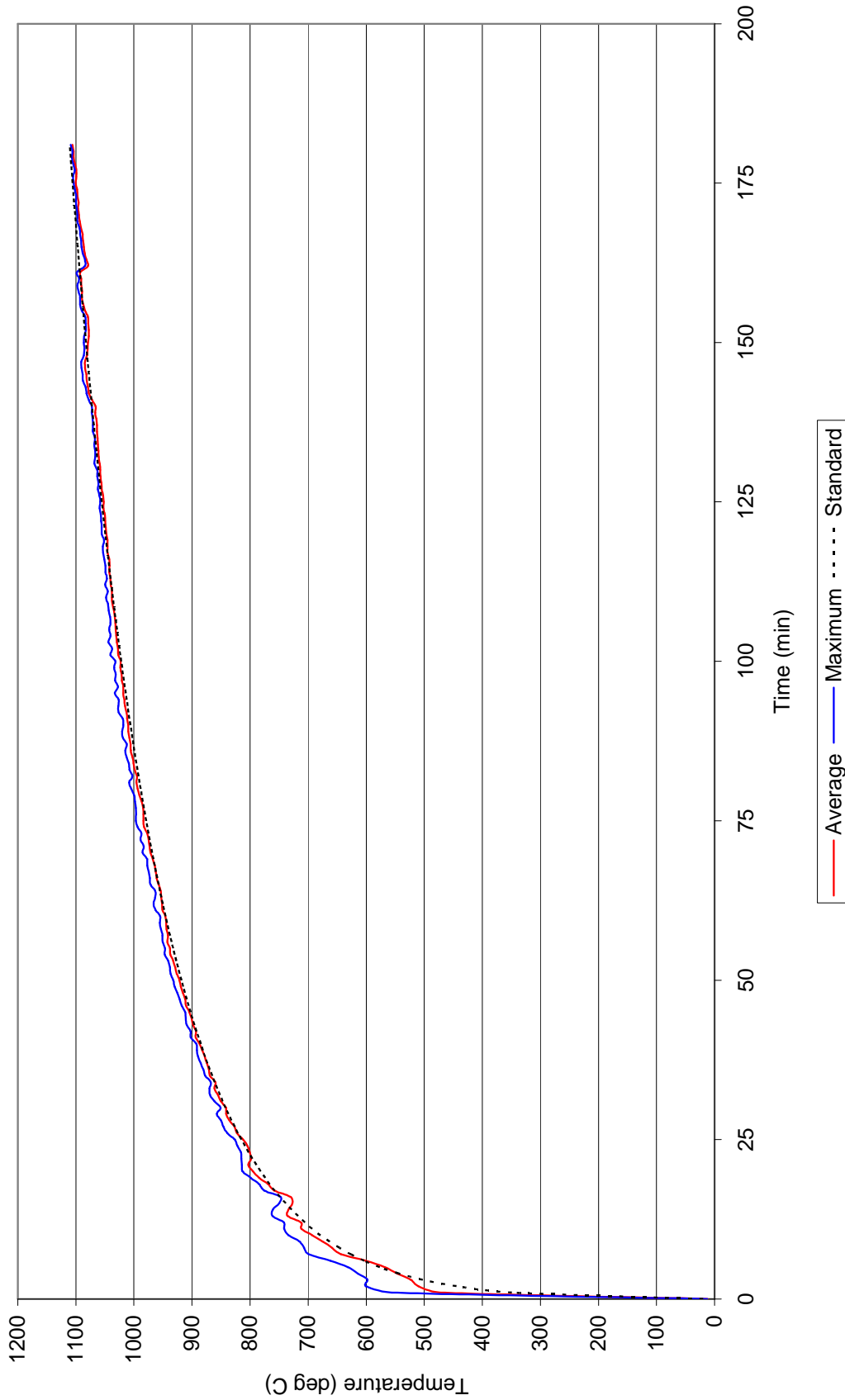


Figure 1 - Furnace temperature



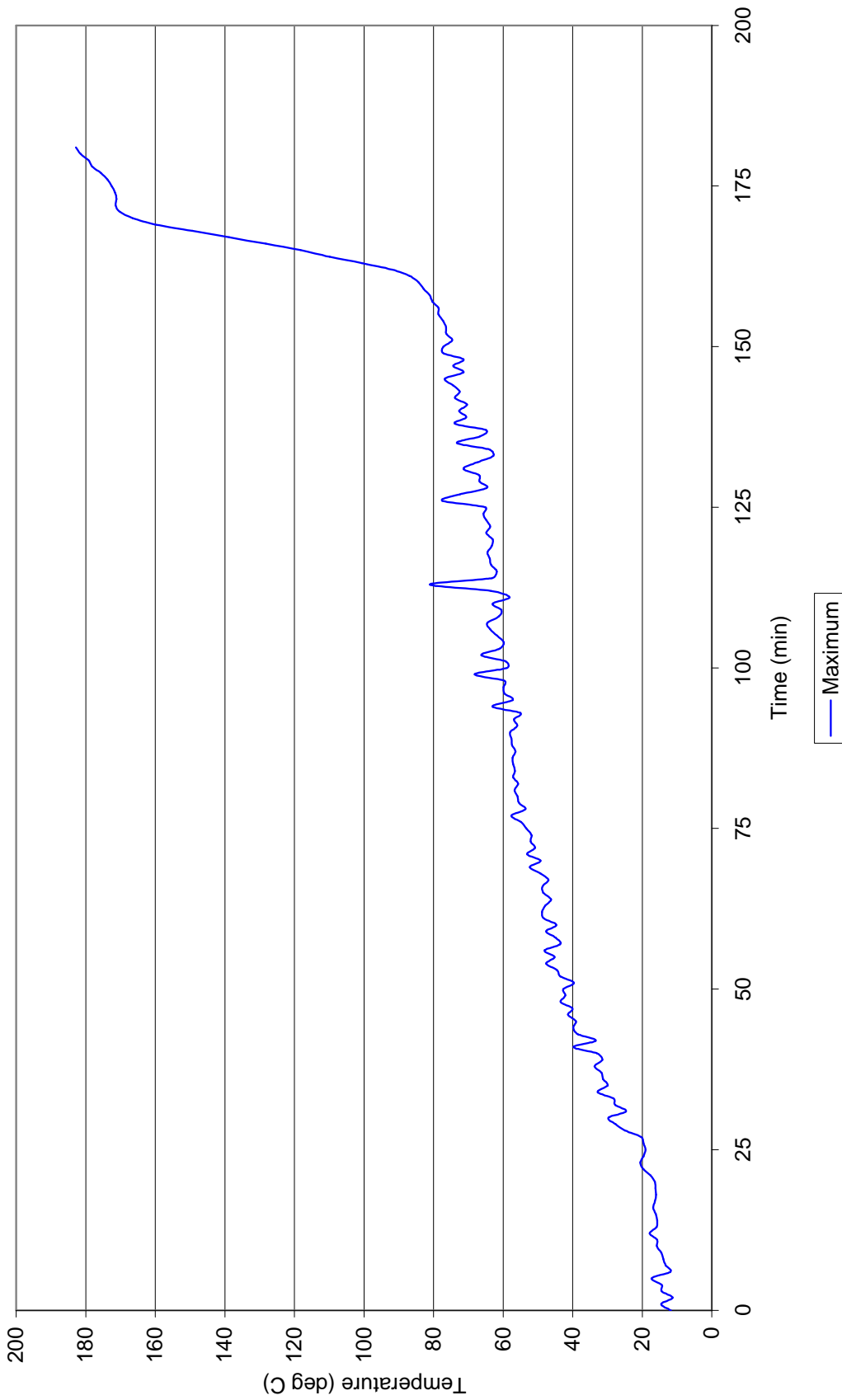


