

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

Test Report

Author: Peter Gordon
Report number: FSP 1960
Date: 5 February 2019

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

Commercial-in-confidence



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5 February 2019

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

Sponsored Investigation No. FSP 1960

1 Introduction

1.1 Identification of specimen

The sponsor identified the specimen as five (5) retrofit fire collars protecting a steel framed plasterboard wall system.

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, Service penetrations and control joints.

1.6 Test number

CSIRO Reference test number: FS 4828/4318

1.7 Test date

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

2 Description of specimen

2.1 General

The wall system comprised a 90-mm thick plasterboard lined steel framed wall, lined with a single layer of 13-mm thick Boral Firestop plasterboard on each side of 64-mm deep metal studs. The wall system has an established FRL of -/60/60 as described as system SB60.1.

The wall was penetrated by five (5) services and protected by various fire stopping systems.

The specimens were referenced as Specimen 1, 2, 3, 4, and 5. Specimens 1, 2 and 5 are the subject of this report. Documents containing a complete description of each specimen were supplied by the sponsor and are retained on file.

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

- AS/NZS 4401 Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings—Polyethylene (PE)
- AS/NZS 1260 'PVC-U pipes and fittings for drain, waste and vent application'; and
- AS 4176.8-2010 'Multilayer pipes for pressure applications - Multilayer pipe systems for consumer gas installations with a maximum operating pressure up to and including 5 bar (500 kPa) - Specifications for systems'
- AS/NZS 1477:2006 PVC pipes and fittings for pressure applications.

Specimen 1 - SNAP 50R Retrofit fire collar and Firesound sealant protecting a nominal 32-mm PE80 (HDPE) pipe.

The SNAP Retrofit 50R fire collar comprised a 0.75-mm steel casing with a 62-mm inner diameter and a 147-mm diameter base flange. The 47-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent wraps lined within the internal circumference of the collar. Intumescent A was 4-mm thick x 43-mm wide x 220-mm long, and Intumescent B was 4-mm thick x 43-mm wide x 200-mm long. Between the strips was a layer of 316 stainless steel mesh 210-mm long x 42-mm wide with wire mesh diameter of 0.15-mm, as shown in drawing numbered 50R-T dated 31 March 2017, by Snap Fire Systems Pty Ltd. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of the wall and fixed through 3 mounting brackets using 38-mm (10g) course thread laminating screws.

The penetrating service comprised a 40-mm PE80 (HDPE) pipe with a wall thickness of 3.35-mm penetrating the plasterboard wall through a 48-mm diameter cut-out hole. The annular gap around the pipe and plasterboard on both sides of the wall was filled with H.B Fullers Firesound sealant to a depth of 10-mm and finished flush with wall as shown in drawing titled "Specimen #1, 32 HDPE & 50R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd. The pipe projected horizontally, approximately 2000-mm away from the unexposed face of the plasterboard wall and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was left open at the unexposed end and plugged with Superwool on the exposed end.

Specimen 2 – SNAP 32R Retrofit fire collar protecting a nominal 25-mm Pex-Al-Pex pipe.

The 32R Retrofit collar comprised a 0.75-mm steel casing with a 40-mm inner diameter and a 106-mm diameter base flange. The 32-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent strips lined within the internal circumference of the collar. The inner and outer strips were 4-mm thick x 26-mm wide x 135-mm long, and 4-mm thick x 26-mm wide x 154-mm long, respectively. Between the strips was a layer of 316 stainless steel mesh 135 mm long x 25-mm wide with wire mesh diameter of 0.15-mm, as shown in drawing numbered 32R-T dated 5 October 2017, by Snap Fire Systems Pty Ltd. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of the wall and fixed through 3 mounting brackets using M4 expandable steel anchors.

The penetrating service comprised a 25.1-mm Pex-Al-Pex pipe, with a wall thickness of 2.95-mm, penetrating the wall through a 32-mm diameter cut-out hole as shown in drawing titled “Specimen # 2, 25 Pex-Al-Pex Pipe & 32R”, dated 13 November 2018, provided by Snap Fire Systems Pty Ltd. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was open at the unexposed end and plugged with a Superwool on the exposed end.

Specimen 5 – SNAP 32R Retrofit fire collar and Firesound sealant protecting a nominal 20-mm P-PVC pipe.

The 32R Retrofit collar comprised a 0.75-mm steel casing with a 40-mm inner diameter and a 106-mm diameter base flange. The 32-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent strips lined within the internal circumference of the collar. The inner and outer strips were 4-mm thick x 26-mm wide x 135-mm long, and 4-mm thick x 26-mm wide x 154-mm long, respectively. Between the strips was a layer of 316 stainless steel mesh 135 mm long x 25-mm wide with wire mesh diameter of 0.15-mm, as shown in drawing numbered 32R-T dated 5 October 2017, by Snap Fire Systems Pty Ltd. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of the wall and fixed through 3 mounting brackets using 38-mm (10g) course thread laminating screws.

The penetrating service comprised a 20.1-mm P-PVC pipe, with a wall thickness of 2.05-mm, penetrating the wall through a 32-mm diameter cut-out hole. The annular gap around the pipe and plasterboard on both sides of the wall was filled with H.B Fullers Firesound sealant to a depth of 10-mm and finished flush with wall as shown in drawing titled “Specimen # 5, 20 P-PVC Pipe & 32R”, dated 13 November 2018, provided by Snap Fire Systems Pty Ltd. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500-mm into the furnace chamber. The pipe was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was open at the unexposed end and plugged with Superwool on the exposed end.

2.2 Dimensions

The wall specimen was nominally 1150-mm wide x 1150-mm high x 90-mm thick. All dimensions are nominal.

2.3 Orientation

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

2.4 Conditioning

The specimen was delivered on 20th November 2018 and left under standard laboratory atmospheric conditions until the test date.

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 titled "Test Wall W-18-C Layout", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd.

Drawing titled "Specimen #1, 40 HDPE & 50R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd.

Drawing titled "Specimen # 2, 25 Pex-Al-Pex Pipe & 32R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd.

Drawing titled "Specimen # 5, 20 P-PVC Pipe & 32R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd.

Drawing numbered 50R-T dated 31 March 2017, by Snap Fire Systems Pty Ltd.

Drawing numbered 32R-T dated 5 October 2017, by Snap Fire Systems Pty Ltd.

4 Equipment

4.1 Furnace

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

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

4.2 Temperature

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

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

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

4.3 Measurement system

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

5 Ambient temperature

The temperature of the test area was 21°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 75 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 |
|------------|---|
| 2 minutes | - Smoke is fluing from Specimens 1. |
| 4 minutes | - Smoke no longer fluing from Specimen 1. |
| 11 minutes | - Smoke is being emitted from inside the collar of Specimen 2. |
| 38 minutes | - Smoke is fluing from Specimen 5. |
| 45 minutes | - The pipe of Specimen 5 has sagged between the wall and supports. |
| 50 minutes | - The amount of smoke fluing from Specimen 5 has increased. |
| 60 minutes | - The pipe of Specimen 1 has started to deform at the based near collar |
| 63 minutes | - Smoke is being emitted from inside the collar of Specimen 1; a red glow is now visible through the gap between the sagged pipe and collar. Cotton wool pad applied over the collar of Specimen 1 - no ignition noted. |
| 65 minutes | - <u>Insulation Failure Specimen 5</u> – maximum temperature rise of 180K is exceeded on the plasterboard 25-mm from the collar of Specimen 5. |
| 65 minutes | - Face of wall is starting to discolour. |
| 67 minutes | - <u>Insulation Failure Specimen 1</u> – maximum temperature rise of 180K is exceeded on the plasterboard 25-mm from the collar of Specimen 1. |
| 75 minutes | - <u>Insulation Failure Specimen 2</u> – maximum temperature rise of 180K is exceeded on the plasterboard 25-mm from the collar of Specimen 2. Test terminated |

8.2 Furnace temperature

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

8.3 Furnace severity

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

8.4 Specimen temperature

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

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

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

8.5 Performance

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

Specimen 1 - SNAP 50R Retrofit fire collar and Firesound sealant protecting a nominal 32-mm PE80 (HDPE) pipe.

| | | |
|---------------------|---|--------------------------|
| Structural adequacy | - | not applicable |
| Integrity | - | no failure at 75 minutes |
| Insulation | - | 67 minutes |

Specimen 2 – SNAP 32R Retrofit fire collar protecting a nominal 25-mm Pex-Al-Pex pipe.

| | | |
|---------------------|---|--------------------------|
| Structural adequacy | - | not applicable |
| Integrity | - | no failure at 75 minutes |
| Insulation | - | 75 minutes |

Specimen 5 – SNAP 32R Retrofit fire collar and Firesound sealant protecting a nominal 20-mm P-PVC pipe.

| | | |
|---------------------|---|--------------------------|
| Structural adequacy | - | not applicable |
| Integrity | - | no failure at 75 minutes |
| Insulation | - | 66 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:

Specimen 1 - /60/60

Specimen 2 - /60/60

Specimen 5 - /60/60

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

The test was conducted on a wall system with an established FRL of /60/60. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed.

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

10 Field of direct application of test results

The results of the fire test contained in this test report are directly applicable, without reference to the testing authority, to similar constructions where one or more changes listed in Clause 10.11 of AS 1530.4-2014, have been made provided no individual component is removed or reduced.

