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

Report number FSP 1366
CSIRO job number SP3264
Date of issue 4 SEPTEMBER 2009

Client
SNAP FIRE SYSTEMS PTY LTD.

Commercial-in-confidence

"Copyright CSIRO 2009 ©"

Copying or alteration of this report without written authorisation from CSIRO is forbidden.

CSIRO – MATERIALS SCIENCE AND ENGINEERING
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113
Ph: 02 9490 5444 Fax: 02 9490 5528

This document is issued in accordance with NATA's accreditation requirements.

Use of this Report

Use of Reports – Testing

This report is subject to binding obligations under which it was prepared. In particular, the Report must not be used:

- *as a means of endorsement; or*
- *in a company prospectus or notification to a Stock Exchange document for capital raising, without the prior written consent of CSIRO.*

The Report may be published verbatim and in full, provided that a statement is included on the publication that it is a copy of the Report issued by CSIRO.

Excerpts of the Report may not be published.

Use of Reports – Consultancy

This report is subject to binding obligations under which it was prepared. In particular, the Report may only be used for the following purposes:

- *the information in the Report may be used by the party that commissioned the Report for its internal business operations (but not licensing to third parties);*
- *the report may be copied for distribution within the organisation that commissioned the Report;*
- *copies of the Report (or extracts of the Report) may be distributed to contractors and agents of the organisation that commissioned the Report who have a need for the Report for its internal business operations. Any extracts of the Report distributed for this purpose must clearly note that the extract is part of a larger Report held by the organisation that commissioned the Report and which has been prepared by CSIRO.*

The name, trade mark or logo of the CSIRO must not be used without the prior written consent of CSIRO.

The Report must not be used as a means of endorsement without the prior written consent of CSIRO.

Copyright and Disclaimer

© 2009 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

Important Disclaimer

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

Table of Contents

SPONSORED INVESTIGATION No. FSP 1366

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 PE 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 4076/3264

TEST DATE: The fire-resistance test was conducted on 11 August 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 Polyethylene 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 PE 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 wrap, 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 shown in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 63-mm OD PE 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 PE 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 wrap, 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 shown in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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 PE 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 wrap, 4-mm thick x 43-mm wide and weighing approximately 69 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 shown in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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 PE 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 wrap, 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 shown in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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 PE 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 wrap, 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 shown in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 32-mm OD PE 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 PE 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 wrap, 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 shown in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 50-mm OD PE 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 PETESTWALL-1, dated August 2009; PEWALLINSTALL, dated 11 August 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 ± 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:

2 minutes -	Smoke is fluing from pipe #3.
3 minutes -	Smoke is no longer fluing from pipe #3. Smoke is fluing from pipe #5.
6 minutes -	Light smoke is fluing from pipe #1 and #6.
9 minutes -	Smoke is no longer fluing from any of the pipes.
60 minutes -	No apparent change to the specimen
120 minutes -	No apparent change to the specimen.
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:

<u>Penetration 1 – Retrofit SNAP63R fire collar protecting a nominal 63-mm PE pipe</u>

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 PE 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 PE 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 PE 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 PE 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 PE 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.

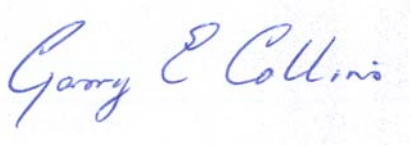
FIRE-RESISTANCE LEVEL (FRL):

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:



