

Title:

The fire resistance performance of an asymmetric non-loadbearing, steel stud partition system, when tested in accordance with BS EN 1364-1:2015 and BS EN 1363-1: 2020

Date Of Test:

21/05/2021

Issue 1

26/01/2023

WF Report No:

WF 501434



Prepared for:

Hadley Industries Holding
Ltd
Downing Street
Smethwick
West Midlands
B66 2PA

Approved Body No. 1314



1762

Test Specimen

Summary of Tested Specimen

The partition system comprised a plasterboard clad steel stud frame, built directly into a refractory lined steel restraint frame. The left edge of the partition remained unrestrained.

The size of the partition system was 3000mm high x 3000mm wide x 87mm deep overall and consisted of 60mm deep Hadley Group I steel studs fitted into 62mm deep Hadley Group head and base tracks. 62mm Hadley Group U Track was used at the fixed and free edges.

The shaftwall partition had 2No. layers of 12.5mm Knauf Firepanel on the unexposed face and 1No. layer of 19mm Knauf Corebord on the exposed face of the partition. 1No. layer of Hadley Group Flat Strap was fitted behind the horizontal joints of each layer of Firepanel, fixed with 25mm drywall screws. 1No. layer of coreboard stagger was fitted behind the horizontal joints of coreboard, fixed with 32mm screws and a 19x19mm angle. The plasterboard joint was reinforced on the outer layer with paper tape and finished with joint filler.

Detailed drawings of the test specimen and a comprehensive description of the test construction based on a detailed survey of the specimen and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

Performance Criteria and Test Results


Integrity	
Cotton pad	108 minutes*
Sustained flaming	108 minutes*
Gap gauges	108 minutes*
Thermal Insulation	72 minutes
Radiation (time to 15kW/m²)	108 minutes*

* No failure of this test criteria was observed at termination of the test at 108 minutes

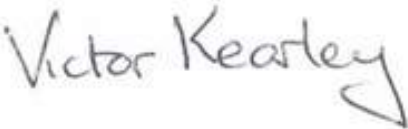
Date of Test 21/05/2021

This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.

Signatories



Report Prepared by:
Stephen Dorme
Technical Officer*



Report Authorised by:
Dr Vic Kearley
Technical Author*

* For and on behalf of **Warringtonfire**.

Report Issued:
Date: 26/01/2023

This copy has been produced from a .pdf format electronic file that has been provided by **Warringtonfire** to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of **Warringtonfire**. The pdf copy supplied is the sole authentic version of this document. All pdf versions of this report bear authentic signatures of the responsible **Warringtonfire** staff.

Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

CONTENTS

PAGE NO.

TEST SPECIMEN 2

PERFORMANCE CRITERIA AND TEST RESULTS 3

SIGNATORIES 4

REVISION HISTORY 5

TEST CONDITIONS 7

TEST SPECIMEN DRAWINGS 8

SCHEDULE OF COMPONENTS 13

INTERNAL FRAMING 13

CLADDING MATERIAL 15

SEALING MATERIALS 17

TAPE AND FILL 17

TEST OBSERVATIONS 18

TEST PHOTOGRAPHS 19

TEMPERATURE AND DEFLECTION DATA 24

ON-GOING IMPLICATIONS 37

FIELD OF DIRECT APPLICATION 37

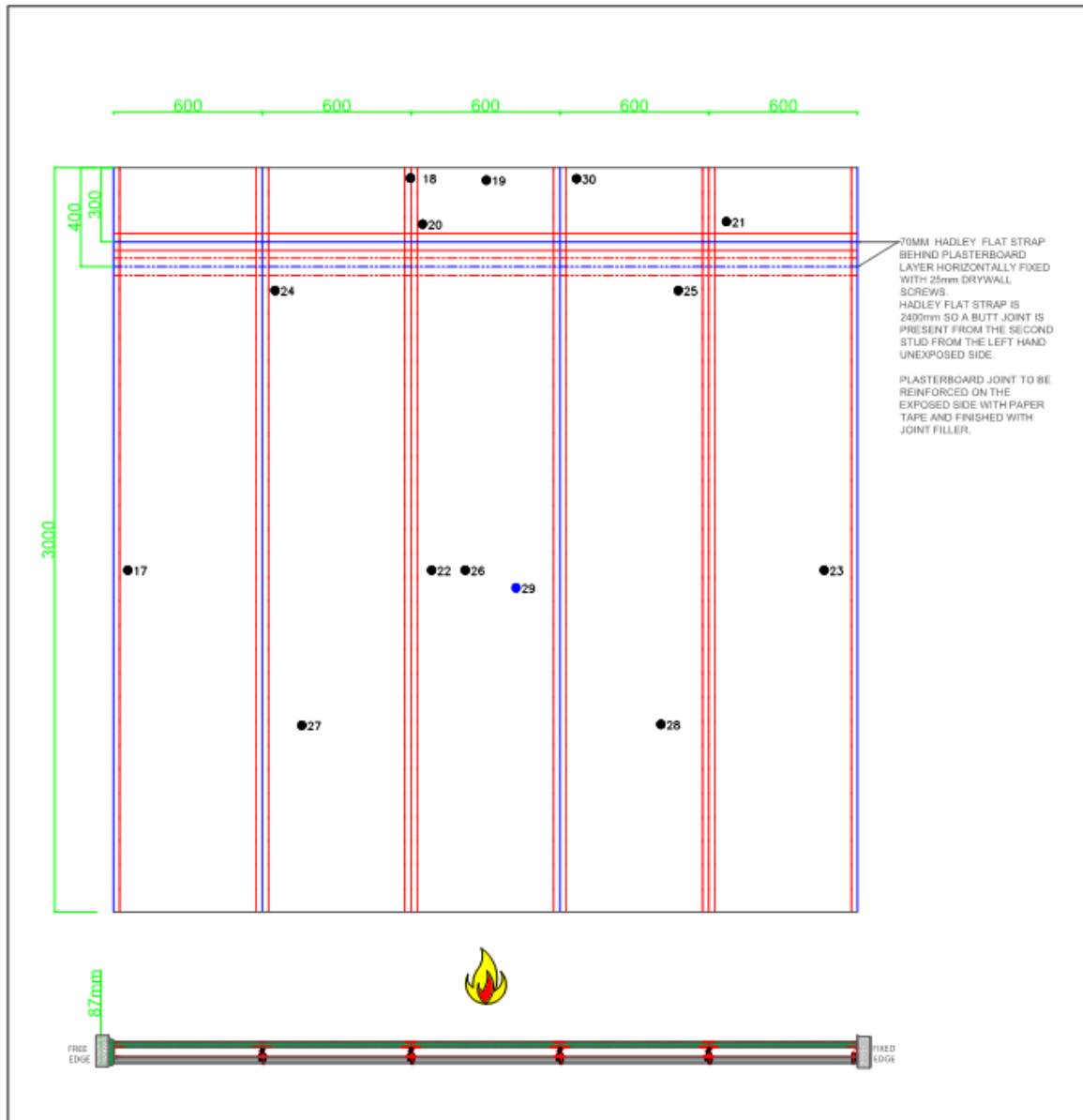


Test Conditions

Standard	BS EN 1364-1, Fire resistance tests for non-loadbearing elements Part 1: Walls and BS EN 1363-1.
Sampling	Warringtonfire was not involved in the sampling or selection of the tested specimens or any of the components, and as such the results apply to the sample as received.
Installation	The components were received during the month of May. The partition system was constructed and installed directly into a refractory line steel restraint frame by representatives of Warringtonfire to the client's specification.
Conditioning	Warringtonfire stored the specimens in climatic conditions approximate to those expected in normal service, and used the guidelines of Annex F.1 of BS EN 1363 – 1: 2020 to establish a suitable conditioned level where possible.
Ambient Temperature	The ambient air temperature in the vicinity of the test construction was 16°C at the start of the test with a maximum variation of 0°C during the test.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2020 Clause 5.1 using eight plate thermometers, distributed over a plane 100±50 mm from the surface of the test construction.
Thermocouples	Thermocouples were provided to monitor the unexposed surface of the specimen. The output of all instrumentation was recorded at no less than one minute intervals. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
Radiation	A water-cooled foil heat-flux meter was used to record the heat radiation from the partition. The heat-flux meter was positioned at mid-height at a distance of 1 metre from the centre of the partition.
Furnace Pressure	After the first 5 minutes of the test, the furnace pressure was maintained at -1.3 ± 5 Pa and after 10 minutes was maintained at -1.3 ± 3 Pa with respect to atmosphere, at a point 0.5m from the notional floor level, equating to a pressure of 20Pa at the head of the wall.