11 Tested by



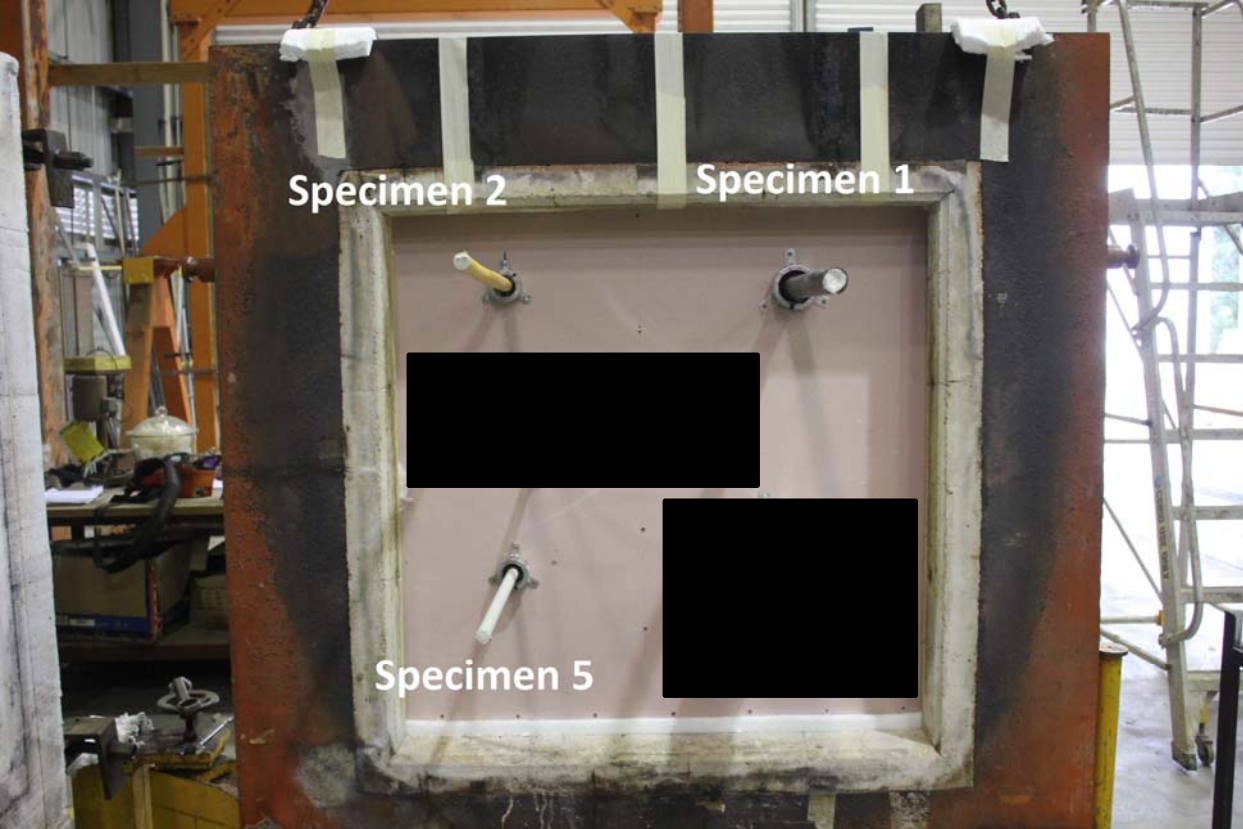
Peter Gordon
Testing Officer

Appendices

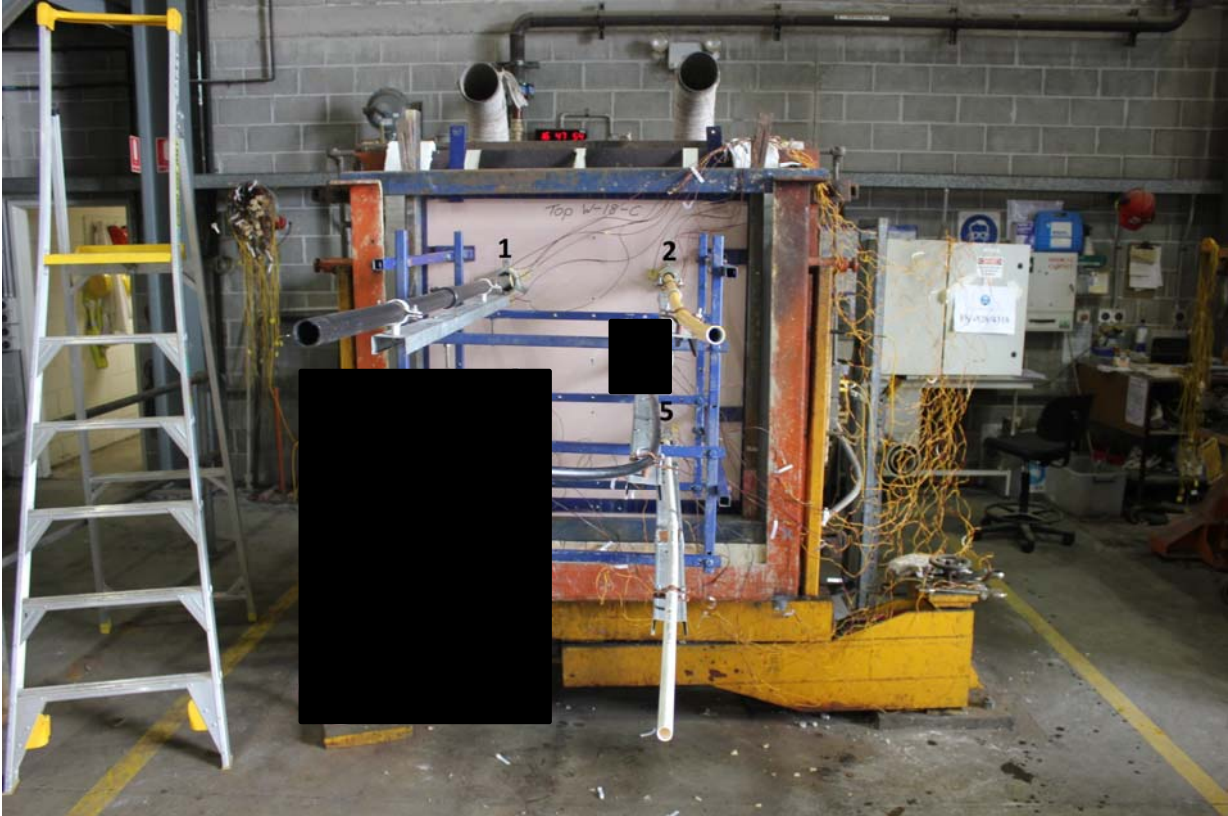
Appendix A – Measurement location

| Specimen | T/C Position | T/C designation |
|--|--------------------------------------|-----------------|
| SPECIMEN 1 – 40-mm OD Pex-B pipe (CXL) with a wall thickness of 3.35-mm protected with Snap 50R Fire collars retro-fitted to both sides of the wall. | On p/b, 25-mm collar right side | S1 |
| | On p/b, 25-mm below of collar | S2 |
| | On collar top | S3 |
| | On collar right side | S4 |
| | On pipe 25-mm from collar right | S5 |
| | On pipe 25-mm from collar left | S6 |
| SPECIMEN 2 – 25.1-mm Pex-Al-Pex Pipe (CXL) having a wall thickness of 2.95-mm, protected with Snap 32R Fire collars retro-fitted to both sides of the wall. | On p/b, 25-mm above collar left side | S7 |
| | On p/b, 25-mm below collar | S8 |
| | On collar top | S9 |
| | On collar bottom | S10 |
| | On pipe 25-mm from collar top left | S11 |
| | On pipe 25-mm from collar top right | S12 |
| SPECIMEN 5 – 22.1-mm OD P-PVC pipe (Iplex) having a wall thickness of 2.05-mm, protected with Snap 32R Fire collars retro-fitted to both sides of the wall. | On p/b, 25-mm above collar | S25 |
| | On p/b, 25-mm left of collar | S26 |
| | On collar top left | S27 |
| | On collar top right | S28 |
| | On pipe 25-mm from collar top | S29 |
| | On pipe 25-mm from collar bottom | S30 |
| Rover | | S31 |
| Ambient | | S32 |