Figure 2 - Specimen temperature – Penetration 1

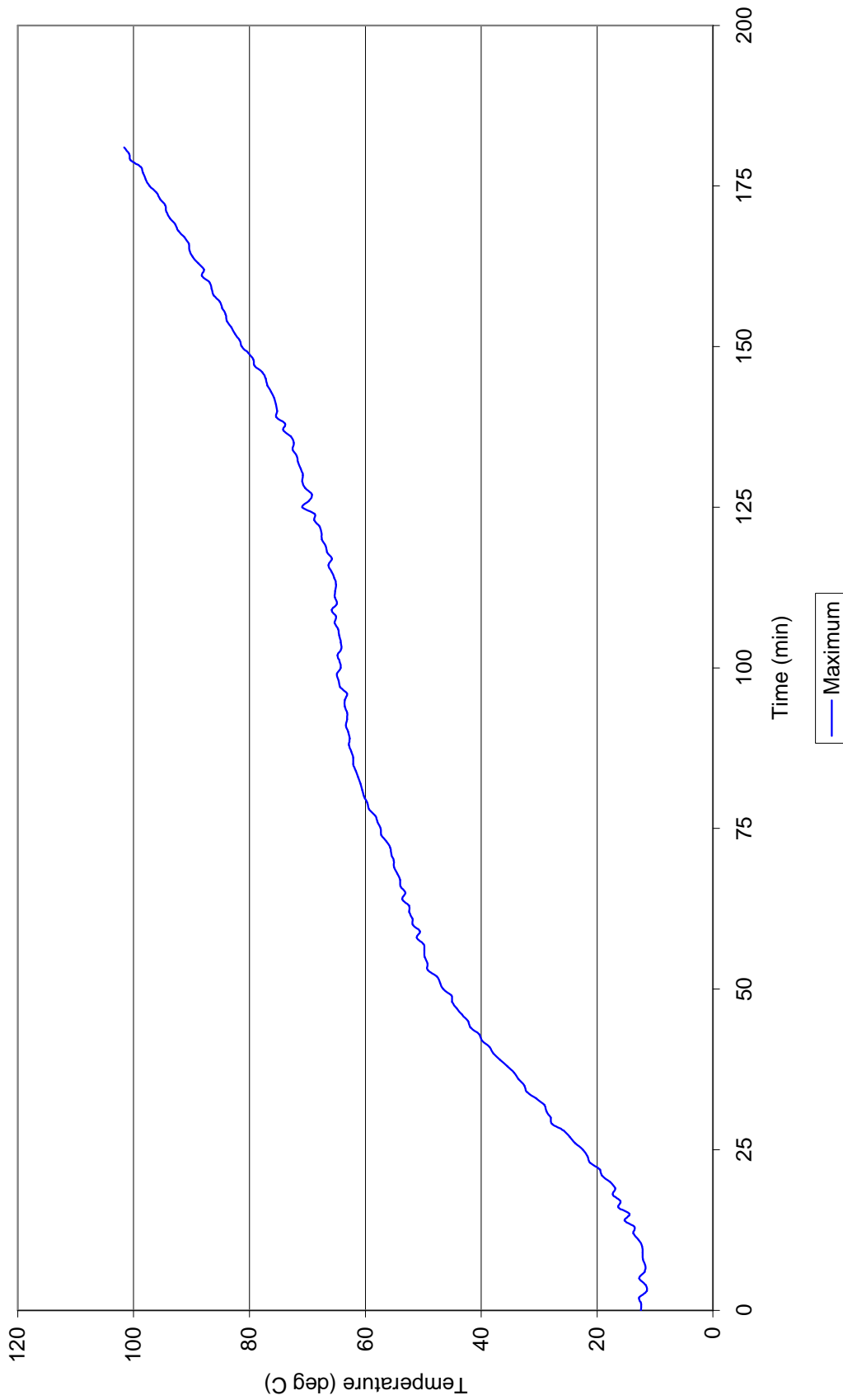


Figure 3 - Specimen temperature – Penetration 2