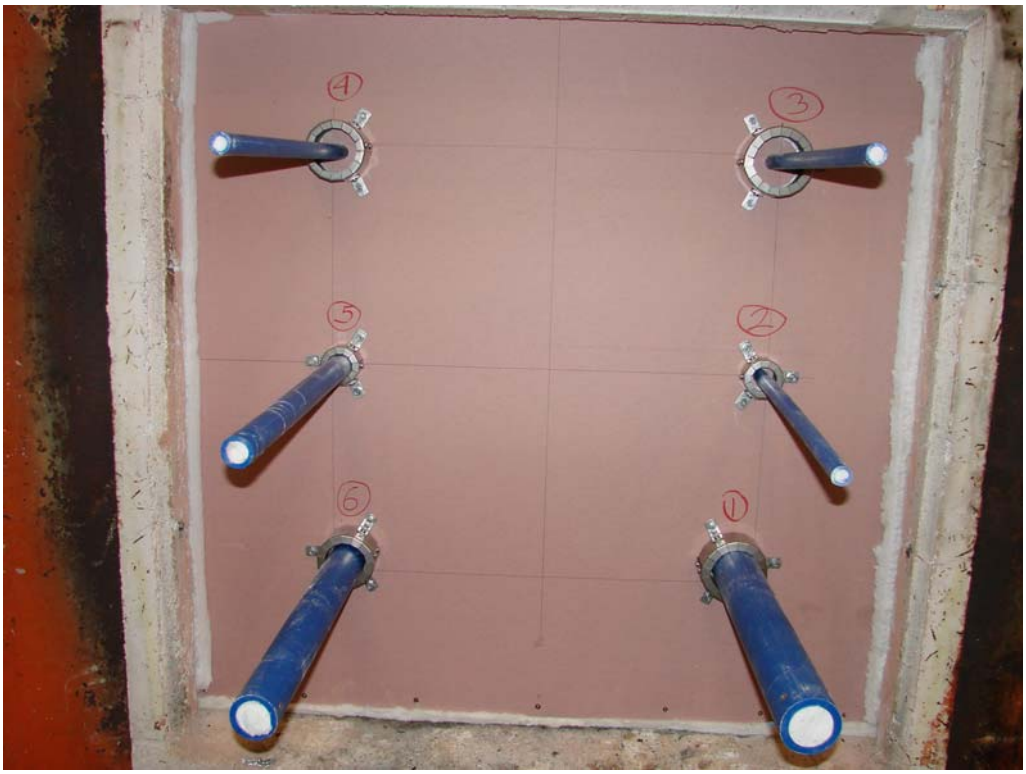
Chris Wojcik
Testing Officer

Garry E Collins
Manager, Fire Testing and Assessments

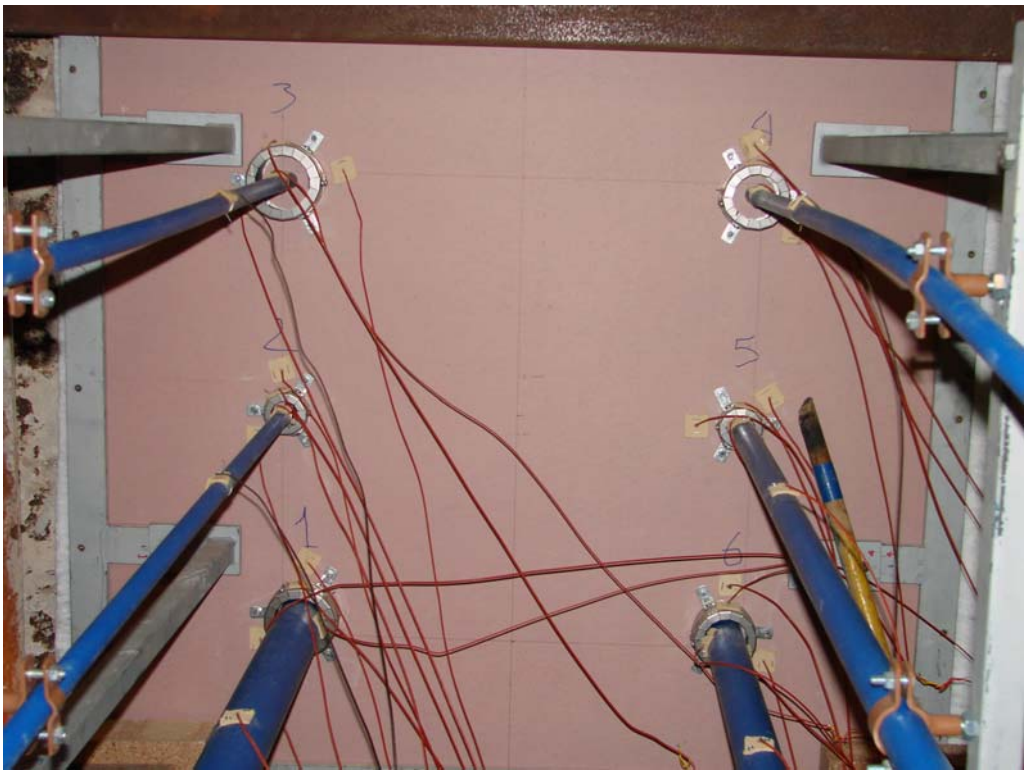
4 September 2009

APPENDICES

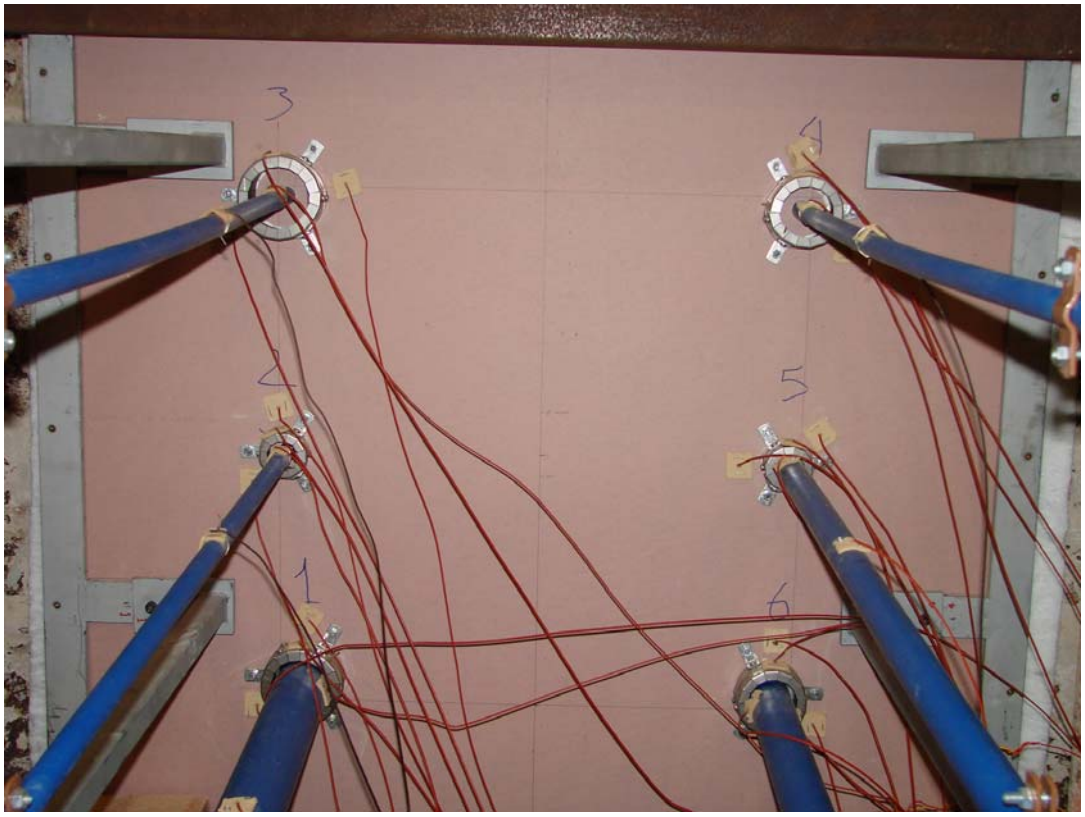
APPENDIX 1



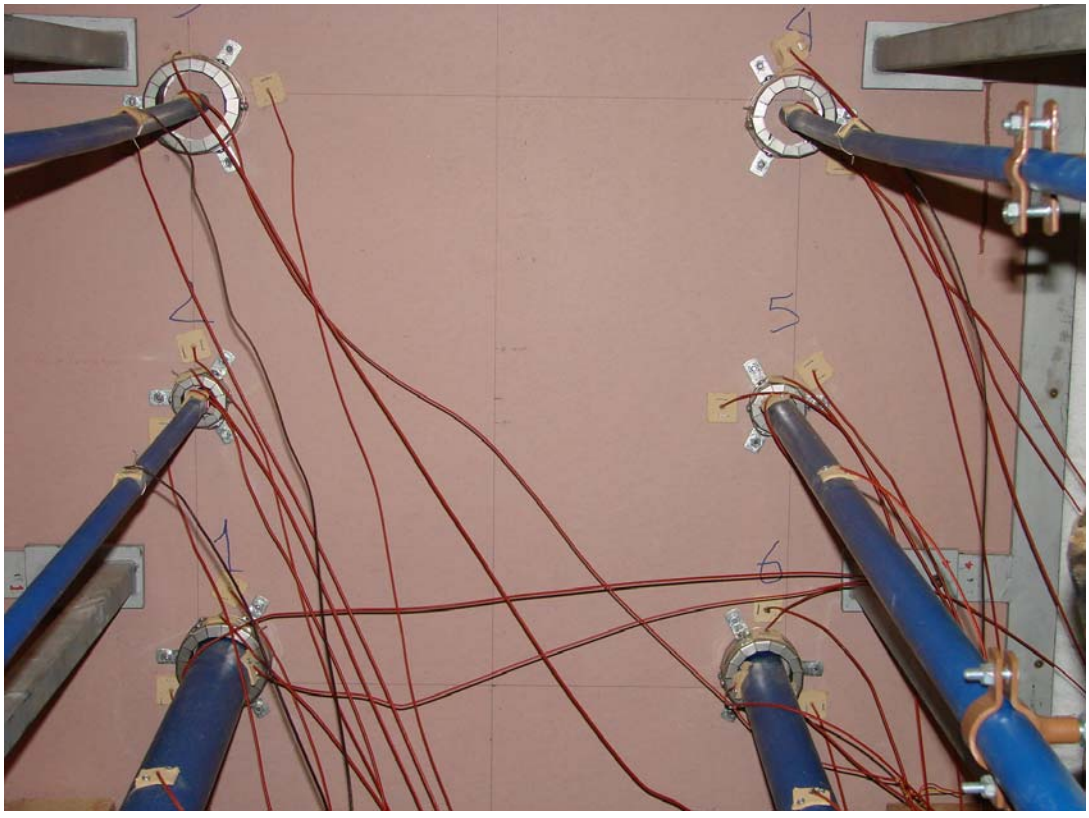
Photograph 1 – Exposed face of the specimen prior to testing



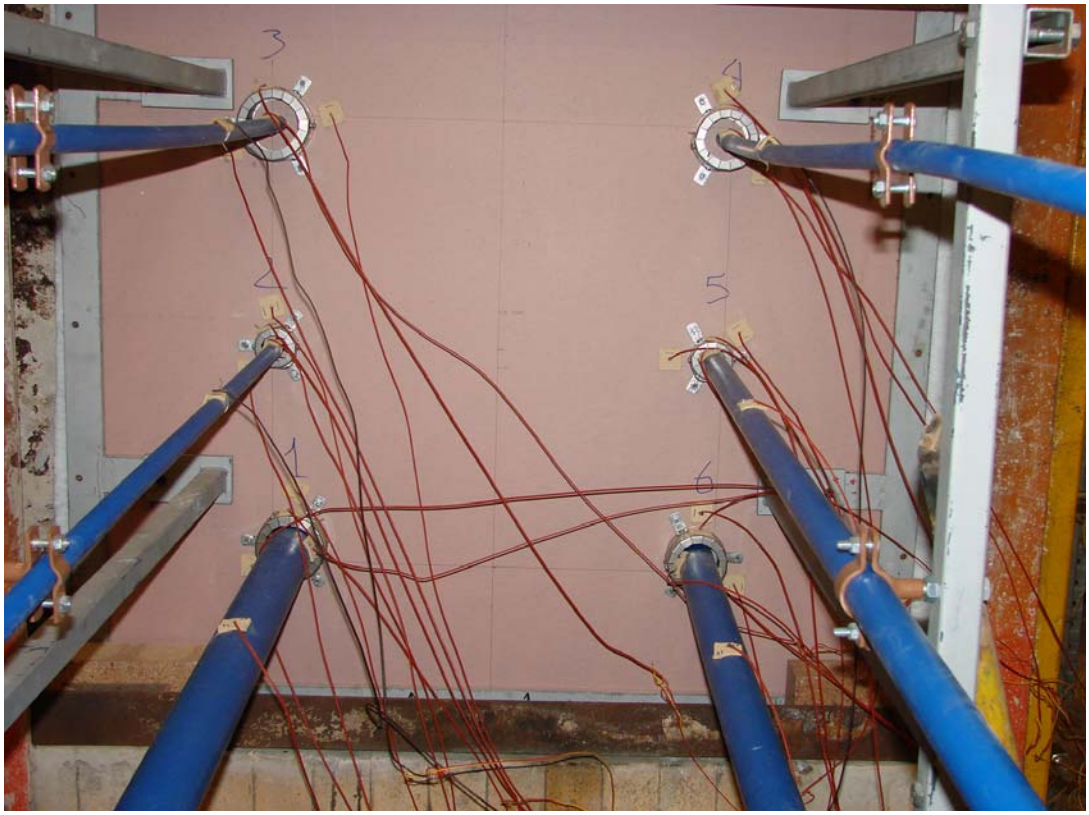
Photograph 2 – Unexposed face of the specimen prior to testing