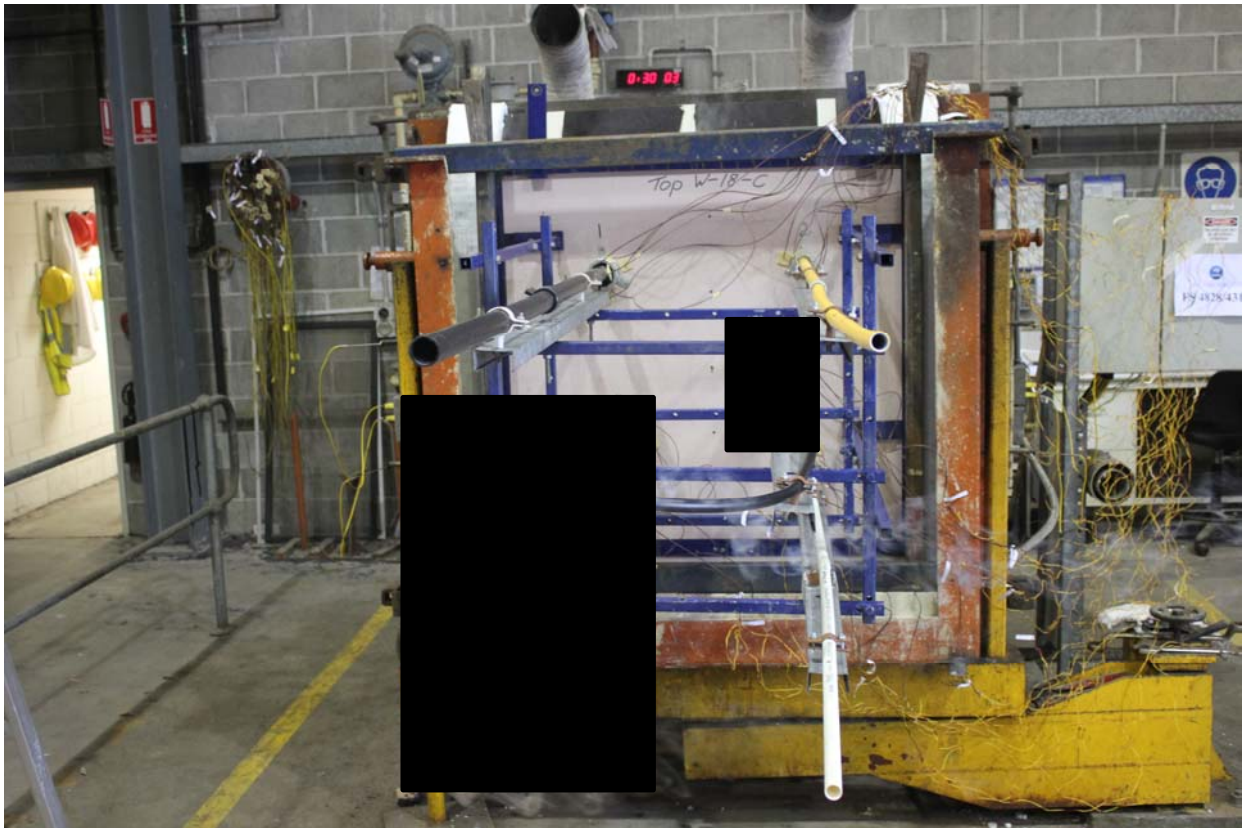
Appendix B – Photographs



PHOTOGRAPH 1 – EXPOSED FACE OF SPECIMENS PRIOR TO TESTING



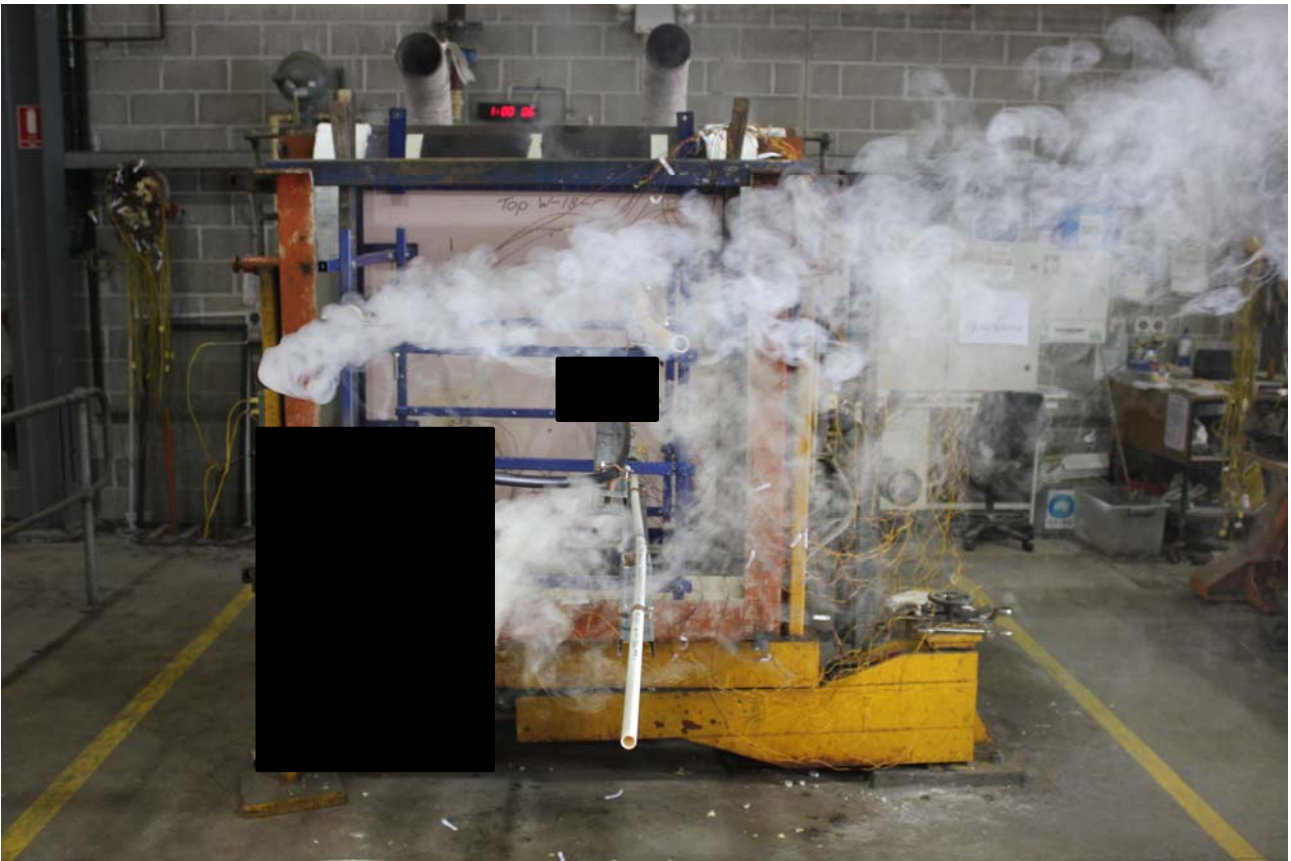
PHOTOGRAPH 2 – UNEXPOSED FACE OF SPECIMENS PRIOR TO TESTING



PHOTOGRAPH 3 – SPECIMENS AFTER 30 MINUTES OF TESTING



PHOTOGRAPH 4 – SPECIMENS AFTER 50 MINUTES OF TESTING



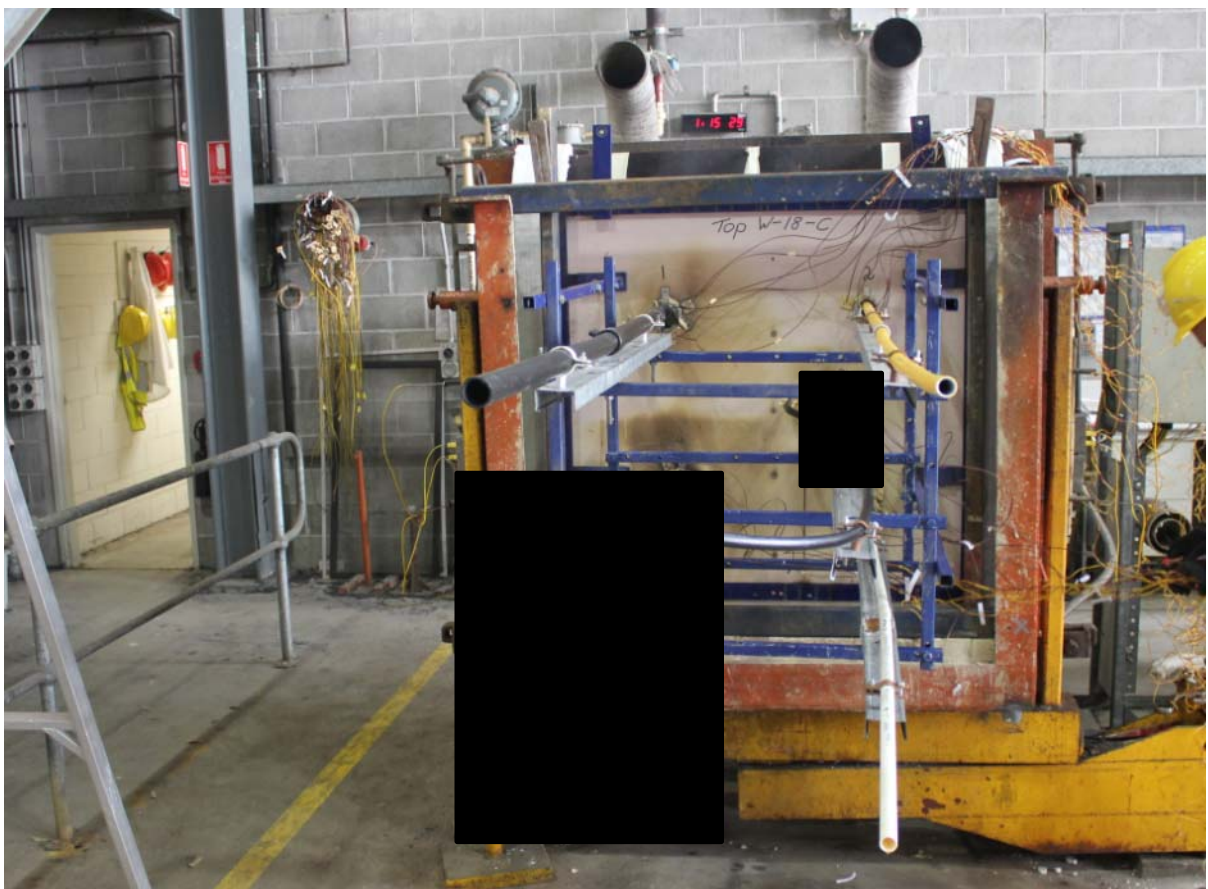
