

Hilti CFS-CID Firestop Cast-In Device

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Customer Hotline

Hong Kong 8228 8118

Macau (Toll free) 00800- 8228 8118

Firestop cast-in device CFS-CID NEW



APPLICATIONS

- Concrete slabs built with traditional formwork
- New building construction
- Sealing combustible and non-combustible pipe penetrations
- Tested with pipe elbows, which allows reduced service zone

ADVANTAGES

- One-step firestop solution for a variety of pipe materials and diameters – no additional backfilling required
- Modular connection allows close placement of multiple penetrations
- Quick and simple installation
- Integrated moisture and smoke seal
- Lid strong enough to carry foot traffic and light access equipment



Smoke



Mould & Mildew



Acoustic

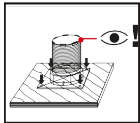


Low VOC

Technical data	
Base materials	Concrete
Approvals	EN 13501-2: 2007+A1:2009, EN 1366-3:2009
Height	250 mm
Application temperature range	-5 - 50 °C
Temperature resistance range	-20 - 100 °C
Colour	Red
Re-penetration	Easy
Reaction to fire class (EN 13501-1)	E



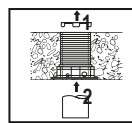
Application Procedure



1. Place anchor channel into formwork and fixing to the wood formwork with nails and staples / fixing to the steel formwork with rivets. Ensure cover is tightened to prevent concrete from going in cast-in device.



2. Cast in concrete. Concrete level should be equal or lower than overall height of cast-in device.



3. Remove the cast-in device cover. Insert penetrating pipe into cast-in device.

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Ordering designation	Pipe diameter - Range	Sales pack quantity	Item number
CFS-CID 50	40 - 63 mm	1 pc	2124523
CFS-CID 75	50 - 75 mm	1 pc	2124524
CFS-CID 110	80 - 110 mm	1 pc	2124525
CFS-CID 160	125 - 160 mm	1 pc	2124526

Please visit Hilti website for the latest item numbers and related products

Subject: Method Statement of Firestop Cast-In Device CFS-CID

Material: Firestop Cast-In Device CFS-CID

Setting Operation		
1	<p>Clean the concrete mold - surface to which CFS-CID cast-in device will be applied to remove loose debris, dirt, oil, wax and grease.</p>	
2	<p>Place anchor channel into formwork and fixing to the wood formwork with nails and staples / fixing to the steel formwork with rivets. Ensure cover is tightened to prevent concrete from going in cast-in device.</p>	
3	<p>Cast in concrete. Concrete level should be equal or lower than overall height of cast-in device.</p>	

Setting Operation		
4	Remove the cast-in device cover.	
5	Remove debris and grease on penetrating pipe.	
6	Insert penetrating pipe into cast-in device .	

FIRE RESISTANCE TEST IN ACCORDANCE WITH BS 476: PART 20: 1987

On 6 nos. of PVC Pipes and Conduits (Specimens '20', '22', '23', '24', '25' and '26')

Test Report No.: R16L28-1C

Identification No.: Q16L45-1

Issue Date: 11 September 2017

Testing Location:

RED Hong Kong Main Laboratory
DD 134, Lung Kwu Tan, Tuen Mun,
N.T., Hong Kong

Test Sponsor

Hilti (Hong Kong) Limited

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong




APPROVED SIGNATORY: _____

DATE: 11 SEP 2017

Ir. Dr. YUEN Sai-wing, MHKIE (FIRE)

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1 SUMMARY

Fire resistance test conducted in accordance with BS 476: Part 20: 1987 on 6 nos. of PVC pipes and conduits (specimens '20', '22', '23', '24', '25' and '26')

Twenty-seven specimens of penetration systems, namely specimens '1a' to '27' (refer to test sponsor's drawings in the appendix), had been subjected to a test in accordance with BS 476: Part 20: 1987, in order to determine their fire resistance performances. In this test report, only PVC pipes and conduits, namely specimens '20', '22', '23', '24', '25' and '26' (refer to photo 1), were considered. As requested by the test sponsor, the specimens were mounted within concrete line specimen holder as shown in the test sponsor's drawings (see the appendix). The specimens '20', '22', and '23' were asymmetrical and the fire side of specimen was determined by the test sponsor. The specimens '24', '25', and '26' were symmetrical and only one side of specimen was tested as per test sponsor's request.

Specimen '20' was comprised of 2 nos. of 50 mm internal diameter by nominal 2.5 mm thick by 1,400 mm long PVC pipes filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipes were protected by 'CFS-CID 50' firestop cast-in device.

Specimen '22' was comprised of 1 no. of 50 mm internal diameter by nominal 2.5 mm thick by 1,400 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by 'CFS-CID 50' firestop cast-in device.

Specimen '23' was comprised of 1 no. of 150 mm internal diameter by nominal 2.5 mm thick by 1,400 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by 'CFS-CID 160' firestop cast-in device.

Specimen '24' was comprised of 1 no. of 32 mm diameter by nominal 2.5 mm thick by 1,400 mm long PVC conduit filled with 'Hilti CP606' sealant. The conduit was protected by 2 nos. of 'CFS-D 25' firestop cable disc.

Specimen '25' was comprised of 1 no. of 25 mm internal diameter by nominal 1.5 mm thick by 1,400 mm long PVC conduit filled with 'Hilti CP606' sealant. The conduit was protected by 1 no. of 'CFS-D 25' firestop cable disc.

Specimen '26' was comprised of 1 no. of 150 mm internal diameter by nominal 5 mm thick by 1,400 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by 2 stacks of 'CFS-C EL' firestop endless collars.

All specimens were penetrated through a nominal 200 mm thick concrete wall. The PVC pipes and conduits were fixed to 42 mm by 20 mm by 3 mm thick steel channels, located at 500 mm from the concrete wall, by nominal 3 mm thick rings on both sides. The steel channels were supported by an external steel framework constructed by 50 mm by 50 mm by 3 mm steel L-angles which in turn fixed to the concrete lining of test rig by 2 nos. of M10 anchor bolts.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	Insulation
Specimen '20'	121 Minutes (No failure)	N/A
Specimen '22'	121 Minutes (No failure)	N/A
Specimen '23'	121 Minutes (No failure)	96 Minutes
Specimen '24'	121 Minutes (No failure)	N/A
Specimen '25'	121 Minutes (No failure)	N/A
Specimen '26'	121 Minutes (No failure)	48 Minutes

The test was discontinued after a heating period of 121 minutes.

2 INTRODUCTION

The objective of the test is to determine the fire resistance performance of 6 nos. of PVC pipes and conduits when tested in accordance with BS 476: Part 20: 1987, 'Methods for determination of the fire resistance of elements of construction (general principles)'.

3 TEST INFORMATION

3.1 Test Sponsor

Hilti (Hong Kong) Limited

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

3.2 Testing Location

Research Engineering Development Façade Consultants Limited, Hong Kong Main Laboratory of
DD 134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong.

3.3 Date of Test

20th January 2017

3.4 Witness of the test

The test was led by Mr. Solaris Chan of Research Engineering Development Façade Consultants Limited (RED) and was witnessed by Miss Selina Lin, Miss Dorothy Wai, Mr. Jimmy Chen, Mr. Dennis Yeung and Mr. Andrew Lau, the representatives of test sponsor.

4 EQUIPMENT

Nine (9) 'type K' thermocouples to monitor the temperature of the furnace, which were kept at 100 mm from the exposed face of the specimen (see Figure 1).

Ten (10) 'type K' thermocouples to monitor the temperature of the unexposed face of the specimens (see Figure 2).

A 'type K' roving thermocouple to measure temperature on hot spots of unexposed surface of specimens.

A micro-manometer provided to monitor the furnace pressure.

Cotton pads, 6 mm and 25 mm gap gauges.

A radiometer placed at 1,000 mm away from the unexposed surface to measure the radiation of unexposed surface of the specimens.

5 CONDITIONING

The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 5 days. Throughout this period of time, both of the temperature and humidity of the laboratory were measured and recorded as being within a range of 14 °C to 22 °C and 68 % to 89 % respectively.

6 TEST SPECIMEN CONSTRUCTION

The specimens were installed into a concrete specimen holder with pre-prepared opening to form the test construction. The details of the fixings were outlined in Appendix D.

A comprehensive description of the test specimens construction was presented in the appendix, which was based on a survey of the specimens and information supplied by the test sponsor.

7 TEST PROCEDURES

The test was conducted in accordance with the procedures specified in BS 476: Part 20: 1987. The ambient temperature of the test area during the test was measured. After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 2 Pa relative to atmosphere, at 1,000 mm from the notional floor level.

The furnace was monitored by nine (9) thermocouples so that the mean furnace temperature complied with the requirements of Clause 3.1 of BS 476: Part 20: 1987.

The temperature of the unexposed face was monitored by means of ten (10) thermocouples fixed to the unexposed surface (see Figure 2 for the locations and reference numbers of the thermocouples).

Thermocouples S32 and S34 were fixed at 100 mm away from the concrete wall for monitoring both of the mean and maximum surface temperatures of specimen '23'. Thermocouples S30 and S31 were fixed at 50 mm away from the concrete wall for monitoring the maximum surface temperature of specimen '23' only. Thermocouples S28 and S29 were fixed at 100 mm away from the concrete wall for monitoring both of the mean and maximum surface temperatures of specimen '26'. Thermocouples S26 and S27 were fixed at 50 mm away from the concrete wall for monitoring the maximum surface temperature of specimen '26' only. Thermocouple S18 was fixed on specimen '22' and thermocouple S13 was fixed on specimen '25' for additional information only. The mean and maximum temperatures were recorded.

The cotton pads and gap gauges were used, if considered appropriate, to determine compliance with the integrity criterion of the standard. The occurrence of sustained flaming on the unexposed surface was monitored to determine compliance with this criterion. The lateral deflection of the specimen was measured by a steel ruler relative to a taut wire and recorded. The radiation of the specimen was measured and recorded.

8 TEST DATA AND INFORMATION

The ambient temperature of the test area during the test was 20 °C.

The furnace was controlled so that the mean furnace temperature complied with the requirements of BS 476: Part 20: 1987. The temperature record was shown graphically in Figure 3.

The maximum temperatures of the unexposed surface of specimen '22' was shown graphically in Figure 4.

The mean and maximum temperatures of the unexposed surface of specimen '23' were shown graphically in Figure 5.

The maximum temperatures of the unexposed surface of specimen '25' was shown graphically in Figure 6.

The mean and maximum temperatures of the unexposed surface of specimen '26' were shown graphically in Figure 7.

The furnace pressure was shown graphically in Figure 8.

The radiation was shown graphically in Figure 9.

A summary of the observations made on the general behaviour of the specimen is given in 'APPENDIX B - OBSERVATION'.

The mean furnace temperature obtained was summarized in Table 1.

The temperature rises of specimen obtained were summarized in Table 2.

The test was discontinued after a heating period of 121 minutes.

9 RESULTS

When tested in accordance with BS 476: Part 20: 1987, the requirements of the standard were satisfied for the following periods:

	Integrity	Insulation
Specimen '20'	121 Minutes (No failure)	N/A
Specimen '22'	121 Minutes (No failure)	N/A
Specimen '23'	121 Minutes (No failure)	96 Minutes
Specimen '24'	121 Minutes (No failure)	N/A
Specimen '25'	121 Minutes (No failure)	N/A
Specimen '26'	121 Minutes (No failure)	48 Minutes

Insulation - It is required that the mean temperature rise of the unexposed surface shall not be greater than 140 °C and that maximum temperature rise shall not be greater than 180 °C. Insulation failure also occurs simultaneously with integrity failure.

Specimen '23'

The 140 °C rise of the mean temperature of the unexposed surface of specimen did not reach during the test. The 180 °C rise of the maximum temperature of the unexposed surface of specimen reached and measured by thermocouple S30 after a heating period of 96 minutes. The maximum temperature rise was 398 °C measured by thermocouple S31 after a heating period of 121 minutes.

Specimen '26'

The 140 °C rise of the mean temperature of the unexposed surface of specimen reached after a heating period of 91 minutes. The 180 °C rise of the maximum temperature of the unexposed surface of specimen reached and measured by thermocouple S26 after a heating period of 48 minutes. The maximum temperature rise was 283 °C measured by thermocouple S26 after a heating period of 121 minutes.

Integrity - It is required that there is no collapse for the specimen, no sustained flaming on the unexposed surface and no loss of impermeability.

Specimen '20'

The specimen met the integrity requirements after a heating period of 121 minutes.

Specimen '22'

The specimen met the integrity requirements after a heating period of 121 minutes.

Specimen '23'

The specimen met the integrity requirements after a heating period of 121 minutes.

Specimen '24'

The specimen met the integrity requirements after a heating period of 121 minutes.

Specimen '25'

The specimen met the integrity requirements after a heating period of 121 minutes.

Specimen '26'

The specimen met the integrity requirements after a heating period of 121 minutes.

10 LIMITATIONS

The results relate only to the behaviour of the specimen of the element of construction under the particular conditions of the test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires (see Clause 12 of BS 476: Part 20: 1987).

The fire resistance performance of the specimen may change if substantially different gaps are used. Application of the results to the specimen of different dimensions or supported other than by a concrete wall or incorporating different components shall be the subject of a design appraisal.

APPENDIX A – Photos and Test Record

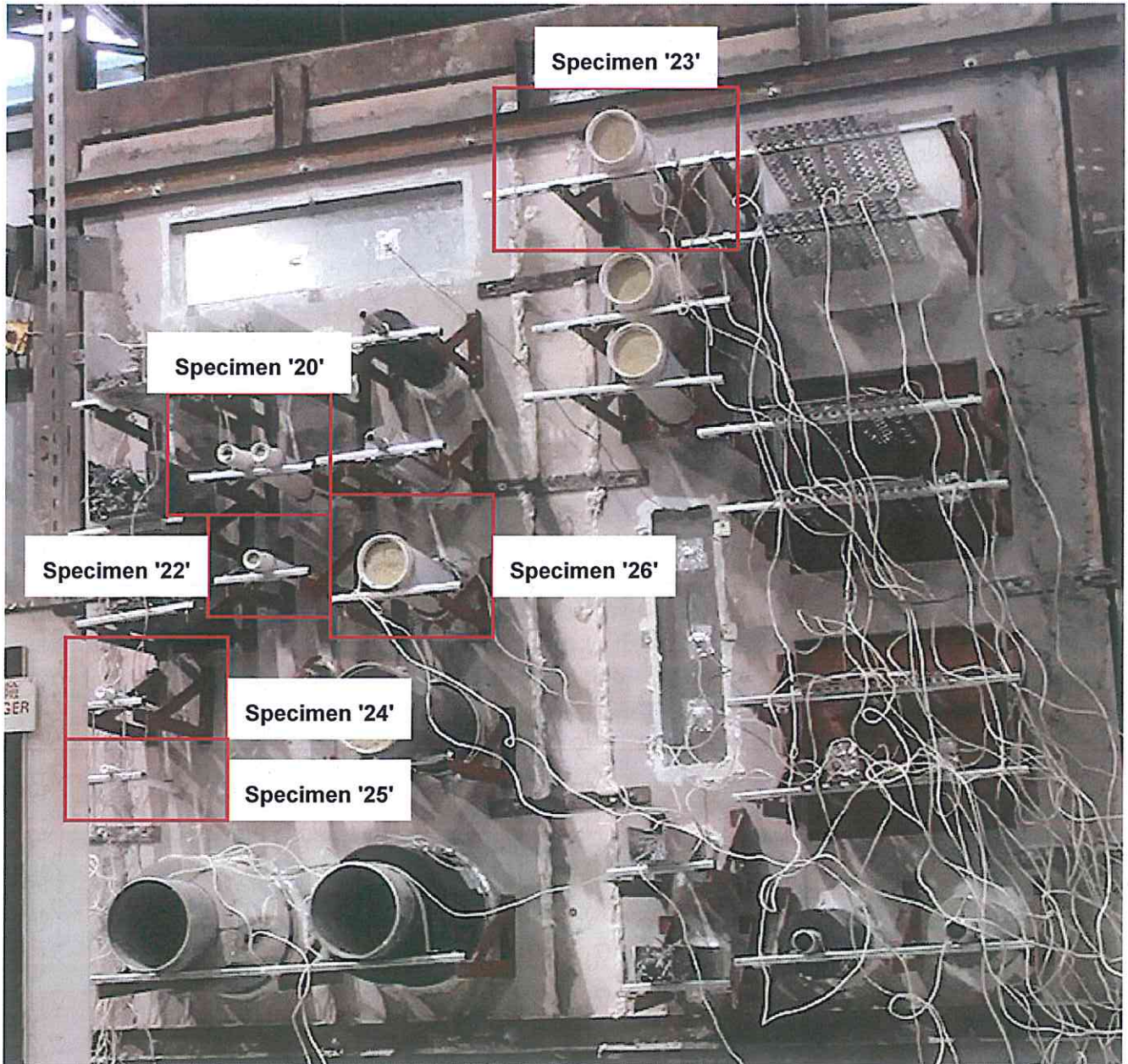


Photo 1: The unexposed face of the specimens before the test.

Note: In this test report, only specimens '20', '22', '23', '24', '25' and '26' were considered.

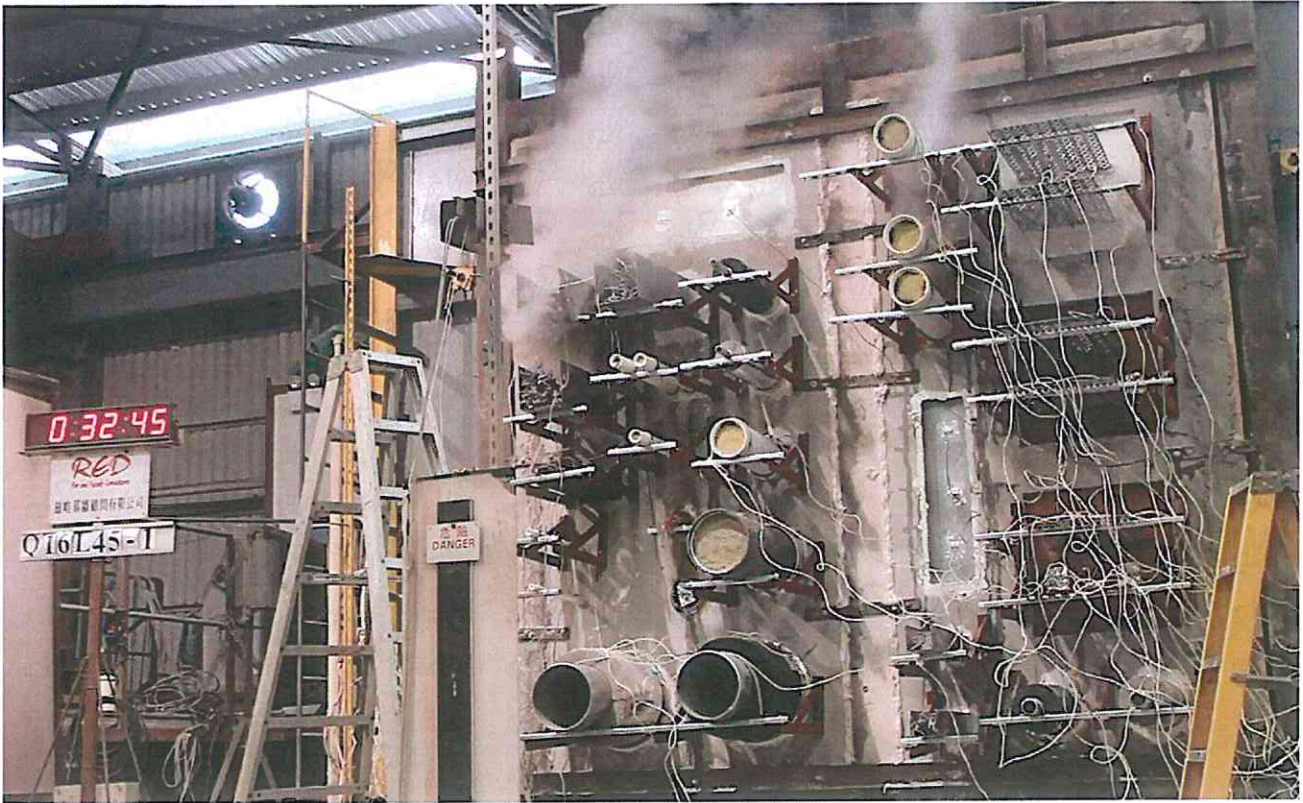


Photo 2: The unexposed face of the specimens after a heating period of 32 minutes.