Test Specimen Drawings

Figure 1 – General Elevation of the Test Construction and Thermocouple Locations



- ⊕ : Furnace Thermocouples
- : Unexposed Face Thermocouples
- : Radiometer

Viewed From Unexposed Face

Do not scale. All dimensions are in mm

Figure 2 – Typical cross section of head track to restraint frame junction

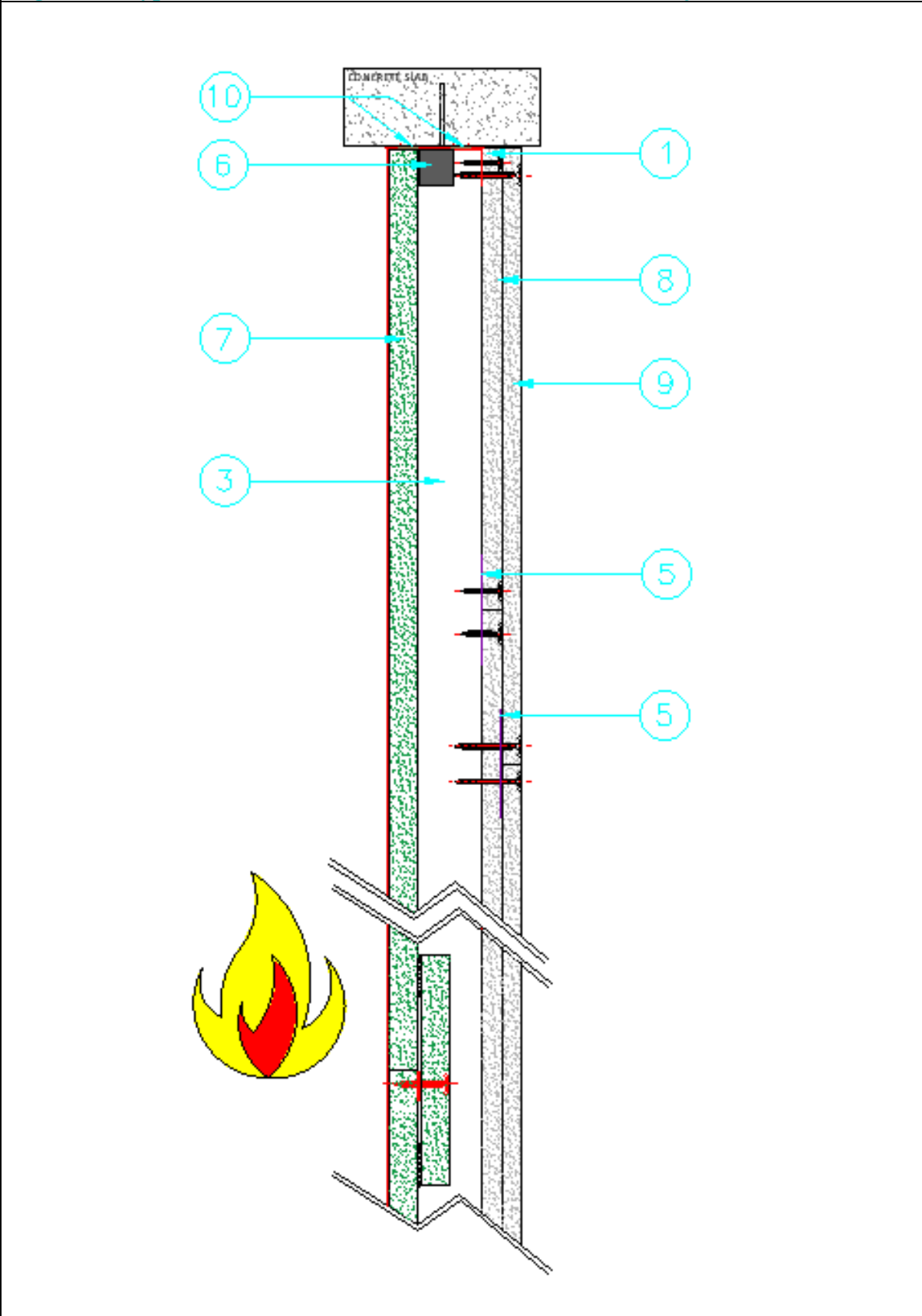


Figure 3 – Typical cross section of base track to restraint frame

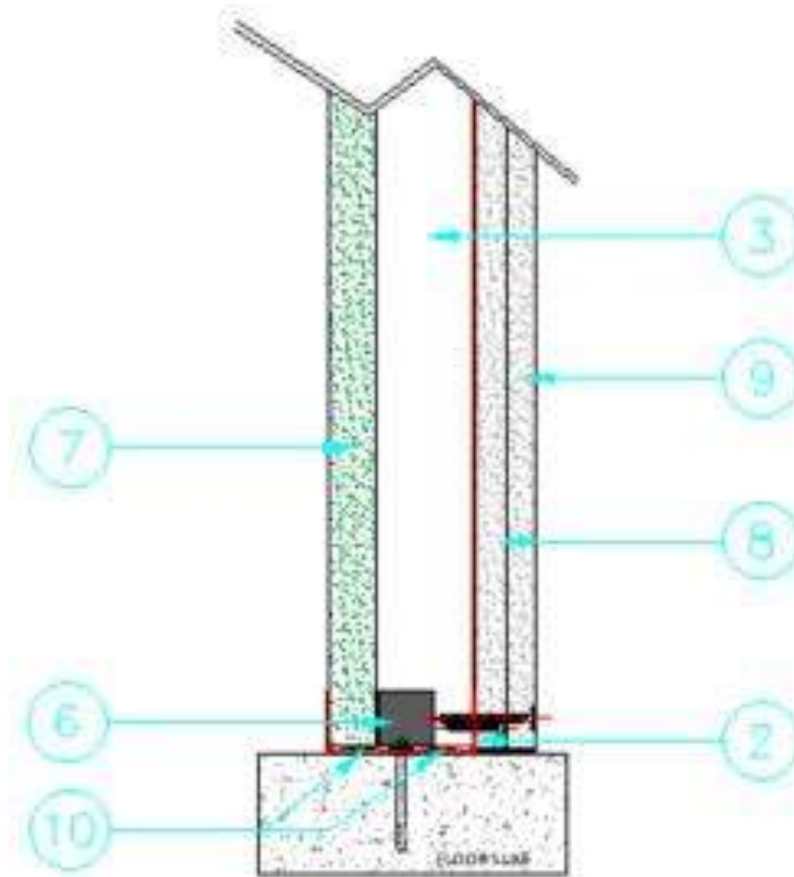


Figure 4 – Typical cross section of vertical stud to board junction

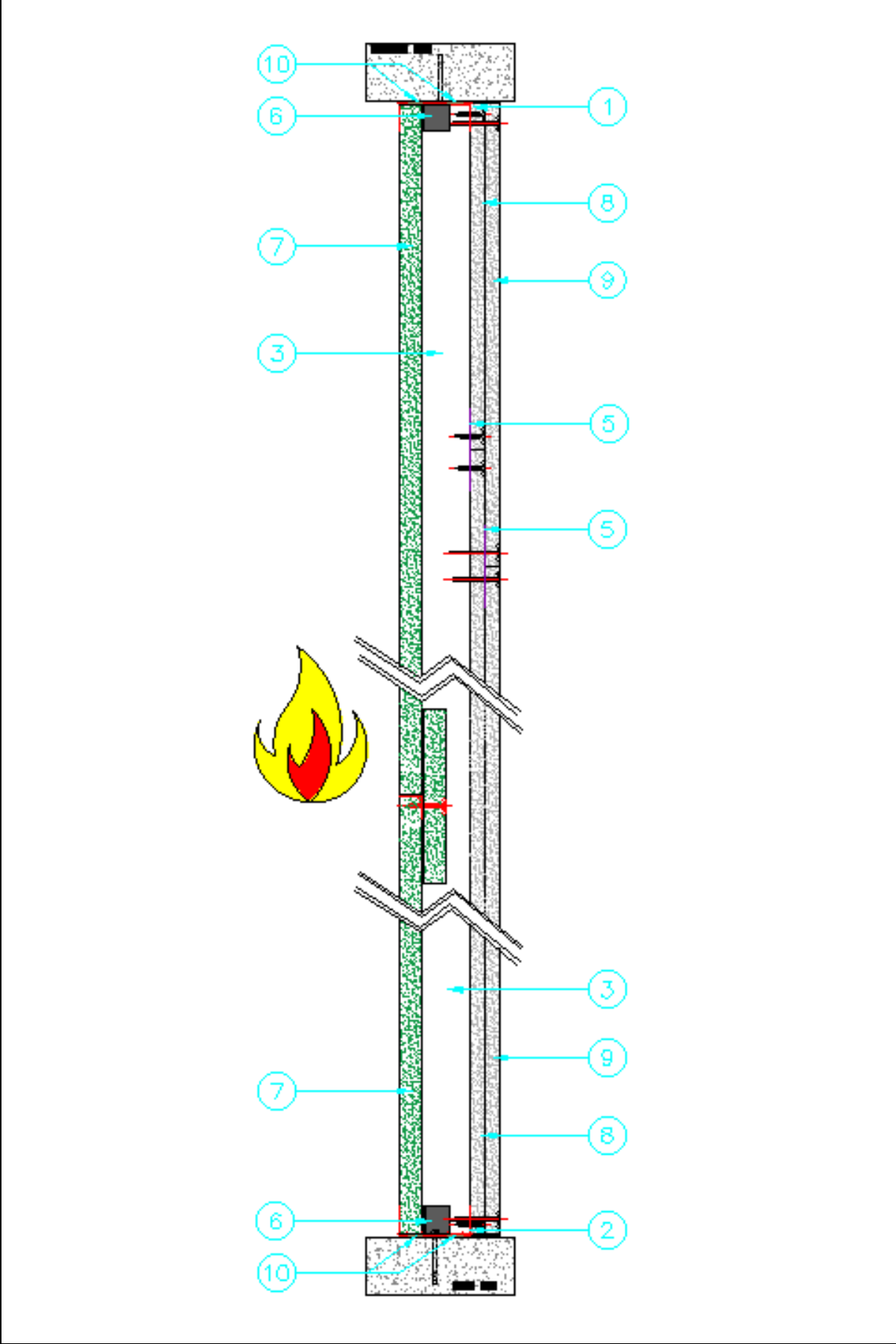
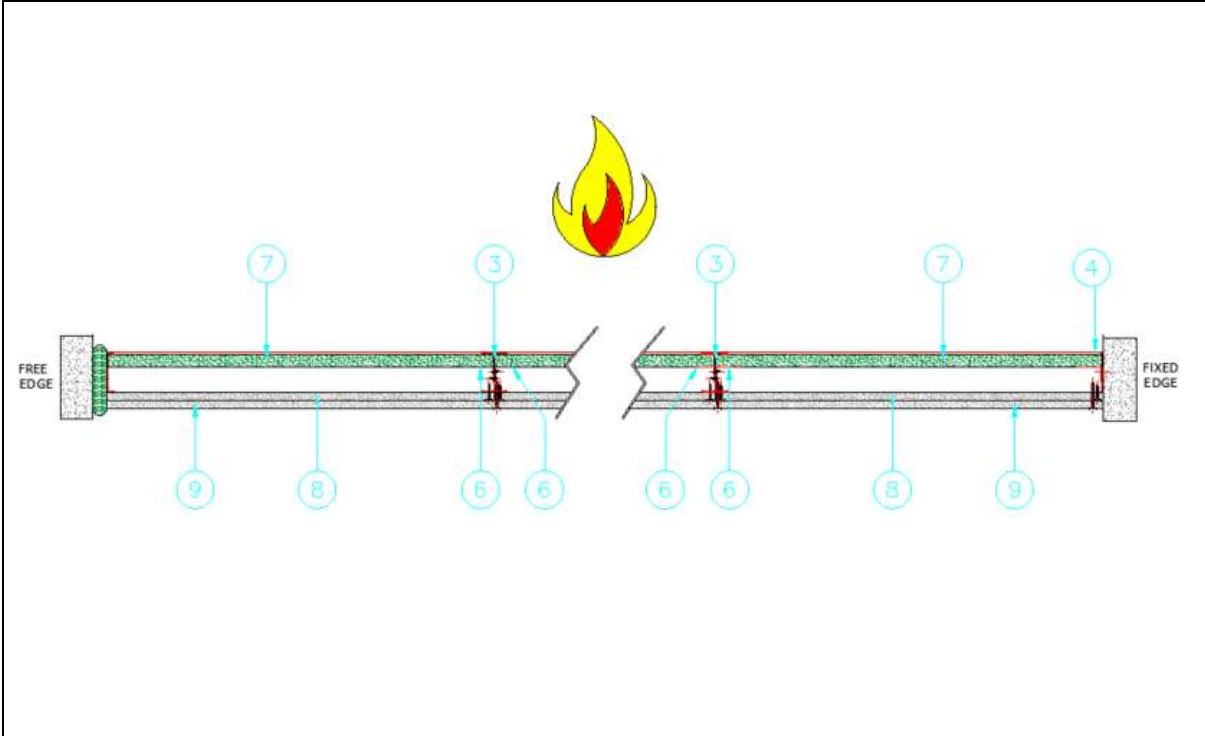