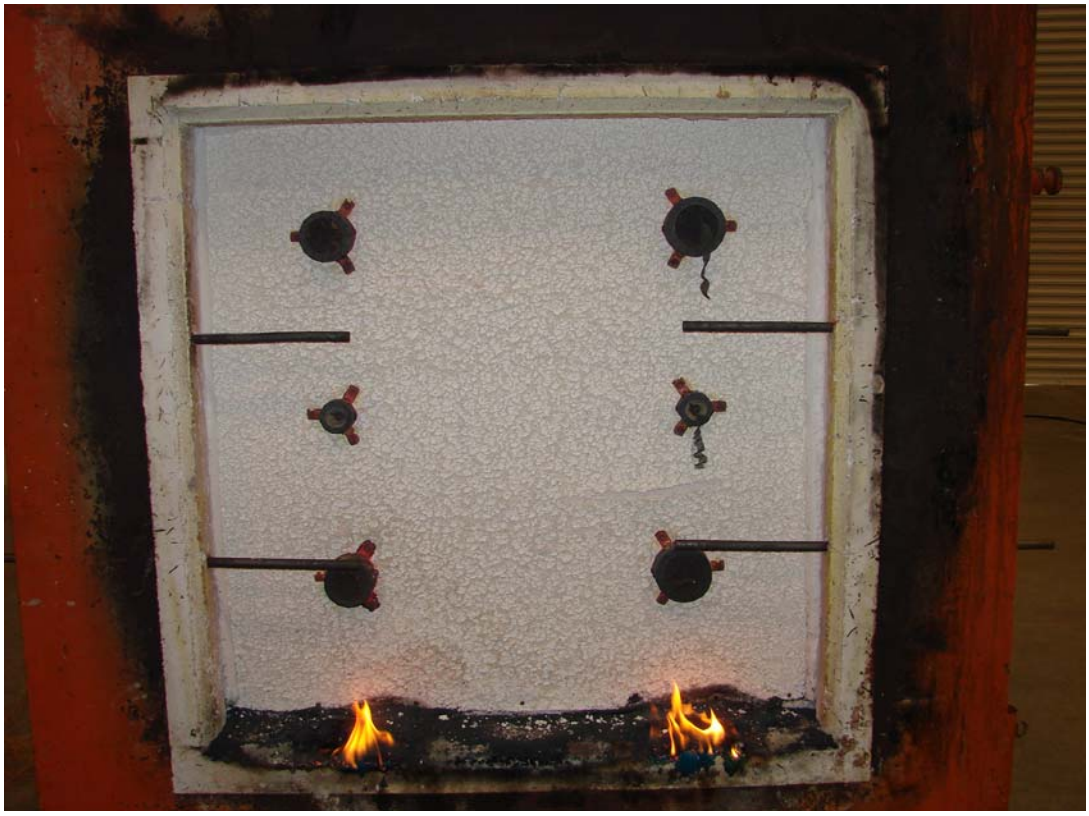
Photograph 3 – Specimen after 60 minutes of testing