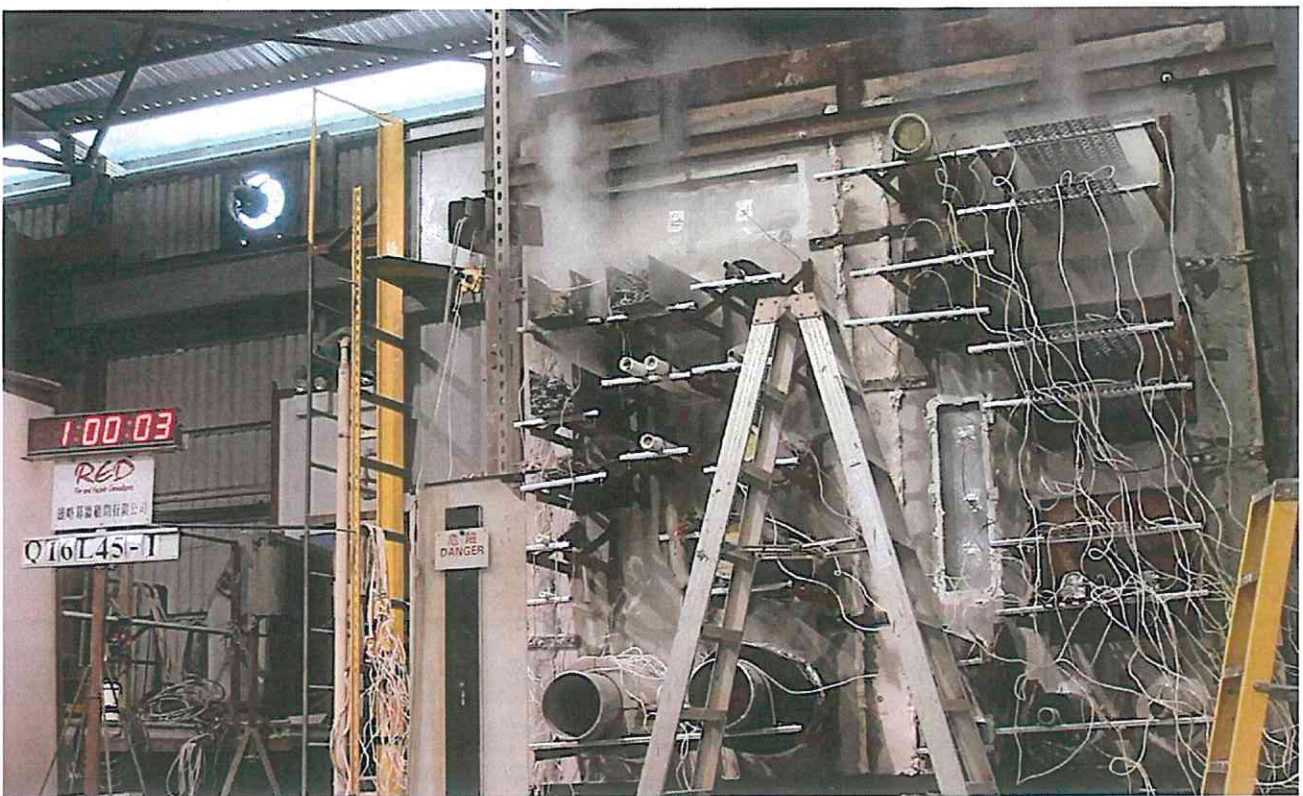


Photo 3: The unexposed face of the specimens after a heating period of 60 minutes.

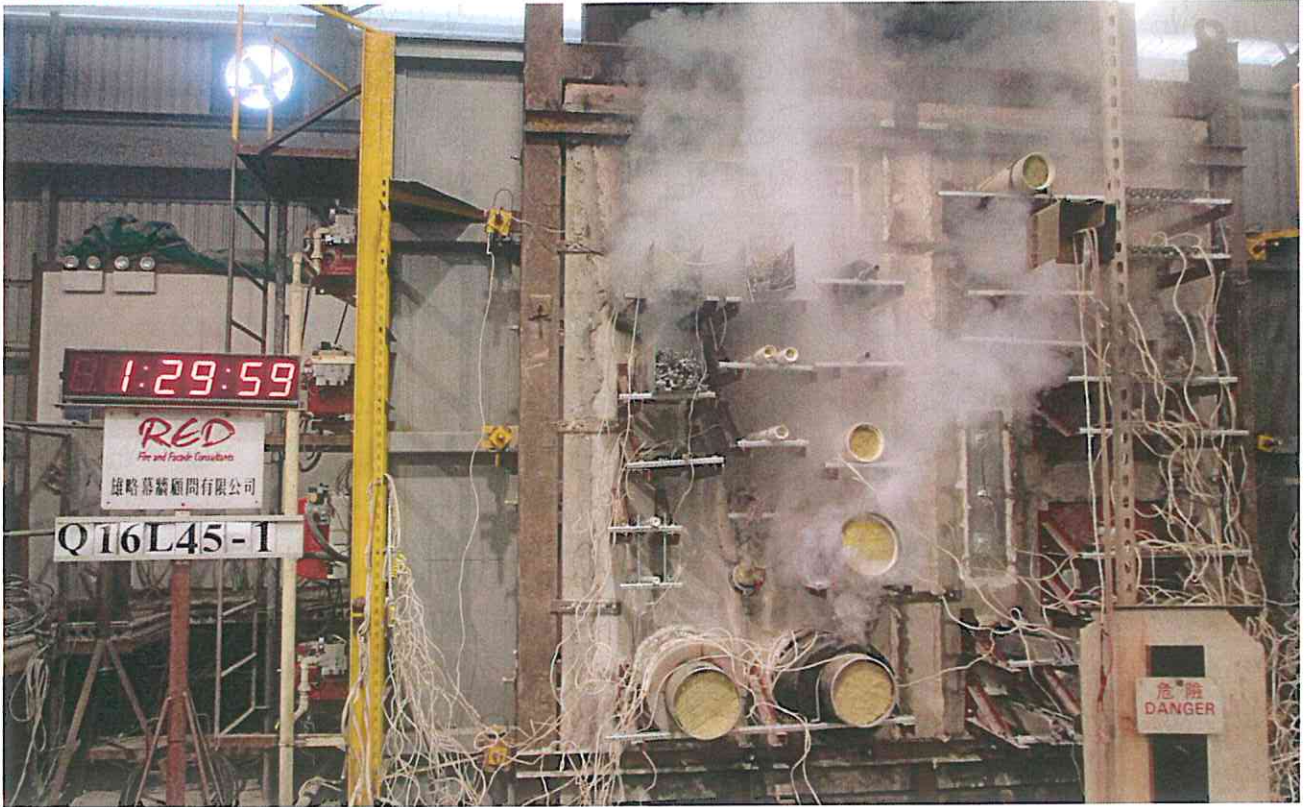


Photo 4: The unexposed face of the specimens after a heating period of 89 minutes.



Photo 5: The unexposed face of the specimens after the test.

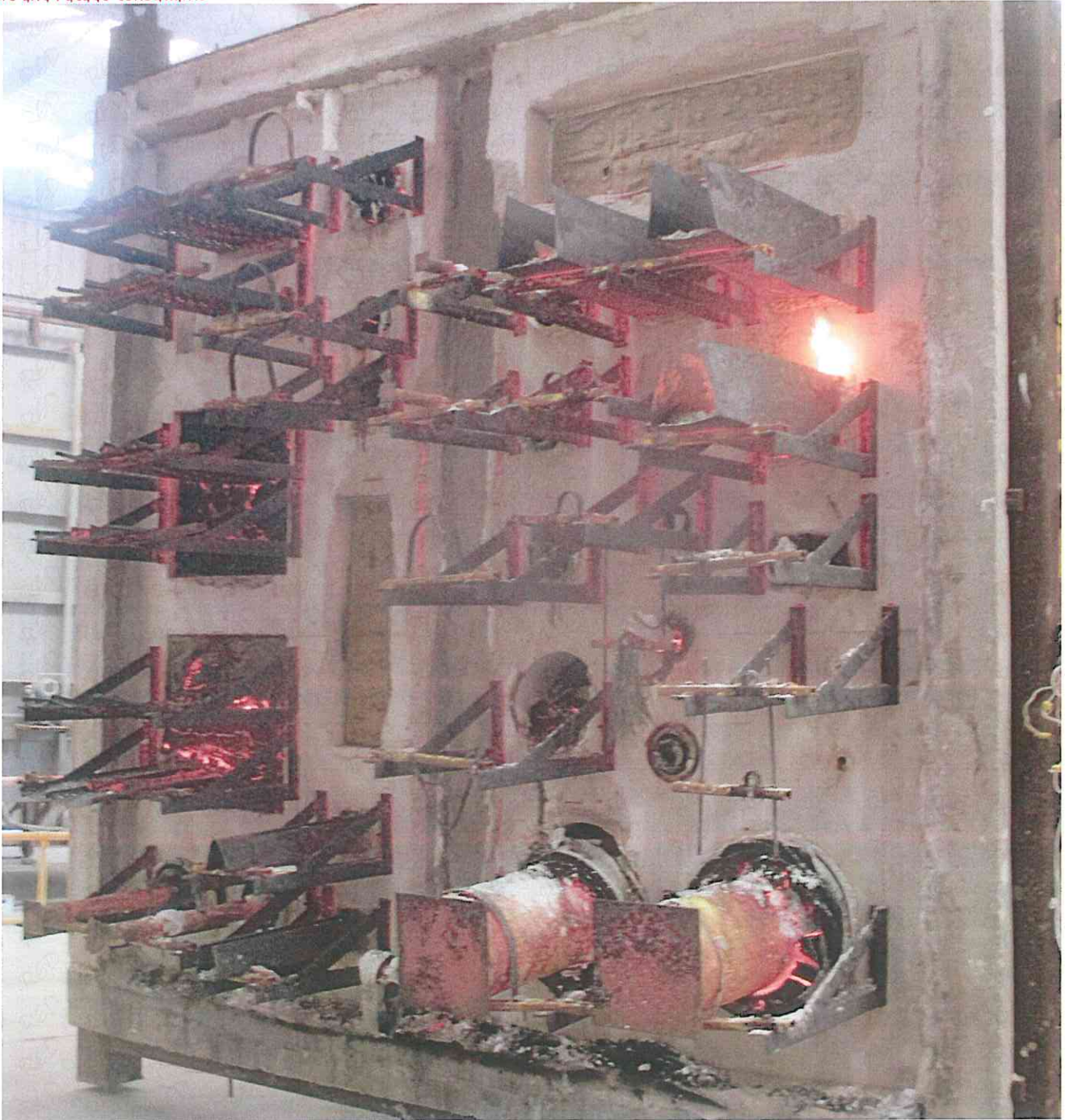


Photo 6: The exposed face of the specimens after the test.

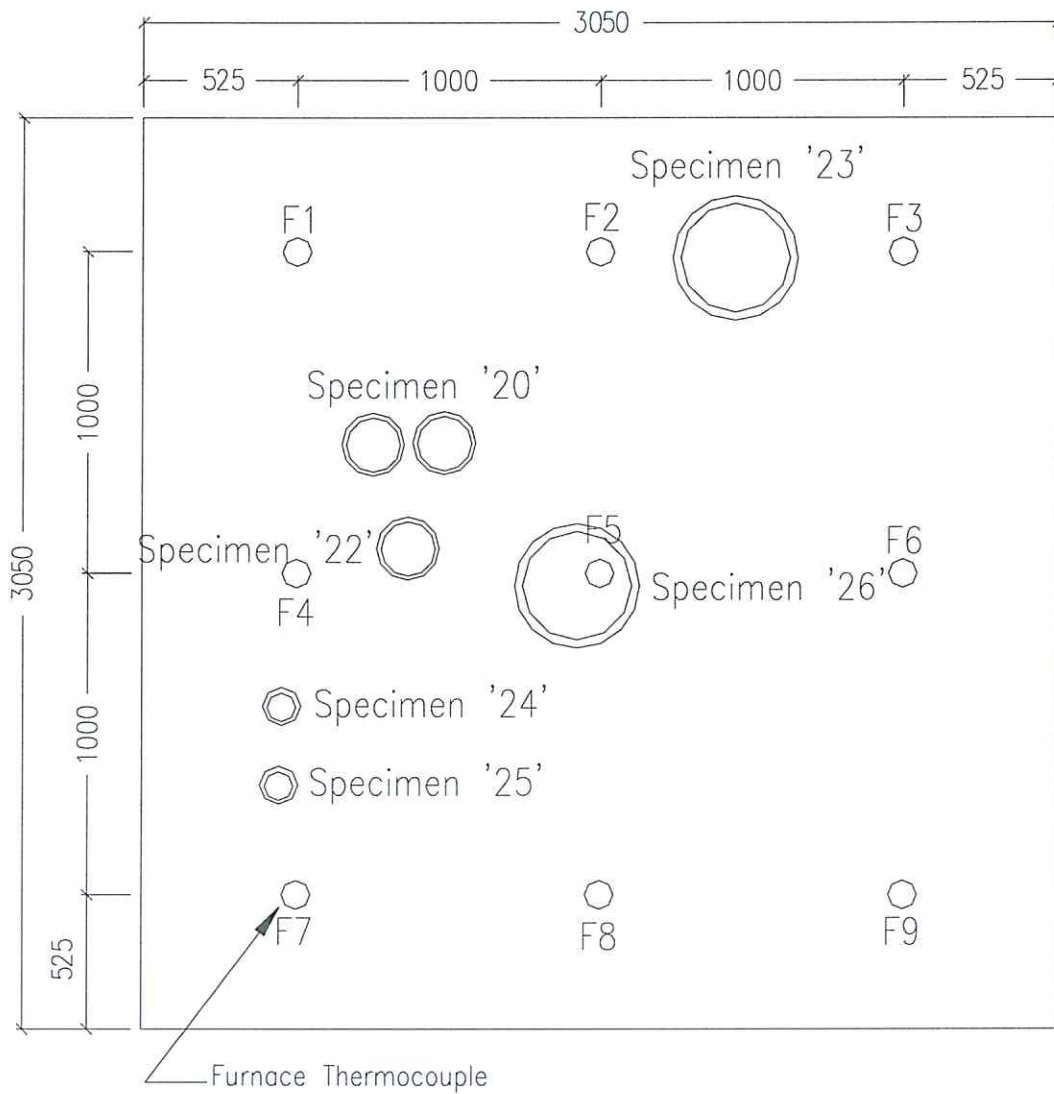


Figure 1 – Locations and reference numbers of furnace thermocouples.
(This figure is not to scale and all dimensions are in millimetres.)

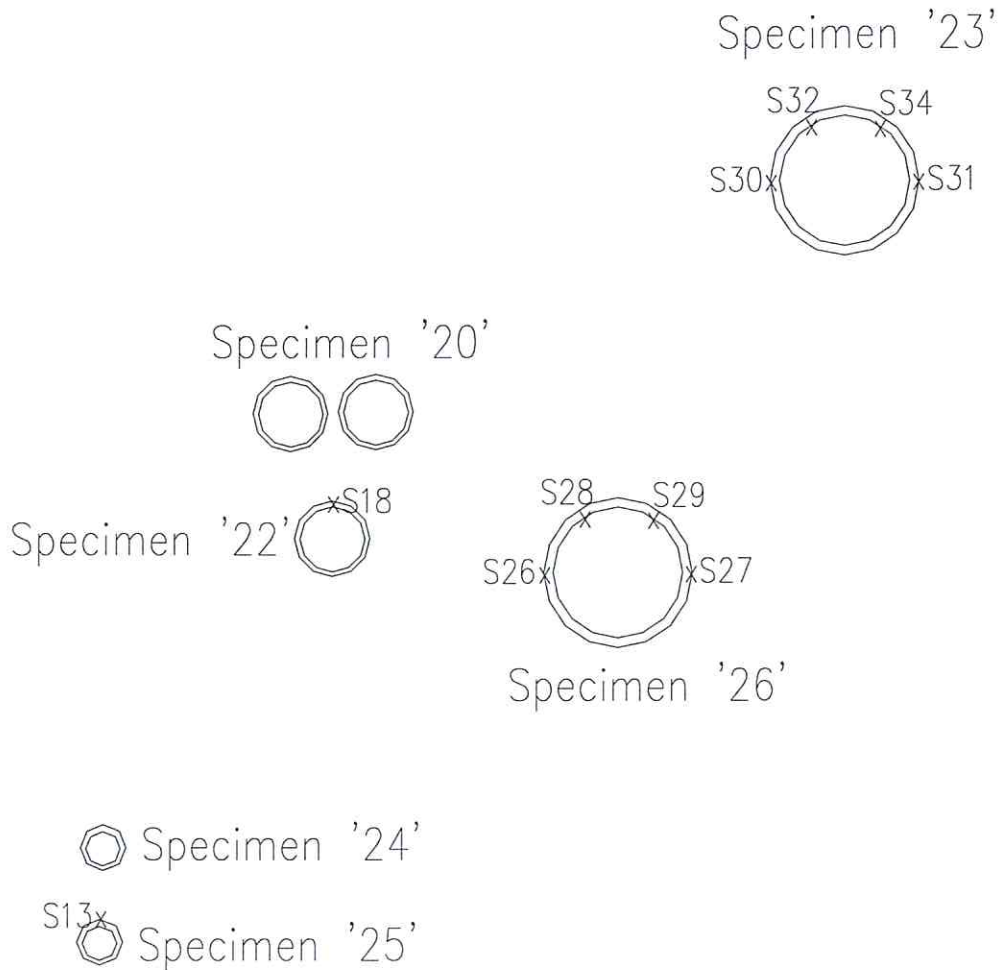


Figure 2 – Locations and reference number of thermocouples to monitor the temperature of unexposed surface of the specimens.

(This figure is not to scale.)

*Note: Thermocouples S26, S27, S30 and S31 were fixed at 50 mm away from the concrete wall.
Thermocouples S28, S29, S32 and S34 were fixed at 100 mm away from the concrete wall.
Thermocouples S18 and S13 was fixed for additional information only.*

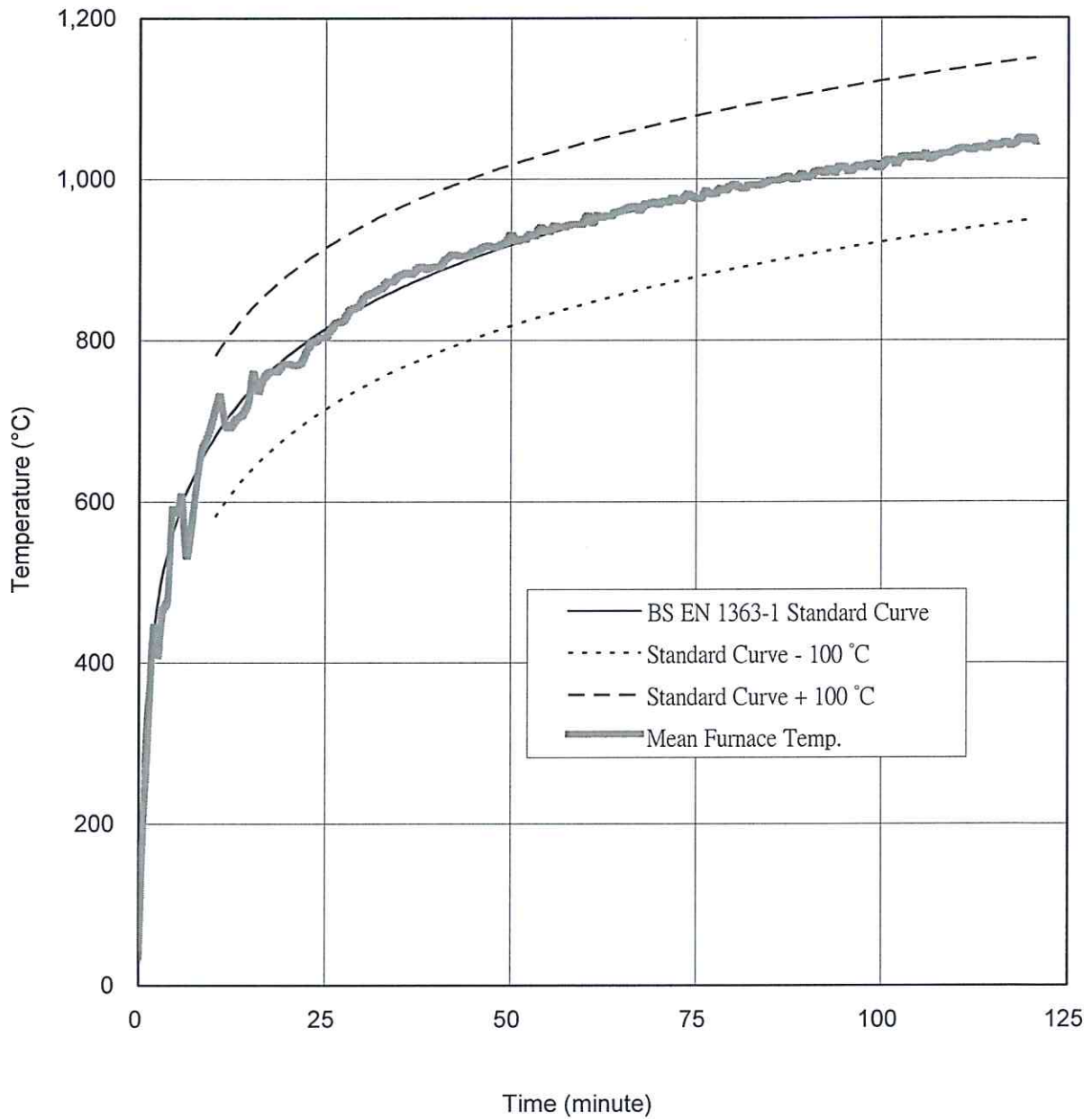


Figure 3 – Mean furnace temperature.