Figure 5 – Typical cross section of deflection head detail



Schedule of Components

(Refer to Figures 1 to 5)

(All values are nominal unless stated otherwise)

* Stated by sponsor, not verified by laboratory

Internal Framing

<u>Item</u>		<u>Description</u>
1. Head Track		
Manufacturer or Supplier	:	Hadley Group
Reference	:	62mm Hadley track
Material	:	Steel
Overall size		
i. Depth	:	62mm*
ii. Height	:	25mm*
iii. Thickness	:	0.55mm*
Fixing Method to restraint frame and centres	:	
Details of fixings to Restraint frame	:	
i. Manufacturer	:	Kingfisher International
ii. Reference	:	Easydrive
iii. Type & material	:	Zinc-plated carbon steel
iv. Overall size	:	7.5mm x 60mm
v. Spacing	:	600mm
2. Base Track		
Manufacturer or Supplier	:	Hadley Group
Reference	:	62mm Hadley track
Material	:	Steel
Overall size		
i. Depth	:	62mm*
ii. Height	:	25mm*
iii. Thickness	:	0.55mm*
Fixing Method to restraint frame and centres	:	
Details of fixings to Restraint frame	:	
i. Manufacturer	:	Kingfisher International
ii. Reference	:	Easydrive
iii. Type & material	:	Zinc-plated carbon steel
iv. Overall size	:	7.5mm x 60mm
v. Spacing	:	600mm

3. Vertical Studs		
Manufacturer or Supplier	:	Hadley
Reference	:	60mm Hadley I studs
Material	:	Steel
Location and Spacing	:	600mm centres
Overall size		
i. Depth	:	32mm
ii. Width	:	60mm
iii. Height	:	3000mm
Fixing Method to Head and Base Track (If applicable)	:	Vertical studs friction fitted into head and base track.

4. Vertical Studs (fixed & free edge)		
Manufacturer or Supplier	:	Hadley
Reference	:	62mm Hadley U Track
Material	:	Steel
Location and Spacing	:	600mm centres
Overall size		
iv. Depth	:	32mm
v. Width	:	60mm
vi. Height	:	3000mm
Fixing Method to Head and Base Track (If applicable)	:	Vertical studs friction fitted into head and base track.
Details of fixings to Head and Base Track (If applicable)	:	N/A
i. Manufacturer	:	N/A
ii. Reference	:	N/A
iii. Type & material	:	N/A
iv. Overall size	:	N/A

5. Flat Strap		
Manufacturer	:	Hadley Group
Reference	:	Hadley 70mm flat strap
Material	:	Steel
Location	:	Behind horizontal joints in Firepanel For joint on inner layer 300mm from top. For joint on outer layer 400mm from top. (2.4m lengths need to be butt jointed).
Overall size		
i. Height	:	70mm*
ii. Length	:	2400mm*
iii. Thickness	:	0.5mm*
Fixing Method to vertical studs	:	Wafer head screws
Details of fixings to vertical studs	:	
i. Manufacturer	:	Evolution Fixings
ii. Reference	:	Evolution Wafer Head Drywall Screws*
iii. Type & material	:	Wafer Head Screws*
iv. Overall size	:	4.2mm x 13mm*
v. Location	:	300mm centres

6. Other		
Manufacturer or Supplier	:	Hadley Group
Reference	:	Hadley Shaft Core Angle Bracket
Material	:	Steel
Location	:	Bracket to be installed at 600mm centres – one angle bracket both sides of I stud to create a flange for the Coreboard to sit within. Fixed both sides through the stud using a wafer head, as per attached client drawings.
Overall size		
i. Depth	:	37mm*
ii. Height	:	23mm*
iii. Thickness	:	0.5mm*
Fixing Method to restraint frame and centres	:	Wafer head fixings
Details of fixings to Restraint frame		
i. Manufacturer	:	Evolution
ii. Reference	:	Evolution Wafer Head Drywall Screws*
iii. Type & material	:	Wafer Head Screws*
iv. Overall size	:	4.2mm x 13mm*
v. Location	:	In angle holes provided

Cladding Material

7. First Layer of board applied to the internal framing exposed face		
Manufacturer	:	Knauf
Reference	:	19mm Coreboard
Material	:	Gypsum plasterboard
Batch Reference/ Number	:	A1-1350*
Individual board dimension	:	19mm X 3000mm X 600mm
Moisture Content (%)	:	< 2%
Board Weight (kg/m ²)	:	16
Joint Reinforcement	:	Horizontal joint in the boards at 800mm from the head of the wall. The joint is reinforced by 150mm wide strip of 19mm Coreboard behind the joint fixed with 32mm screws at 300mm centres and a Hadley 19x19mm angle.
Application method	:	Friction fixed, no screws, between back flange of Hadley I Stud and Hadley Shaft Angle Bracket.
Fixing Method to internal frame and centres	:	Friction fitted, as described above

8. First Layer of board applied to the internal framing unexposed face		
Manufacturer	:	Knauf
Reference	:	12.5mm Firepanel
Material	:	Gypsum plasterboard
Batch Reference/ Number	:	243493*
Individual board dimension	:	12.5mm X 3000mm X 1200mm
Moisture Content (%)	:	< 2%
Board Weight (kg/m ²)	:	10
Application method	:	Screw fixed
Fixing Method to restraint frame and centres	:	Screw fixed at 300mm centres
Details of fixings to Internal framing		
i. Manufacturer	:	Evolution
ii. Reference	:	DW screws
iii. Type & material	:	Steel*
iv. Overall size	:	32mm
v. Spacing	:	300mm

9. Second Layer of board applied to the internal framing unexposed face		
Manufacturer	:	Knauf
Reference	:	12.5mm Knauf firepanel
Material	:	Gypsum plasterboard
Batch Reference/ Number	:	
Individual board dimension	:	12.5mm x 3000mm x 1200mm
Overall dimension	:	
Moisture Content (%)	:	< 2%
Board Weight (kg/m ²)	:	10
Application method	:	Screw fixed
Fixing Method to restraint frame and centres	:	Screw fixed at 300mm centres
Details of fixings to Internal framing		
i. Manufacturer	:	Evolution
ii. Reference	:	42mm DW screws
iii. Type & material	:	Steel*
iv. Overall size	:	42mm
v. Spacing	:	300mm

Sealing Materials

10. Sealant		
Manufacturer	:	Everbuild
Reference	:	Everflex Fire Mate intumescent sealant
Material	:	Sealant
Location	:	2 continuous beads under the head and base track and under board abutments
Nominal Application thickness	:	10mm

Tape and Fill

11. Jointing Tape		
Manufacturer	:	Knauf
Reference	:	Jointing Tape
Material	:	Paper Tape
Location	:	Fitted over the plasterboard joints in the second layer

12. Jointing Compound		
Manufacturer	:	Knauf
Reference	:	Fill & Finish 20kg
Material	:	Mixture of calcium carbonate, perlite, water based polymer emulsion, thickeners and water
Location	:	Fitted over the plasterboard joints in the second layer