PHOTOGRAPH 5 – SPECIMENS AFTER 60 MINUTES OF TESTING



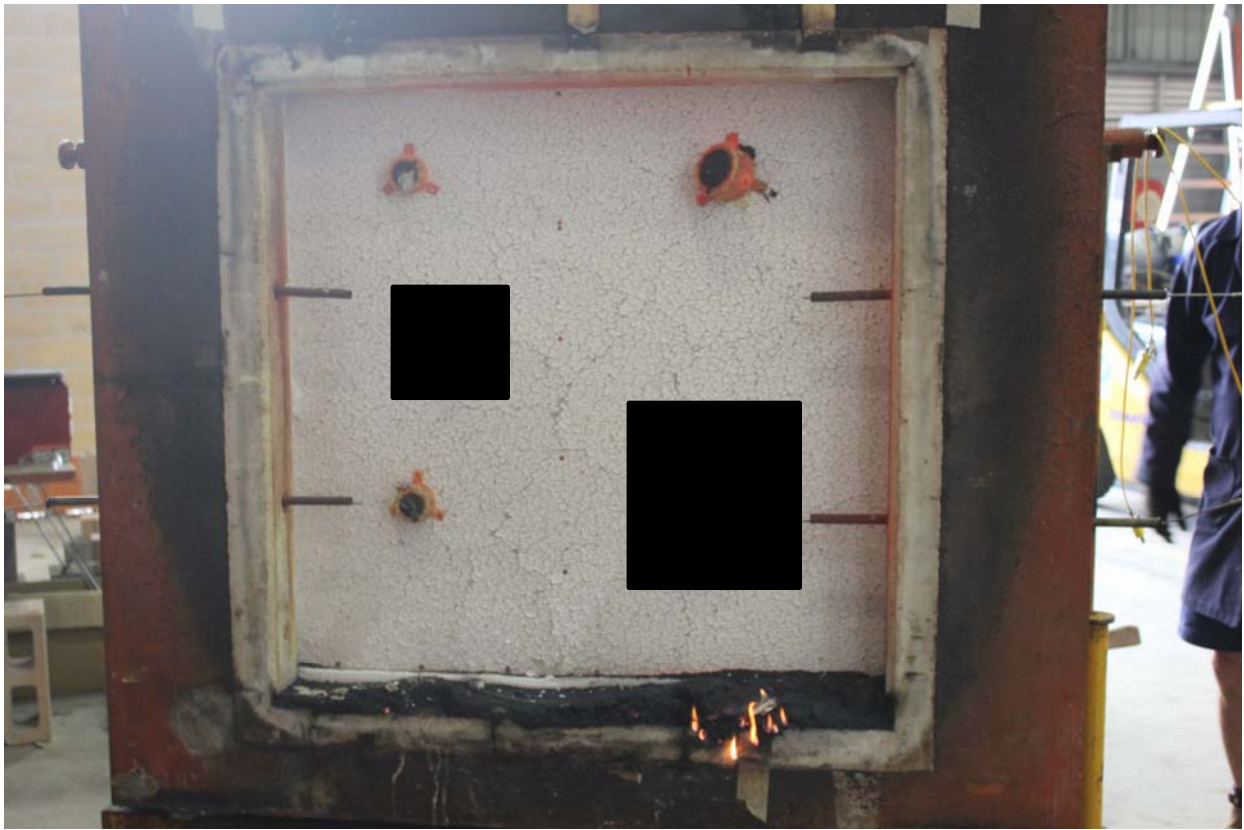
PHOTOGRAPH 6 – SPECIMEN 1 AFTER 63 MINUTES OF TESTING



PHOTOGRAPH 7 – SPECIMENS AFTER 74 MINUTES OF TESTING



PHOTOGRAPH 8 – SPECIMENS AT CONCLUSION OF TESTING



PHOTOGRAPH 9 – EXPOSED FACE OF SPECIMENS AT CONCLUSION OF TESTING

Appendix C – Furnace Temperature

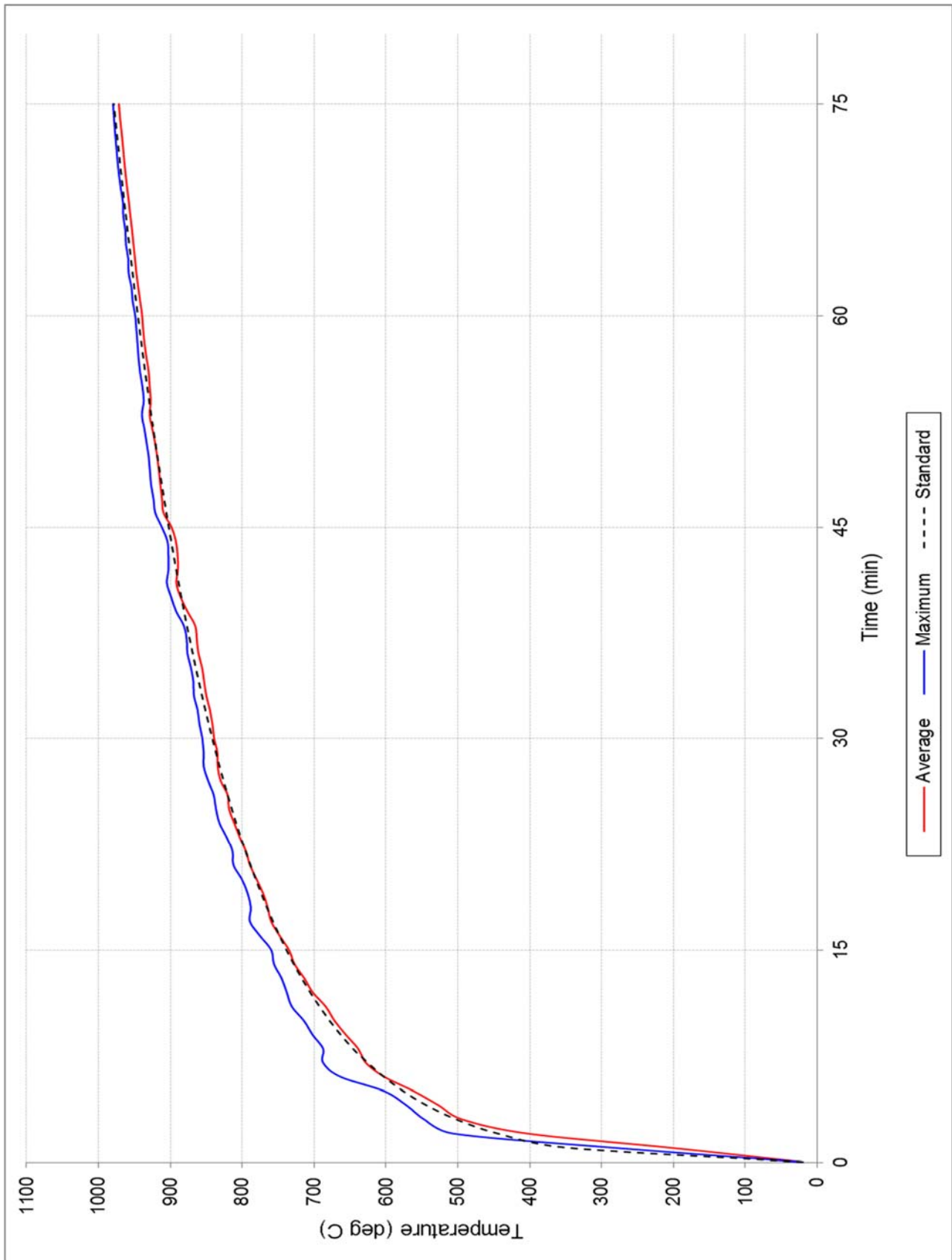