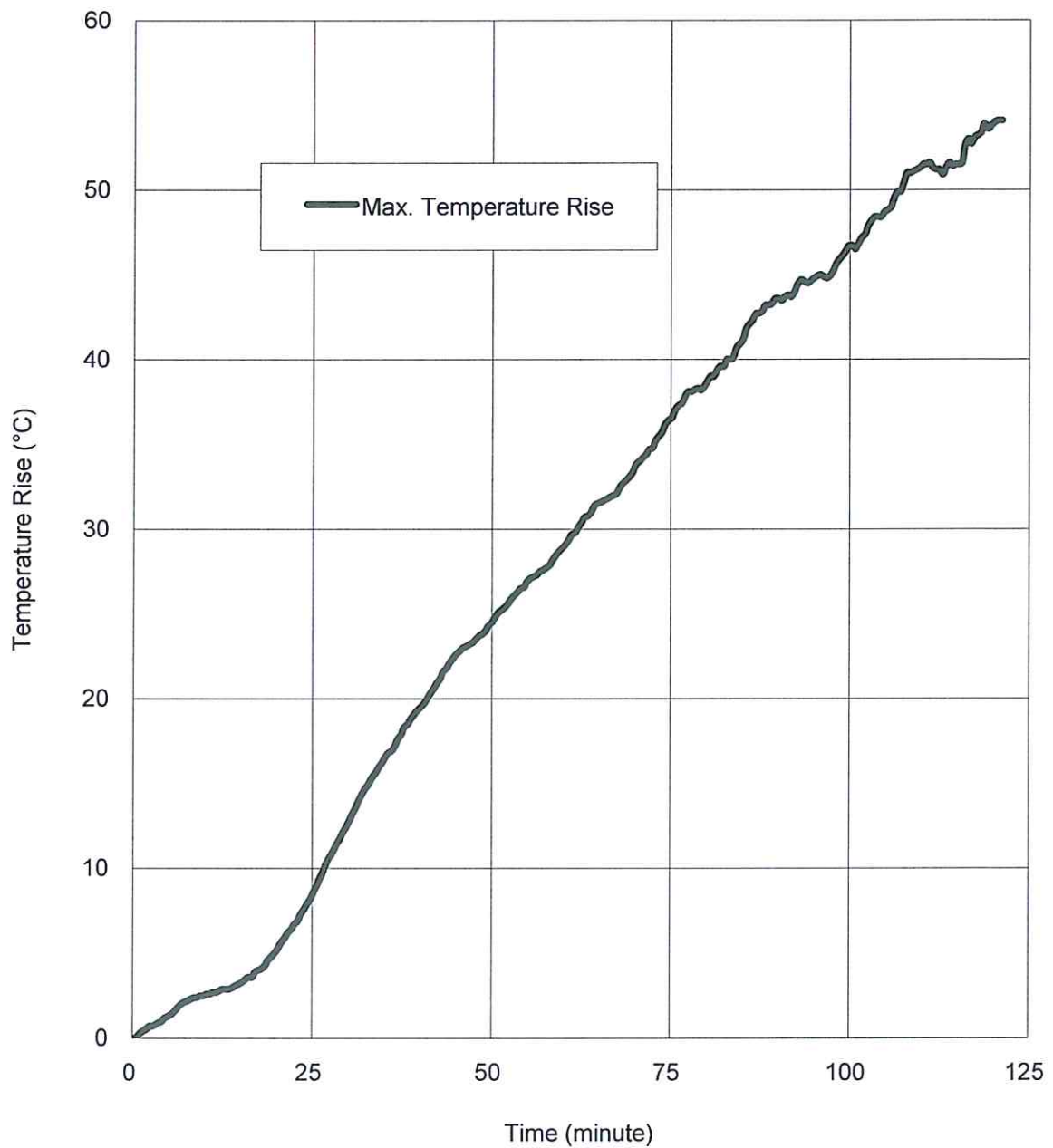


Figure 4 – Temperature rises of unexposed surface of specimen '22' (for additional information only).

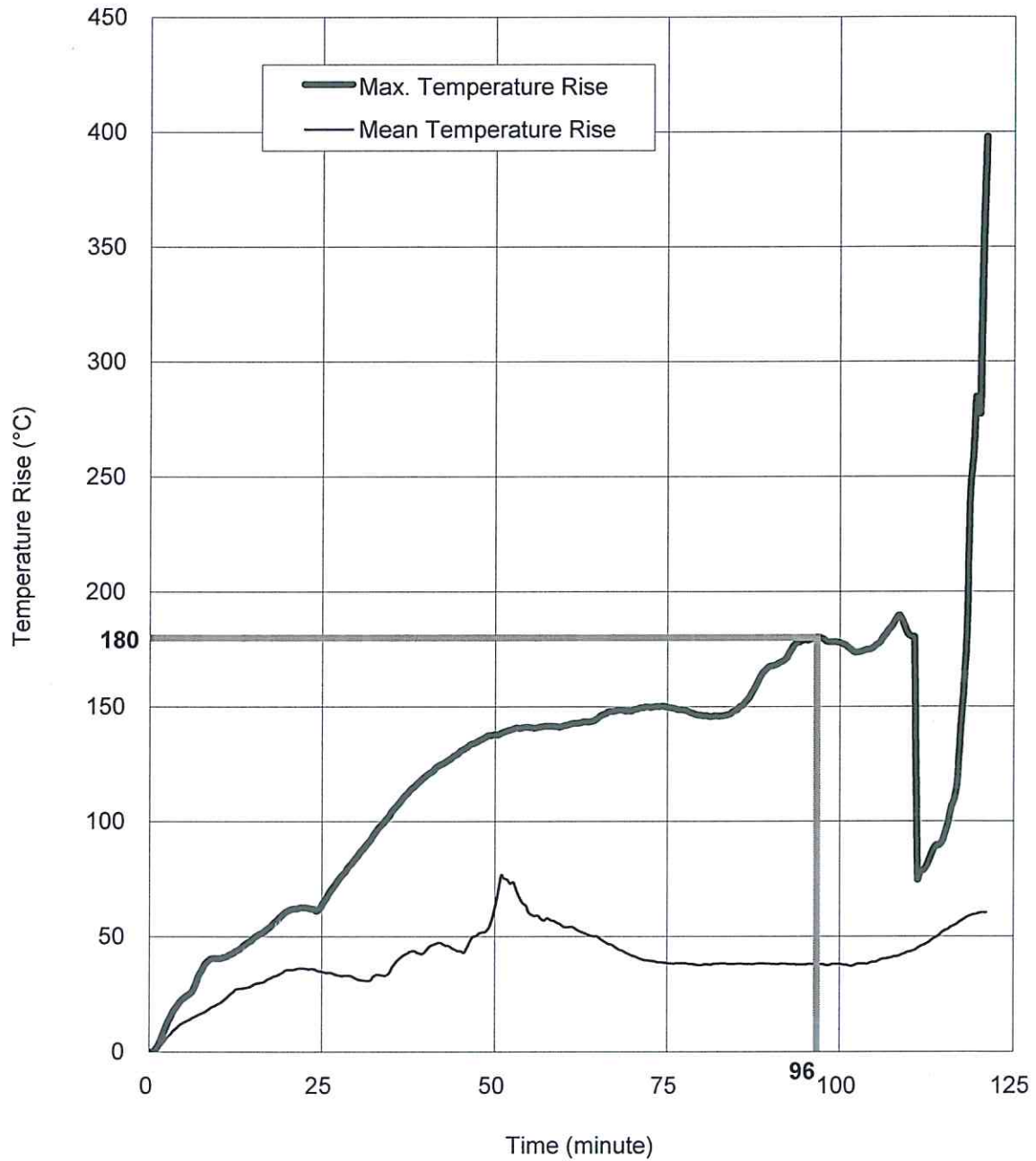


Figure 5 – Temperature rises of unexposed surface of specimen '23'.

Note: Thermocouple S30 detached after a heating period of 111 minutes.

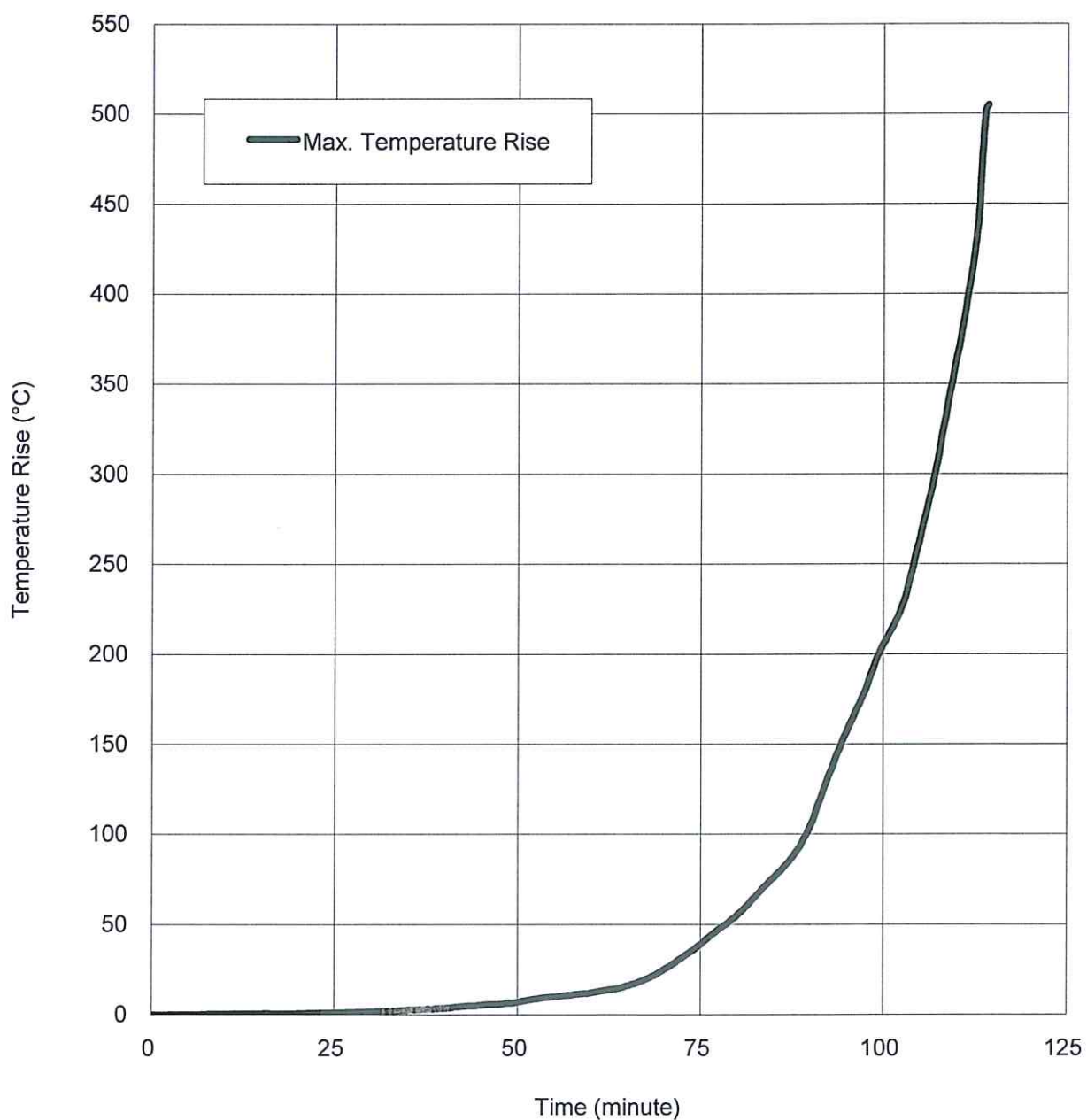


Figure 6 – Temperature rises of unexposed surface of specimen '25' (for additional information only).

Note: Thermocouple S13 was detached after a heating period of 114 minutes.

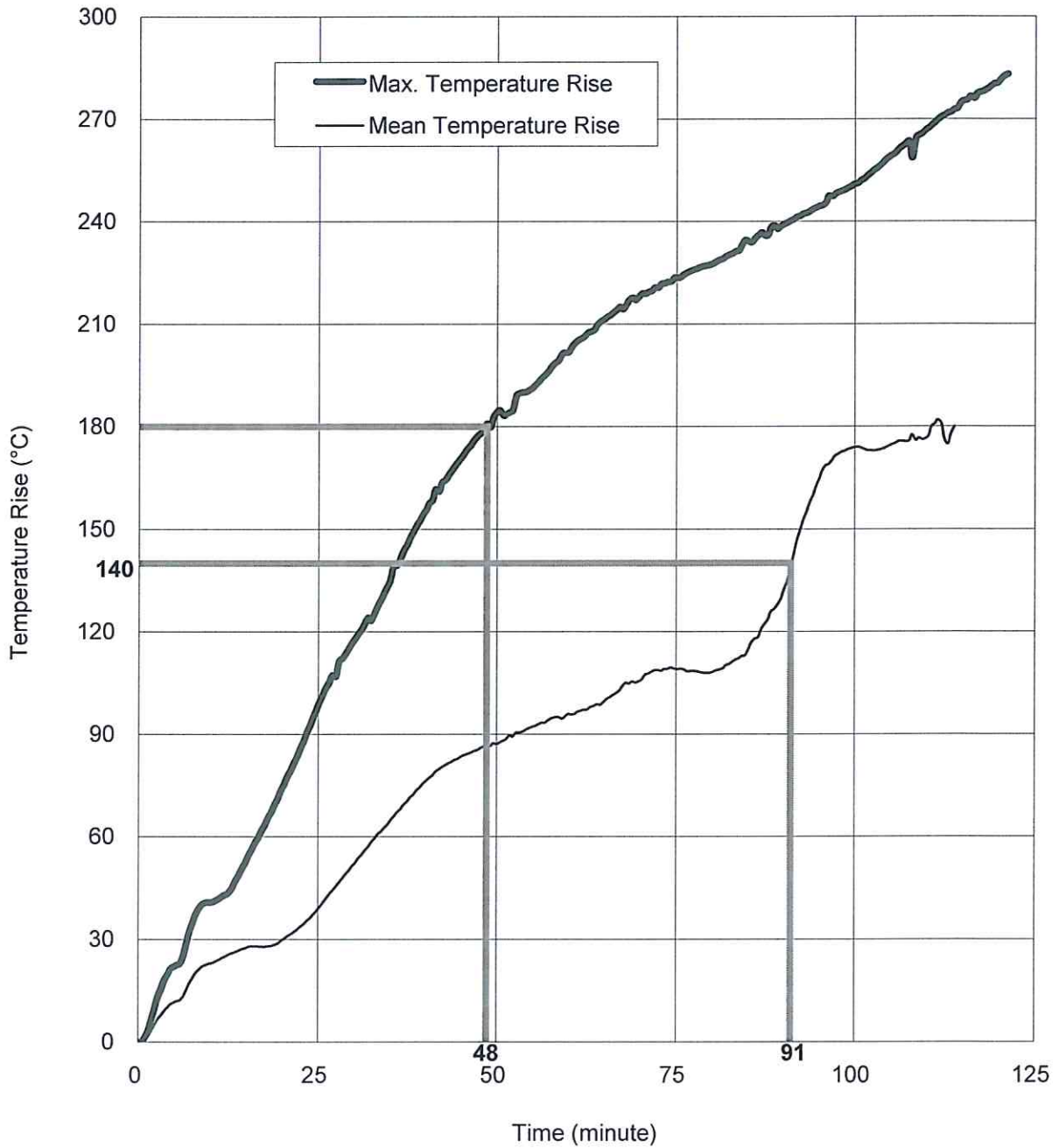


Figure 7 – Temperature rises of unexposed surface of specimen '26'.

Note: Thermocouples S27-S29 were detached after a heating period of 114 minutes.

After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 2 Pa relative to atmosphere, at 1,000 mm from the notional floor level.

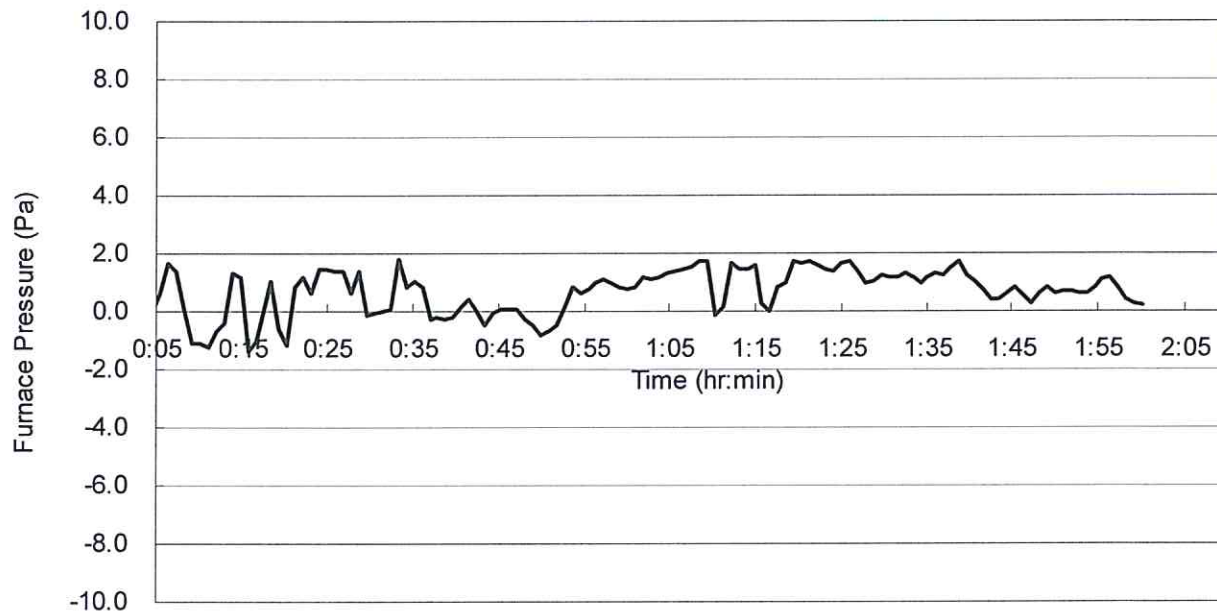


Figure 8 – Furnace pressure.

A radiometer placed at 1,000 mm away from the unexposed surface to measure the radiation of unexposed surface of the specimens.

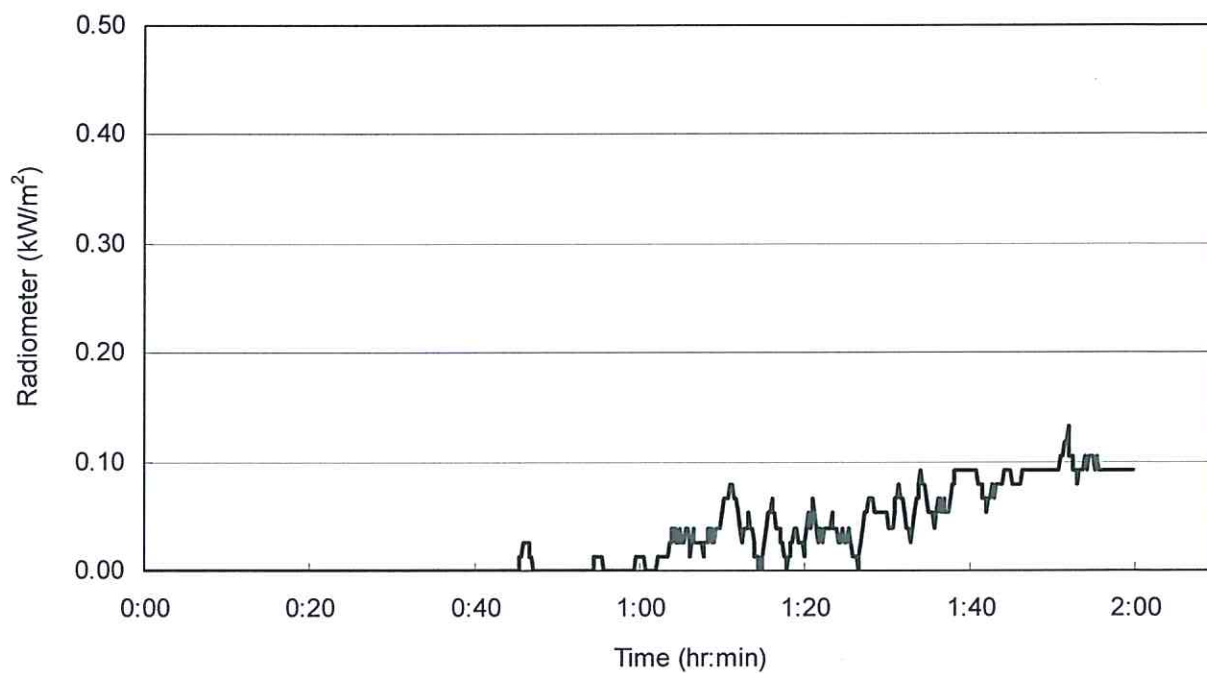


Figure 9 – Radiation.