Test Observations

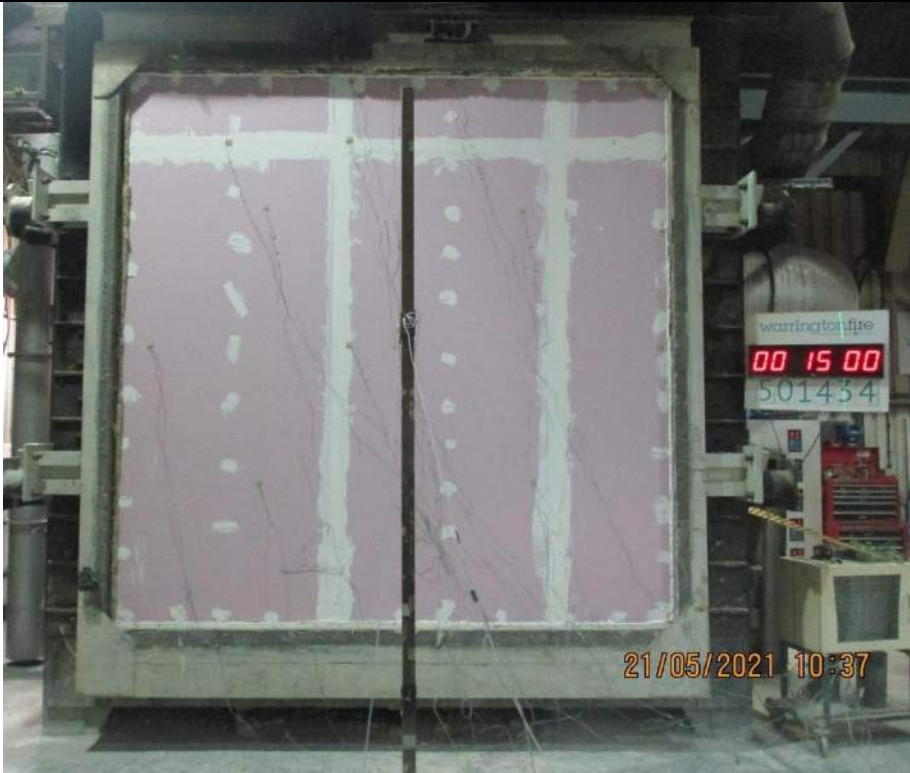
Time (minutes)	All observations are from the unexposed face unless noted otherwise.
00:00	The test has started.
04:51	There is smoke issuing at the head approximately 200mm from the fixed edge, and at the second and fourth studs.
20:01	There is a decrease in the smoke issuing at the head.
30:00	No visible change.
45:00	No visible change.
57:07	There is smoke issuing at the fixed edge approximately 1500mm up.
60:00	No visible change.
75:00	No visible change.
92:20	There is discolouration at the screw heads on the fourth stud.
97:12	There is discoloration at the head.
105:41	There is discolouration at the head and the tape and fill is falling away.
108:32	Test terminated.

Test Photographs

The unexposed face prior to testing



The unexposed face after a test duration of 15 minutes



The unexposed face after a test duration of 30 minutes



The unexposed face after a test duration of 45 minutes



The unexposed face after a test duration of 60 minutes



The unexposed face after a test duration of 75 minutes



The unexposed face after a test duration of 90 minutes



The unexposed face after a test duration of 105 minutes



The exposed
face after the
completion of
the test



Temperature and Deflection Data

Mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2020

Time min	Mean Furnace °C	ISO 834 °C
0	20	20
1	268	349
2	360	445
3	459	502
4	574	544
5	598	576
6	622	603
7	646	626
8	661	645
9	674	663
10	683	678
11	694	693
12	700	705
13	708	717
14	720	728
15	737	739
16	747	748
17	756	757
18	763	766
19	769	774
20	776	781
21	781	789
22	793	796
23	800	802
24	807	809
25	814	815
26	819	820
27	825	826
28	830	831
29	835	837
30	841	842
31	845	847
32	852	851
33	858	856
34	862	860
35	867	865
36	872	869

Time min	Mean Furnace °C	ISO 834 °C
37	877	873
38	881	877
39	885	881
40	888	885
41	890	888
42	895	892
43	899	896
44	902	899
45	906	902
46	909	906
47	912	909
48	916	912
49	919	915
50	922	918
51	924	921
52	928	924
53	929	927
54	932	930
55	936	932
56	938	935
57	941	938
58	943	940
59	946	943
60	947	945
61	949	948
62	953	950
63	955	953
64	956	955
65	959	957
66	961	960
67	964	962
68	966	964
69	968	966
70	970	968
71	972	971
72	973	973
73	975	975

Time min	Mean Furnace °C	ISO 834 °C
74	977	977
75	978	979
76	980	981
77	983	983
78	983	985
79	985	986
80	988	988
81	991	990
82	990	992
83	992	994
84	994	996
85	994	997
86	997	999
87	998	1001
88	999	1003
89	1001	1004
90	1003	1006
91	1003	1008
92	1005	1009
93	1006	1011
94	1008	1012
95	1009	1014
96	1011	1016
97	1012	1017
98	1013	1019
99	1015	1020
100	1014	1022
101	1018	1023
102	1018	1025
103	1017	1026
104	1020	1028
105	1022	1029
106	1022	1030
107	1024	1032
108	1025	1033

Individual And Mean Temperatures Recorded On The Unexposed Face

Time min	Chan 24 °C	Chan 25 °C	Chan 26 °C	Chan 27 °C	Chan 28 °C	Mean °C
0	16	18	16	17	18	17
1	16	18	16	17	18	17
2	16	18	16	17	18	17
3	16	18	17	17	18	17
4	16	18	17	17	18	17
5	16	19	16	17	18	17
6	16	19	17	17	18	17
7	16	19	16	18	18	17
8	16	19	16	18	18	17
9	16	20	17	19	19	18
10	17	22	18	19	20	19
11	17	23	18	21	21	20
12	18	25	20	23	23	22
13	19	28	20	25	25	23
14	20	30	21	27	27	25
15	21	32	22	29	29	27
16	23	35	23	32	32	29
17	24	37	24	34	34	31
18	24	40	24	36	37	32
19	26	42	26	39	39	34
20	27	44	26	40	42	36
21	27	45	27	42	44	37
22	28	46	28	44	45	38
23	30	47	28	46	47	40
24	32	48	29	47	49	41
25	32	49	28	48	50	41
26	32	49	32	49	51	43
27	31	50	29	50	52	42
28	32	51	29	51	53	43
29	33	51	31	52	53	44
30	33	52	30	53	54	44
31	29	53	27	53	55	43
32	29	54	27	53	55	44
33	31	55	27	54	56	45
34	30	57	27	54	58	45
35	32	58	27	55	59	46
36	32	60	30	55	61	48
37	34	61	31	56	62	49
38	34	62	32	57	63	50
39	35	64	30	58	64	50
40	38	65	31	60	64	52
41	39	66	29	61	65	52
42	43	67	32	62	66	54
43	43	68	34	63	67	55
44	46	69	33	64	68	56
45	47	69	32	64	68	56
46	41	70	31	65	69	55
47	40	70	30	66	69	55
48	41	70	32	67	69	56

Time min	Chan 24 °C	Chan 25 °C	Chan 26 °C	Chan 27 °C	Chan 28 °C	Mean °C
49	39	71	28	67	70	55
50	43	71	32	67	70	57
51	44	71	31	68	70	57
52	49	71	32	68	71	58
53	48	72	29	69	71	58
54	50	72	29	69	71	58
55	52	72	32	69	71	59
56	53	72	29	69	71	59
57	51	73	31	69	71	59
58	53	74	31	69	71	60
59	52	74	31	68	71	59
60	52	74	33	69	70	60
61	49	74	35	69	71	60
62	50	74	34	69	70	59
63	51	74	32	70	70	59
64	49	75	32	70	71	59
65	50	76	35	70	71	60
66	52	77	33	71	72	61
67	51	78	34	71	72	61
68	52	78	34	71	73	62
69	55	77	38	71	75	63
70	54	77	36	70	76	63
71	56	77	37	71	76	63
72	59	78	37	71	76	64
73	57	79	40	72	77	65
74	59	80	41	73	77	66
75	58	81	41	74	77	66
76	32	81	35	75	78	60
77	33	82	33	75	78	60
78	33	83	36	75	79	61
79	33	84	34	76	80	61
80	33	85	36	77	81	62
81	34	86	36	77	81	63
82	35	87	37	78	82	64
83	37	88	38	78	83	65
84	37	90	38	79	84	66
85	37	92	41	80	86	67
86	38	95	42	81	87	69
87	39	97	42	82	89	70
88	41	98	44	84	91	72
89	45	99	42	85	92	73
90	45	100	39	87	93	73
91	42	101	41	88	94	73
92	39	102	44	90	95	74
93	38	102	45	91	97	75
94	38	103	41	92	98	74
95	40	104	42	93	99	76
96	40	105	44	94	100	77
97	42	106	45	95	100	78
98	43	106	45	96	101	78
99	46	107	45	96	102	79
100	46	109	51	97	103	81

Time min	Chan 24 °C	Chan 25 °C	Chan 26 °C	Chan 27 °C	Chan 28 °C	Mean °C
101	44	110	49	98	104	81
102	48	111	48	99	105	82
103	50	112	52	100	106	84
104	51	114	48	101	107	84
105	53	116	53	101	108	86
106	54	120	55	102	110	88
107	55	123	52	103	111	89
108	57	128	54	104	113	91