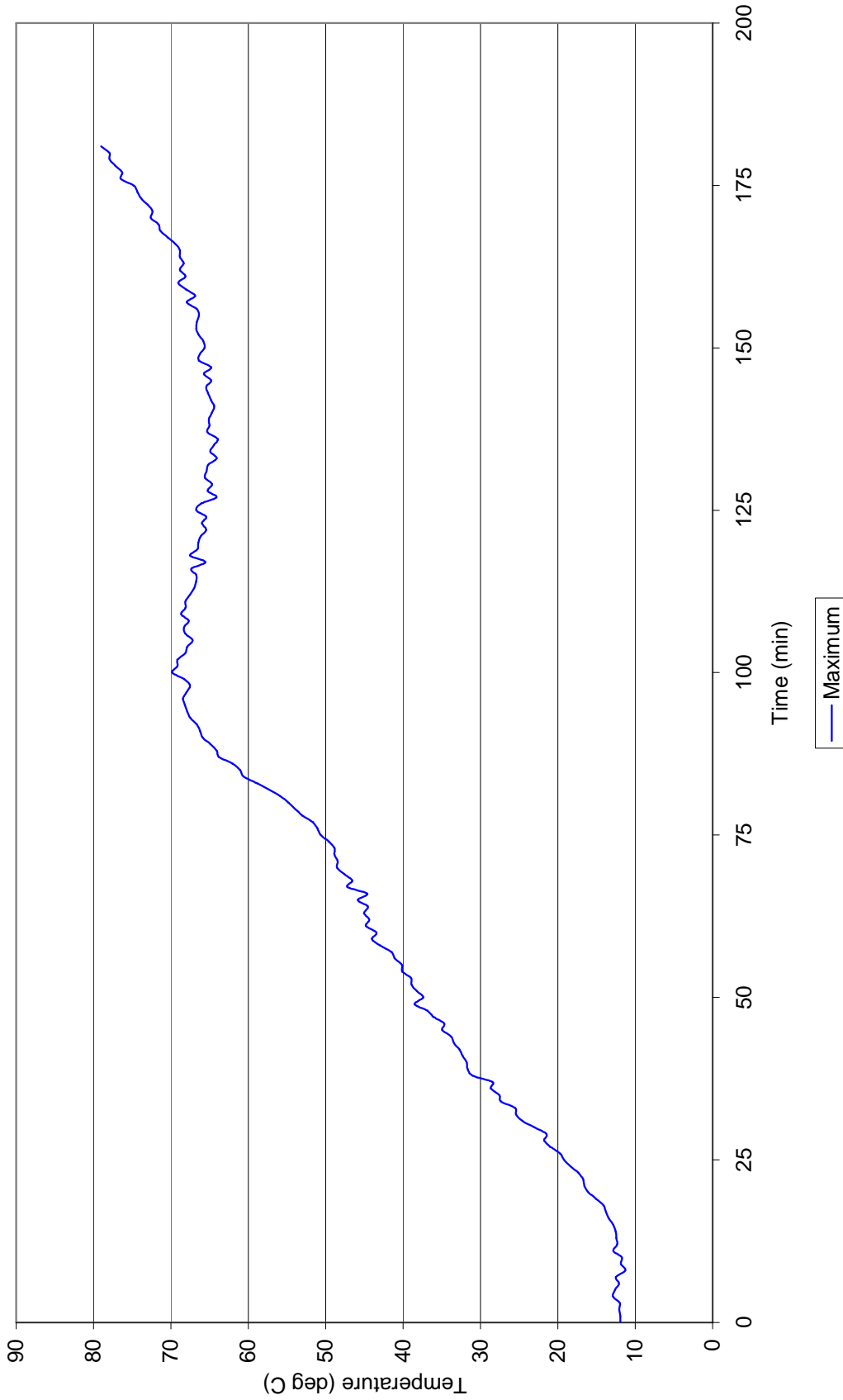


Figure 4 - Specimen temperature – Penetration 3