APPENDIX B – Observation

Time (min.sec)	Exposed (E) or Unexposed (U)	Observation
00.00	-	Test started.
08.00	U	Smoke started releasing from the perimeter of specimens '22' and '23'.
14.30	U	Pop sound was heard from the specimens.
19.45	U	Smoke started releasing from the perimeter of specimen '26'.
30.00	U	Specimens '20', '22', '24' and '25' satisfied the integrity requirements performance. Specimens '23' and '26' satisfied the integrity and insulation requirements performance.
38.00	U	Smoke release from specimen '23' increased.
60.00	U	Specimens '20', '22', '24', '25' and '26' satisfied the integrity requirements performance. Specimens '23' satisfied the integrity and insulation requirements performance.
75.30	U	Water leakage was observed from specimen '22'.
90.00	U	Specimens '20', '22', '24', '25' and '26' satisfied the integrity requirements performance. Specimens '23' satisfied the integrity and insulation requirements performance.
120.00	U	Specimens '20', '22', '23', '24', '25' and '26' satisfied the integrity requirements performance.
121.11	-	Test was terminated as requested by test sponsor.

APPENDIX C – Data Recorded During the Test

Table 1 - Mean furnace temperature

Time (minute)	BS 476: Part 20 Standard Temp. Curve (°C)	Actual Mean Furnace Temp. (°C)
0	20	36
5	578	586
10	681	715
15	742	758
20	780	771
25	814	804
30	842	851
35	866	881
40	886	892
45	902	910
50	918	930
55	933	935
60	946	954
65	958	963
70	968	968
75	979	975
80	989	994
85	998	999
90	1006	1002
95	1014	1015
100	1022	1016
105	1029	1026
110	1037	1037
115	1043	1043
120	1049	1051
121	1050	1046

Notes: Locations of furnace thermocouples are shown in Figure 1.

The test was terminated as requested by the test sponsor after a heating period of 121 minutes.

Table 2 - Time and related temperature rise measured by thermocouples S13, S18, S26 - S32 and S34

Time (min)	S13	S18	S26	S27	S28	S29	S30	S31	S32	S34
0	0	0	0	0	0	0	0	0	0	0
5	0	1	3	3	1	23	23	3	2	24
10	1	3	30	4	5	41	41	8	5	36
15	1	3	54	7	10	46	46	16	9	50
20	1	5	75	10	13	47	48	33	10	61
25	1	9	99	13	16	63	65	35	9	60
30	2	13	118	17	21	84	85	33	10	53
35	3	17	135	26	27	102	104	39	25	48
40	4	20	156	33	35	118	120	36	42	46
45	5	23	171	36	41	126	131	49	35	52
50	7	25	185	42	46	130	138	70	73	64
55	10	27	192	46	52	133	141	73	47	71
60	12	29	203	51	56	136	142	56	40	69
65	16	32	212	54	59	142	146	50	35	64
70	25	34	219	61	61	151	149	46	25	58
75	39	37	224	67	65	153	150	44	21	56
80	55	39	228	76	67	149	146	43	20	56
85	76	41	234	96	75	155	149	42	20	56
90	104	44	239	101	101	163	168	42	20	57
95	160	45	245	104	161	173	179	47	20	56
100	208	47	251	101	178	170	177	49	19	56
105	270	49	260	151	176	174	177	57	19	59
110	370	52	267	173	181	173	181	72	22	65
115	-	52	275	-	-	-	-	95	25	81
120	-	54	282	-	-	-	-	278	27	93
121	-	54	283	-	-	-	-	398	28	93

Notes: Locations of thermocouples S13, S18, S26 - S32 and S34 are shown in Figure 2.

Thermocouples S13, S27 - S29 detached after a heating period of 114 minutes.

Thermocouple S30 detached after a heating period of 111 minutes.

The test was terminated as requested by the test sponsor after a heating period of 121 minutes.

APPENDIX D – Information from Test Sponsor

(The information provided by the test sponsor, which was not verified by RED or unless specified.)

For Specimens '20', '22', '23', '24', '25' and '26'

Item	Description
1	PVC Pipes and Conduits
Supplier	: Hilti Corporation.
Internal dimensions	: Specimen '20'- 50 mm diameter x 2.5 mm thick x 1,400 mm long (2 nos.).* Specimen '22'- 50 mm diameter x 2.5 mm thick x 1,400 mm long.* Specimen '23'- 150 mm diameter x 2.5 mm thick x 1,400 mm long.* Specimen '24'- 32 mm diameter x 2.5 mm thick x 1,400 mm long.* Specimen '25'- 25 mm diameter x 1.5 mm thick x 1,400 mm long.* Specimen '26'- 150 mm diameter x 5 mm thick x 1,400 mm long.*
Fixing details	: The PVC pipes and conduits were fixed to 42 mm x 20 mm x 3 mm thick steel channels, located at 500 mm from the concrete wall, by nominal 3 mm thick rings on both sides. The steel channels were supported by an external steel framework constructed by 50 mm x 50 mm x 3 mm steel L-angles which in turn fixed to the concrete lining of test rig by 2 nos. of M10 anchor bolts.*
End cover	Specimens '20', Filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m ³ with and 'Hilti CP606' sealant. Specimens '22', '23' & '26'- Specimens '24' Filled with 'Hilti CP606' sealant. & '25'-
2a	Firestop Cast-In Device
Brand & Model	: Hilti Firestop Cast-In Device CFS-CID 50.
Material	: Consists of a plastic housing, an intumescent inlay and rubber seal.
Fixing details	: Precast before concrete pouring.
Applied location	: At the gap between concrete test rig and specimens '20' and '22'.

Notes: * Verified on site by RED.

As shown on the test construction.

Appendix D – Information from Test Sponsor

(The information provided by test sponsor, which is not verified by RED or unless specified.)

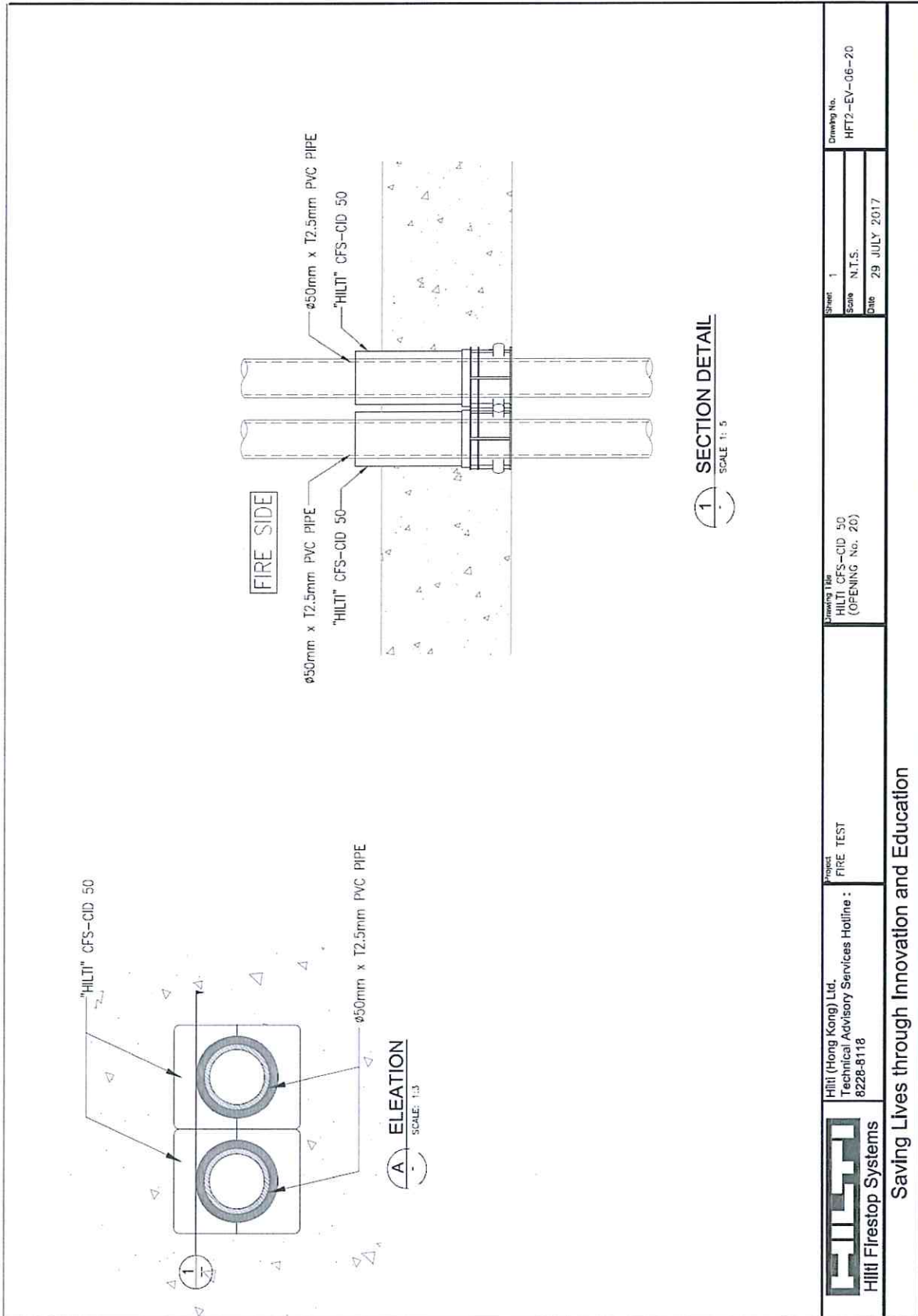
For Specimens '20', '22', '23', '24', '25' and '26'

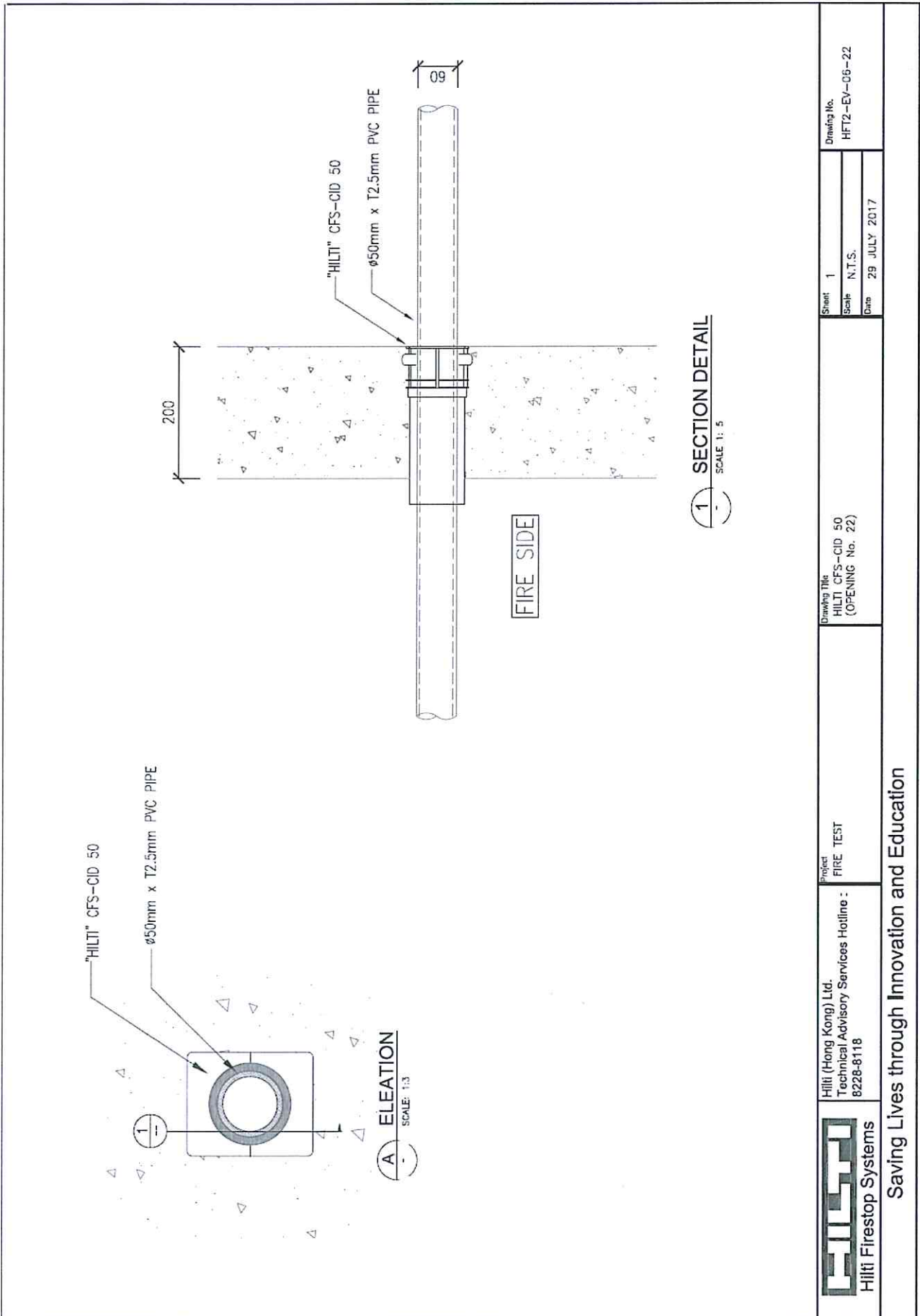
Item	Description
2b	Firestop Cast-In Device Brand & Model : Hilti Firestop Cast-In Device CFS-CID 160. Material : Consists of a plastic housing, an intumescent inlay and rubber seal. Fixing details : Precast before concrete pouring. Applied location : At the gap between concrete test rig and specimen '23'.
3	Firestop Cable Disc Brand & Model : Hilti Firestop Cable Disc CFS-D 25. Material : Tris(2-ethylhexyl) phosphate. Density : 1.6 g/cm ³ . Fixing details : Wrap around and paste against PVC conduits with overlapping to form an entity. Applied location : At the gap between concrete test rig and specimens '24' and '25'.
4	Firestop Collar Endless Brand & Model : Hilti Firestop Collar Endless CFS-C EL. Material : Consists of one intumescent strip with a soft polyurethane foam layer. Fixing details : Install against the wall with fixing hooks. Applied location : At the gap between concrete test rig and specimen '26' (2 stacks).
5	Fire Sealant Brand & Model : Hilti flexible firestop sealant CP 606 Material : Acrylic based. Applied locations : Filled in all the pipes and conduits.
6	Mineral Wool Board Brand : ROCKWOOL.# Material : Mineral wool. Thickness : 20 mm.* Density : 100 kg/m ³ .# Applied locations : Filled in specimens '20', '22', '23' and '26'.


* and # see notes on page 24

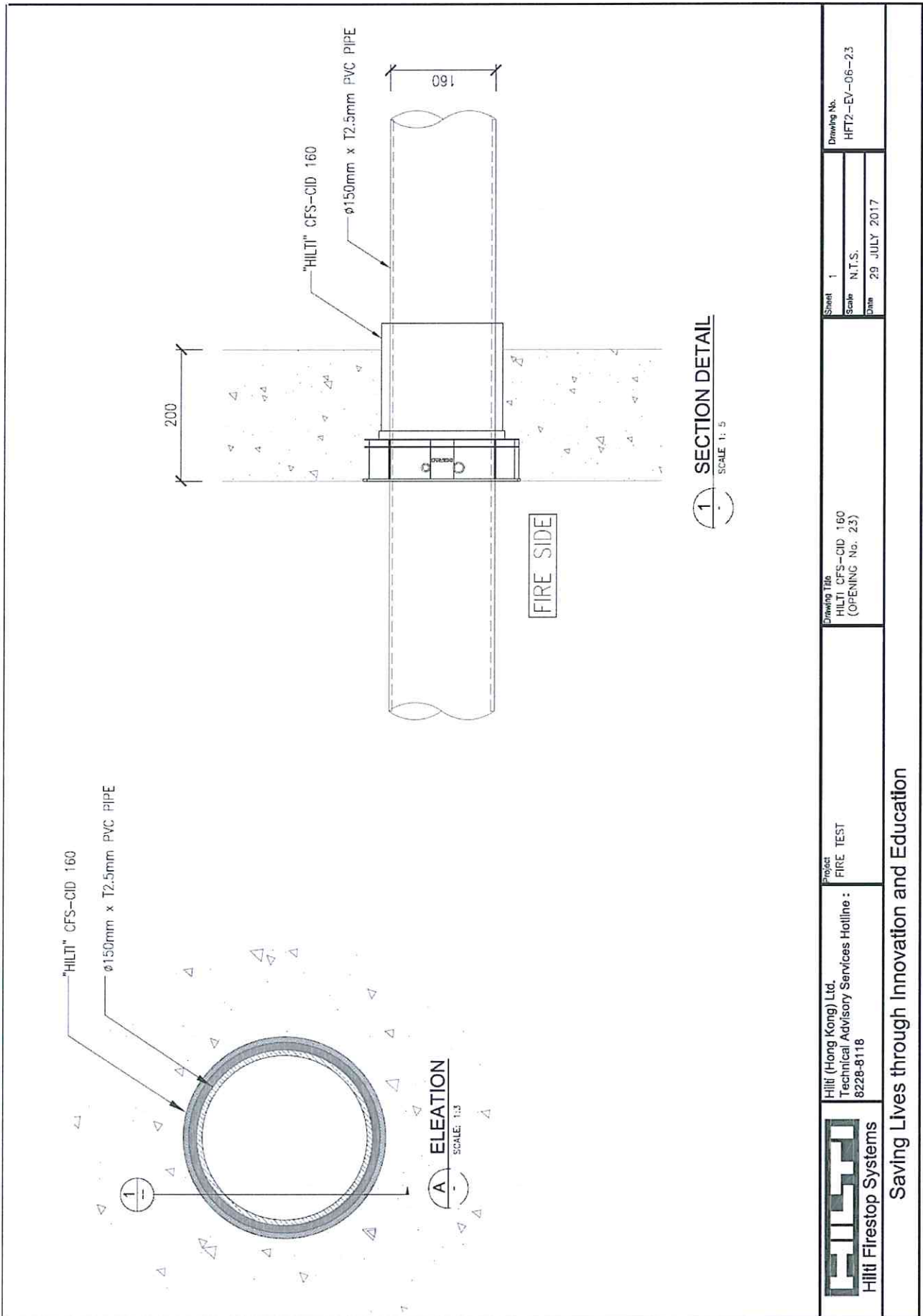
Drawings from Test Sponsor

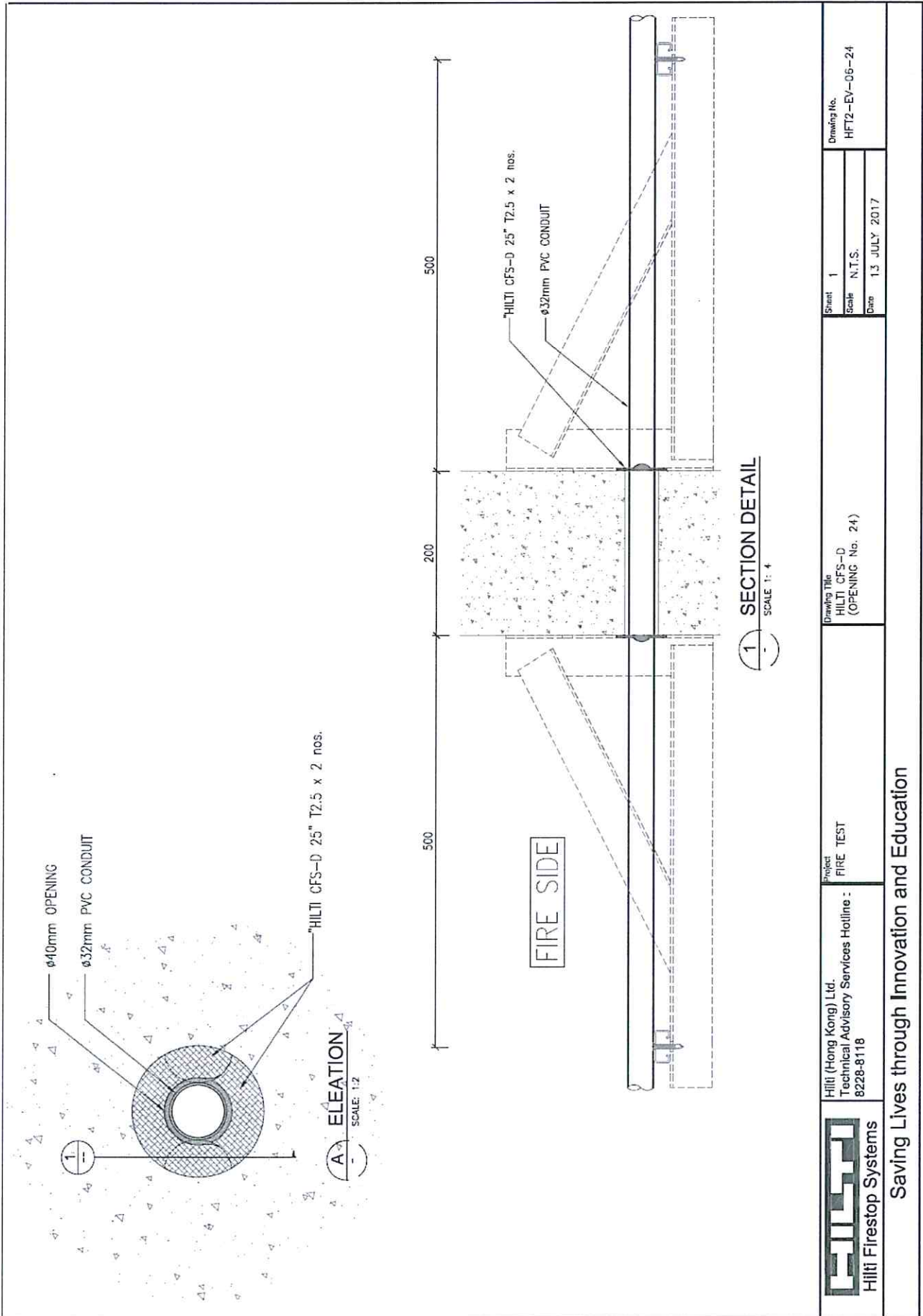
(The drawings provided by test sponsor, which was not verified by RED, except those specified and described in 'information from test sponsor'.)