FIGURE 1 – FURNACE TEMPERATURE

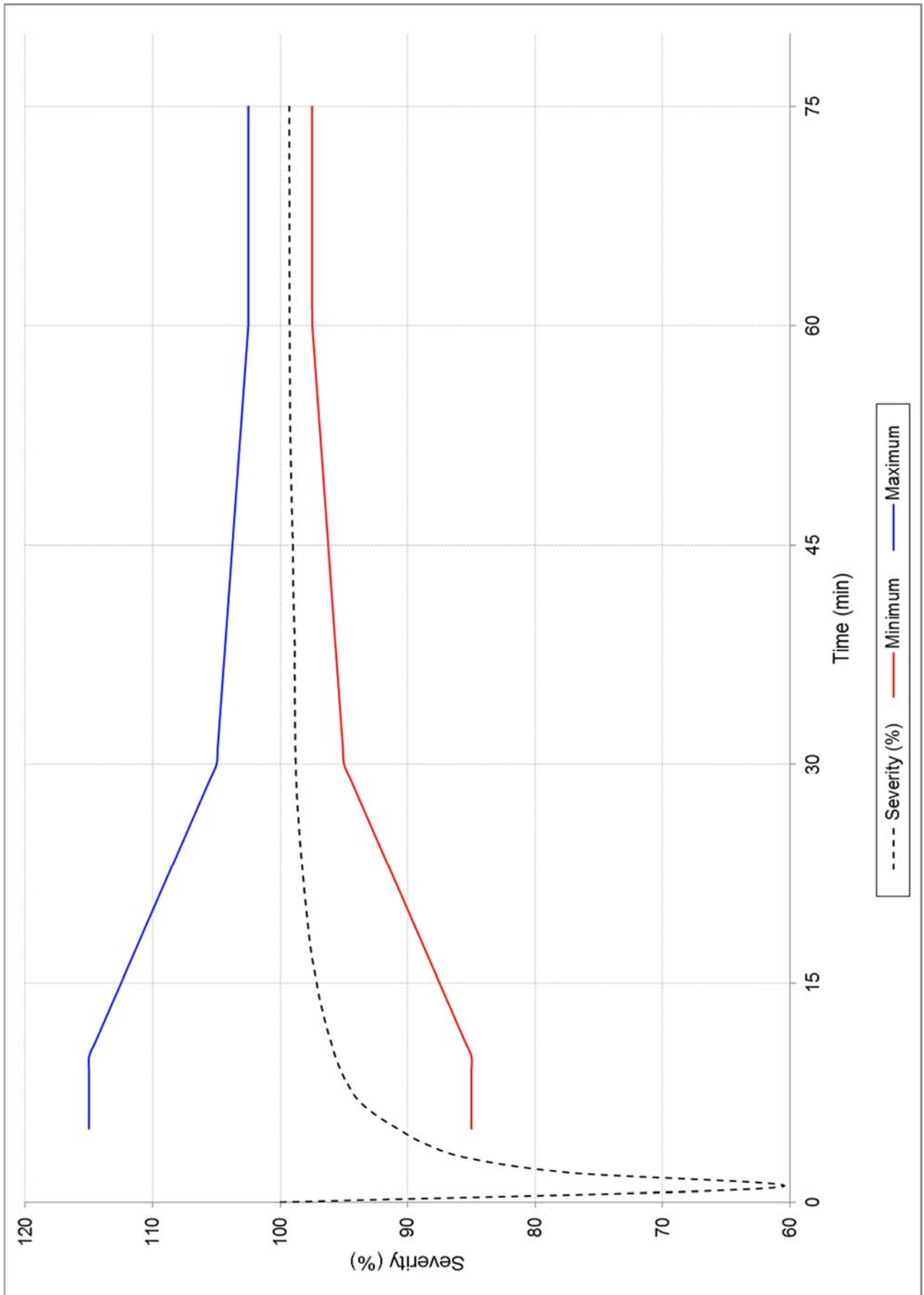


FIGURE 2 – FURNACE SEVERITY

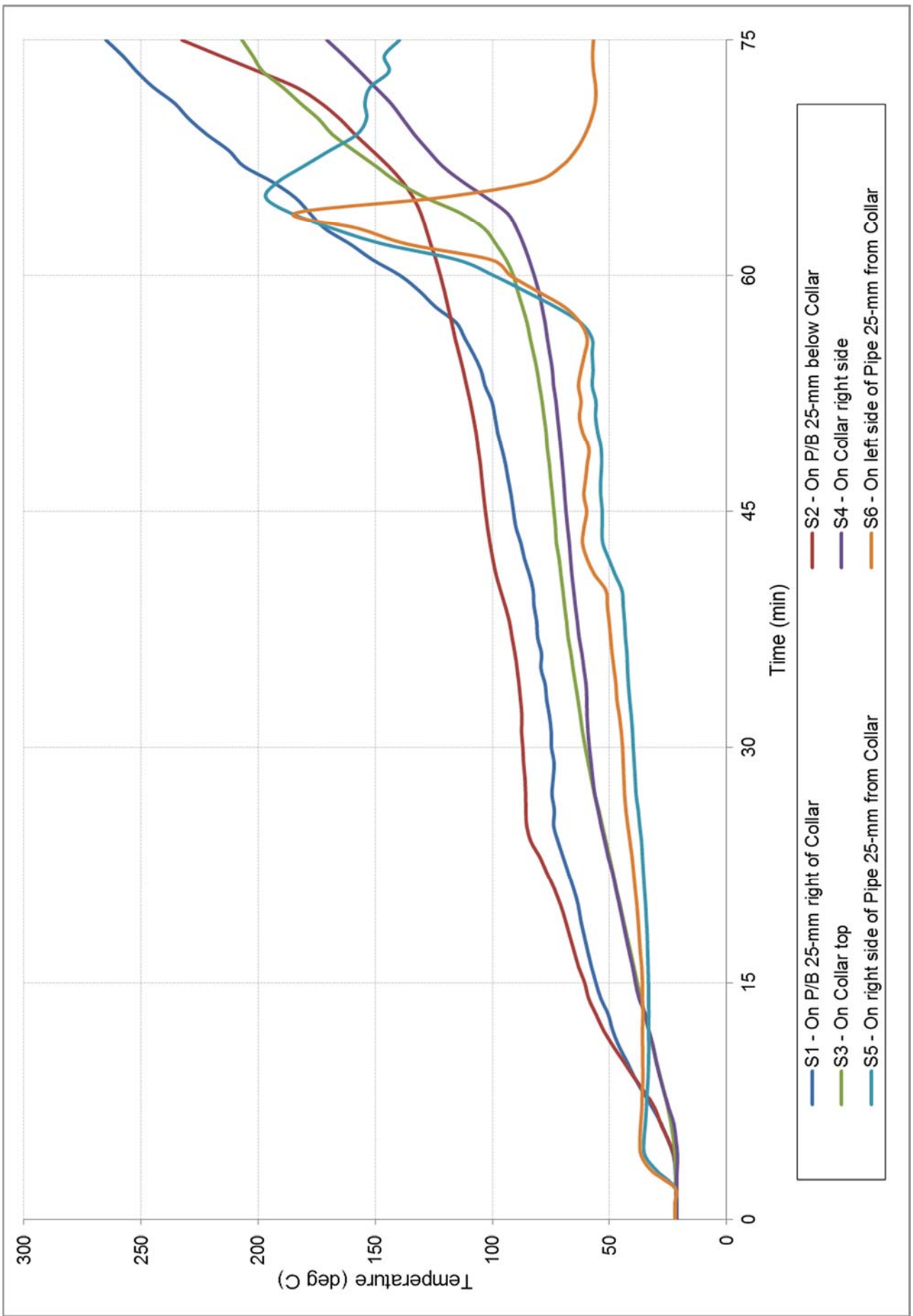


FIGURE 3 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #1

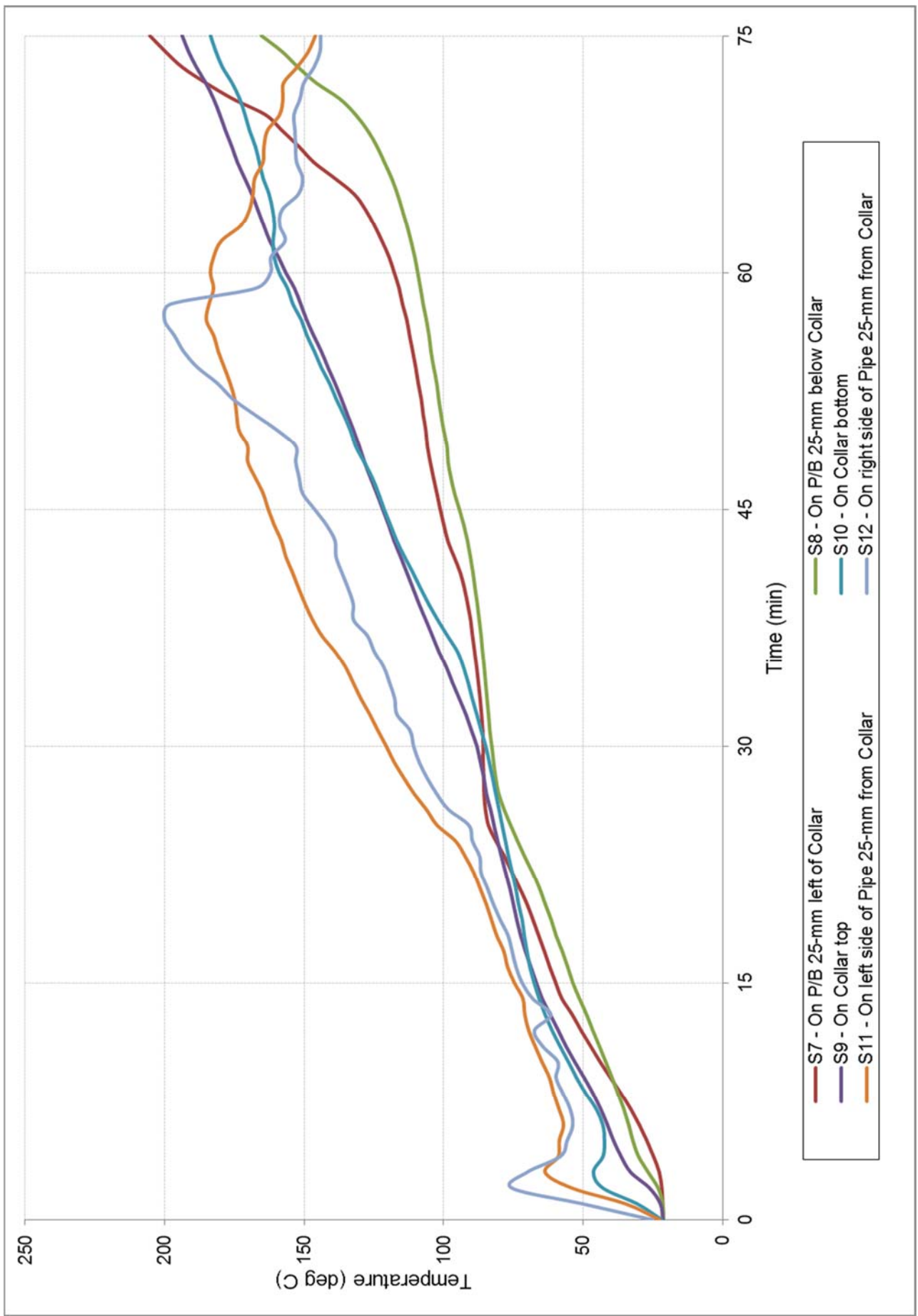


FIGURE 4 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #2

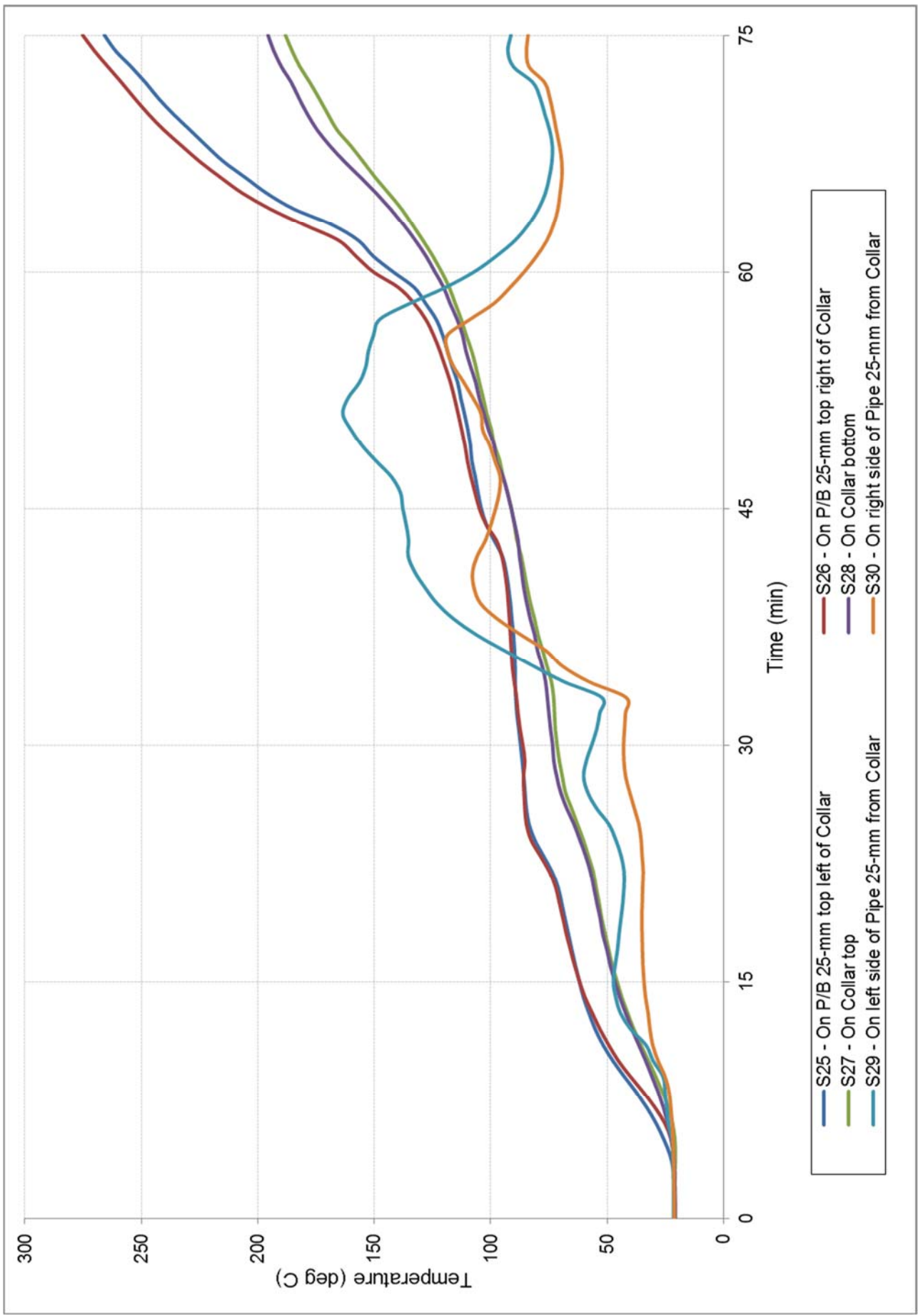
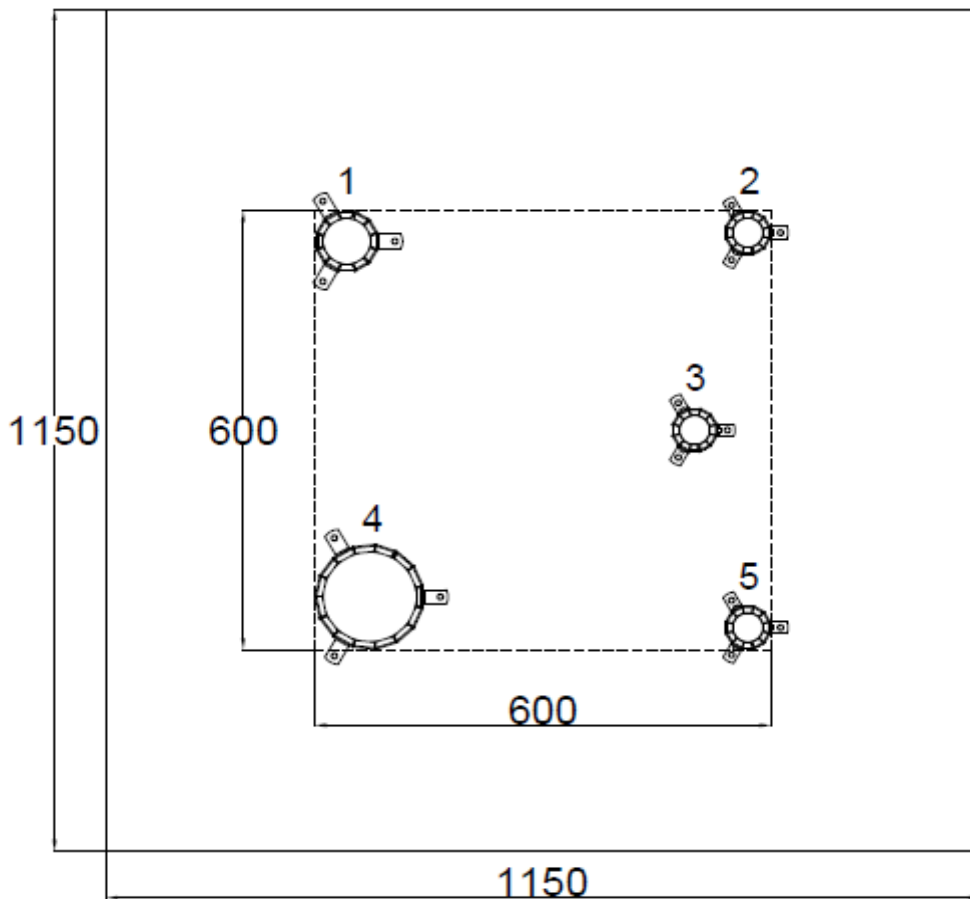