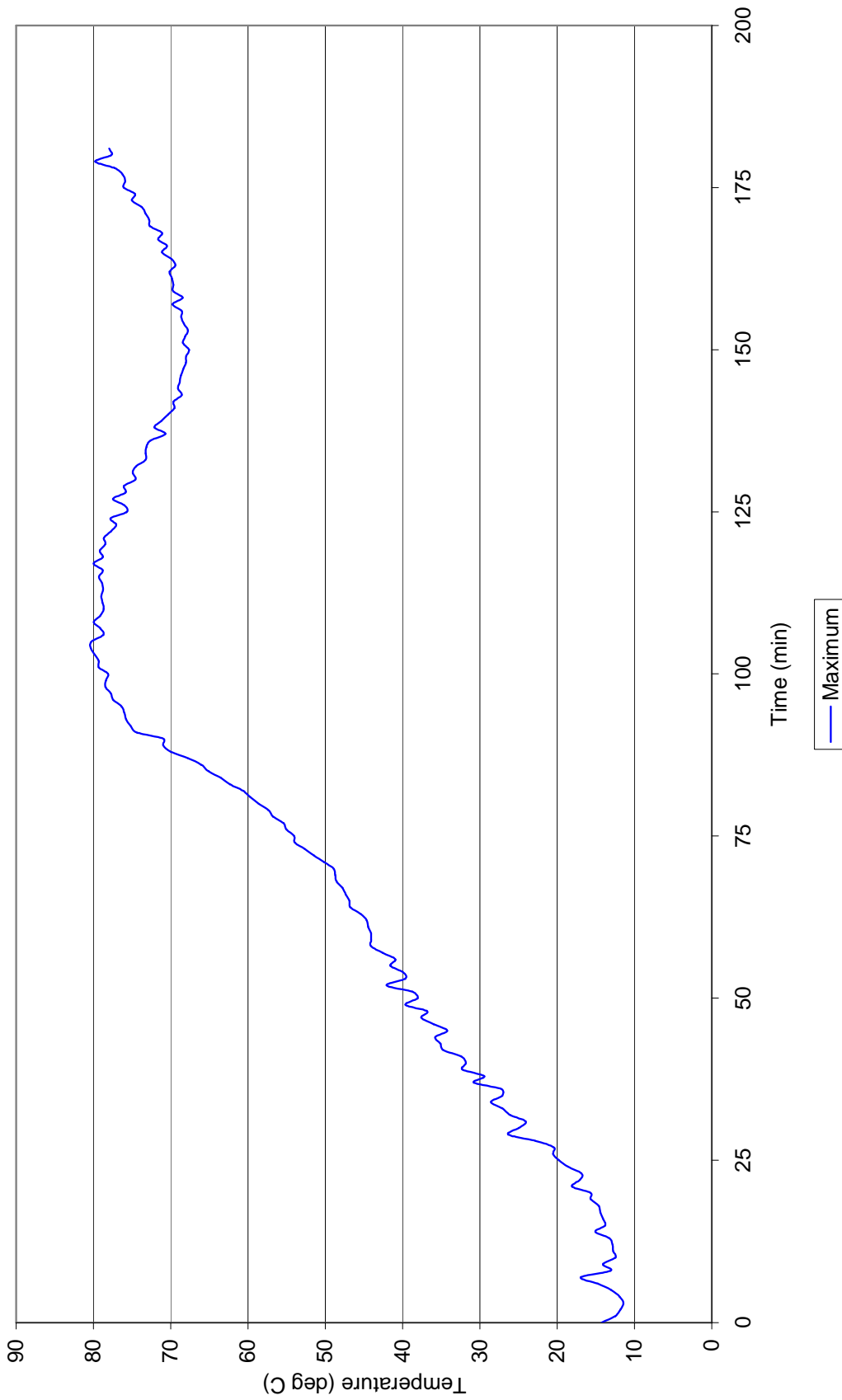


Figure 5 - Specimen temperature – Penetration 4



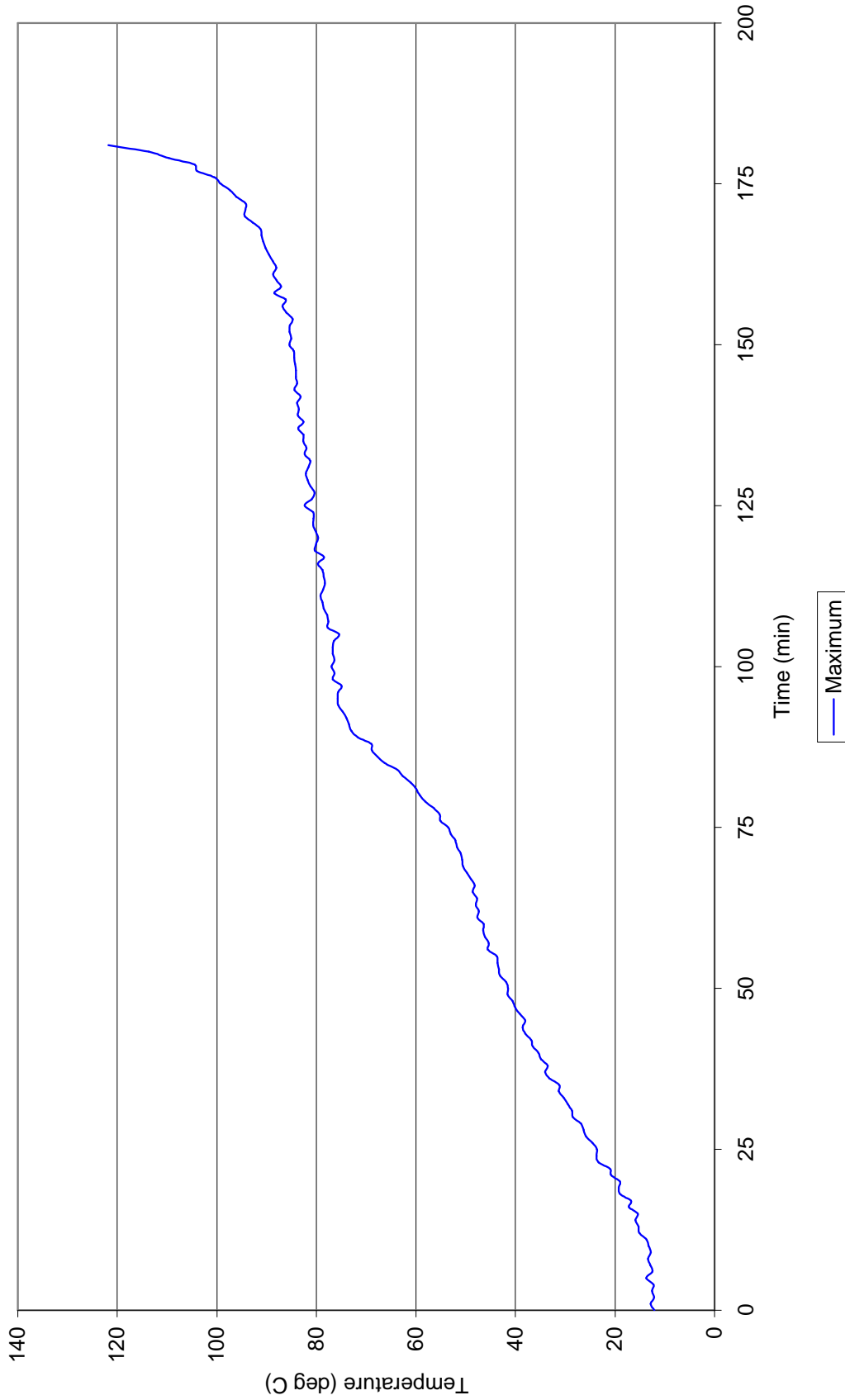