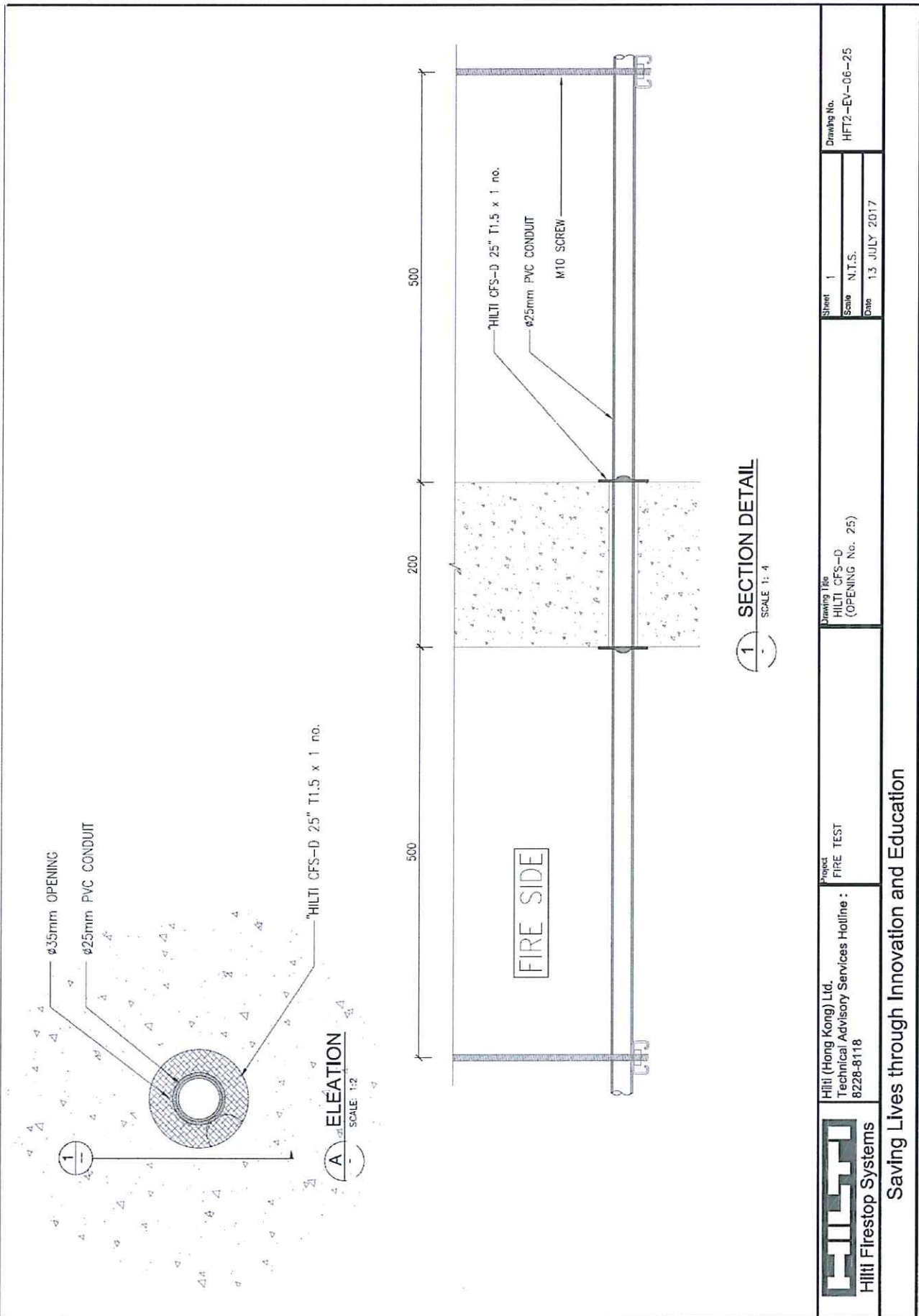


 Hilti Firestop Systems	Hilti (Hong Kong) Ltd. Technical Advisory Services Hotline : 8228-8118	Project FIRE TEST	Drawing Title HILTI CFS-CID 50 (OPENING No. 22)	Sheet 1 Scale N.T.S. Date 29 JULY 2017	Drawing No. HFT2-EV-05-22
	Saving Lives through Innovation and Education				



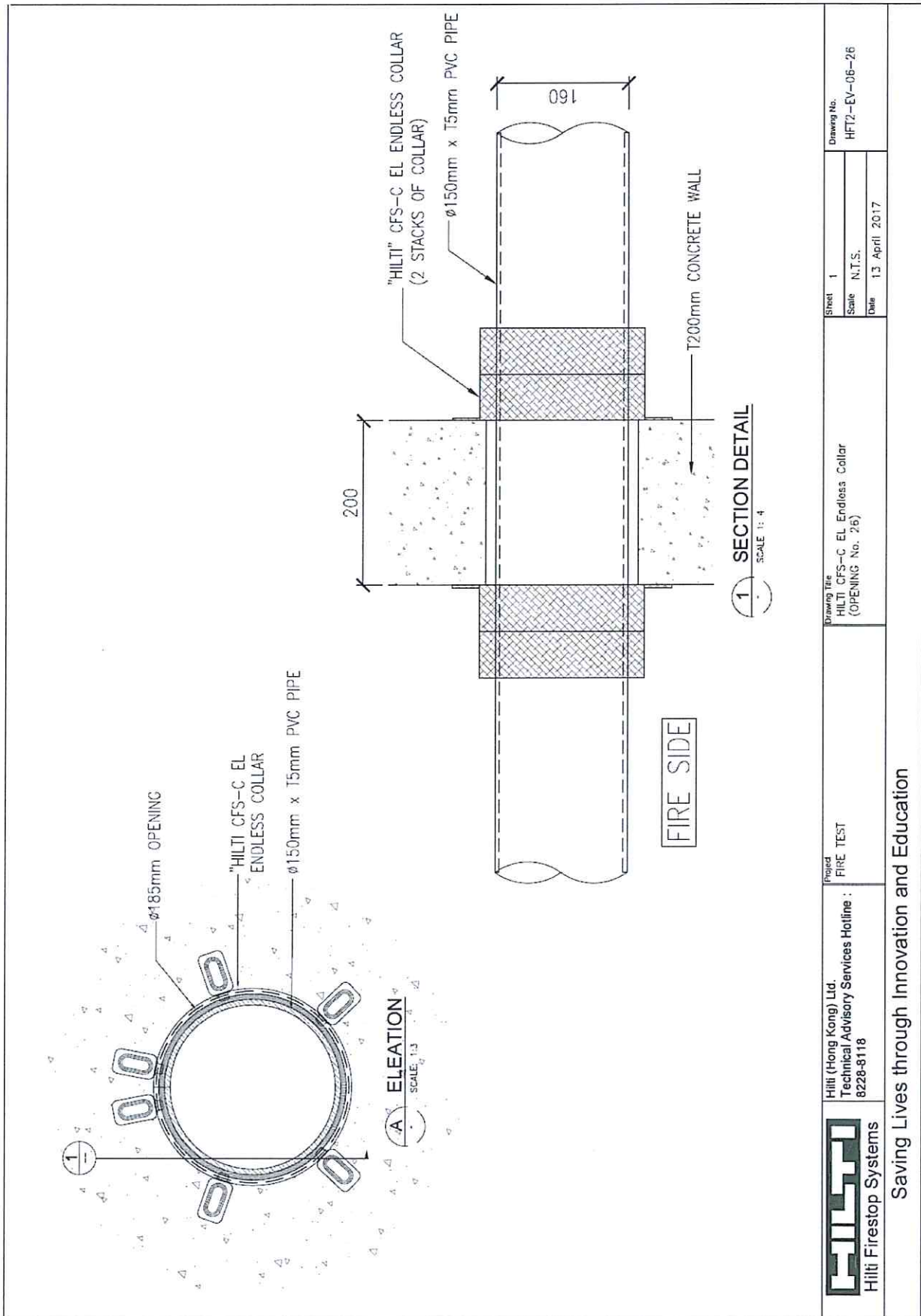


<p>Hilti Firestop Systems</p>	<p>Hilti (Hong Kong) Ltd. Technical Advisory Services Hotline : 8228-8118</p>	<p>Project FIRE TEST</p>	<p>Drawing Title HILTI CFS-D (OPENING No. 24)</p>	<p>Sheet 1</p>	<p>Drawing No. HFT2-EV-06-24</p>
		<p>Hilti Firestop Systems</p>	<p>Scale N.T.S.</p>	<p>Date 13 JULY 2017</p>	<p>Saving Lives through Innovation and Education</p>



SECTION DETAIL
SCALE 1: 4

<p>HILTI Firestop Systems</p>	<p>Hilti (Hong Kong) Ltd. Technical Advisory Services Hotline : 8228-8118</p>	<p>Project FIRE TEST</p>	<p>Drawing File HILTI CFS-D (OPENING No. 25)</p>	<p>Sheet 1</p>	<p>Drawing No. HFT2-EV-06-25</p>
	<p>Hilti Firestop Systems</p> <p>Saving Lives through Innovation and Education</p>	<p>Scale N.T.S.</p>	<p>Date 13 JULY 2017</p>	<p>Scale N.T.S.</p>	<p>Date 13 JULY 2017</p>



- End of report -

FIRE RESISTANCE TEST IN ACCORDANCE WITH BS 476: PART 20: 1987

On 4 nos. of Penetration Systems (Specimens '9', '14', '19' and '20')

Test Report No.: R16L28-2C

Identification No.: Q16L45-2

Issue Date: 9 November 2017

Testing Location:

RED Hong Kong Main Laboratory
DD 134, Lung Kwu Tan, Tuen Mun,
N.T., Hong Kong

Test Sponsor

Hilti (Hong Kong) Limited

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong



APPROVED SIGNATORY: _____

DATE: 9 NOV 2017

Ir. Dr. YUEN Sai-wing, MHKIE (FIRE)

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (HOKLAS 091- TEST) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accreditation laboratories. The results shown in this test report were determined by this laboratory in accordance with its terms of accreditation. This report may not be reproduced except in full.

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1 SUMMARY

Fire resistance test conducted in accordance with BS 476: Part 20: 1987 on 4 nos. of penetration systems (specimens '9', '14', '19' and '20')

Twenty-one specimens of penetration systems had been subjected to a test in accordance with BS 476: Part 20: 1987, in order to determine their fire resistance performances. In this test report, only PVC pipes, namely specimens '9', '14', '19' and '20' (refer to figure 1), were considered. As requested by the test sponsor, the specimens were mounted within concrete line specimen holder as shown in the test sponsor's drawings (see the appendix). The specimens were symmetrical and only one side of specimens was tested as per test sponsor's request.

Specimen '9' was comprised of 2 nos. of 50 mm internal diameter by nominal 2.5 mm thick by 1,000 mm long PVC pipes filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipes were protected by 'CFS-CID 50' firestop cast-in device.

Specimen '14' was comprised of 2 nos. of 150 mm internal diameter by nominal 3.5 mm thick by 1,000 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by 'CFS-CID 160' firestop cast-in device.

Specimen '19' was comprised of 1 no. of 150 mm internal diameter by nominal 5 mm thick by 1,000 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by 2 nos. of 'CFS-C EL' firestop endless collars installed at the exposed side.

Specimen '20' was comprised of 1 no. of 100 mm internal diameter by nominal 5 mm thick by 1,000 mm long PVC pipe filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m³ with and 'Hilti CP606' sealant. The pipe was protected by a 'CFS-C EL' firestop endless collar installed the exposed side.

The specimens were fixed to 50 mm by 50 mm by 3 mm thick steel brackets, located at 300 mm from the concrete floor, by M5 bolts and nuts on both sides. The steel brackets were supported by an external steel framework constructed by 50 mm by 50 mm by 3 mm steel brackets which in turn fixed to the concrete lining of test rig by 2 nos. of M10 anchor bolts.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	Insulation
Specimen '9'	241 Minutes (No failure)	N/A
Specimen '14'	241 Minutes (No failure)	N/A
Specimen '19'	230 Minutes	N/A
Specimen '20'	126 Minutes	N/A

The test was discontinued after a heating period of 241 minutes.

2 INTRODUCTION

The objective of the test is to determine the fire resistance performance of 6 nos. of penetration systems when tested in accordance with BS 476: Part 20: 1987, 'Methods for determination of the fire resistance of elements of construction (general principles)'.

3 TEST INFORMATION

3.1 Test Sponsor

Hilti (Hong Kong) Limited

701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

3.2 Testing Location

Research Engineering Development Façade Consultants Limited, Hong Kong Main Laboratory of
DD 134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong.

3.3 Date of Test

10th May 2017

3.4 Witness of the test

The test was led by Mr. Solaris Chan of Research Engineering Development Façade Consultants Limited (RED) and was witnessed by Miss Selina Lin and Mr. Dennis Yeung, the representatives of test sponsor.

4 EQUIPMENT

Nine (9) 'type K' thermocouples to monitor the temperature of the furnace, which were kept at 100 mm from the exposed face of the specimen (see Figure 1).

Six (6) 'type K' thermocouples to monitor the temperature of the unexposed face of the specimens (see Figure 2).

A 'type K' roving thermocouple to measure temperature on hot spots of unexposed surface of specimens.

A micro-manometer provided to monitor the furnace pressure.

Cotton pads, 6 mm and 25 mm gap gauges.

5 CONDITIONING

The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 6 days. Throughout this period of time, both of the temperature and humidity of the laboratory were measured and recorded as being within a range of 24 °C to 35 °C and 58 % to 91 % respectively.

6 TEST SPECIMEN CONSTRUCTION

The specimens were installed into a concrete specimen holder with pre-prepared opening to form the test construction. The details of the fixings were outlined in Appendix D.

A comprehensive description of the test specimens construction was presented in the appendix, which was based on a survey of the specimens and information supplied by the test sponsor.

7 TEST PROCEDURES

The test was conducted in accordance with the procedures specified in BS 476: Part 20: 1987. The ambient temperature of the test area during the test was measured. After the first 5 minutes of the test, the furnace pressure was maintained at 20 ± 2 Pa relative to atmosphere, at 100 mm from the exposed side of specimen.

The furnace was monitored by nine (9) thermocouples so that the mean furnace temperature complied with the requirements of Clause 3.1 of BS 476: Part 20: 1987.

The temperature of the unexposed face was monitored by means of six (6) thermocouples fixed to the unexposed surface (see Figure 2 for the locations and reference numbers of the thermocouples). Thermocouples S47 and S48 were fixed on specimen '9', thermocouples S21 and S22 were fixed on specimen '14', thermocouple S41 was fixed on specimen '19' and thermocouple S4 was fixed on specimen '20' for additional information only. The mean and maximum temperatures were recorded.

The cotton pads and gap gauges were used, if considered appropriate, to determine compliance with the integrity criterion of the standard. The occurrence of sustained flaming on the unexposed surface was monitored to determine compliance with this criterion.

8 TEST DATA AND INFORMATION

The ambient temperature of the test area during the test was 31 °C.

The furnace was controlled so that the mean furnace temperature complied with the requirements of BS 476: Part 20: 1987. The temperature record was shown graphically in Figure 3.

The maximum temperatures of the unexposed surface of specimen '9' was shown graphically in Figure 4.

The maximum temperatures of the unexposed surface of specimen '14' was shown graphically in Figure 5.

The maximum temperatures of the unexposed surface of specimen '19' was shown graphically in Figure 6.

The maximum temperatures of the unexposed surface of specimen '20' was shown graphically in Figure 7.

The furnace pressure was shown graphically in Figure 8.

A summary of the observations made on the general behaviour of the specimen is given in 'APPENDIX B - OBSERVATION'.

The mean furnace temperature obtained was summarized in Table 1.

The temperature rises of specimen obtained were summarized in Table 2.

The test was discontinued after a heating period of 241 minutes.

9 RESULTS

When tested in accordance with BS 476: Part 20: 1987, the requirements of the standard were satisfied for the following periods:

	Integrity	Insulation
Specimen '9'	241 Minutes (No failure)	N/A
Specimen '14'	241 Minutes (No failure)	N/A
Specimen '19'	230 Minutes	N/A
Specimen '20'	126 Minutes	N/A

Integrity - It is required that there is no collapse for the specimen, no sustained flaming on the unexposed surface and no loss of impermeability.

Specimen '9'

The specimen met the integrity requirements after a heating period of 241 minutes.

Specimen '14'

The specimen met the integrity requirements after a heating period of 241 minutes.

Specimen '19'

Sustained flaming was observed from specimen '19' after a heating period of 230 minutes.

The specimen did not meet the integrity requirements after a heating period of 230 minutes.

Specimen '20'

Specimen '20' was covered by fire rated board with ceramic fibre blank as requested by the test sponsor after a heating period of 126 minutes.

The specimen did not meet the integrity requirements after a heating period of 126 minutes.

10 LIMITATIONS

The results relate only to the behaviour of the specimen of the element of construction under the particular conditions of the test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires (see Clause 12 of BS 476: Part 20: 1987).

The fire resistance performance of the specimen may change if substantially different gaps are used. Application of the results to the specimen of different dimensions or supported other than by a concrete wall or incorporating different components shall be the subject of a design appraisal.

APPENDIX A – Photos and Test Record



Photo 1: The unexposed face of the specimens before the test.

Note: In this test report, only specimens '9', '14', '19' and '20' were considered.



Photo 2: The unexposed face of the specimens after a heating period of 30 minutes.



Photo 3: The unexposed face of the specimens after a heating period of 60 minutes.



Photo 4: The unexposed face of the specimens after a heating period of 121 minutes.



Photo 5: The unexposed face of the specimens after a heating period of 181 minutes.



Photo 6: The unexposed face of the specimens after a heating period of 211 minutes.



Photo 7: The unexposed face of the specimens after the test.