Photograph 4 – Specimen after 120 minutes of testing



Photograph 5 – Specimen at the conclusion of testing



Photograph 6 – Exposed face of the specimen after the conclusion of testing

APPENDIX 2

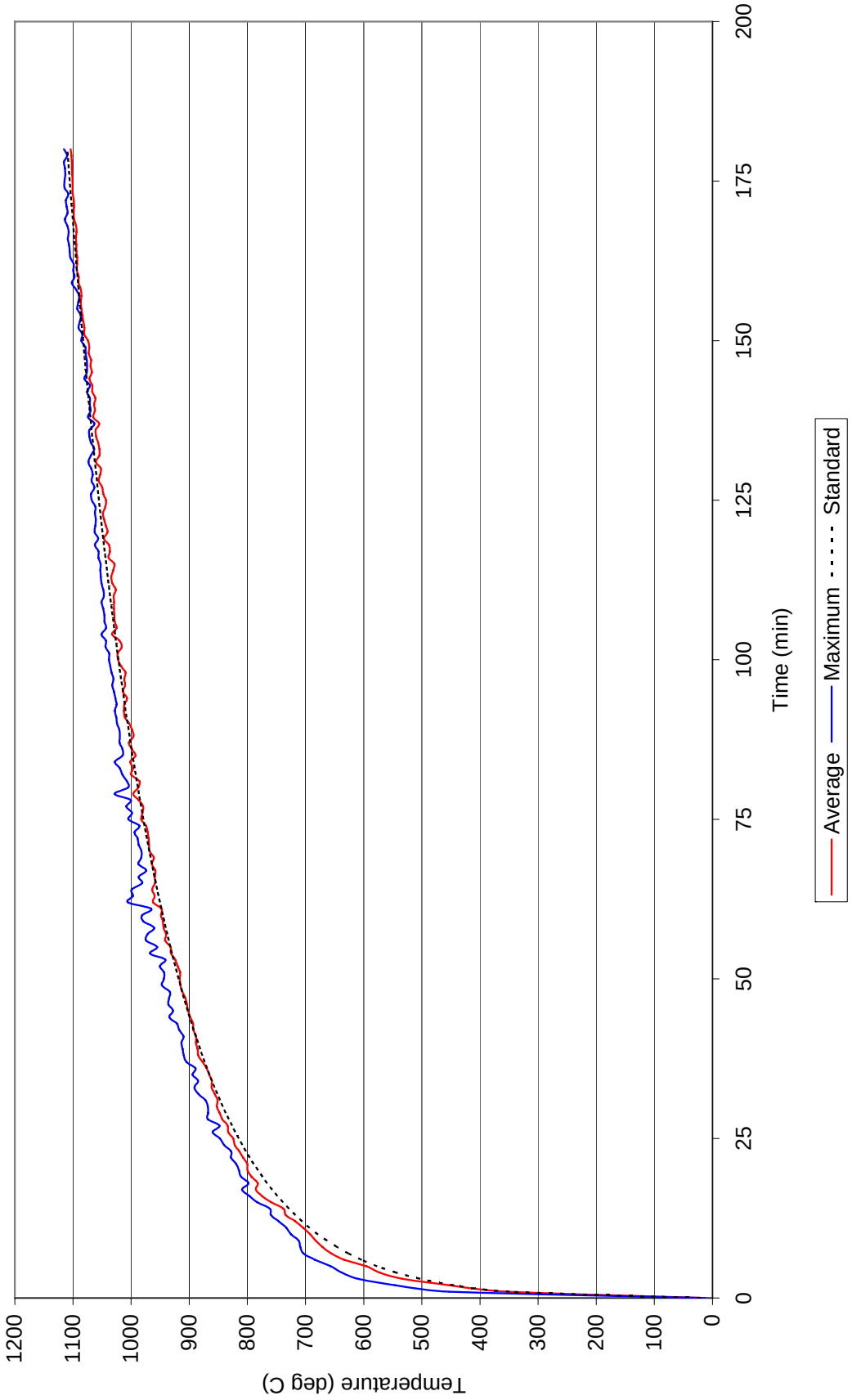


Figure 1 - Furnace temperature