Figure 6 - Specimen temperature – Penetration 5



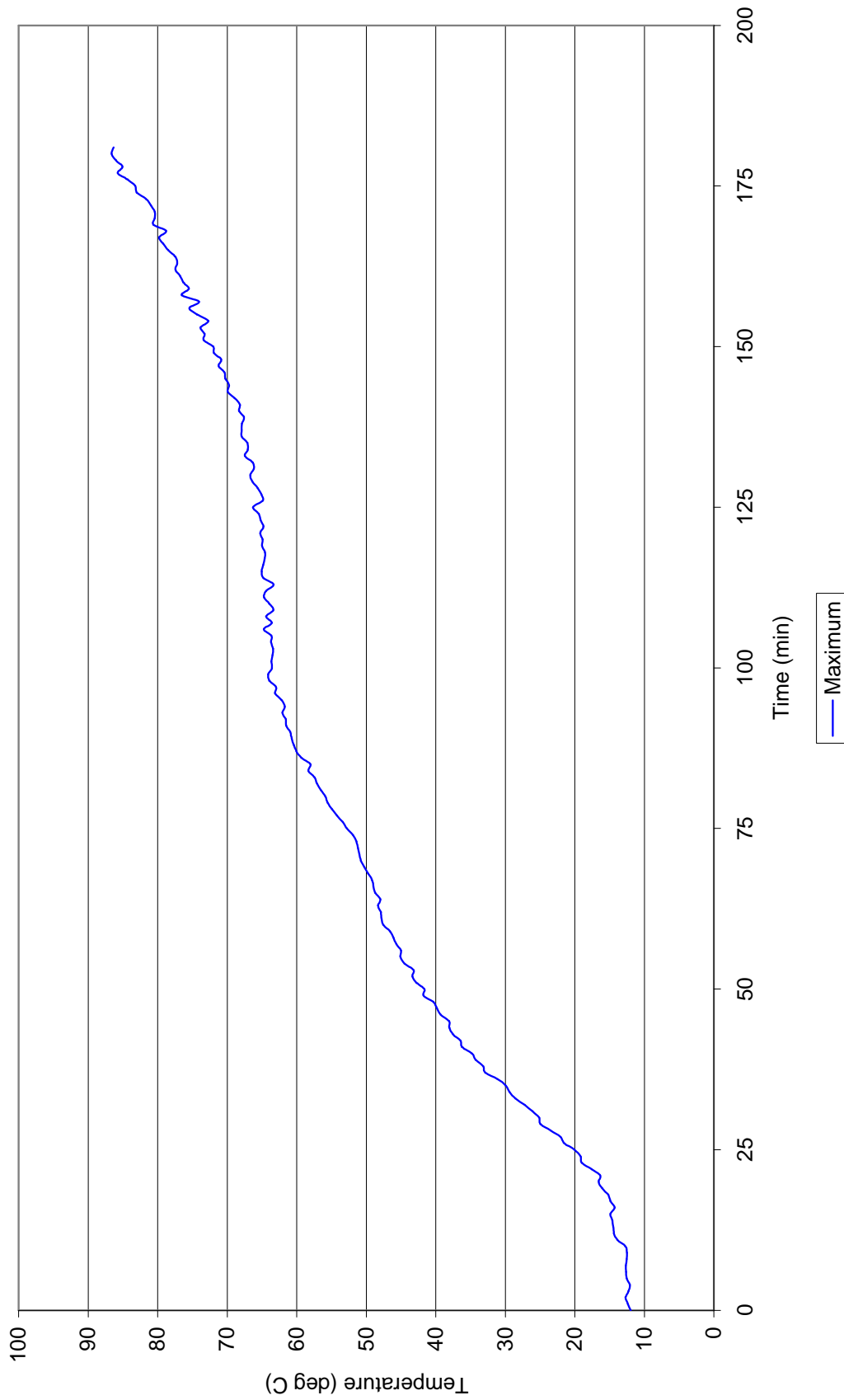
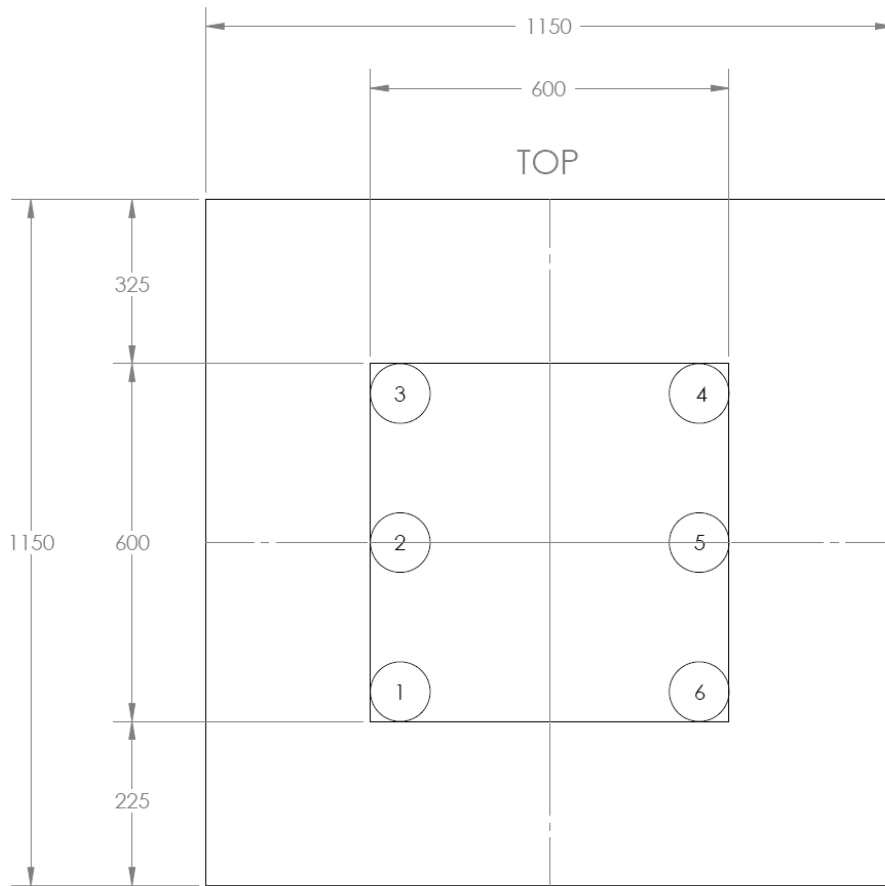