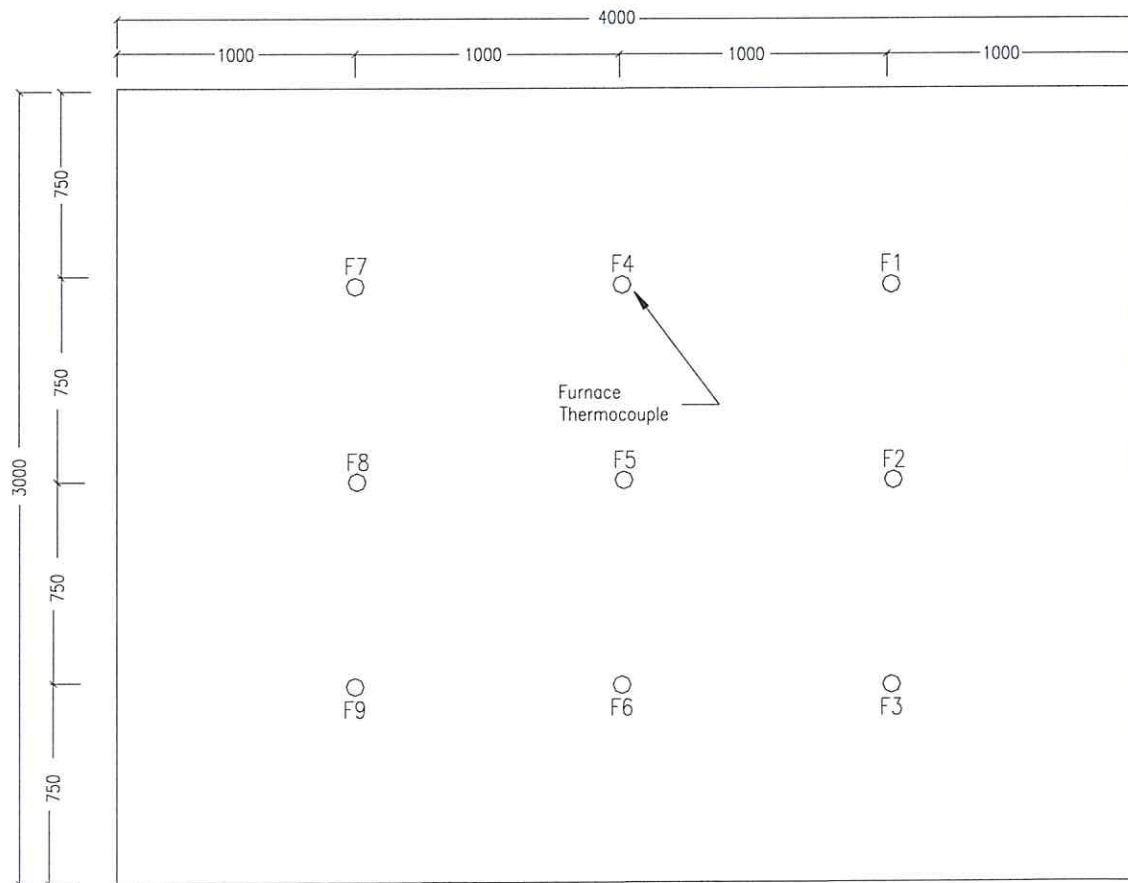


Figure 1 – Locations and reference numbers of furnace thermocouples.

(This figure is not to scale and all dimensions are in millimetres.)

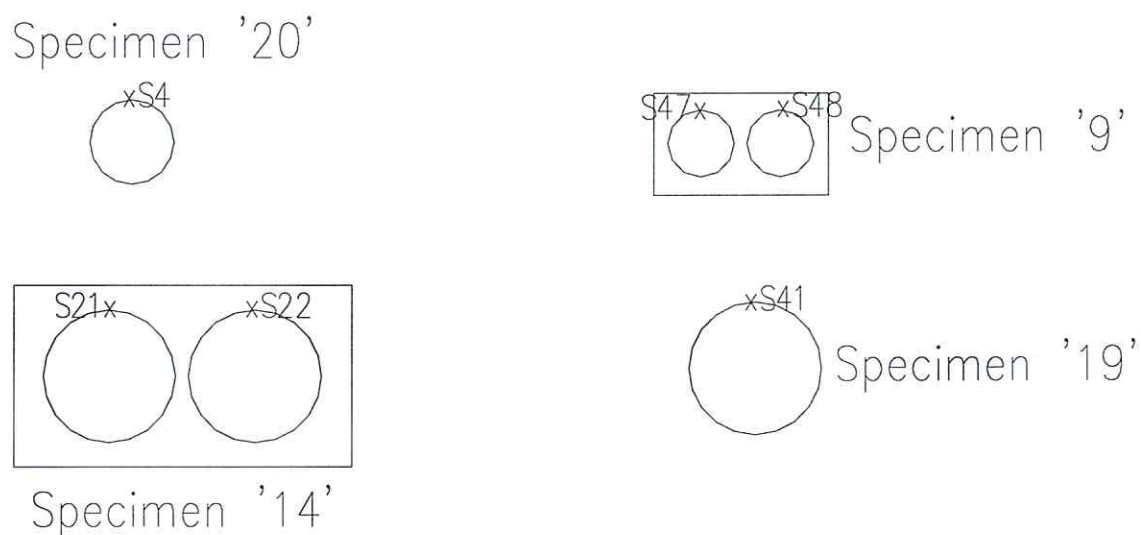


Figure 2 – Locations and reference number of thermocouples to monitor the temperature of unexposed surface of the specimens.

(This figure is not to scale.)

Notes: Thermocouples S4, S21, S22, S41, S47 and S48 were fixed for additional information only.

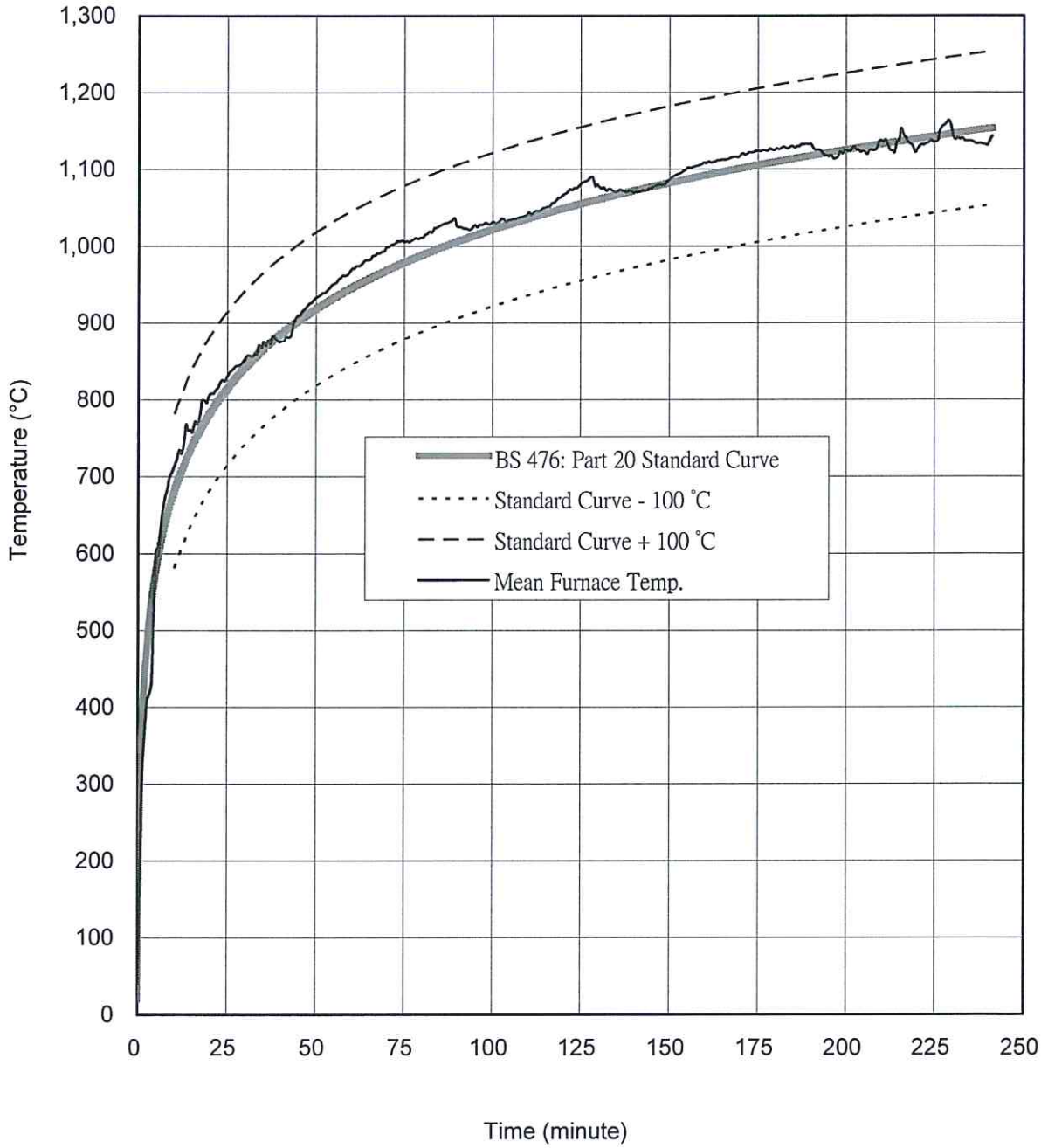


Figure 3 – Mean furnace temperature.

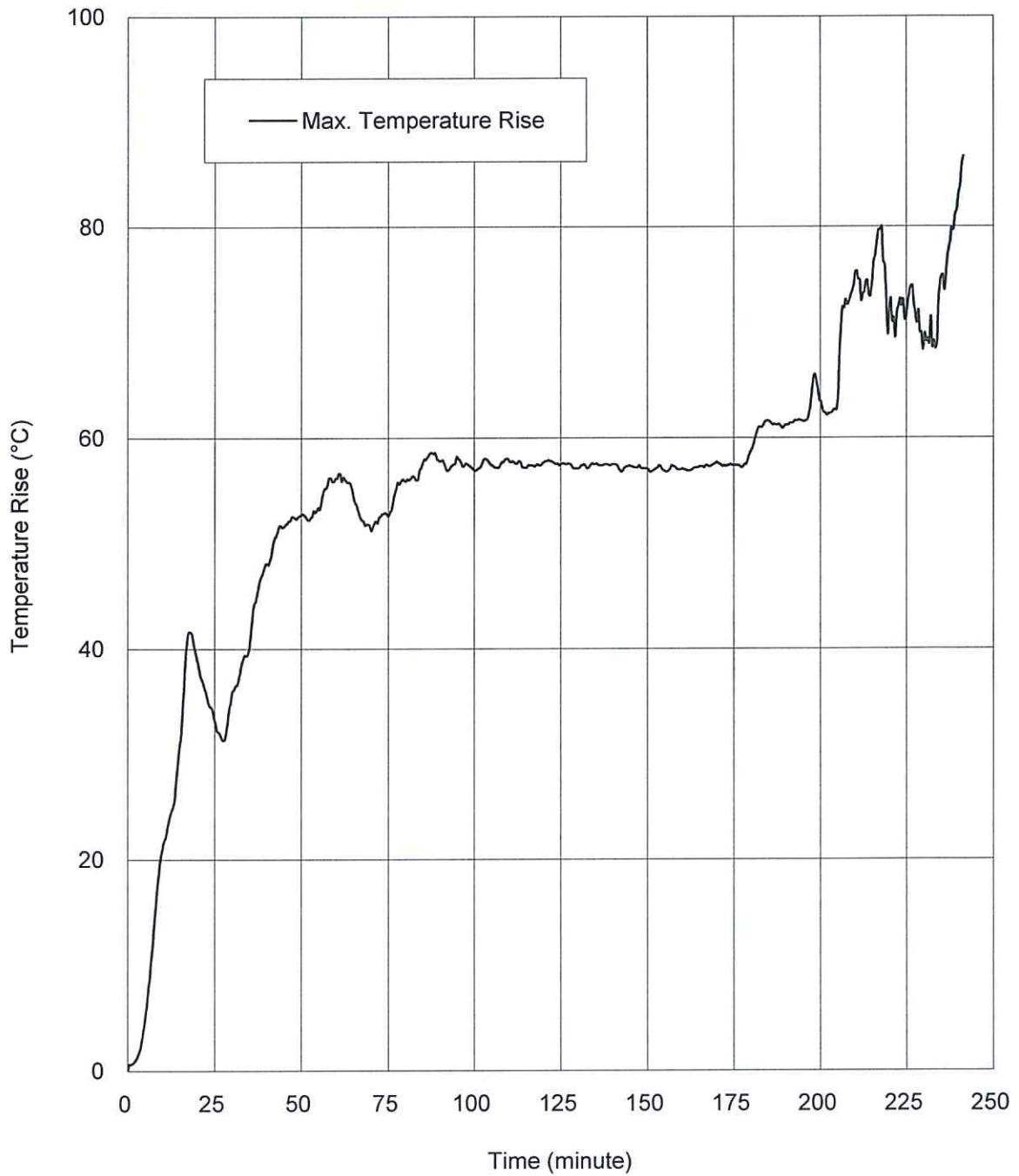


Figure 4 – Temperature rises of unexposed surface of specimen '9'.
(for additional information only)

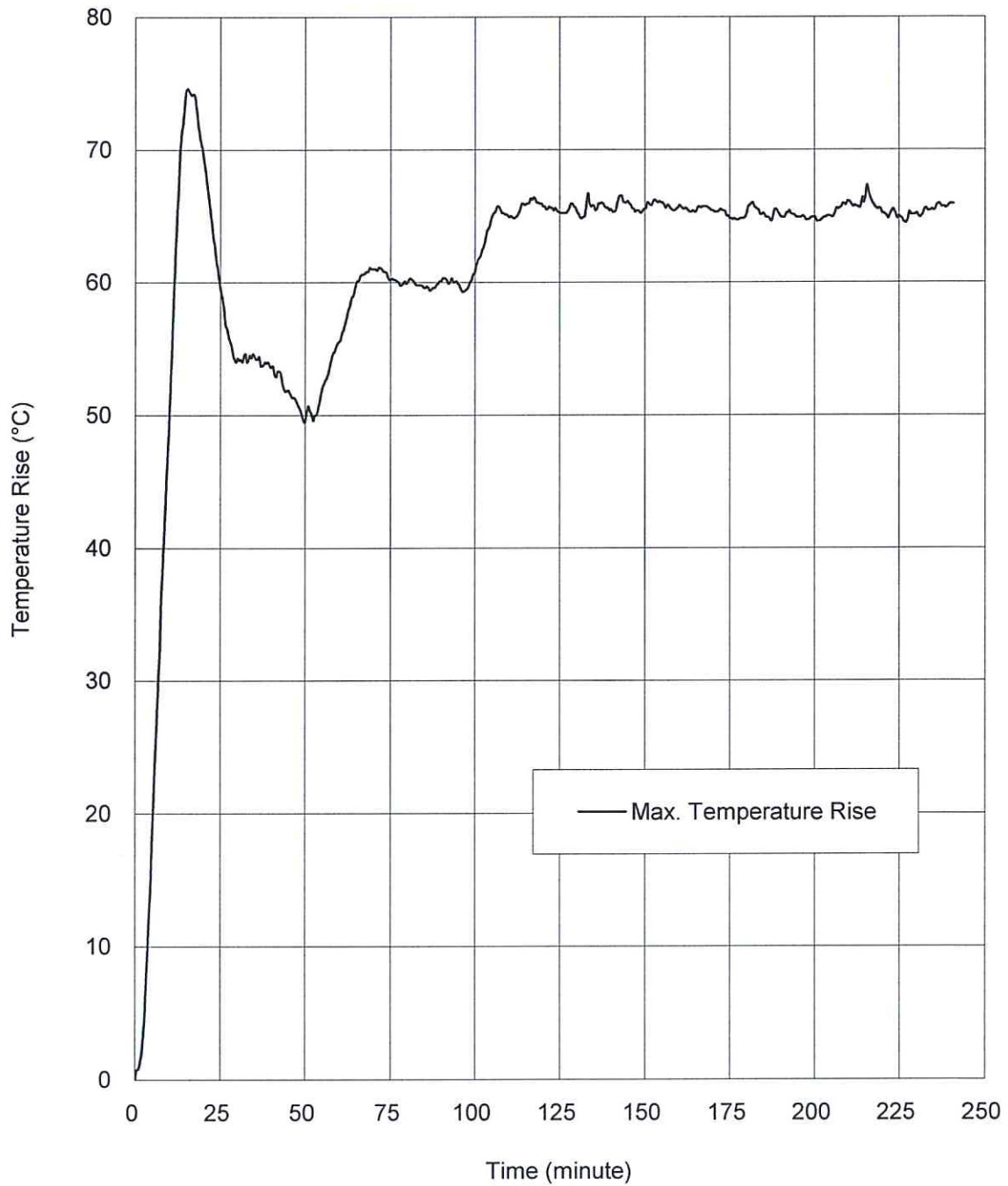


Figure 5 – Temperature rises of unexposed surface of specimen '14'.
(for additional information only)

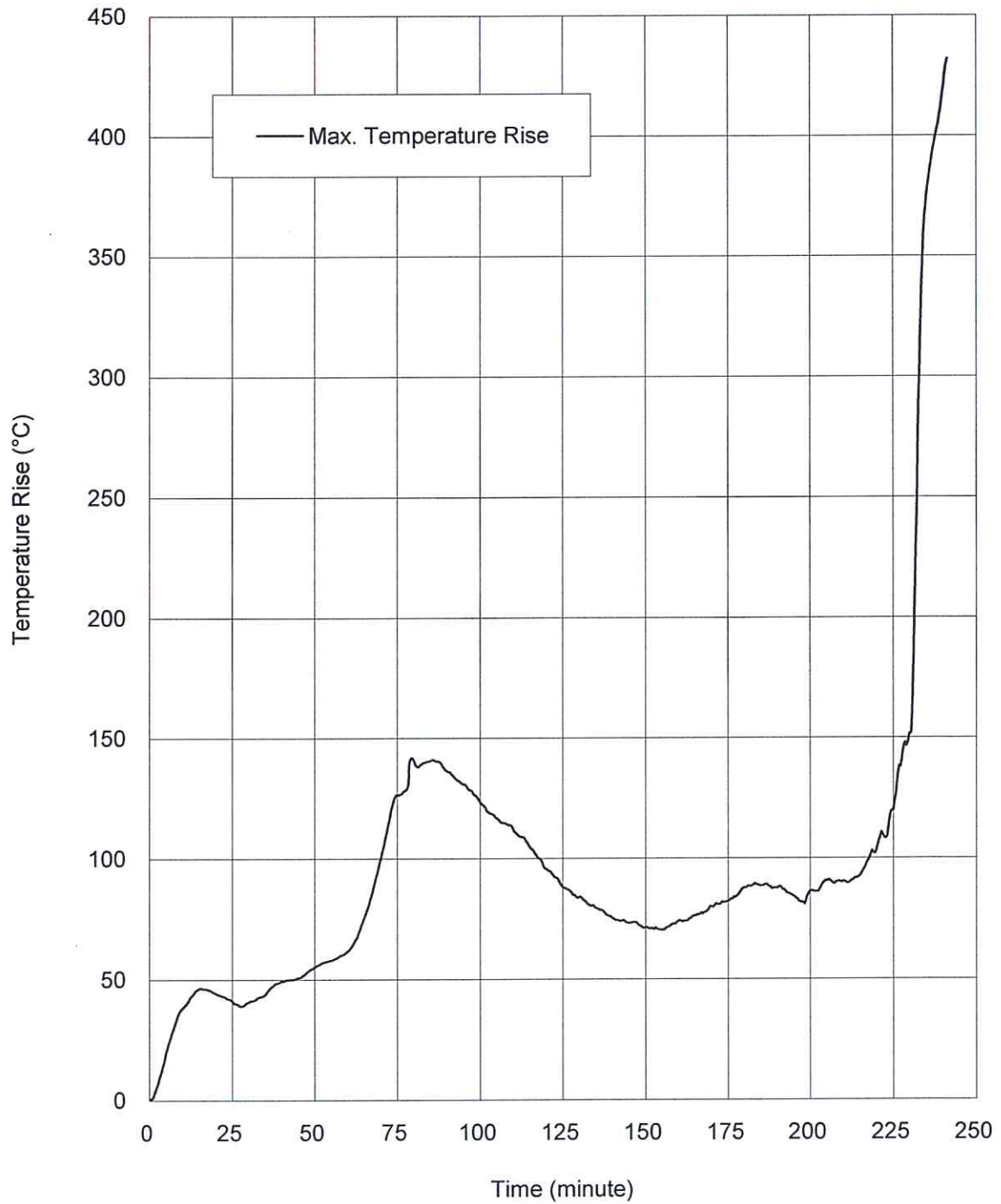


Figure 6 – Temperature rises of unexposed surface of specimen '19'.
(for additional information only)