FIGURE 5 - TEMPERATURE VERSUS TIME ASSOCIATED WITH SPECIMEN #5

Appendix D – Layout and installation drawings

Snap Fire Systems Pty Ltd
 Test Wall W-18-C Layout
 Date: 13 NOV 2018



| Penetration | Collar Code | Pipe Type | Pipe Diameter (mm) | Sealant |
|-------------|-------------|------------|--------------------|-----------|
| 1 | 50R | HDPE | 40 | Firesound |
| 2 | 32R | Pex-Al-Pex | 25 | N/A |
| 3 | 32R | Pex-B | 20 | Firesound |
| 4 | 110R | PVC | 100 | N/A |
| 5 | 32R | P-PVC | 20 | Firesound |

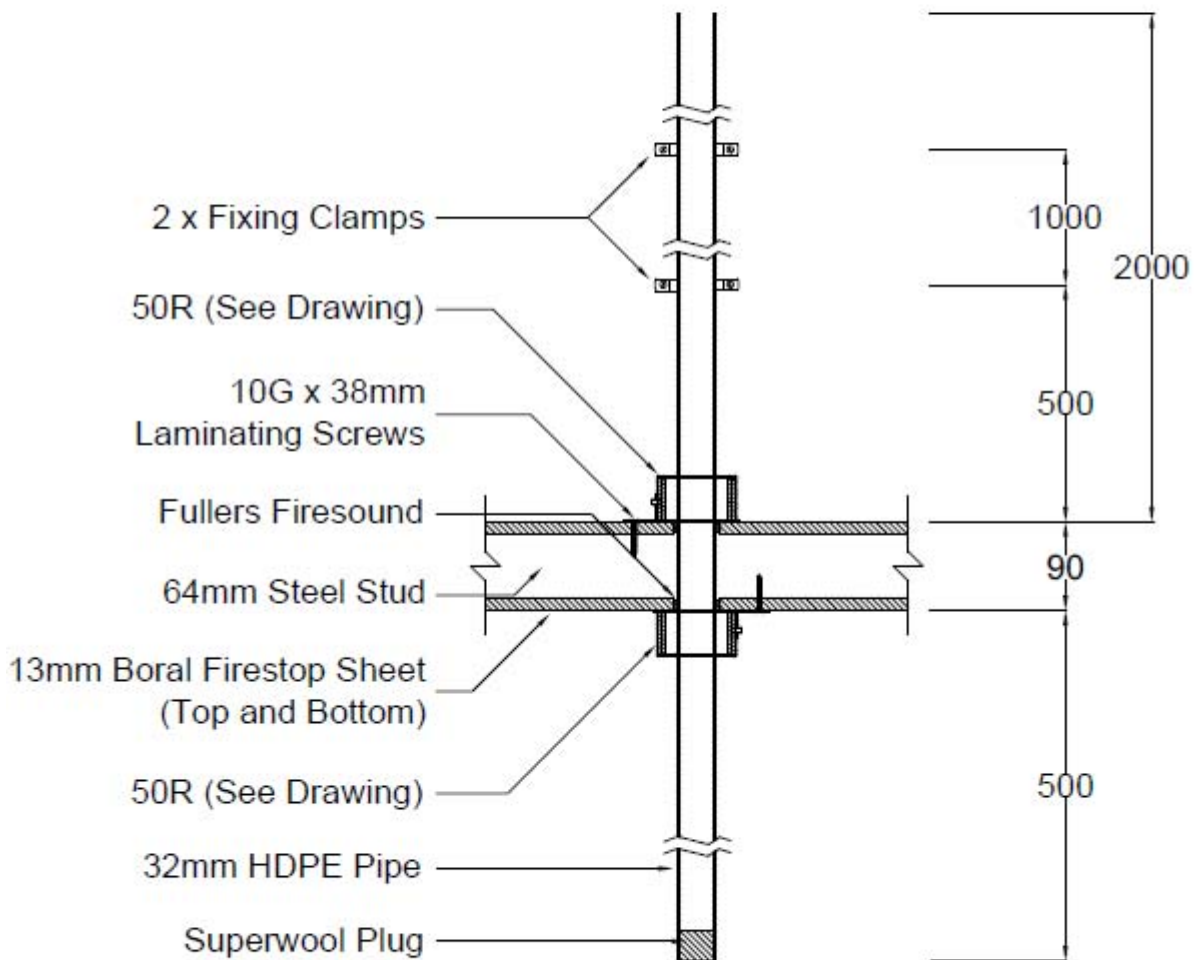
DRAWING TITLED “TEST WALL W-18-C LAYOUT, DATED 13 NOVEMBER 2018, PROVIDED BY SNAP FIRE SYSTEMS PTY LTD.

Snap Fire Systems Pty Ltd

Specimen #1

32 HDPE & 50R

Date: 13 NOV 2018



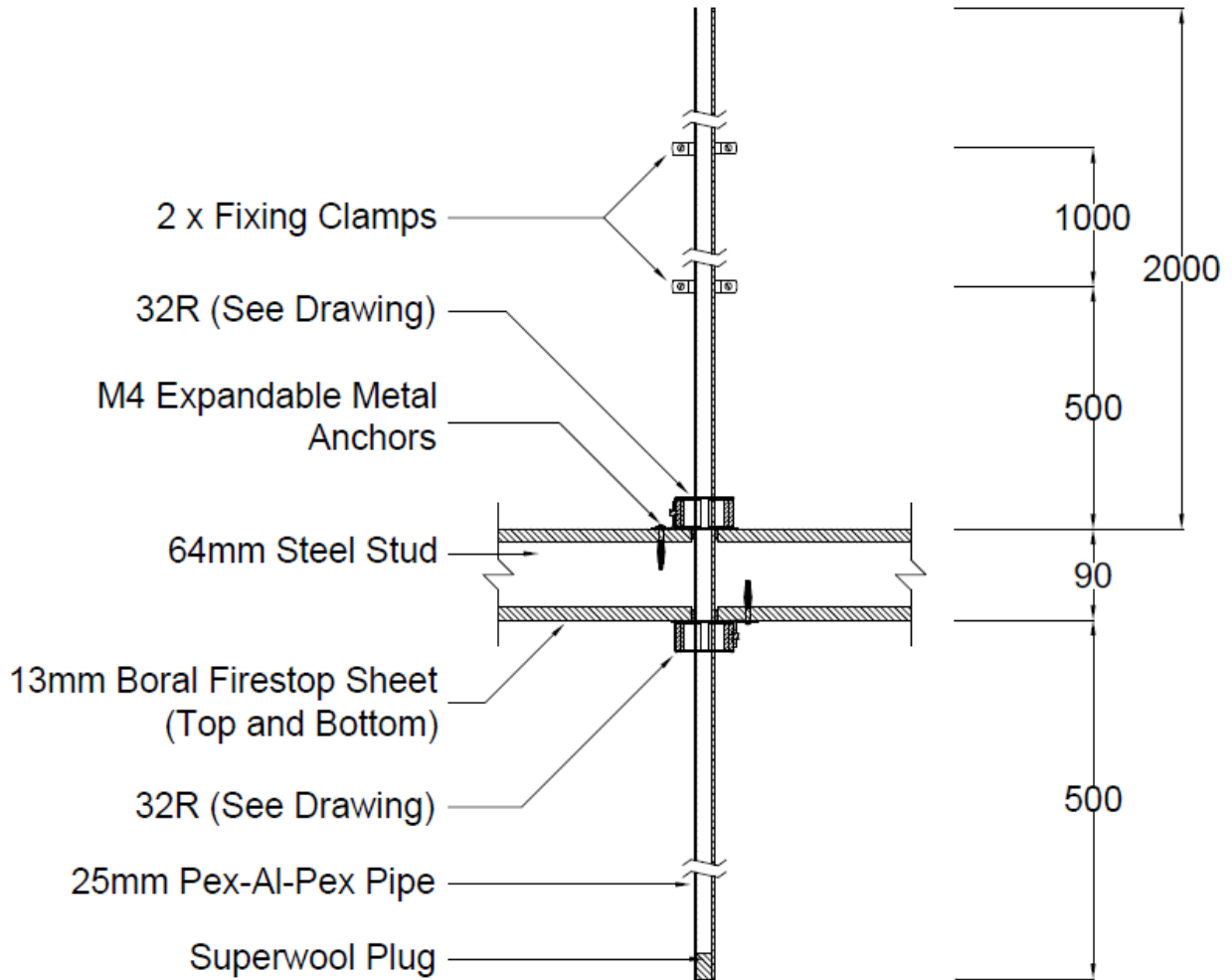
DRAWING TITLED "SPECIMEN # 1, 32 HDPE PIPE & 50R", DATED 13 NOVEMBER 2018, PROVIDED BY SNAP FIRE SYSTEMS PTY LTD