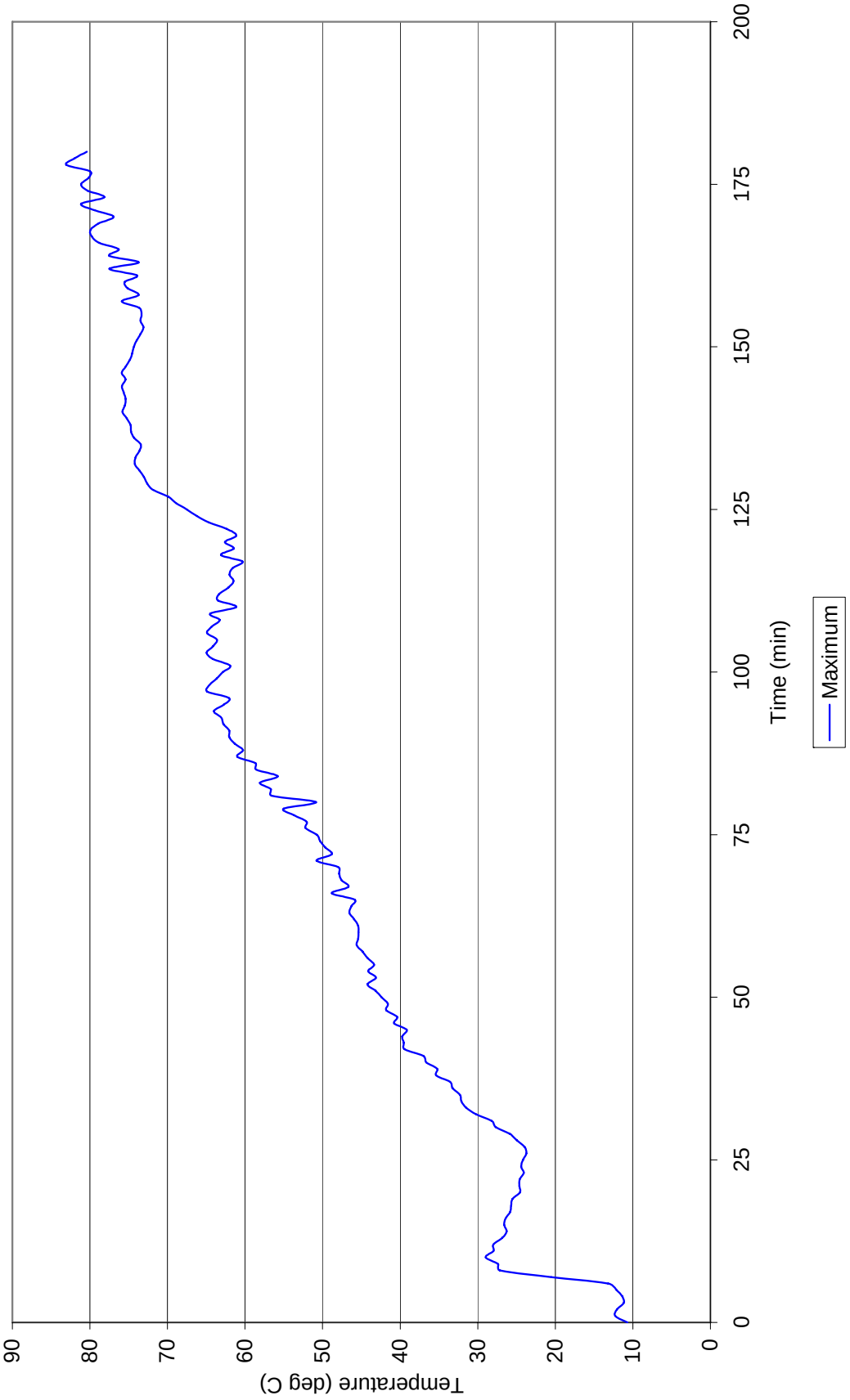


Figure 2 - Specimen temperature – Penetration 1

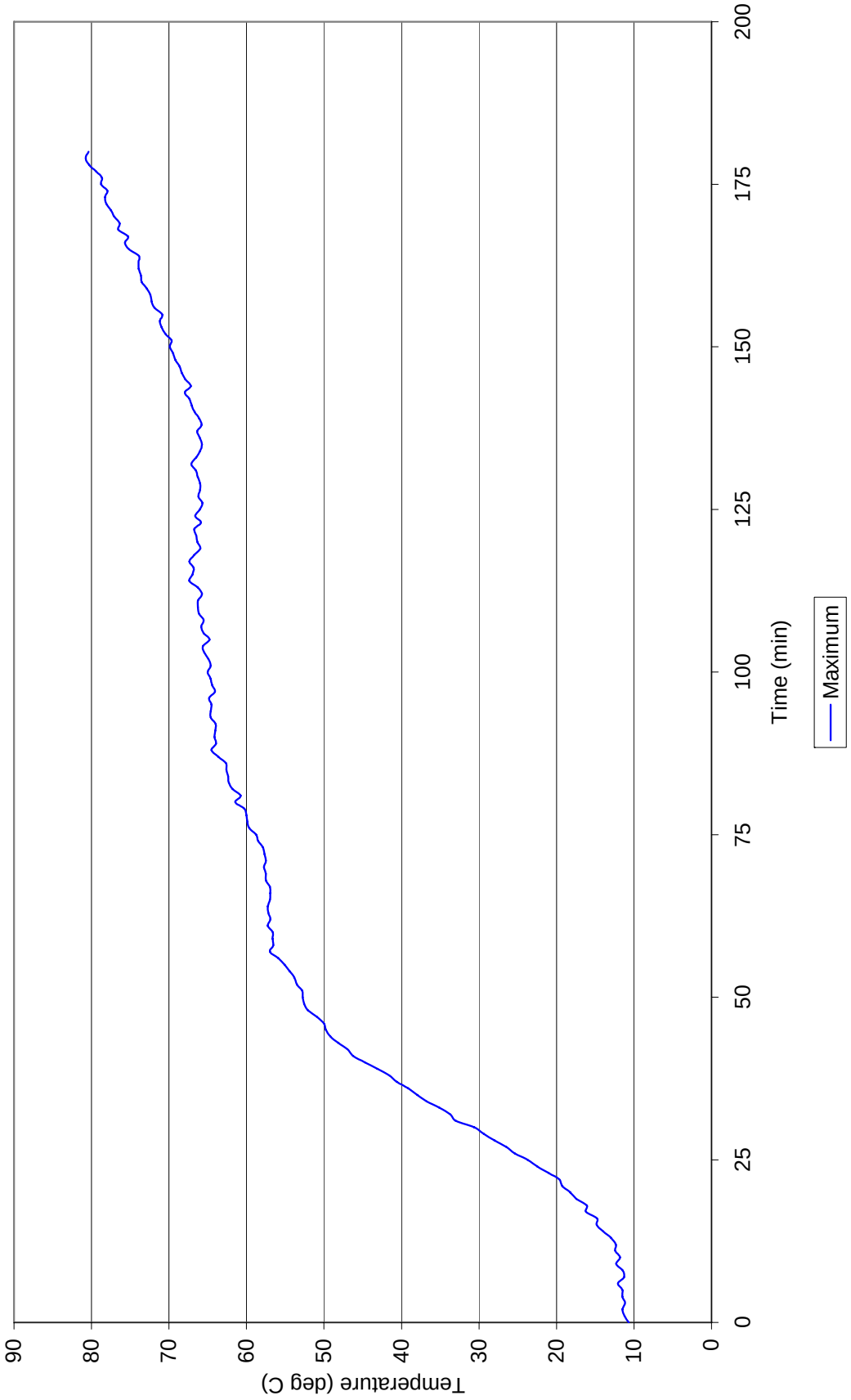


Figure 3 - Specimen temperature – Penetration 2

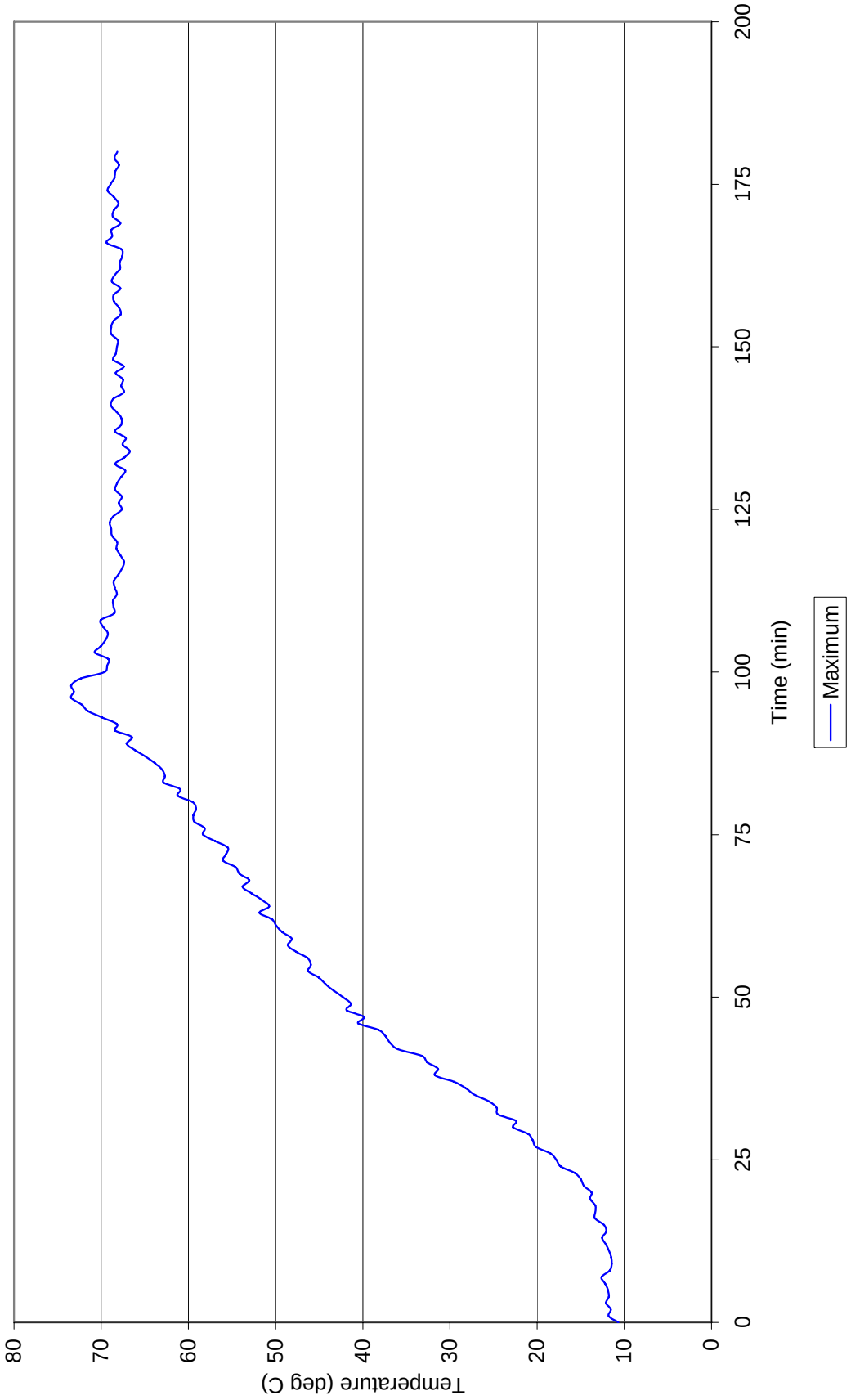


Figure 4 - Specimen temperature – Penetration 3

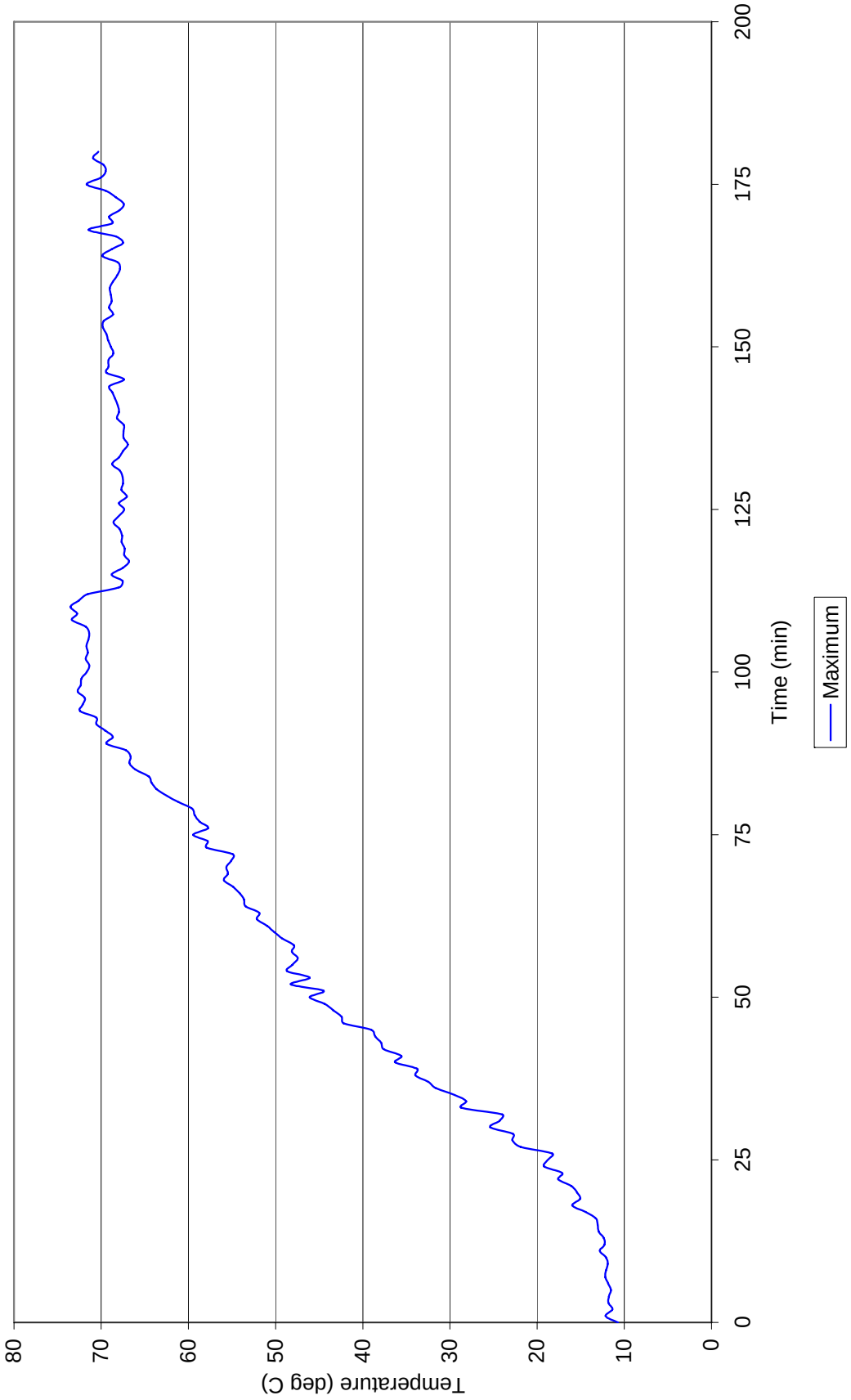