Figure 7 - Specimen temperature – Penetration 6



APPENDIX 3



TOP VIEW



FRONT VIEW

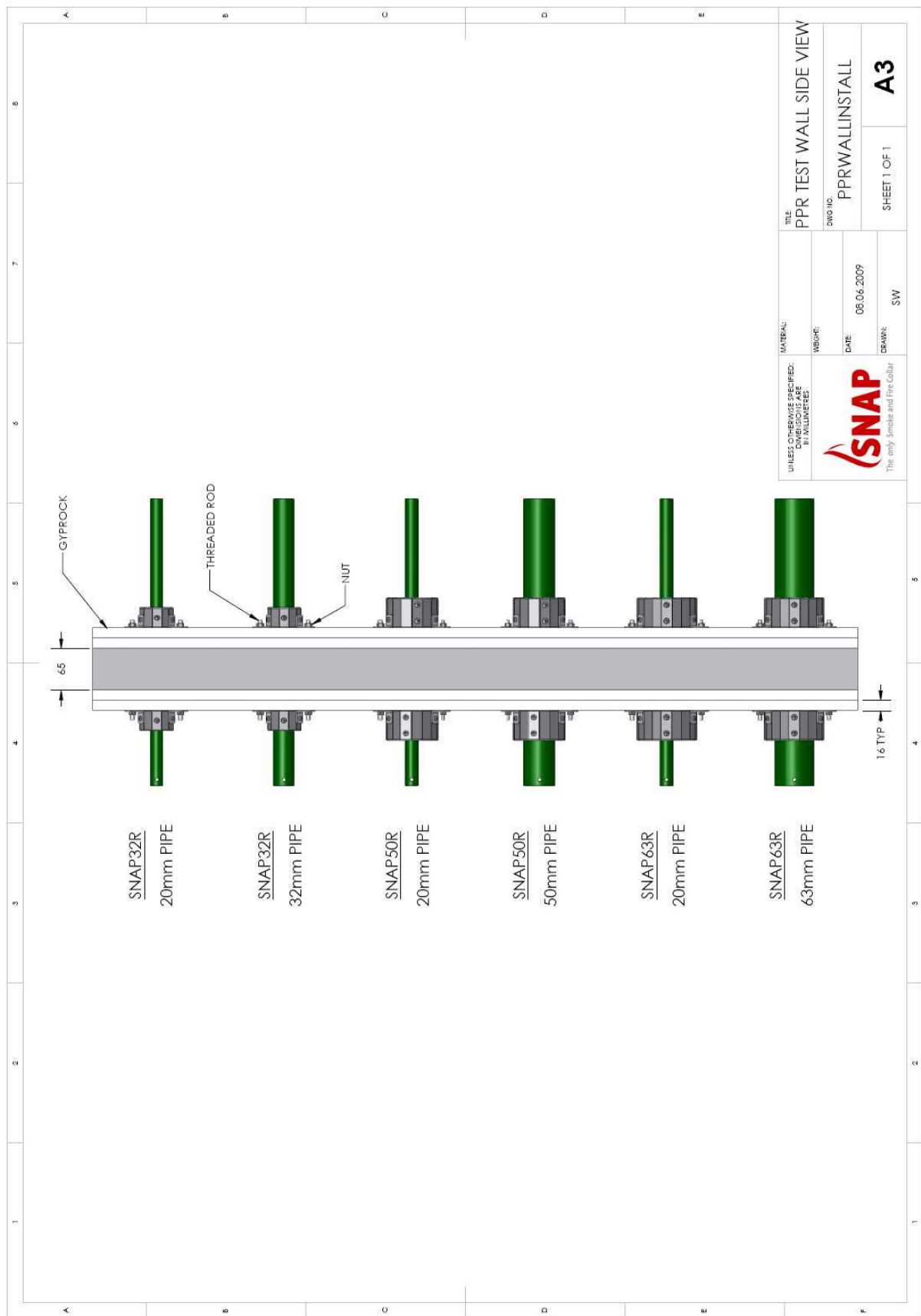
SDR	PIPE DESCRIPTION	PIPE DIAMETER	POSITION	COLLAR	TYPE
7.4	PPR	63	1	63 METAL	RETRO
7.4	PPR	20	2	32 METAL	RETRO
7.4	PPR	20	3	63 METAL	RETRO
7.4	PPR	20	4	50 METAL	RETRO
7.4	PPR	32	5	32 METAL	RETRO
7.4	PPR	50	6	50 METAL	RETRO