Snap Fire Systems Pty Ltd

Specimen #2

25 Pex-Al-Pex & 32R

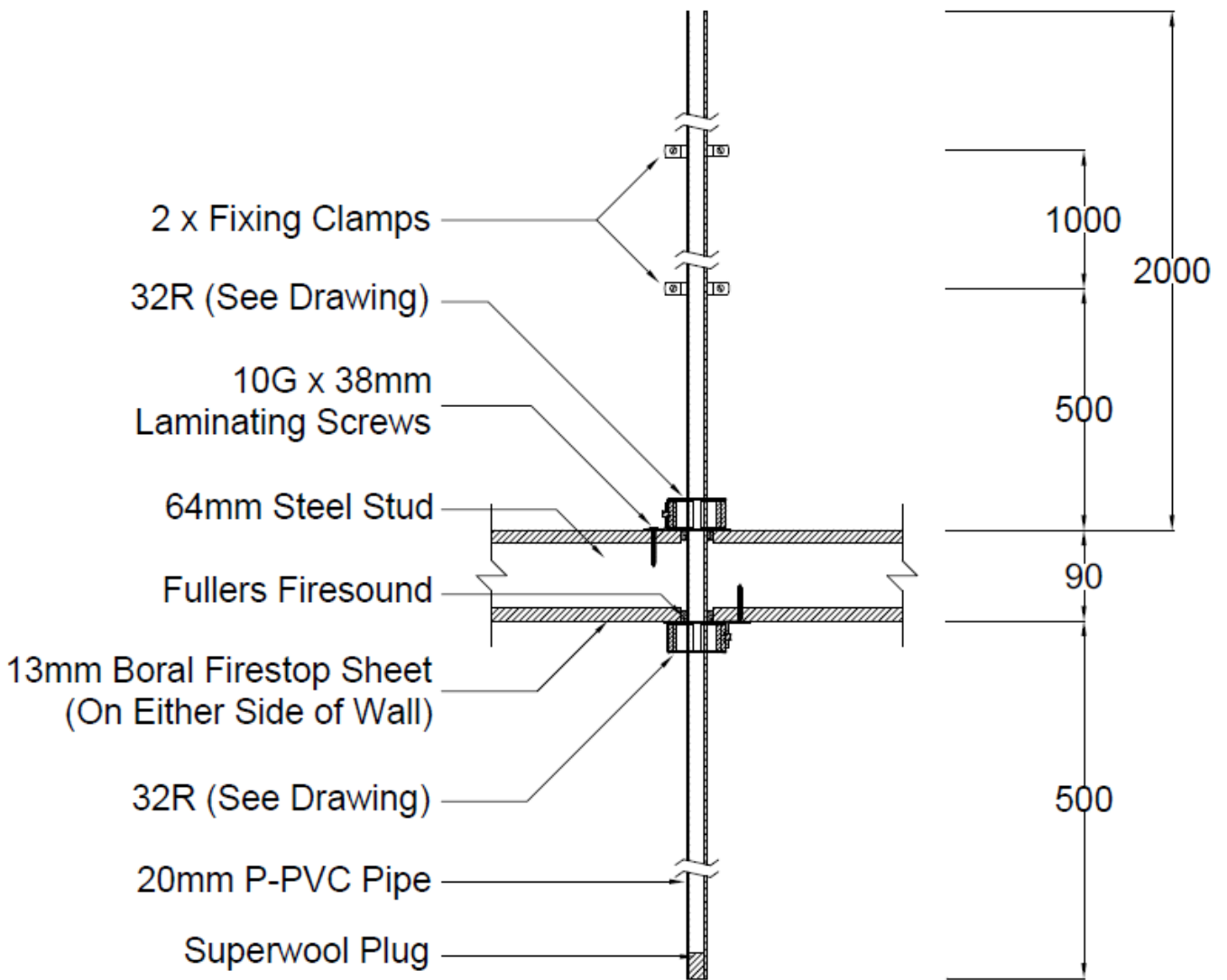
Date: 13 NOV 2018



DRAWING TITLED "SPECIMEN # 2, 25 PEX-AL-PEX PIPE & 32R", DATED 13 NOVEMBER 2018, PROVIDED BY SNAP FIRE SYSTEMS PTY LTD

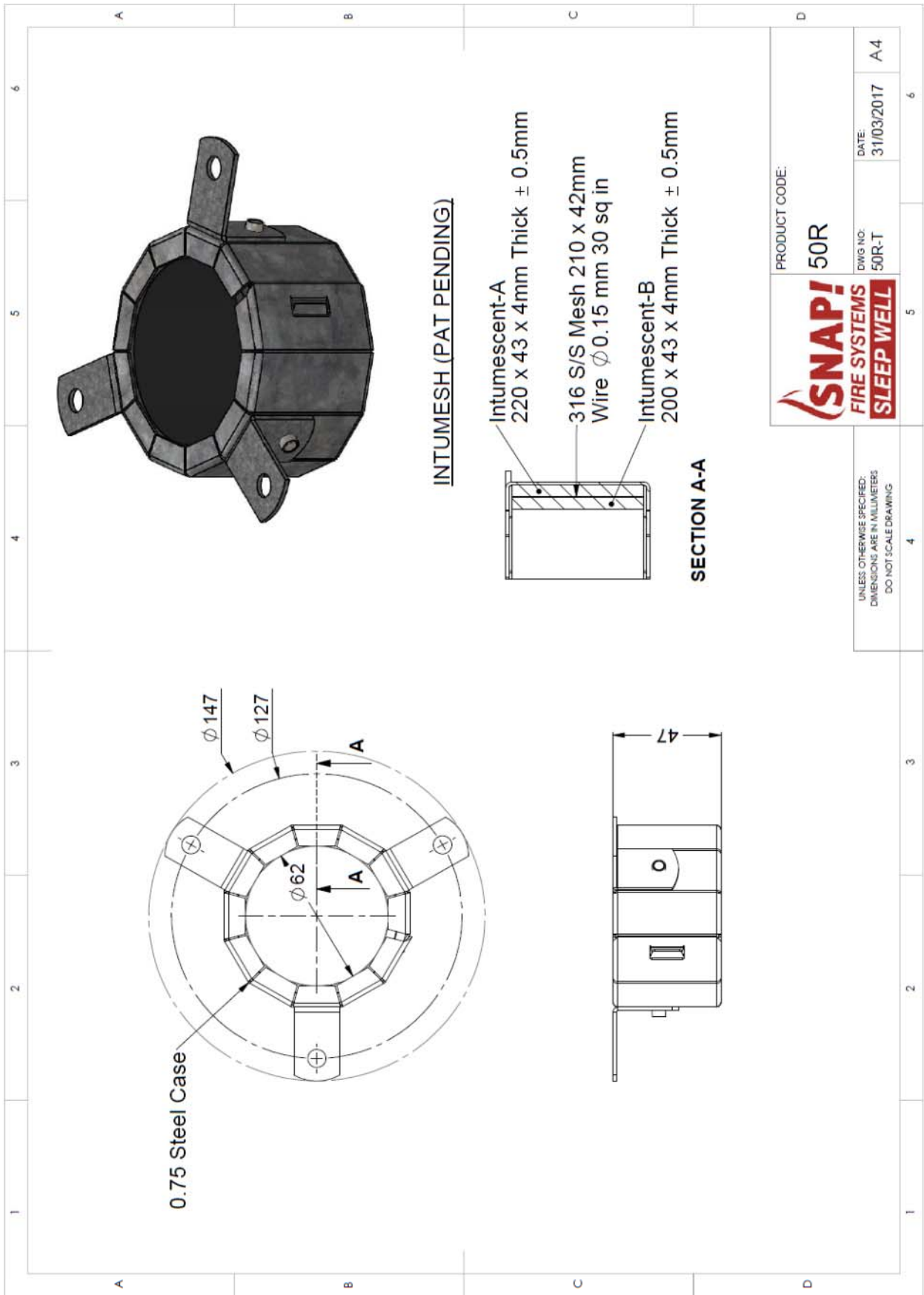
Snap Fire Systems Pty Ltd

Specimen #5
20 P-PVC & 32R
Date: 13 NOV 2018

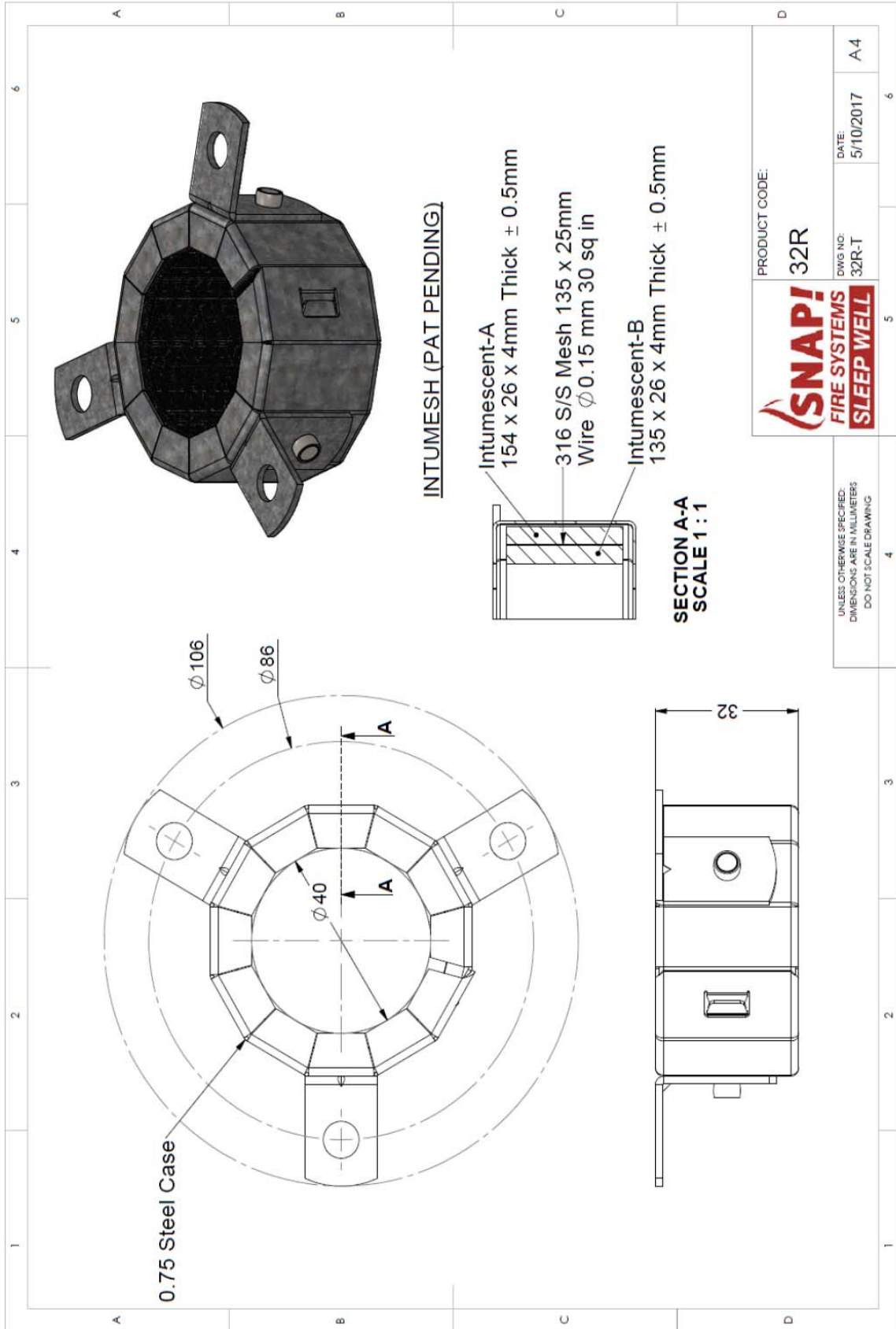


DRAWING TITLED "SPECIMEN # 5, 20P-PVC PIPE & 32R", DATED 13 NOVEMBER 2018, PROVIDED BY SNAP FIRE SYSTEMS PTY LTD

Appendix E – Specimen Drawings



DRAWING NUMBERED 50 R-T DATED 31 MARCH 2017, BY SNAP FIRE SYSTEMS PTY LTD.



DRAWING NUMBERED 32R-T DATED 5 OCTOBER 2017, BY SNAP FIRE SYSTEMS PTY LTD.

Appendix F – Certificate(s) of Test

| | | |
|--|--|---|
| INFRASTRUCTURE TECHNOLOGIES www.csiro.au | |  |
| 14 Julius Avenue, North Ryde NSW 2113 PO Box 52, North Ryde NSW 1670, Australia T (02) 9490 5444 • ABN 41 687 119 230 | | |
| <h2>Certificate of Test</h2> | | No. 3202a |
| 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 report numbered FSP 1960. | | |
| Product Name: SNAP 50R Retrofit fire collar and Firesound sealant protecting a nominal 32-mm PE80 (HDPE) pipe. | | |
| Description: | The wall system comprised a 90-mm thick plasterboard lined steel framed wall, lined with a single layer of 13-mm thick Boral Firestop plasterboard on each side of 64-mm deep metal studs. The wall system has an established FRL of -/60/60 as described as system SB60.1. The wall was penetrated by a service and protected by a fire stopping system. The SNAP Retrofit 50R fire collar comprised a 0.75-mm steel casing with a 62 mm inner dia. and a 147-mm dia. base flange. The 47-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent wraps lined within the internal circumference of the collar. Intumescent A was 4-mm thick x 43-mm wide x 220-mm long, and Intumescent B was 4-mm thick x 43-mm wide x 200-mm long. Between the strips was a layer of 316 stainless steel mesh 210-mm long x 42-mm wide with wire mesh dia. of 0.15-mm. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of wall and fixed through 3 mounting brackets using 38-mm (10g) course thread laminating screws. The penetrating service comprised a 40-mm PE80 (HDPE) pipe with a wall thickness of 3.35-mm penetrating the plasterboard wall through a 48-mm dia. cut-out hole. The annular gap around the pipe and plasterboard on both sides of the wall was filled with H.B Fullers Firesound sealant to a depth of 10-mm and finished flush with wall as shown in drawing "Specimen #1, 32 HDPE & 50R", dated 13 November 2018. The pipe projected horizontally, approx. 2000-mm away from the unexposed face of the plasterboard wall and approx. 500-mm into the furnace chamber. The pipe was supported at nominally 500-mm and 1500-mm from the unexposed face of the wall. The pipe was left open at the unexposed end and plugged with Superwool on exposed end. | |
| Performance observed in respect of the following AS 1530.4-2014 criteria: | | |
| Structural Adequacy | not applicable | |
| Integrity | No failure at 75 minutes | |
| Insulation | 67 minutes | |
| and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/60/60. | | |
| The fire-resistance level of the specimens is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of -60/60. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be 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 November 2018 |
| Issued on the 5 th day of February 2019 without alterations or additions. This Certificate supersedes that dated 14 December 2018. | | |
|  | | |
| Brett Roddy Manager, Fire Testing and Assessments | | |
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|  | This document is issued in accordance with NATA's accreditation requirements. Accreditation No. 165 – Corporate Site No. 3625 Accredited for compliance with ISO/IEC 17025 - Testing | |

COPY OF CERTIFICATE OF TEST – NO. 3202A



Certificate of Test

No. 3203a

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 report numbered FSP 1960.

Product Name: SNAP 32R Retrofit fire collar protecting a nominal 25-mm Pex-Al-Pex pipe.