Maximum Temperatures Recorded On The Unexposed Face

Time	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23	Chan 30
min	°C	°C	°C	°C	°C	°C	°C	°C
0	17	19	19	18	18	18	18	19
1	17	19	19	18	18	18	18	19
2	17	19	19	18	18	18	18	19
3	17	19	19	18	18	18	18	19
4	17	20	20	18	18	18	18	20
5	17	21	21	19	19	18	18	22
6	17	23	22	19	19	18	18	25
7	18	25	24	20	20	18	18	28
8	18	28	27	21	22	19	19	31
9	19	30	30	23	24	20	20	35
10	20	33	34	24	26	21	22	38
11	21	36	39	26	28	23	24	42
12	23	40	43	28	31	25	26	45
13	26	44	48	29	33	27	29	47
14	29	47	51	31	35	30	31	49
15	32	50	54	33	38	32	34	51
16	34	53	56	35	40	35	36	52
17	37	55	58	37	42	37	38	53
18	39	57	60	38	43	40	40	54
19	41	58	61	40	45	42	42	55
20	43	60	62	42	46	44	44	55
21	44	61	63	43	48	45	46	56
22	46	62	64	45	49	47	47	57
23	47	62	65	46	50	48	48	58
24	48	63	66	48	51	49	50	59
25	49	64	67	50	52	50	50	60
26	50	65	67	52	53	50	51	61
27	50	65	68	54	54	51	52	63
28	51	66	68	55	55	51	52	64
29	51	67	69	56	55	52	52	65
30	51	68	70	58	56	52	53	66
31	51	69	70	59	57	53	54	67
32	52	70	71	61	58	54	54	68
33	52	71	72	62	59	55	55	69
34	52	72	73	63	60	56	55	70
35	53	72	74	63	61	57	56	71
36	54	73	76	64	61	59	58	72
37	56	73	77	64	62	60	59	73
38	57	74	79	64	63	62	61	74
39	59	75	80	64	63	63	63	75

Time	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23	Chan 30
min	°C	°C	°C	°C	°C	°C	°C	°C
40	61	77	82	64	64	64	64	76
41	62	79	84	64	64	66	65	77
42	63	81	86	65	64	66	65	78
43	64	82	87	65	65	67	66	80
44	64	84	88	66	65	68	67	82
45	65	85	90	67	65	68	67	83
46	65	87	91	67	65	69	68	85
47	65	88	92	68	66	69	68	87
48	66	90	93	68	66	69	69	88
49	66	91	94	69	67	69	69	89
50	66	92	95	69	68	69	69	91
51	66	93	96	70	68	70	69	92
52	66	94	98	70	69	69	70	94
53	66	93	99	71	70	70	69	95
54	66	91	100	73	71	70	70	97
55	66	93	102	75	73	70	70	98
56	66	92	103	77	74	70	70	99
57	66	90	104	79	76	70	70	100
58	66	90	105	81	78	70	70	102
59	66	93	106	83	79	70	70	102
60	67	94	107	84	80	70	70	103
61	66	96	108	85	81	70	70	104
62	66	98	109	86	81	70	70	106
63	66	99	111	88	82	70	70	107
64	67	101	113	89	83	71	71	108
65	67	103	116	90	83	71	71	111
66	67	105	119	90	84	72	71	113
67	67	108	125	92	85	73	71	117
68	67	111	132	92	85	73	71	122
69	67	107	143	93	86	75	71	128
70	67	117	155	94	87	76	72	136
71	67	122	174	95	88	76	72	147
72	67	129	191	96	89	77	73	159
73	67	137	205	97	89	78	75	173
74	67	148	217	98	90	79	76	186
75	68	160	228	99	91	80	77	197
76	68	175	238	100	92	80	77	208
77	70	188	247	102	93	81	78	218
78	72	201	255	103	94	82	79	227
79	73	213	263	105	94	83	80	235
80	73	223	270	107	95	84	81	244

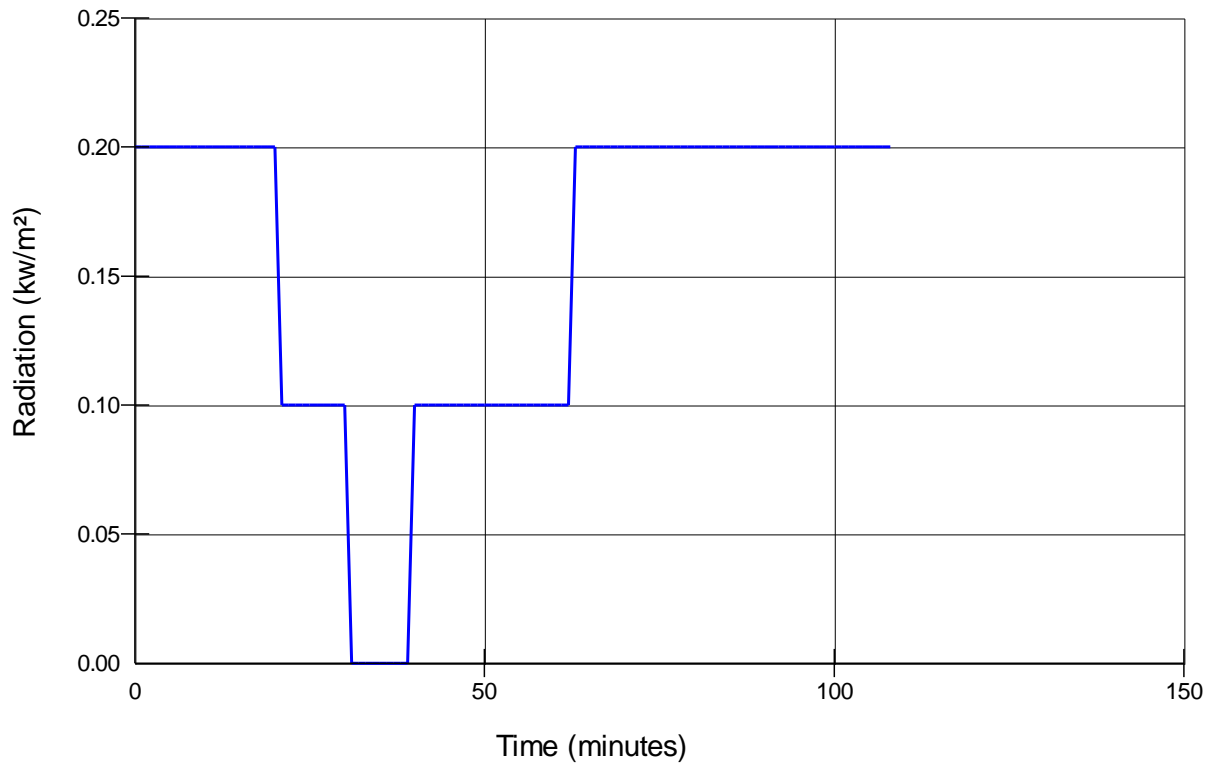
Time	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23	Chan 30
min	°C	°C	°C	°C	°C	°C	°C	°C
81	74	233	277	108	96	87	82	251
82	75	243	282	111	97	89	84	258
83	76	252	285	113	98	90	85	265
84	77	261	288	116	98	92	87	271
85	79	270	290	119	99	94	89	277
86	80	279	291	122	100	95	90	283
87	81	287	292	126	101	96	91	289
88	82	294	293	130	102	97	92	294
89	83	302	293	134	103	98	93	301
90	84	309	292	139	104	99	94	306
91	85	316	292	147	106	100	95	310
92	86	321	291	155	107	101	96	313
93	87	325	290	164	108	102	97	314
94	88	328	289	174	110	103	97	314
95	89	331	289	182	112	104	98	312
96	90	333	288	190	113	105	99	310
97	91	335	287	199	116	107	100	307
98	91	336	287	207	118	108	101	306
99	92	337	286	216	121	109	102	304
100	93	337	285	224	123	111	102	302
101	94	337	285	232	127	113	103	301
102	95	336	284	239	131	116	104	301
103	95	336	284	246	136	119	105	300
104	96	334	284	253	145	123	106	300
105	96	334	284	259	153	128	107	300
106	97	333	284	265	164	134	108	299
107	98	331	284	269	175	141	109	298
108	98	330	284	272	184	152	110	299

Recorded Radiation Intensity From The Partition Specimen

Time	Chan 29
min	kW/m ²
0	0.2
1	0.2
2	0.2
3	0.2
4	0.2
5	0.2
6	0.2
7	0.2
8	0.2
9	0.2
10	0.2
11	0.2
12	0.2
13	0.2
14	0.2
15	0.2
16	0.2
17	0.2
18	0.2
19	0.2
20	0.2
21	0.1
22	0.1
23	0.1
24	0.1
25	0.1
26	0.1
27	0.1
28	0.1
29	0.1
30	0.1
31	0
32	0
33	0
34	0
35	0
36	0

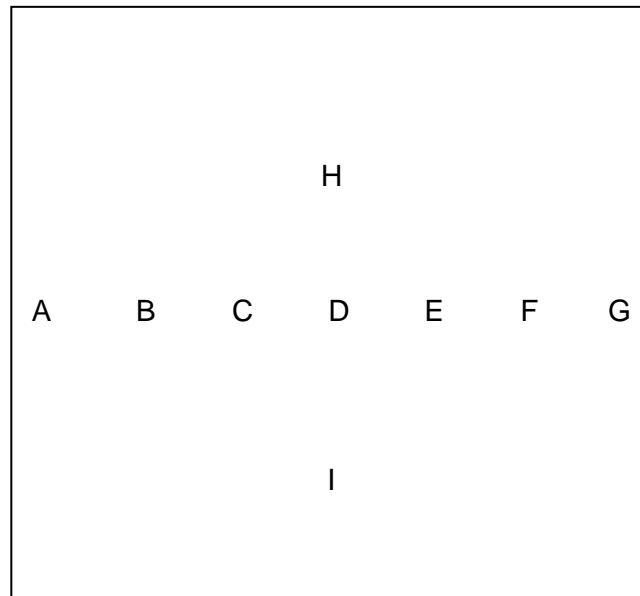
Time	Chan 29
min	kW/m ²
37	0
38	0
39	0
40	0.1
41	0.1
42	0.1
43	0.1
44	0.1
45	0.1
46	0.1
47	0.1
48	0.1
49	0.1
50	0.1
51	0.1
52	0.1
53	0.1
54	0.1
55	0.1
56	0.1
57	0.1
58	0.1
59	0.1
60	0.1
61	0.1
62	0.1
63	0.2
64	0.2
65	0.2
66	0.2
67	0.2
68	0.2
69	0.2
70	0.2
71	0.2
72	0.2
73	0.2