<b>SNAP FIRE SYSTEMS</b>	
	DWG No. PPRTTESTWALL-1
	PPR TESTWALL COLLAR / PIPE LOCATIONS
	NOV 2008      SCALE 1:10

Drawing numbered PPRTTESTWALL-1, dated November 2008, by Snap Fire Systems

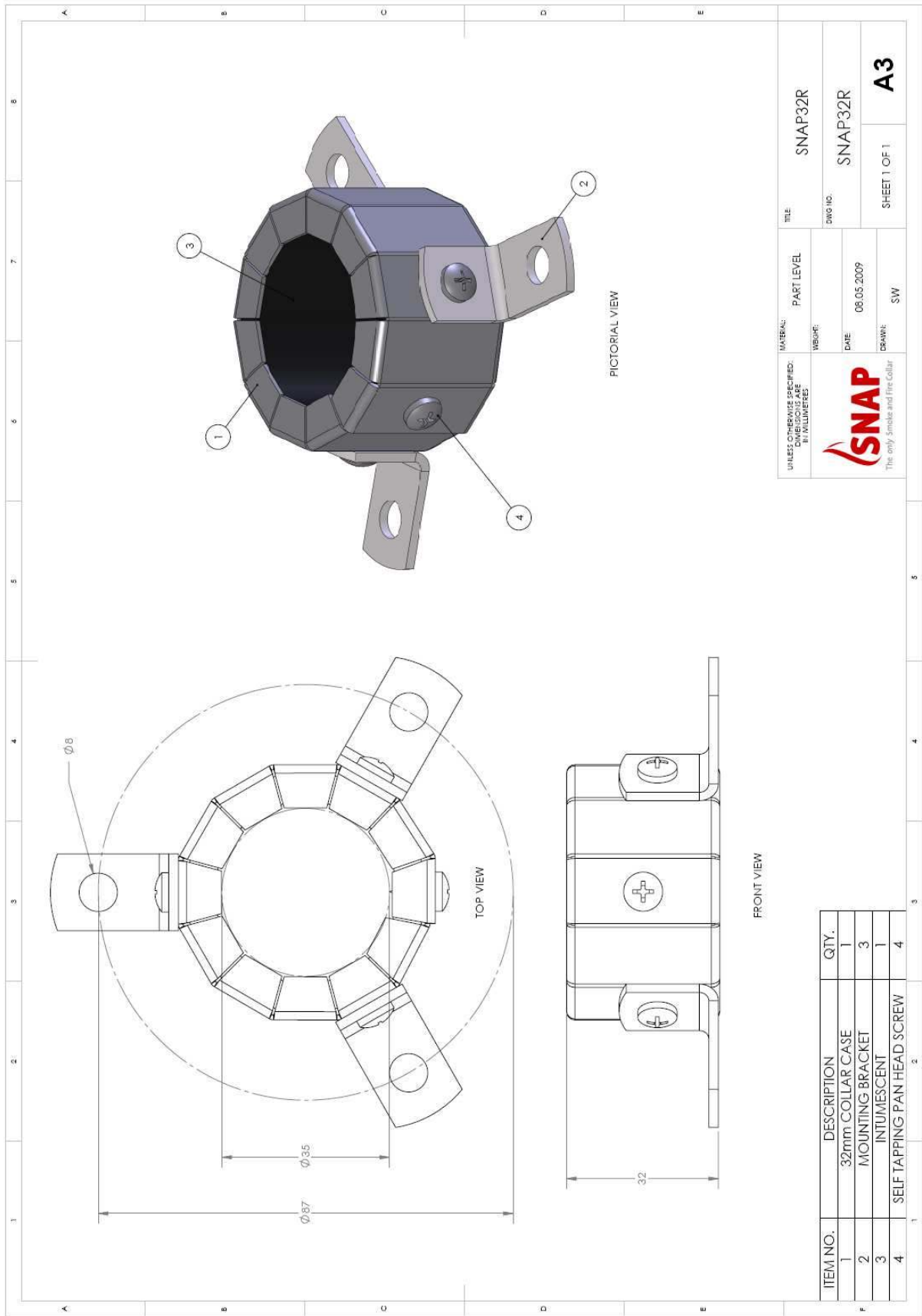






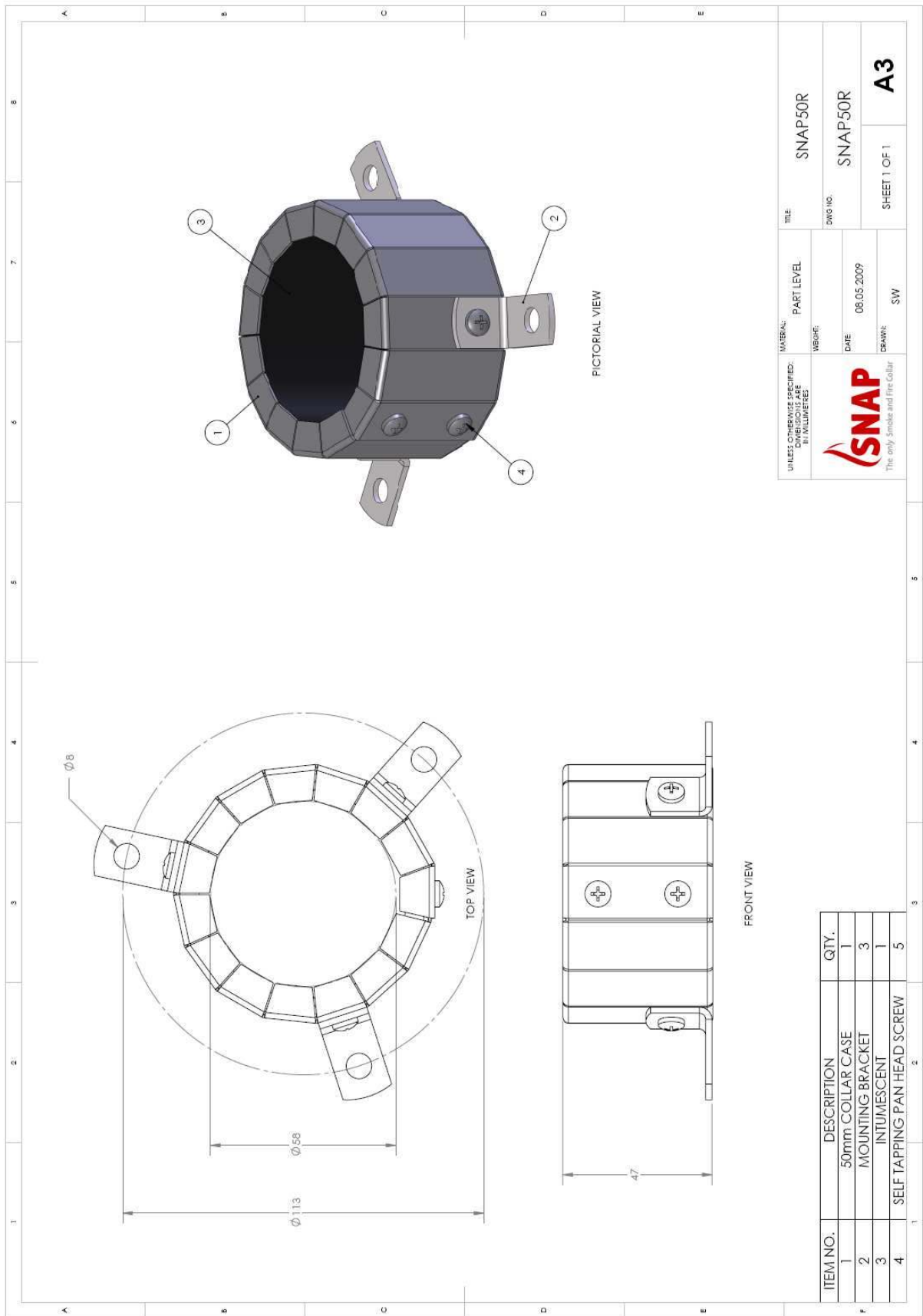
Drawing numbered PPRWALLINSTALL, dated 08/06/2009, by Snap Fire Systems