Description: The wall system comprised a 90-mm thick plasterboard lined steel framed wall, lined with a single layer of 13-mm thick Boral Firestop plasterboard on each side of 64-mm deep metal studs. The wall system has an established FRL of -/60/60 as described as system SB60.1. The wall was penetrated by a service and protected by a fire stopping system. The 32R Retrofit collar comprised a 0.75-mm steel casing with a 40 mm inner diameter and a 106 mm diameter base flange. The 32-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent strips lined within the internal circumference of the collar. The inner and outer strips were 4-mm thick x 26-mm wide x 135-mm long, and 4-mm thick x 26-mm wide x 154-mm long, respectively. Between the strips was a layer of 316 stainless steel mesh 135 mm long x 25-mm wide with wire mesh diameter of 0.15-mm. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of the wall and fixed through 3 mounting brackets using M4 expandable steel anchors. The penetrating service comprised a 25.1-mm Pex-Al-Pex pipe, with a wall thickness of 2.95-mm, penetrating the wall through a 32-mm diameter cut-out hole as shown in drawing titled "Specimen # 2, 25 Pex-Al-Pex Pipe & 32R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500 mm into the furnace chamber. The pipe was supported at nominally 500-mm and 1500-mm from the unexposed face of the plasterboard wall. The pipe was open at the unexposed end and plugged with a Superwool on the exposed end.

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

| | |
|---------------------|--------------------------|
| Structural Adequacy | not applicable |
| Integrity | No failure at 75 minutes |
| Insulation | 75 minutes |

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/60/60.

The fire-resistance level of the specimens is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of -60/60. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be 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 November 2018

Issued on the 5th day of February 2019 without alterations or additions. This Certificate supersedes that dated 14 December 2018.

Brett Roddy
Manager, Fire Testing and Assessments

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COPY OF CERTIFICATE OF TEST – NO. 3203A



Certificate of Test

No. 3206a

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 report numbered FSP 1960.

Product Name: SNAP 32R Retrofit fire collar and Firesound sealant protecting a nominal 20-mm P PVC pipe.

Description: The wall system comprised a 90-mm thick plasterboard lined steel framed wall, lined with a single layer of 13-mm thick Boral Firestop plasterboard on each side of 64-mm deep metal studs. The wall system has an established FRL of -/60/60 as described as system SB60.1. The wall was penetrated by a service and protected by a fire stopping system. The 32R Retrofit collar comprised a 0.75-mm steel casing with a 40 mm inner diameter and a 106 mm diameter base flange. The 32-mm high collar casing incorporated a closing mechanism that was comprised of two soft Intumesh intumescent strips lined within the internal circumference of the collar. The inner and outer strips were 4-mm thick x 26-mm wide x 135-mm long, and 4-mm thick x 26-mm wide x 154-mm long, respectively. Between the strips was a layer of 316 stainless steel mesh 135 mm long x 25-mm wide with wire mesh diameter of 0.15-mm. The Snap collars were surface mounted around the pipe on both the exposed and unexposed face of the wall and fixed through 3 mounting brackets using 38-mm (10g) course thread laminating screws. The penetrating service comprised a 20.1-mm P-PVC pipe, with a wall thickness of 2.05-mm, penetrating the wall through a 32-mm diameter cut-out hole. The annular gap around the pipe and plasterboard on both sides of the wall was filled with H.B Fullers Firesound sealant to a depth of 10-mm and finished flush with wall as shown in drawing titled "Specimen # 5, 20 P-PVC Pipe & 32R", dated 13 November 2018, provided by Snap Fire Systems Pty Ltd. The pipe projected horizontally, 2000-mm away from the unexposed face of the wall and approximately 500 mm into the furnace chamber. Pipe was supported at nom. 500-mm and 1500-mm from the unexposed face of the wall. The pipe was open at unexposed end and plugged with Superwool on exposed end.

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

| | |
|---------------------|--------------------------|
| Structural Adequacy | not applicable |
| Integrity | No failure at 75 minutes |
| Insulation | 66 minutes |

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of -/60/60.

The fire-resistance level of the specimens is applicable when the system is exposed to fire from either direction. The test was conducted on a wall system with an established FRL of -60/60. The maximum FRL of any test specimen cannot exceed the FRL achieved by the wall system in which it was installed. For the purposes of AS 1530.4-2014 the results of these fire tests may be used to directly assess fire hazard, but it should be 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 November 2018

Issued on the 5th day of February 2019 without alterations or additions. This Certificate supersedes that dated 14 December 2018.

Brett Roddy
Manager, Fire Testing and Assessments

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COPY OF CERTIFICATE OF TEST – NO. 3206A

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 | 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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