Time	Chan 29
min	kW/m ²
74	0.2
75	0.2
76	0.2
77	0.2
78	0.2
79	0.2
80	0.2
81	0.2
82	0.2
83	0.2
84	0.2
85	0.2
86	0.2
87	0.2
88	0.2
89	0.2
90	0.2
91	0.2
92	0.2
93	0.2
94	0.2
95	0.2
96	0.2
97	0.2
98	0.2
99	0.2
100	0.2
101	0.2
102	0.2
103	0.2
104	0.2
105	0.2
106	0.2
107	0.2
108	0.2



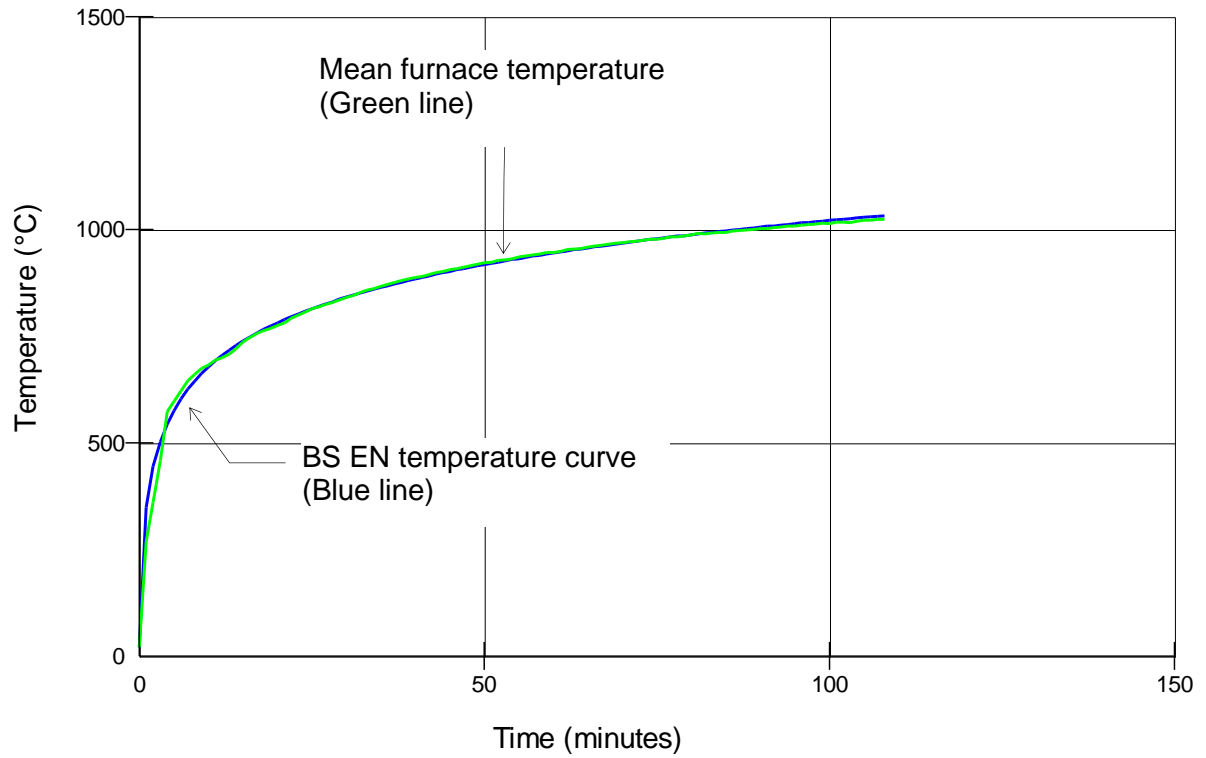
Horizontal Deflections Of The Partition Specimen

The deflection of the specimen partition was measured from the centre point, and at mid-height on each stud. The readings have been tabulated and are shown graphically below. A positive reading represents deflection in towards the furnace. A negative reading represents deflection away from the furnace.

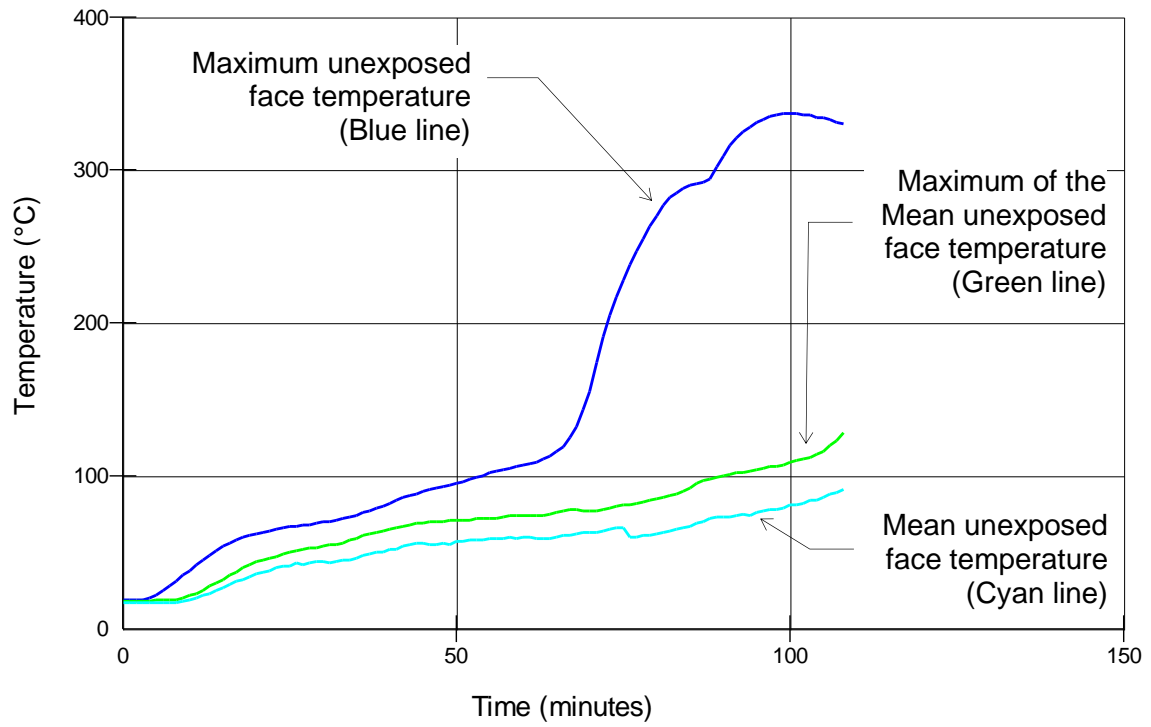


TIME (minutes)	A	B	C	D	E	F	G	H	I
15	16	37	43	52	42	39	12	41	42
30	25	56	51	62	52	40	8	52	42
45	30	60	71	70	72	51	10	52	59
60	25	61	72	71	72	56	8	51	52
75	35	66	80	77	74	57	10	59	55
90	36	73	80	77	81	59	9	46	60

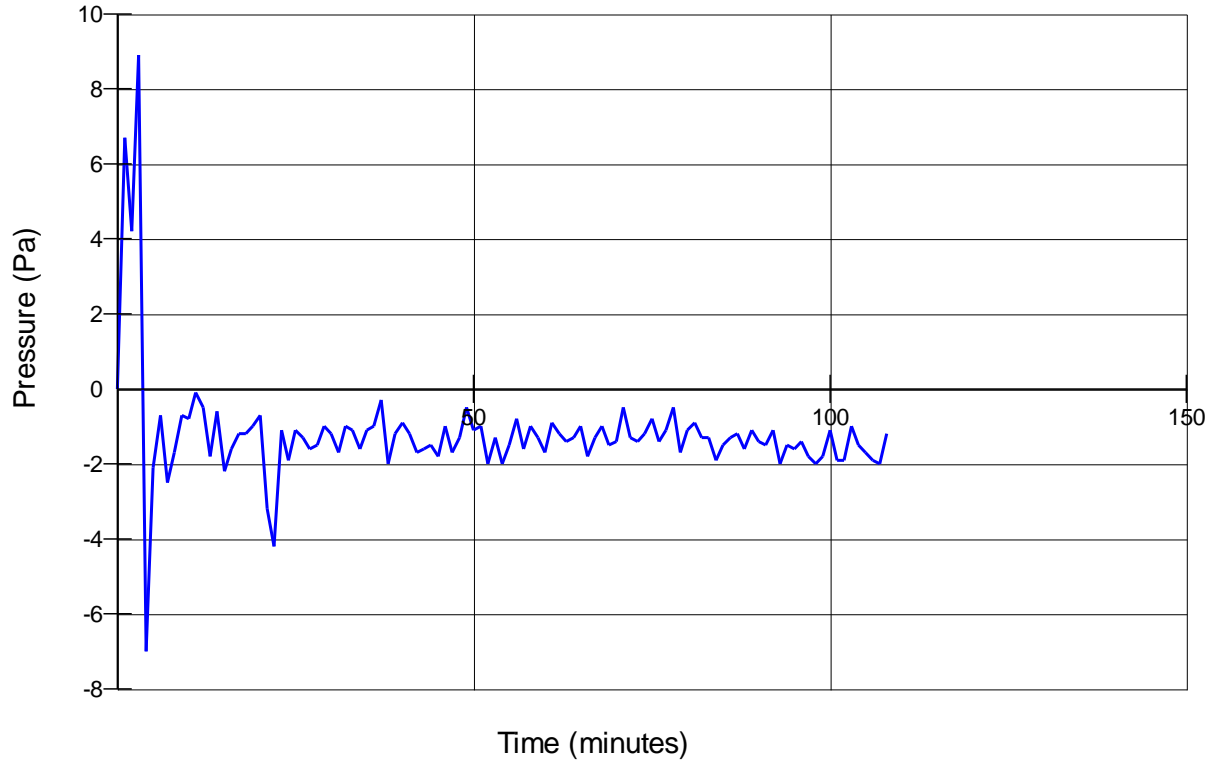
Graph showing mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2020



Graph Showing Mean and Maximum Temperatures Recorded On The Unexposed Surface



Graph showing recorded furnace pressure at 0.5m from the notional floor level



On-going Implications

Limitations This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in BS EN 1364-1, BS EN 1363-1, and where appropriate BS EN 1363-2. Any significant deviation with respect to size, construction details, loads, stresses and 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.