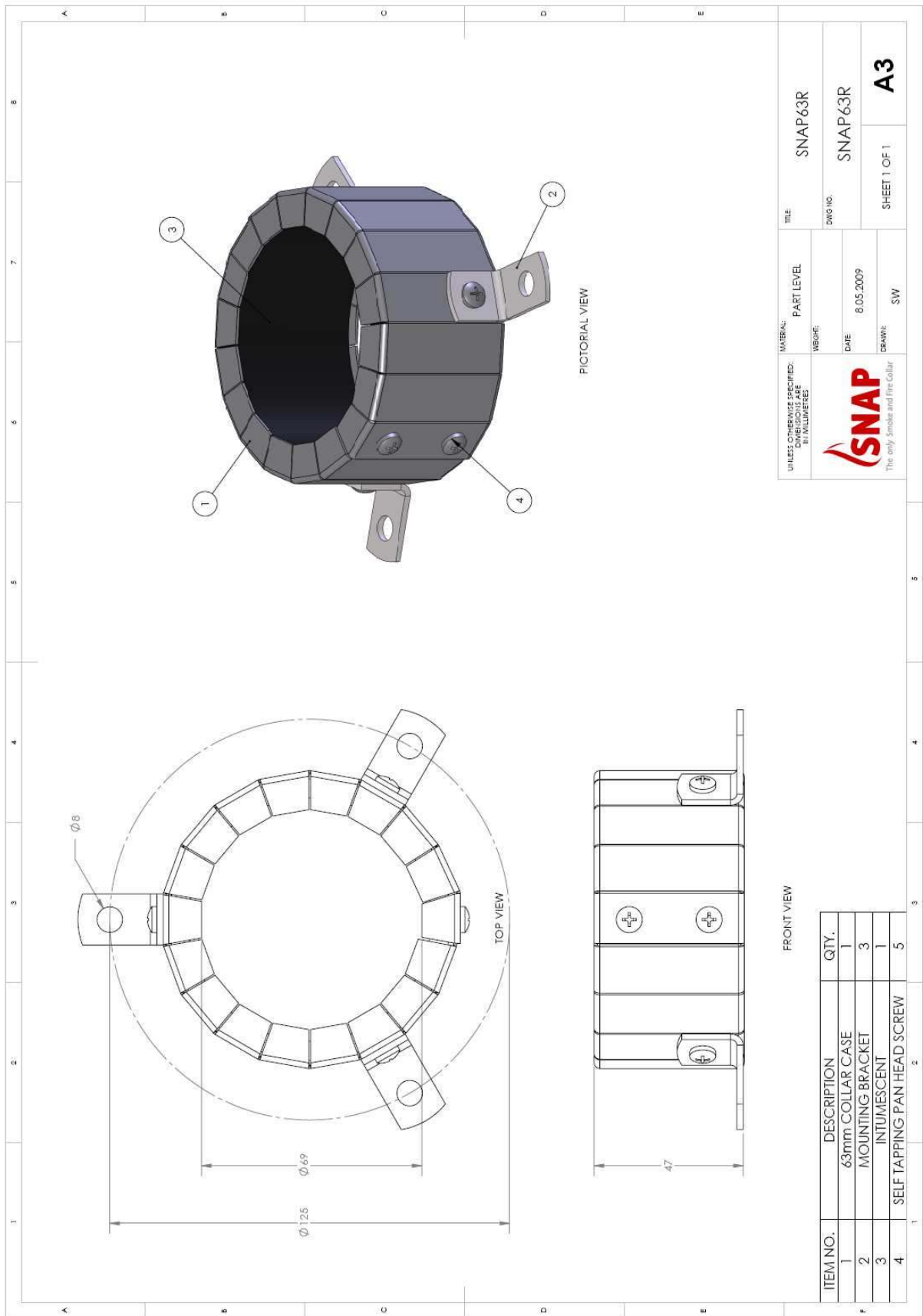
Drawing numbered SNAP32R, dated 08/05/2009, by Snap Fire Systems





Drawing numbered SNAP50R, dated 08/05/2009, by Snap Fire Systems





Drawing numbered SNAP63R, dated 08/05/2009, by Snap Fire Systems



## APPENDIX 4

*Certificate of Test*

No. 2154

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This is to certify that the element of construction described below was tested by the CSIRO Division of Material Science and Engineering in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2005 on behalf of:

Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

Product Name: Penetration 1 – Retrofit SNAP63R fire collar protecting a nominal 63-mm PPR pipe

Description: The SNAP63R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with a 69-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighing approximately 50 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 63-mm OD PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 10-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

Testing Officer: Chris Wojcik Date of Test: 18 June 2009.

Issued on the 31<sup>st</sup> day of July 2009 without alterations or additions.



Garry E Collins  
Manager, Fire Testing and Assessments



**CSIRO Materials Science and Engineering**  
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Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

**Product Name:** Penetration 2 – Retrofit SNAP32R fire collar protecting a nominal 20-mm PPR pipe

**Description:** The SNAP32R fire collar consisted of a 0.7-mm thick steel case, 32-mm high with a 35-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 26-mm wide and weighing approximately 23 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

**Testing Officer:** Chris Wojcik                      **Date of Test:** 18 June 2009.

Issued on the 31<sup>st</sup> day of July 2009 without alterations or additions.



Garry E Collins  
Manager, Fire Testing and Assessments



**CSIRO Materials Science and Engineering**  
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA  
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This is to certify that the element of construction described below was tested by the CSIRO Division of Material Science and Engineering in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2005 on behalf of:

Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

**Product Name:** Penetration 3 – Retrofit SNAP63R fire collar protecting a nominal 20-mm PPR pipe

**Description:** The SNAP63R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with a 69-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighing approximately 50 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

**Testing Officer:** Chris Wojcik                      **Date of Test:** 18 June 2009.

Issued on the 31<sup>st</sup> day of July 2009 without alterations or additions.



Garry E Collins  
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Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

**Product Name:** Penetration 4 – Retrofit SNAP50R fire collar protecting a nominal 20-mm PPR pipe

**Description:** The SNAP50R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with 58-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighed approx 45 grams each lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

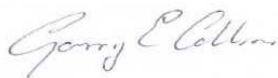
The penetrating service comprised a nominally 20-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 4-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

**Testing Officer:** Chris Wojcik                      **Date of Test:** 18 June 2009.

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Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

**Product Name:** Penetration 5 – Retrofit SNAP32R fire collar protecting a nominal 32-mm PPR pipe

**Description:** The SNAP32R fire collar consisted of a 0.7-mm thick steel case, 32-mm high with a 35-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 26-mm wide and weighing approximately 23 grams each, lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

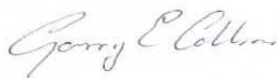
The penetrating service comprised a nominally 32-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 5-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

**Testing Officer:** Chris Wojcik                      **Date of Test:** 18 June 2009.

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Snap Fire Systems Pty Ltd  
448 Newman road  
Geebung QLD

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSP 1360.

Product name: Penetration 6 – Retrofit SNAP50R fire collar protecting a nominal 50-mm PPR pipe

Description: The SNAP50R fire collar consisted of a 0.7-mm thick steel case, 47-mm high with 58-mm diameter opening. Two layers of soft intumescent wraps, 4-mm thick x 43-mm wide and weighed approx 45 grams each lined the internal circumference of the collar. One collar was fixed to each side of the plasterboard wall in a back-to-back configuration using three 6-mm diameter bolts fixed through the wall and the holes in the brackets of the two collars and fastened with nuts. The collar detail is showed in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 50-mm PPR-80 faser composite pipe of SDR7.4 with a wall thickness of 8-mm, penetrating the plasterboard wall through a close-fitting cut-out hole. The pipe projected horizontally, approximately 2000-mm above the plasterboard and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 1000-mm from the unexposed face of the plasterboard. The pipe was open at the unexposed end and capped on the exposed end with a ceramic fibre plug.

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 FRL is applicable for exposure to fire from the same side as tested. This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

Testing Officer: Chris Wojcik                      Date of Test: 18 June 2009.

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