Figure 5 - Specimen temperature – Penetration 4

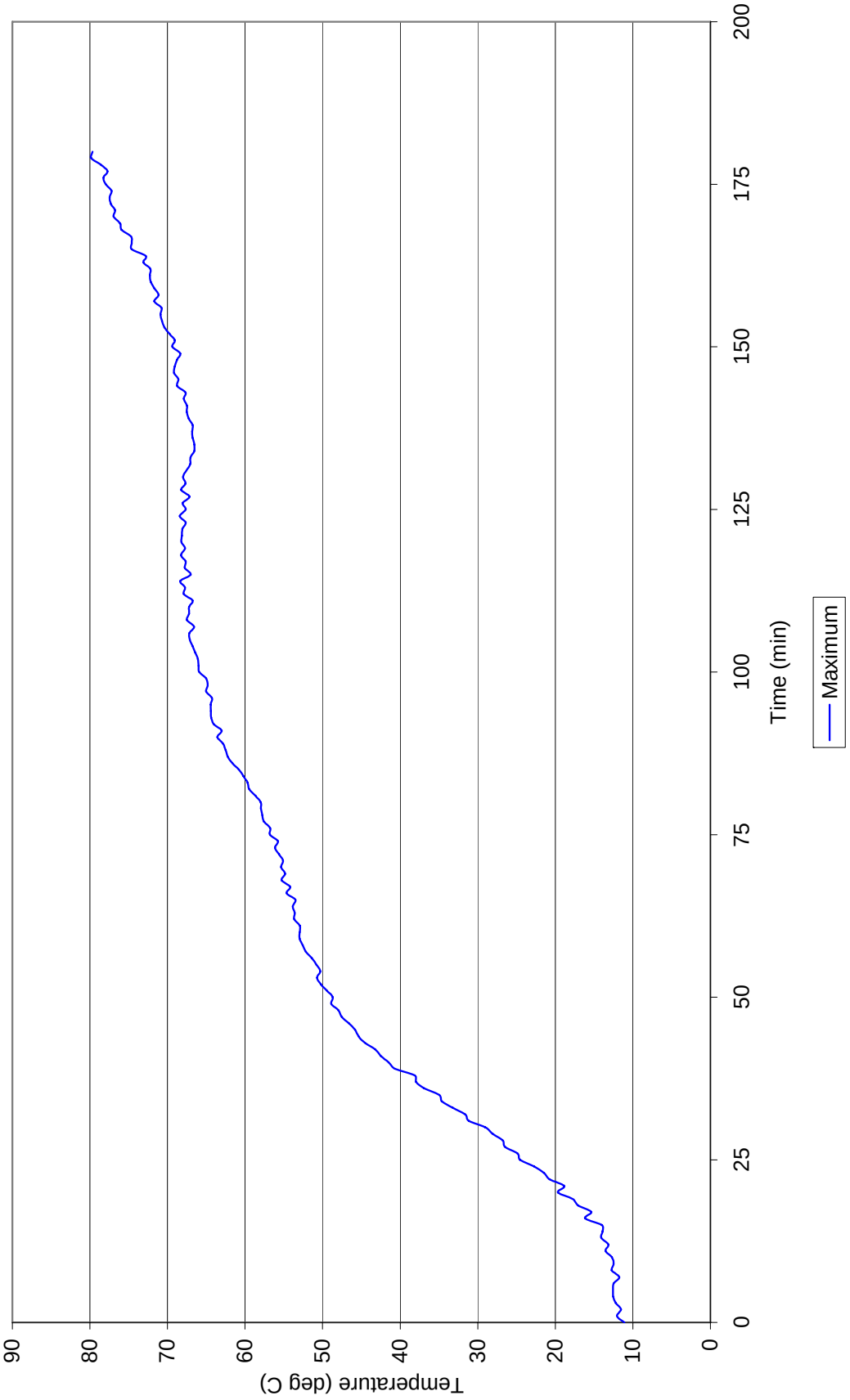


Figure 6 - Specimen temperature – Penetration 5

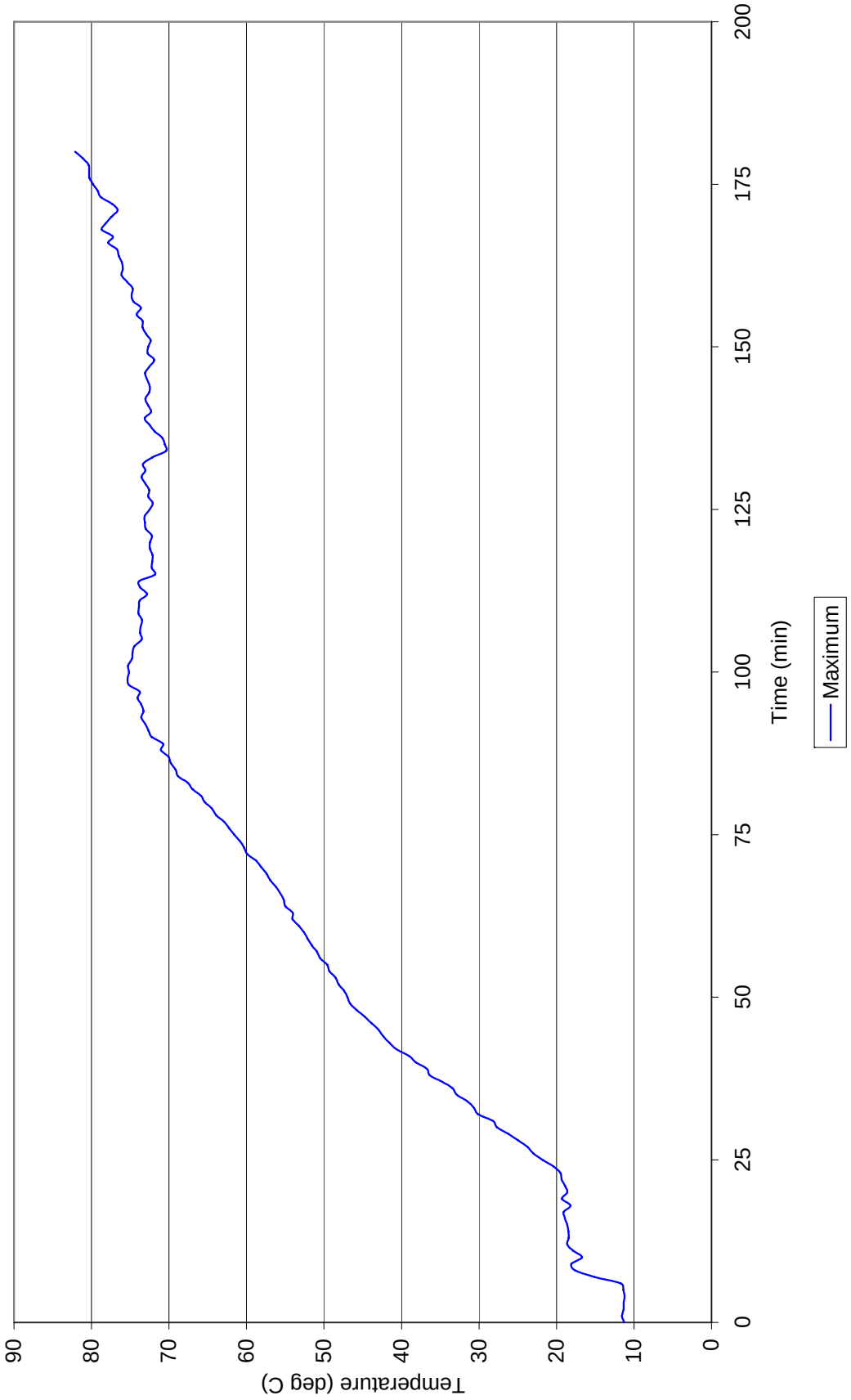
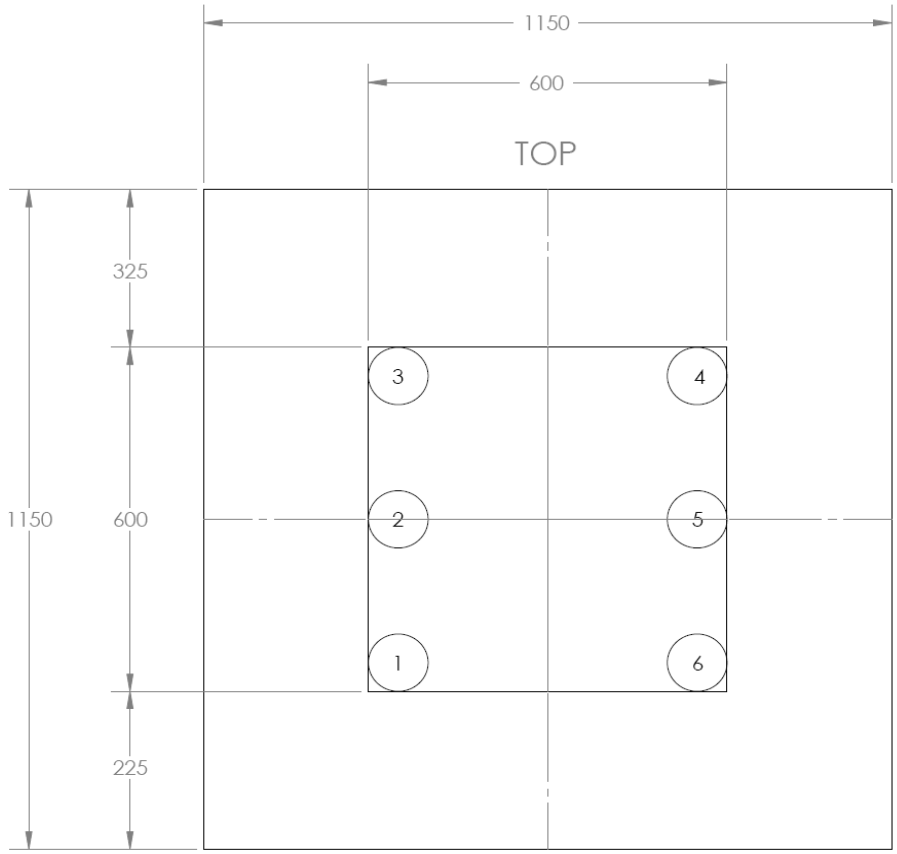
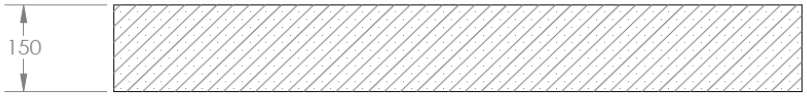