The results only relate to the behaviour of the element of construction under the particular conditions of 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.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. **Warringtonfire** will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

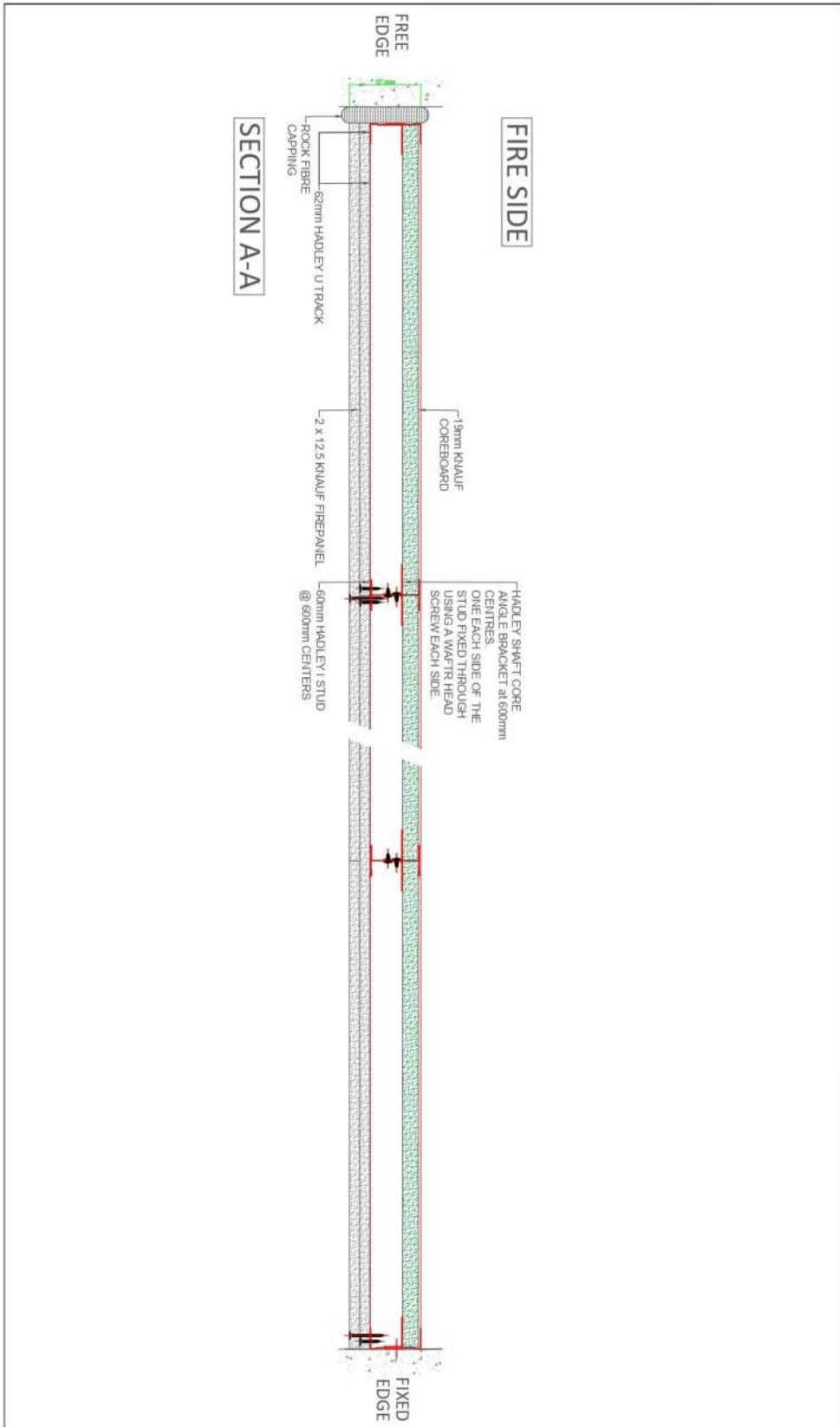
Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

EGOLF Certain aspects of some fire test specifications are open to different interpretations. EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

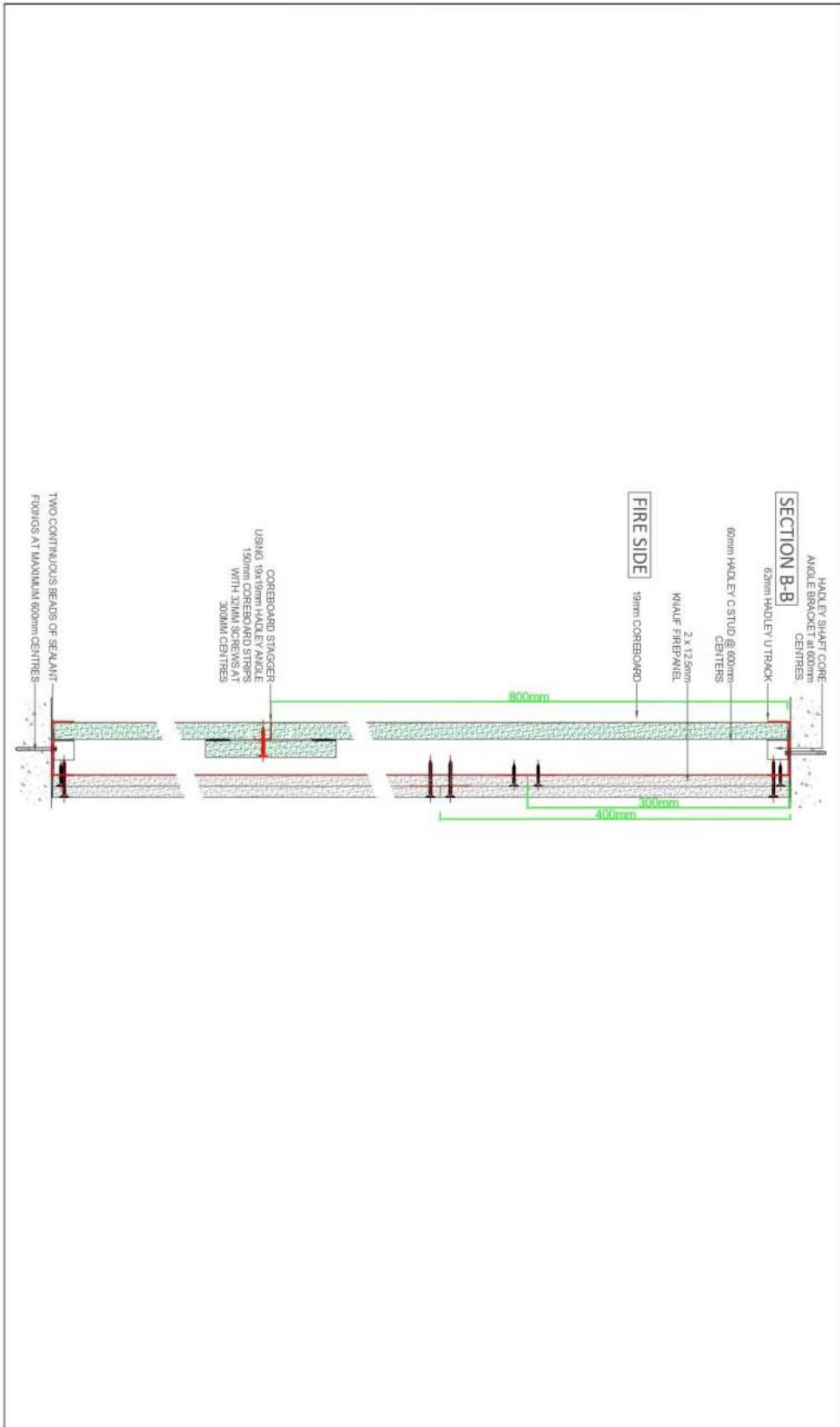
Field of Direct Application

BS EN 1363-1:2020, Fire resistance tests - Part 1: General requirements, states within Section 12.1, Clause v) that "The field of direct application of the results for the specimen being evaluated, either in the form of the full text from the appropriate standard, or only those clauses which are relevant for the specimen tested" shall be included within the test report. The full text of the field of direct application for the results of the specimen being evaluated herein, can be found within the appropriate test standard, which is referenced on the front cover of this report.