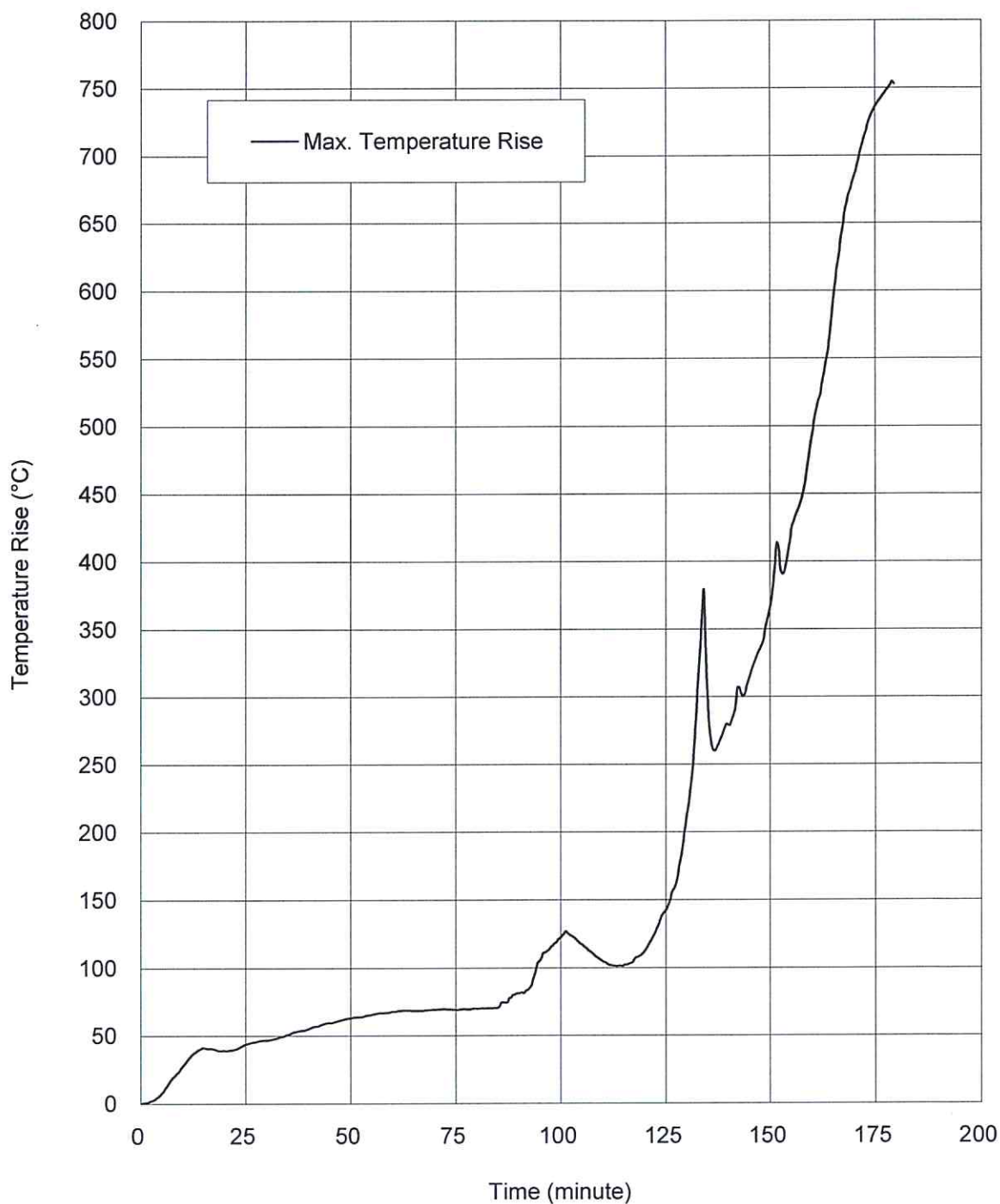


Figure 7 – Temperature rises of unexposed surface of specimen '20'.
(for additional information only)

Note: Thermocouple S4 detached after a heating period of 180 minutes.

After the first 5 minutes of the test, the furnace pressure was maintained at 20 ± 2 Pa relative to atmosphere, at 100 mm from the exposed side of specimen.

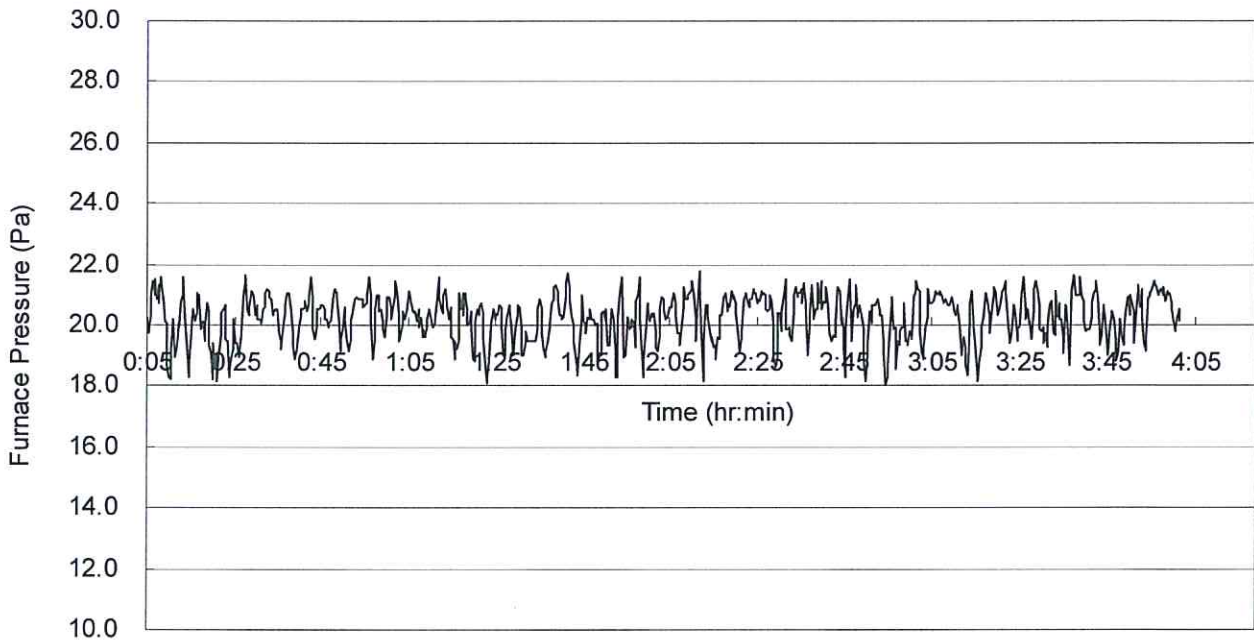


Figure 8 – Furnace pressure.

APPENDIX B – Observation

Time (min.sec)	Exposed (E) or Unexposed (U)	Observation
00.00	-	Test started.
06.00	U	Smoke started releasing from specimen '9'.
07.30	U	Smoke started releasing from all specimens.
10.00	U	Smoke release increased from all specimens.
28.00	U	Smoke release decreased.
30.00	U	Specimens '9', '14', '19' and '20' satisfied the integrity requirements performance.
60.00	U	Specimens '9', '14', '19' and '20' satisfied the integrity requirements performance.
90.00	U	Specimens '9', '14', '19' and '20' satisfied the integrity requirements performance.
120.00		Specimens '9', '14', '19' and '20' satisfied the integrity requirements performance.
126.07		Specimen '20' was covered by fire rated board with ceramic fibre blank as requested by the test sponsor. Integrity failed.
150.00	U	Specimens '9', '14' and '19' satisfied the integrity requirements performance.
180.00	U	Specimens '9', '14' and '19' satisfied the integrity requirements performance.
230.40	U	Sustained flaming was observed from specimen '19'. Integrity failed.
240.00	U	Specimens '9' and '14' satisfied the integrity requirements performance.
241.08	-	Test was terminated as requested by test sponsor.

APPENDIX C – Data Recorded During the Test

Table 1 - Mean furnace temperature

Time (minute)	BS 476: Part 20 Standard Temp. Curve (°C)	Actual Mean Furnace Temp. (°C)
0	20	39
5	578	604
10	681	714
15	742	758
20	780	805
25	814	831
30	842	854
35	866	876
40	886	876
45	902	910
50	918	933
55	933	951
60	946	971
65	958	983
70	968	999
75	979	1005
80	989	1011
85	998	1027
90	1007	1025
95	1014	1028
100	1022	1032
105	1029	1034
110	1037	1044
115	1042	1050
120	1049	1067
125	1055	1082
130	1061	1077
135	1067	1071
140	1072	1070

(To be continued)

Table 1 - Mean furnace temperature

Time (minute)	BS 476: Part 20 Standard Temp. Curve (°C)	Actual Mean Furnace Temp. (°C)
145	1077	1076
150	1083	1087
155	1088	1103
160	1093	1108
165	1097	1113
170	1101	1118
175	1106	1124
180	1110	1127
185	1114	1128
190	1118	1134
195	1122	1117
200	1126	1124
205	1130	1123
210	1133	1138
215	1136	1139
220	1140	1126
225	1143	1136
230	1147	1143
235	1150	1137
240	1153	1131
241	1154	1144

Notes: Locations of furnace thermocouples are shown in Figure 1.

The test was terminated as requested by the test sponsor after a heating period of 241 minutes.

Table 2 - Time and related temperature rise measured by thermocouples S4, S21, S22, S41, S47 and S48

Time (min)	S4	S21	S22	S41	S47	S48
0	0	0	0	0	0	0
5	9	21	21	22	6	5
10	29	50	52	39	22	21
15	41	75	73	47	32	29
20	39	68	69	44	38	39
25	44	59	59	41	32	33
30	47	54	51	41	36	34
35	51	54	47	44	40	40
40	55	54	45	49	47	48
45	60	52	48	51	46	52
50	63	50	49	56	45	53
55	66	52	50	58	53	53
60	68	56	49	62	52	56
65	68	60	50	76	48	54
70	69	61	52	101	50	51
75	69	60	53	127	53	53
80	70	60	54	141	51	56
85	70	60	56	141	50	58
90	81	60	58	136	48	58
95	107	60	59	131	48	58
100	124	61	59	123	49	57
105	117	65	61	117	51	57
110	104	65	62	112	49	58
115	102	66	64	105	50	57
120	113	66	65	96	51	58
125	143	65	64	88	50	58
130	212	65	65	84	51	57
135	280	65	65	79	51	58
140	279	65	65	75	50	58
145	317	66	66	73	47	57
150	371	66	65	72	48	57

(To be continued)

Table 2 - Time and related temperature rise measured by thermocouples S4, S21, S22, S41, S47 and S48 (con't)

Time (min)	S4	S21	S22	S41	S47	S48
155	425	66	65	70	49	57
160	495	66	65	74	49	57
165	594	65	64	76	47	57
170	685	65	65	80	47	58
175	736	65	64	82	52	57
180	736	66	65	88	59	57
185	-	65	64	89	62	58
190	-	65	64	88	61	58
195	-	65	64	84	62	58
200	-	65	64	86	63	60
205	-	65	63	91	64	60
210	-	66	61	91	76	65
215	-	67	60	93	75	64
220	-	65	60	104	72	61
225	-	65	60	123	73	64
230	-	65	62	152	70	65
235	-	65	65	378	75	68
240	-	65	66	423	84	70
241	-	65	66	432	87	70

Notes: Locations of thermocouples S4, S21, S22, S41, S47 and S48 are shown in Figure 2.

Thermocouple S4 detached after a heating period of 180 minutes.

All thermocouples were fixed for additional information only.

The test was terminated as requested by the test sponsor after a heating period of 241 minutes.

APPENDIX D – Information from Test Sponsor

(The information provided by the test sponsor, which was not verified by RED or unless specified.)

For Specimens '9', '14', '19' and '20'

Item	Description
1 PVC Pipes	
Supplier	: Hilti Corporation.
Internal dimensions	: Specimen '9'- 50 mm diameter x 2.5 mm thick x 1,000 mm long (2 nos.).* Specimen '14'- 150 mm diameter x 3.5 mm thick x 1,000 mm long (2 nos.).* Specimen '19'- 150 mm diameter x 5 mm thick x 1,000 mm long.* Specimen '20'- 100 mm diameter x 5 mm thick x 1,000 mm long.*
Fixing details	: The PVC pipes were fixed to 50 mm by 50 mm by 3 mm thick steel brackets, located at 300 mm from the concrete floor, by M5 bolts and nuts on both sides. The steel brackets were supported by an external steel framework constructed by 50 mm by 50 mm by 3 mm steel brackets which in turn fixed to the concrete lining of test rig by 2 nos. of M10 anchor bolts.*
End cover (all specimens)	: Filled with a layer of 20 mm thick 'ROCKWOOL' mineral wool boards with density of 100 kg/m ³ with and 'Hilti CP606' sealant.
2a Firestop Cast-In Device	
Brand & Model	: Hilti Firestop Cast-In Device CFS-CID 50.
Material	: Consists of a plastic housing, an intumescent inlay and rubber seal.
Fixing details	: Precast before concrete pouring.
Applied location	: At the gap between concrete test rig and specimen '9'.
2b Firestop Cast-In Device	
Brand & Model	: Hilti Firestop Cast-In Device CFS-CID 160.
Material	: Consists of a plastic housing, an intumescent inlay and rubber seal.
Fixing details	: Precast before concrete pouring.
Applied location	: At the gap between concrete test rig and specimen '14'.

Notes: * Verified on site by RED.

As shown on the test construction.

Appendix D – Information from Test Sponsor

(The information provided by test sponsor, which is not verified by RED or unless specified.)

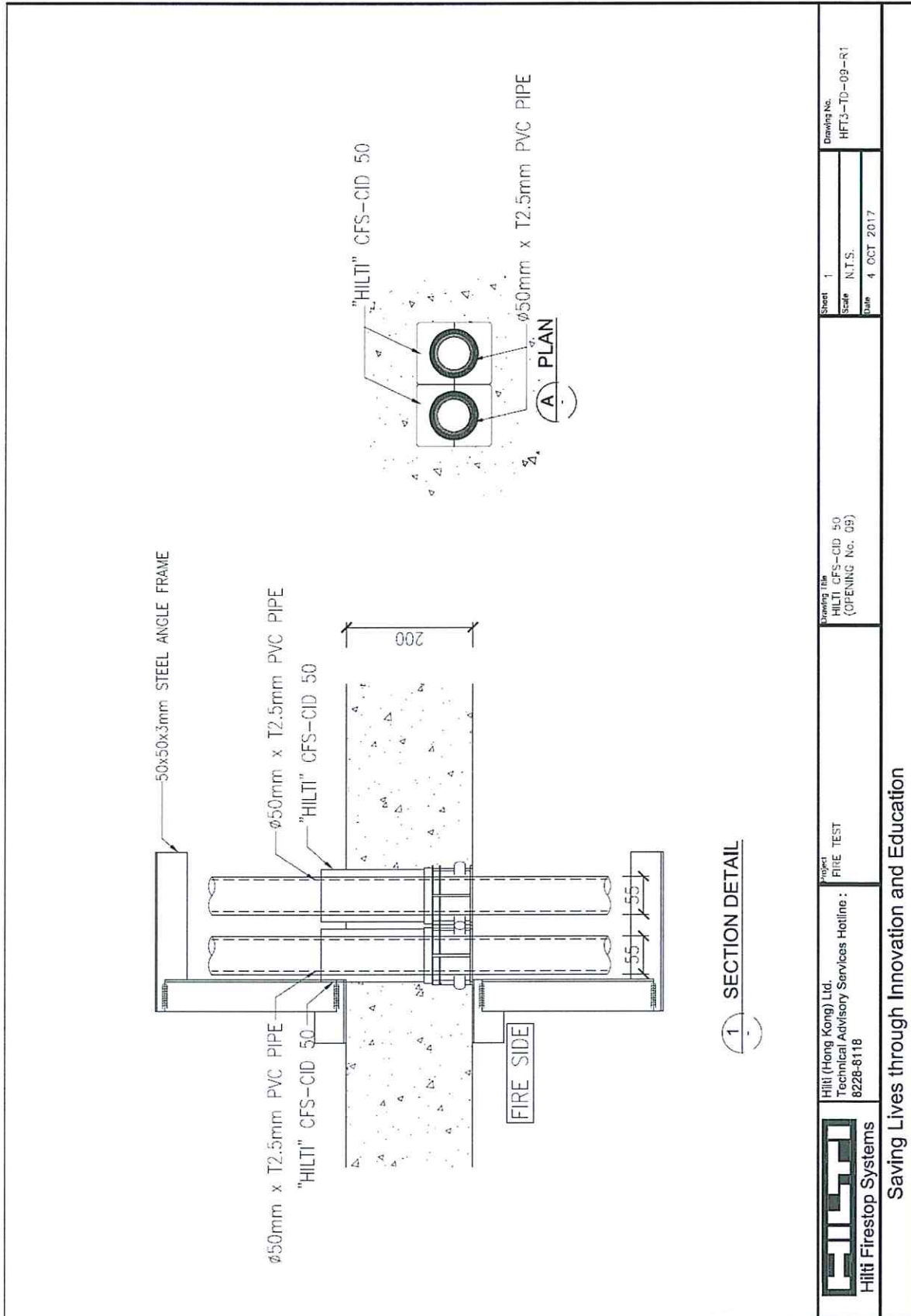
For Specimens '9', '14', '19' and '20'

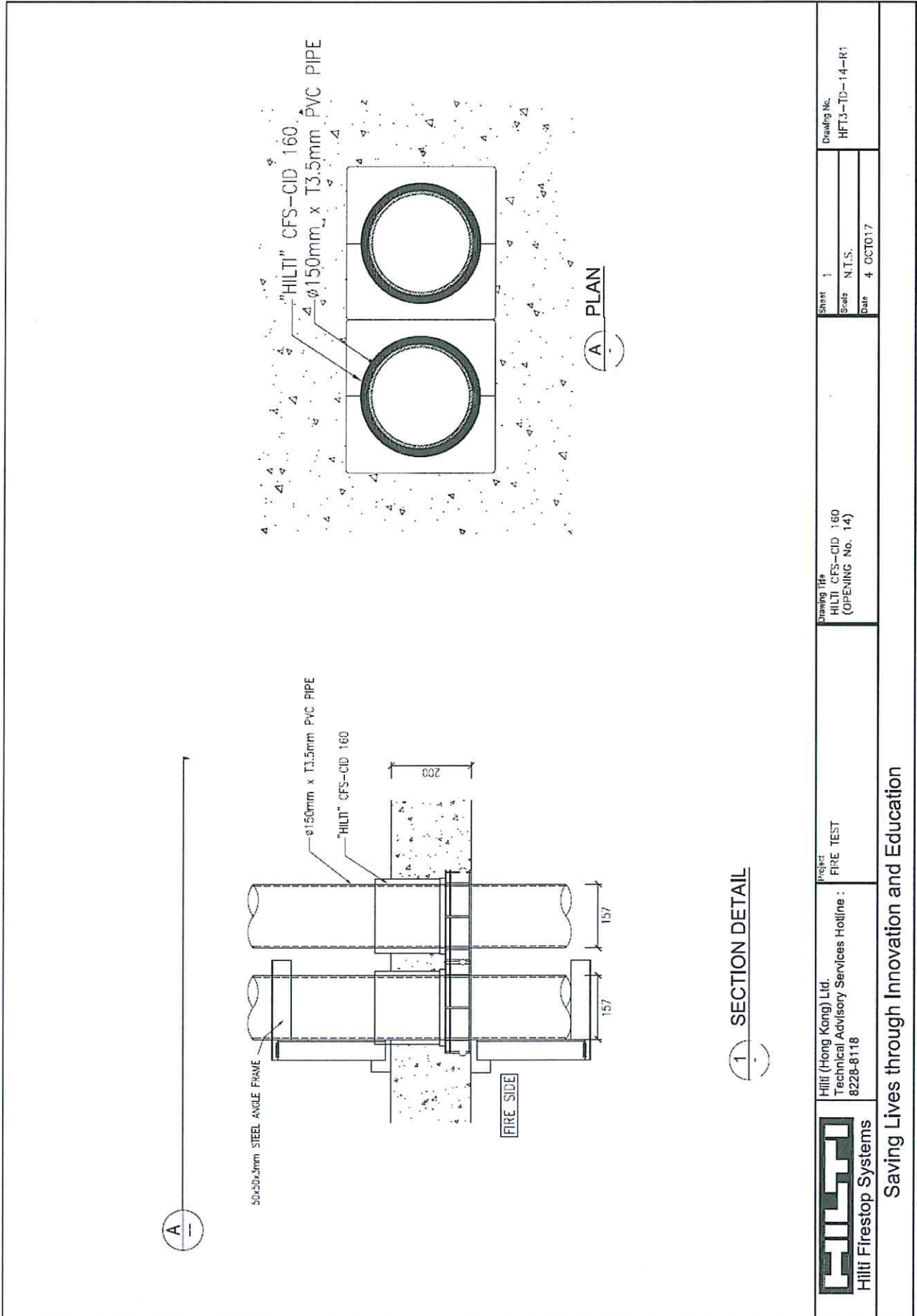
Item	Description
3 Firestop Collar Endless	
Brand & Model	: Hilti Firestop Collar Endless CFS-C EL.
Material	: Consists of one intumescent strip with a soft polyurethane foam layer.
Fixing details	: Install against the wall with fixing hooks.
Number of use	: Specimen '19' - two. Specimen '20' - one.
Applied location	: At the exposed side of specimens '19' and '20'.
4 Fire Sealant	
Brand & Model	: Hilti flexible firestop sealant CP 606
Material	: Acrylic based.
Applied locations	: Filled in all the pipes and conduits.
5 Mineral Wool Board	
Brand	: ROCKWOOL.#
Material	: Mineral wool.
Thickness	: 20 mm.*
Density	: 100 kg/m ³ .#
Applied locations	: Filled in all specimens.