Figure 7 - Specimen temperature – Penetration 6

APPENDIX 3



TOP VIEW



FRONT VIEW

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

SNAP FIRE SYSTEMS

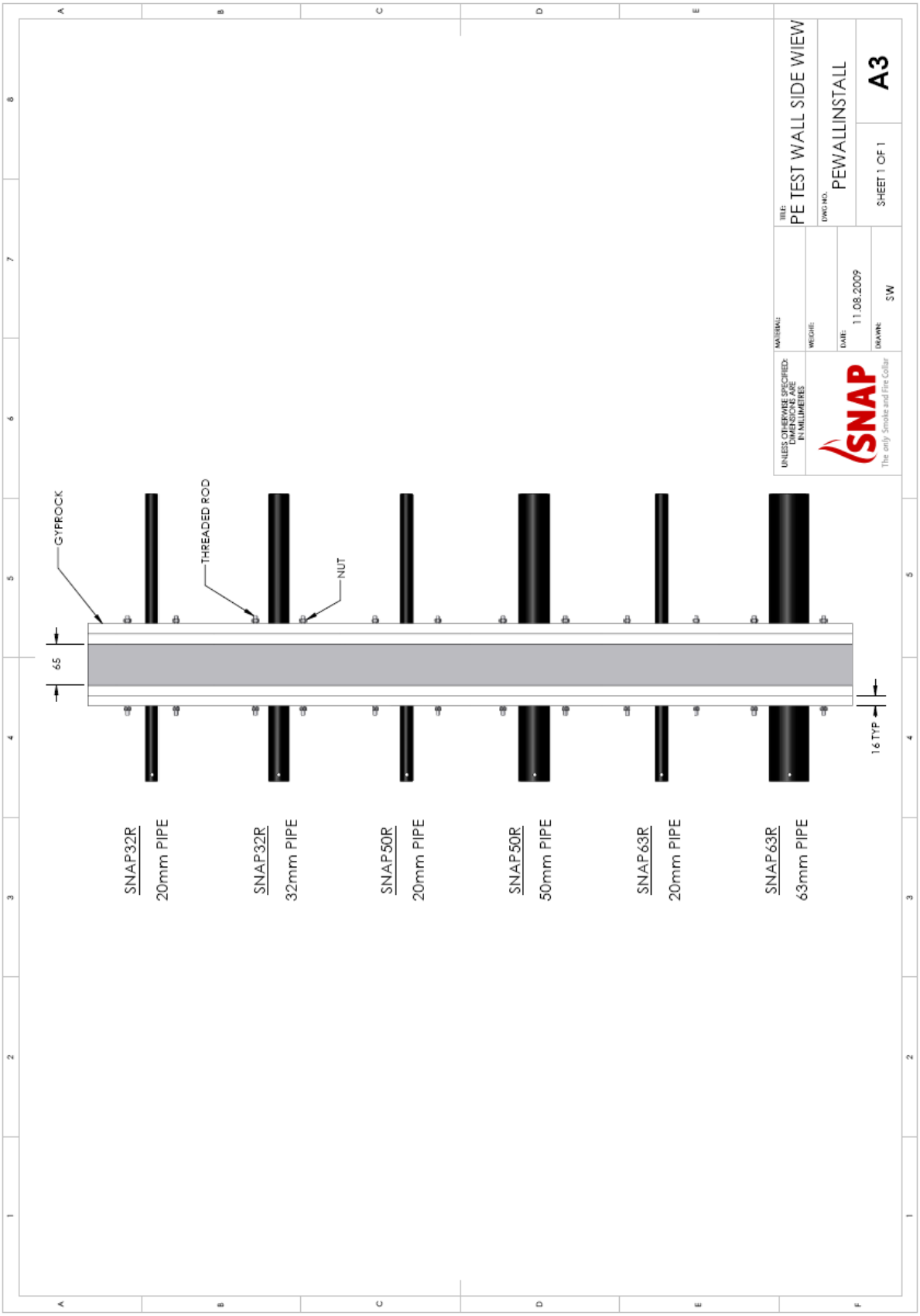
SNAP The only Smoke and Fire Collar

DWG No. PETESTWALL-1

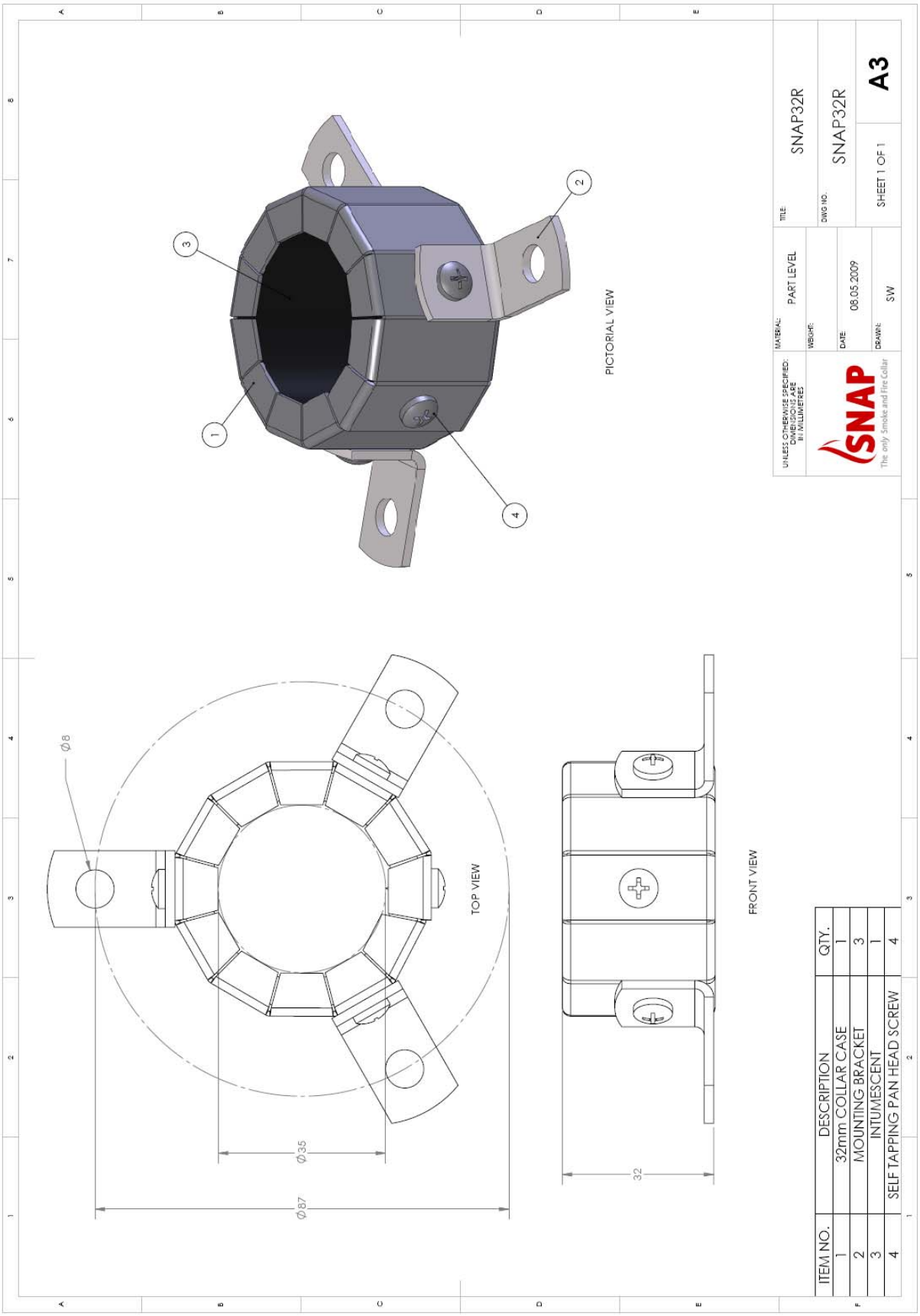
PE TESTWALL
COLLAR / PIPE LOCATIONS

AUGUST 2009 SCALE 1:10

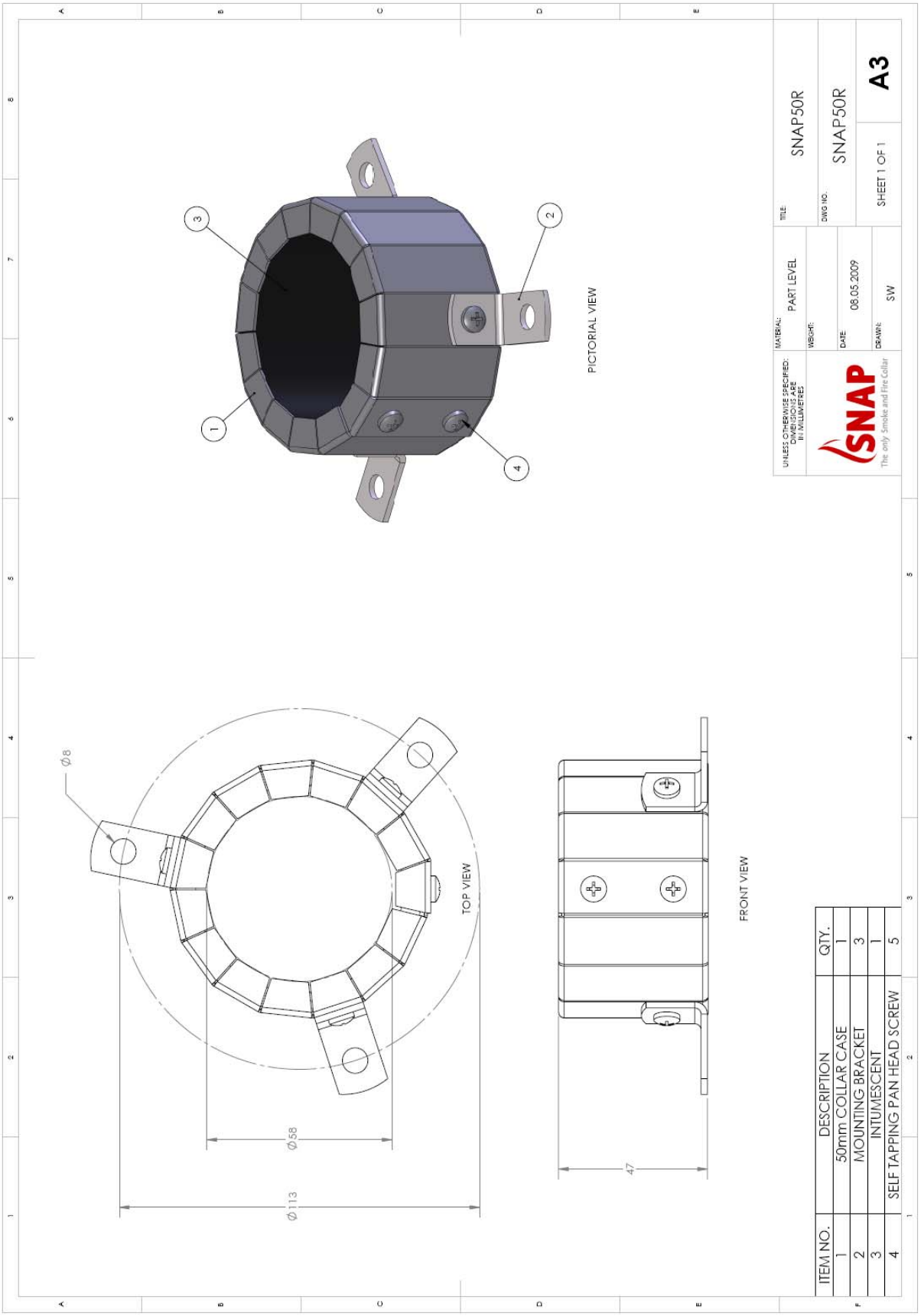
Drawing numbered PETESTWALL-1, dated August 2009, by Snap Fire Systems



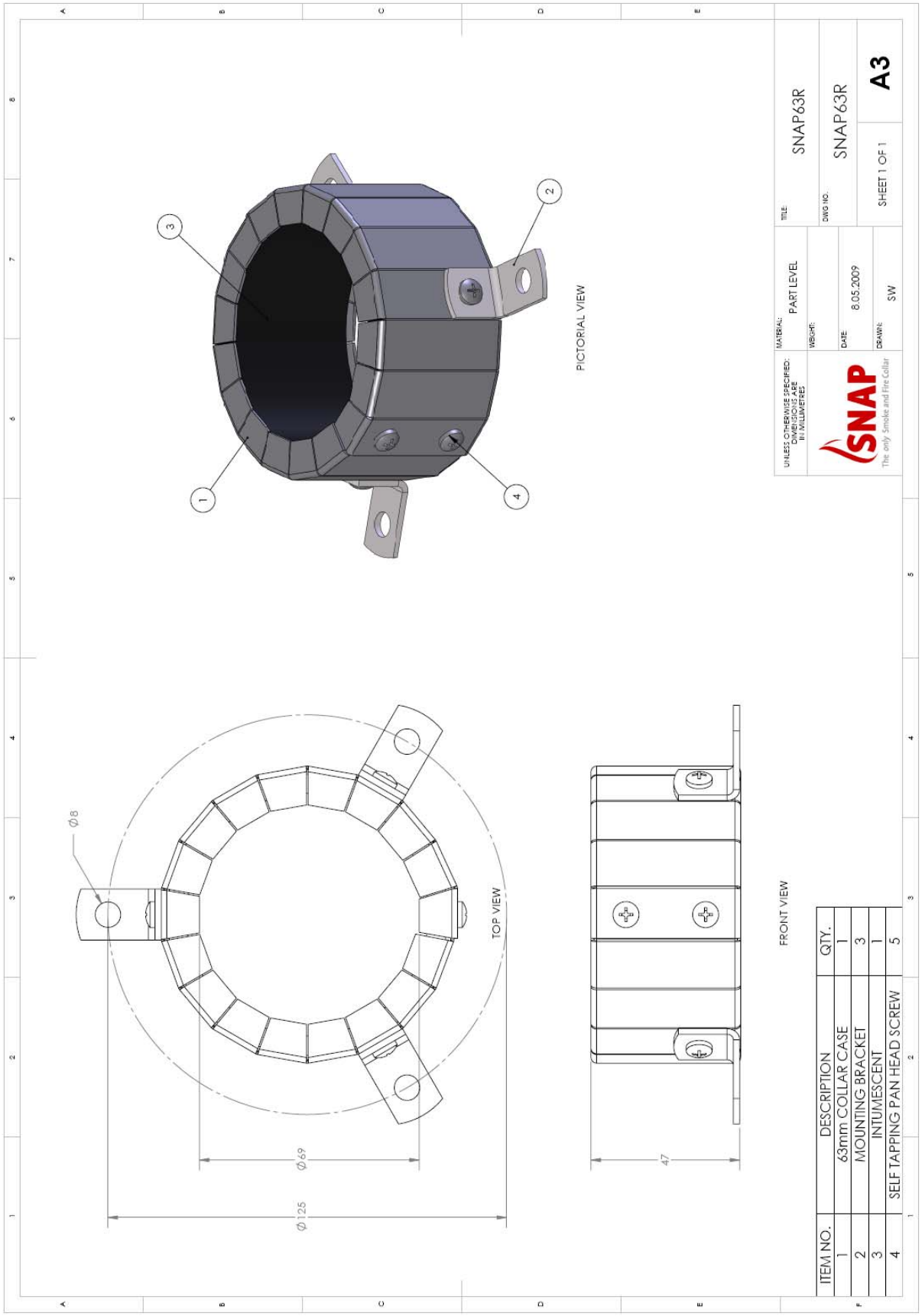
Drawing numbered PEWALLINSTALL, dated 11/08/2009, by Snap Fire Systems



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. 2168

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Product Name: Penetration 1 – Retrofit SNAP63R fire collar protecting a nominal 63-mm PE 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 wrap, 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 shown in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 63-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO
CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA
This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2168

Certificate of Test

No. 2169

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Product Name: Penetration 2 – Retrofit SNAP32R fire collar protecting a nominal 20-mm PE 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 wrap, 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 shown in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO

CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA

This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2169

Certificate of Test

No. 2170

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Product Name: Penetration 3 – Retrofit SNAP63R fire collar protecting a nominal 20-mm PE 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 wrap, 4-mm thick x 43-mm wide and weighing approximately 69 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 shown in drawing numbered SNAP63R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO
CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA
This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2170

Certificate of Test

No. 2171

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Product Name: Penetration 4 – Retrofit SNAP50R fire collar protecting a nominal 20-mm PE 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 wrap, 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 shown in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 20-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO
CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA
This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2171

Certificate of Test

No. 2172

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Product Name: Penetration 5 – Retrofit SNAP32R fire collar protecting a nominal 32-mm PE 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 wrap, 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 shown in drawing numbered SNAP32R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 32-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO
CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA
This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2172

Certificate of Test

No. 2173

"Copyright CSIRO 2009©"
Copying or alteration of this report
without written authorisation from CSIRO is forbidden.

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 1366.

Penetration 6 – Retrofit SNAP50R fire collar protecting a nominal 50-mm PE 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 wrap, 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 shown in drawing numbered SNAP50R, dated 8 May 2009, by Snap Fire Systems.

The penetrating service comprised a nominally 50-mm OD PE 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: 11 August 2009.

Issued on the 4th day of September 2009 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO
CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

NATA
This document is issued in accordance with NATA's accreditation requirements

Copy of Certificate of Test - No.2173