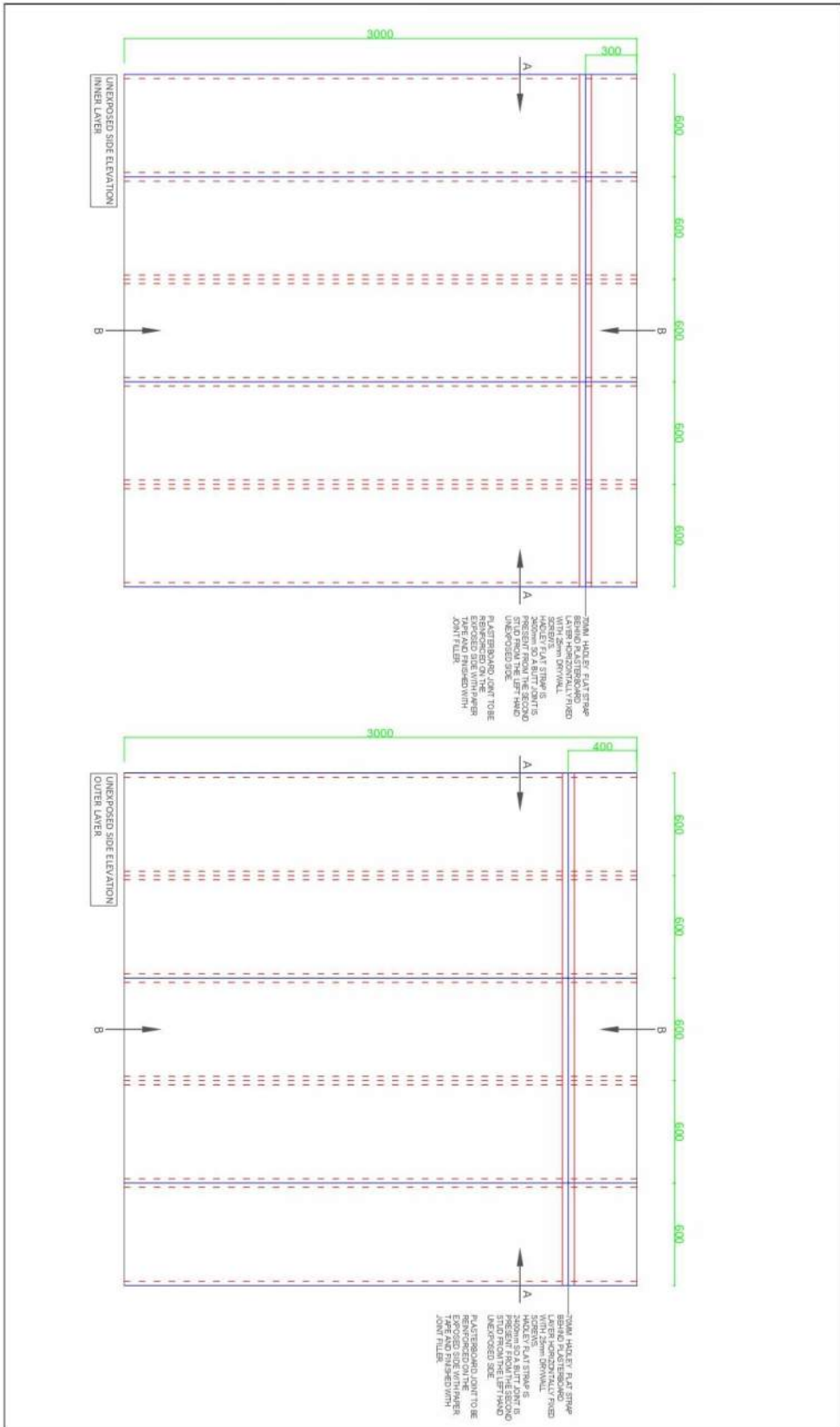
Client Drawings



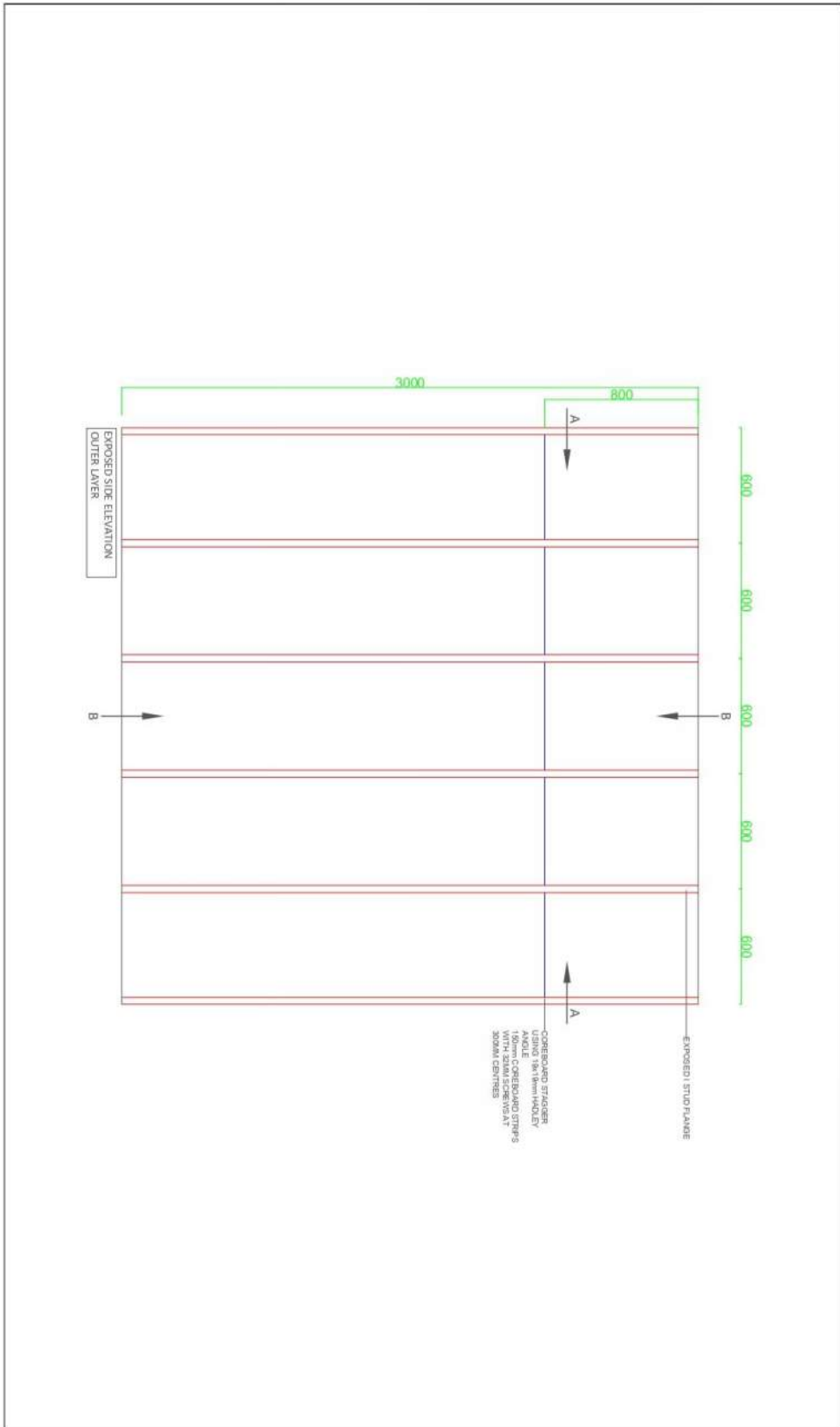
TITLE: HORIZONTAL CROSS SECTIONS (SECTION A-A)		DWG. NUMBER: F-WF-501434-1	
SYSTEM: 19mm KNAUF COREBOARD TO EXPOSED SIDE WITH 2 x 12.5mm KNAUF FIREPANEL on 60mm HADLEY 1 STUDS AT 600mm CENTRES	TEST_REF: WF 501434	TEST_DATE: 21/05/2021	
	DATE: 01/05/2021	DRW: FM	SCALE: NTS
HADLEY GROUP PHONE: +44 (0) 121 555 1300 FAX: +44 (0) 121 555 1300 EMAIL: ask.hadley@hadleygroup.com			



TITLE: VERTICAL CROSS SECTIONS (SECTION B-B)		DWG. NUMBER: F-WF-501434-2	
SYSTEM: 19mm KNAUF COREBOARD TO EXPOSED SIDE WITH 2 x 12.5mm KNAUF FIREPANEL on 60mm HADLEY I STUDS AT 600mm CENTRES		TEST REF: WF 501434	TEST DATE: 21/05/2021
DATE: 01/05/2021	DRN: FM	SCALE: NTS	HADLEY GROUP PHONE: +44 (0) 121 555 1300 FAX: +44 (0) 121 555 1300 EMAIL: ask.hadley@hadleygroup.com



TITLE: UNEPOSED SIDE ELEVATION		DWG. NUMBER: F-WF-501434-3	
SYSTEM: 19mm KNAUF COREBOARD TO EXPOSED SIDE WITH 2 X 12.5mm KNAUF FIREPANEL on 60mm HADLEY I STUDS AT 600mm CENTRES		TEST REF: WF 501434	TEST DATE: 21/05/2021
DATE: 01/05/2021	DRN: FM	SCALE: NTS	
HADLEY GROUP PHONE: +44 (0) 121 555 1300 FAX: +44 (0) 121 555 1300 EMAIL: ask.hadley@hadleygroup.com			



TITLE: EXPOSED SIDE ELEVATION		DWG. NUMBER: F-WF-501434-4	
SYSTEM: 19mm KNAUF COREBOARD TO EXPOSED SIDE WITH 2 X 12.5mm KNAUF FIREPANEL on 60mm HADLEY I STUDS AT 600mm CENTRES		TEST_REF: WF 501434	TEST_DATE: 21/05/2021
DATE: 01/05/2021	DRN: FM	SCALE: NTS	
HADLEY GROUP PHONE: +44 (0) 121 555 1300 FAX: +44 (0) 121 555 1300 EMAIL: ask.hadley@hadleygroup.com			