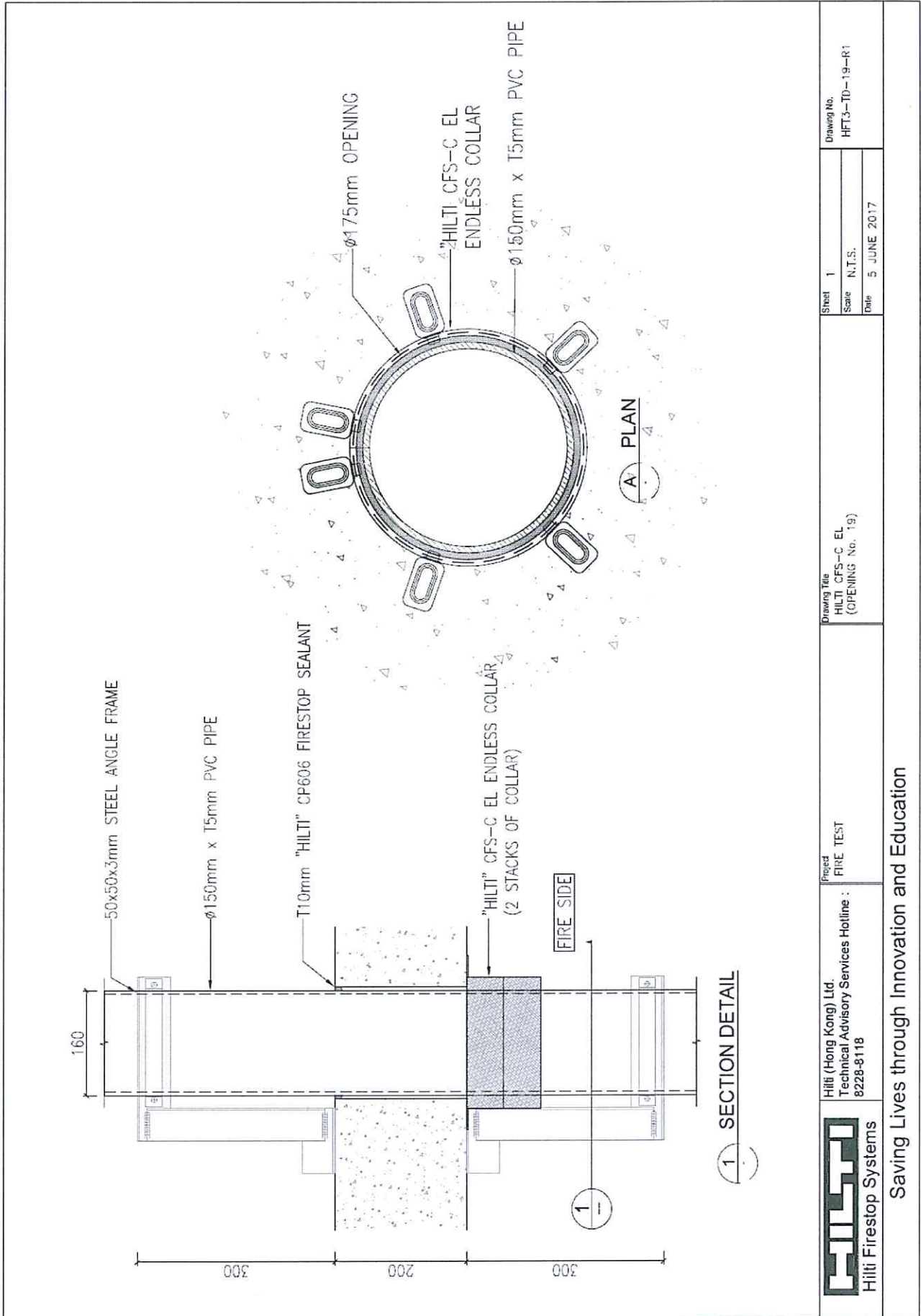
* and # refer to page 25

Drawings from Test Sponsor

(The drawings provided by test sponsor, which was not verified by RED, except those specified and described in 'information from test sponsor'.)

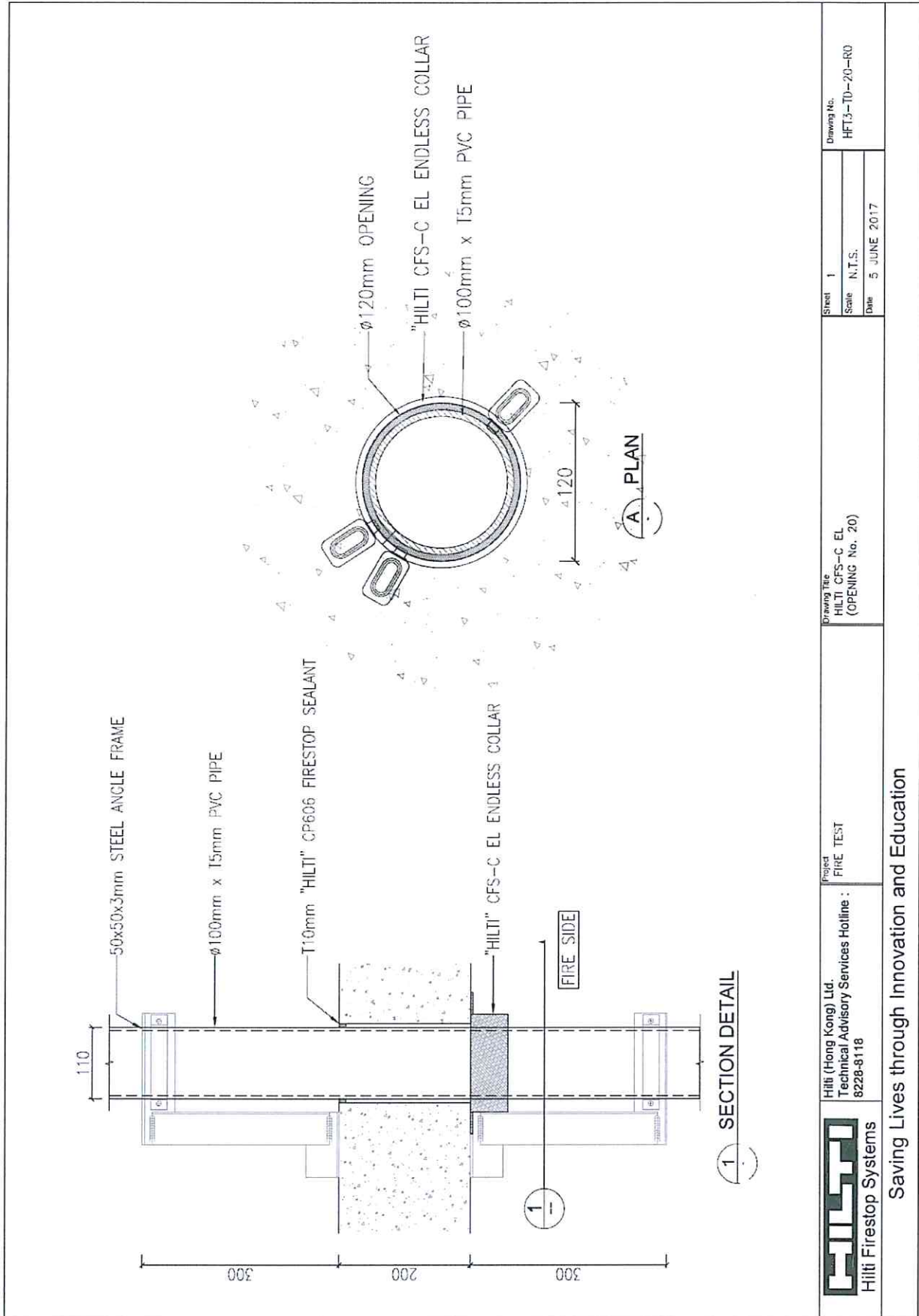






<p>Hilti (Hong Kong) Ltd. Technical Advisory Services Hotline : 8228-8118</p>	<p>Project FIRE TEST</p>	<p>Drawing Title HILTI CFS-C EL (OPENING No. 19)</p>	<p>Sheet 1</p>	<p>Drawing No. HFT3-TD-19-R1</p>
	<p>Hilti (Hong Kong) Ltd. Technical Advisory Services Hotline : 8228-8118</p>	<p>Scale N.T.S.</p>	<p>Date 5 JUNE 2017</p>	<p>Sheet 1</p>

Saving Lives through Innovation and Education



- End of report -

Hilti (Hong Kong) Ltd.
Unit 3 5/F Harbour Centre Tower 2
8 Hok Cheung Street Hung Hom
Kowloon

26 May 1994
Handwritten initials and date

Dear Sirs,

Fire Resisting Penetration Sealing System
As Supplied By Hilti (GB) Ltd.

Thank you for your letters dated 4.3.94 and 27.4.94 and the accompanying test/assessment reports on the above. You are asking for comments on the acceptability of the fire resisting product in the context of relevant provisions of the Buildings Ordinance, Chapter 123 of the Law of Hong Kong and its subsidiary legislation.

Under the Buildings Ordinance, "authorized persons" (i.e. architects, engineers or surveyors registered with the Building Authority) are required to supervise building works including the selection and installation of fire resisting products and to certify compliance with the Buildings Ordinance upon completion of works. Authorized persons are therefore responsible for ensuring the safety requirements inter alia of fire resisting products in the building projects which they have been appointed by the developer to coordinate and supervise.

In establishing the acceptability of fire resisting products, reference may be made to the performance standards laid down in Building (Construction) Regulation 90, the current Code of Practice for Fire Resisting Construction issued by the Building Authority and British Standard 476: Parts 20 to 24. Reliance may also be placed on the test/assessment report prepared by a recognized laboratory or an equivalent establishment.

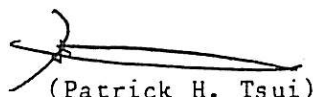
The Buildings Department has a list of recognized laboratories. This is available for reference at our office :

Technical Administration (Building) Unit
Buildings Department
11/F Murray Building
Garden Road Hong Kong

Before fire resisting products are installed in a building project, the authorized person appointed for the project should be approached for advice and guidance.

Your test/assessment reports are returned herewith. In this respect, please note that paragraph 3 of my letter dated 25 January 1994 is no longer applicable. The delay in replying is regretted.

Yours faithfully,


(Patrick H. Tsui)

Technical Secretary/Building
for Director of Buildings

消防處
防火組
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT,
FIRE PROTECTION BUREAU,

FIRE SERVICES HEADQUARTERS BUILDING,
No. 1 Hong Chong Road,
Tsim Sha Tsui, East, Kowloon,
Hong Kong.

本處檔號 Our Ref.: FPB 207/0005
來函檔號 Your Ref.: L026/92HK
電訊掛號 Telex: 39607 HKFSD HX } (24 小時 Hours)
圖文傳真 Fax: 852-3110066 }
852-3689744 }
電話 Tel. No.: 733 7596

29 April 1992

Hilti (Hong Kong) Ltd.,
Unit 3, 5/F, Harbour Centre,
Tower 2,
8 Hok Cheung Street,
Hunghom, Kowloon.

Dear Sirs,

"HILTI" Fire Prevention System

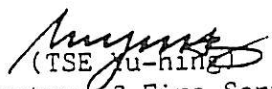
I refer to your letter of 30.3.92 and the enclosures attached thereto.

Based on the information contained in your letter under reference and the given test report, I understand that the captioned product is a building material which should be approved by the Director of Buildings and Lands. As such, I am not in a position to process your application and you are advised to refer your enquiry to the Director of Buildings and Lands, whose address is listed hereunder :-

The Director of Buildings and Lands,
(Attn.: Technical Secretary/Building, B.O.O.)
Murray Building,
Garden Road,
Central,
Hong Kong.

Please feel free to contact us should you have any other question in this matter.

Yours faithfully,


(TSE Yu-hing)
for Director of Fire Services

TYH/jt



ARCHITECTURAL SERVICES DEPARTMENT 建築署

QUEENSWAY GOVERNMENT OFFICES, 66 QUEENSWAY, HONG KONG. 香港金鐘道六十六號金鐘道政府合署
FAX 852-2869 0289

Our Ref : ASD 16/92101/AML/APP
Your Ref. : -----
Tel. No. : 2867 3631
Fax No. : 2877 0594

06 June 1997

Hilti (HK) Ltd
17/F, Tower 6, China HK City,
33 Canton Rd., TST

Dear Sirs,

Architectural Services Department
List of Acceptable Materials
Hilti Firestop Products
Ref. no. 0001P

I am pleased to inform you that approval has been given to include the above product/material in this Department's List of Acceptable Materials. Initially, this listing is for a probationary status and this will be reviewed after the submission of satisfactory performance reports on completion of projects undertaken by this Department where your product has been used.

The Architectural Services Department List of Acceptable Materials is a restricted internal document. This letter should not be used for commercial or marketing purposes and failure to comply with this may result in the removal of the product from the List.

Yours faithfully,

(W.M. TANG)
Technical Secretary/2
for Chief Architect/ Central Management Branch
Architectural Services Department

Attn. : To whom it may concern

Date : 21 Dec 2020
Ref. : 099/FP/KK/20

Subject : Hilti CFS-CID Firestop Cast-In Device

Dear Sirs / Madams,

Enclosed please find the information of Hilti CFS-CID Firestop Cast-In Device

Brand Name : Hilti
Model Name : Hilti CFS-CID Firestop Cast-In Device
Manufacturer : Hilti Corporation
Address of Manufacturer : FL-9494, Principality of Liechtenstein.
Supplier : Hilti (Hong Kong) Ltd
Address of Supplier : 701-704 & 708B, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong.
Country of Origin : Malaysia

Should you have further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours sincerely,
Hilti (Hong Kong) Ltd.



Kian Kwok
Product Manager

To whom it may concern

Date: 21st Dec 2020

Dear Sir / Madam,

Subject: Hilti Firestop Products non-CFC and Ozone Confirmation

Referring to your enquiry about the captioned subject, please be advised that:

Hilti firestop products, CFS-CID Firestop Cast in device is free of CFC, HCFC nor other ozone depletion elements.

CFC, HCFC and ozone depletion elements were not used during the product process neither.

Should you have further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours sincerely,



Kian Kwok
Product Manager

Attestation

On 26/10/2015, Eurofins Product Testing A/S received a sample of a Cast In with the product name:

CFS-CID 160

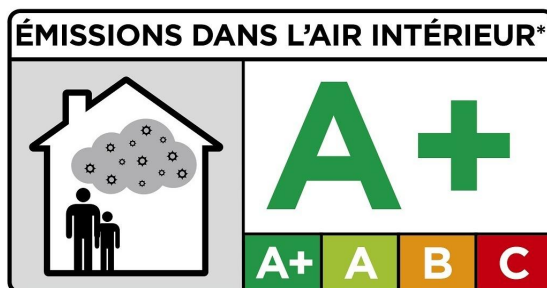
supplied by

Hilti Entwicklungsgesellschaft GmbH

The product was tested for VOC emissions according to the requirements of the French legislation (order of April 2011) concerning the labeling of construction products or coverings of walls or floors and paint and varnishes on their emissions of volatiles pollutants.

Sampling, testing and evaluation were performed according to ISO 16000 in its latest versions, see test report no. 392-2015-00336801_E_EN.

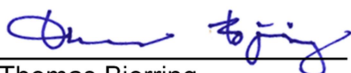
In accordance with legislative requirements, the test results can be summarized as follows:



*Information sur le niveau d'émission de substances volatiles dans l'air intérieur, présentant un risque de toxicité par inhalation, sur une échelle de classe allant de A+ (très faibles émissions) à C (fortes émissions).

The product was assigned a VOC emission class without taking into account the measurement uncertainty associated with the result. As specified in French Decree no. 2011-321 of March 23, 2011, correct assignment of the VOC emission class is the sole responsibility of the party responsible for distribution of the product in the French market.

21 July 2016



Thomas Bjerring
Analytical Service Manager

Confirmation

LEED

On 26 October, Eurofins Product Testing A/S received a sample of Cast In with the product name:

CFS-CID 160

supplied by

Hilti Entwicklungsgesellschaft GmbH

The sample was supplied as being representative of the manufactured product, and it has been tested in accordance with the relevant ISO 16000 and CDPH testing standards (See test report no. 392-2015-00336801_H).

The test results of the tested sample indicate that the product qualifies for LEED v4 and LEED 2009 specifications on VOC emissions by complying with:

VOC emissions specifications in LEED EQ credit "Low-emitting products":

- The requirements of CDPH-IAQ (California Department of Public Health, Feb 2010); and a TVOC below 0.5 mg/m³ in both office and class room.

26 November 2015



Lise L. Clement
Chemist



Janne R. Norup
Chemist

Material Information Statement

Articles

According to Regulation (EC) 1907/2006, Article 32
Revision: 07.04.2020

Version: 18

1 Identification of the articles and of the company undertaking

1.1 Product identifier

Trade name:

- Firestop Bandage CFS-B / CP 646
- Firestop Back Pan Strip CFS-BPS
- Firestop Block CFS-BL / CFS-BL P
- Firestop Board CP 675
- Firestop Boot CFS-BO
- Firestop Box Insert
- Firestop Cable Collar CFS-CC / CFS-RCC / CFS-RCC EXT
- Firestop Cable Module CFS-T
- Firestop Cast-in device CP 680 / CP 681 / CFS-CID / CFS-CID MD P/M
- Firestop Coated Board CFS-CT B / CP670 / CP673 / CP676
- Firestop Collar CFS-C / CFS-C P
- Firestop Collar CP 643 / CP 644
- Firestop Composite Sheet CFS-COS
- Firestop Cord CFS-CO
- Firestop Cushion CP 651N
- Firestop Drop-In Device CFS-DID
- Firestop Edge of Slab QuickSeal CFS-EOS QS
- Firestop Endless Collar CFS-C EL
- Firestop Filler Module CFS-T FB
- Firestop Gangplate CFS-SL GP
- Firestop Module Box CFS-MB / CP 657
- Firestop Plug CFS-PL / CP 658
- Firestop Plug Seal CFS-T RR / CFS-T RRS
- Firestop Retrofit Sleeve CFS-SL RK
- Firestop Sleeve CP 645
- Firestop Sleeve Kit CFS-SL SK
- Firestop Speed Sleeve CFS-SL / CFS-SL GA / CP 653
- Firestop Top Track Seal CFS-TTS
- Firestop Top Track Seal CFS-TTS MD
- Firestop Top Track Cover CFS-TTS MD
- Firestop Top Track Plug CFS-TTS MD
- Firestop Top Track Seal CFS-TTS 212
- Firestop Top Track Seal CFS-TTS R
- Firestop Wedge Seal CFS-T WD120
- Firestop Wrap Strip CFS-W EL / SG / P / CP 648
- Foil Tapes CS-FT
- Intumescent façade cavity closer CP674
- Joint Sealing Tapes CS-JST
- Mineral Wool
- Mineral Wool Boards
- Multifunctional Tapes CS-MFT
- Pre-coated Mineral Wool Boards
- Smoke & Acoustic Track Seal CS-TTS SA
- Speed Plug CP 777
- Speed Strip CP 767

1.2 Application of the listed articles

Construction industry.

Refer to Hilti product literature, technical data sheets, 3rd party published listings and national approvals for specific application information. For more details, please contact your local Hilti organization through <http://www.hilti.group>

1.3 Manufacturer / Supplier

Hilti AG
Feldkircherstr. 100
FL-9494 Schaan
Liechtenstein

Customer Service
Phone +423 (0)844 84 84 85
Fax +423 (0)844 84 84 86

2 Other information

A Safety Data Sheet is not required due to the classification of these products as “articles” according to Regulation (EC) No. 1907/2006 of 18 December 2006 (EU) / 29CFR 1910.1200 (U.S.A.). Consequently, these products are exempted from CLP / OSHA Labeling and SDS requirements.

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Informing department:
chemicals.hse@hilti.com