Warringtonfire
Chiltern House
Stocking Lane
High Wycombe
HP14 4ND
United Kingdom
T: +44 (0)1494 569750
W: www.warringtonfire.com

Title:

The fire resistance performance of a symmetrical 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:

20/04/2022

Issue 1
02/02/2023

WF Report No:

WF514552

Prepared for:

Hadley Industries Holding Ltd
PO Box 92
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 132mm deep overall.

The head and base track were Hadley Group 72mm Track, along with the studs positioned at the fixed and free edges. The vertical studs were Hadley Group 60mm metal I stud, secured with Hadley Stagger Clips. A Hadley fixing plate was used behind all horizontal board joints, on both faces of the partition and both layers of boards. Each face was clad with two layers of Knauf Soundshield Plus 15mm thick plasterboard. Each face was finished with Knauf tape and fill.

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

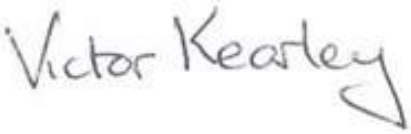
Integrity	
Cotton pad	108 (One Hundred and Eight) Minutes*
Sustained flaming	108 (One Hundred and Eight) Minutes*
Gap gauges	108 (One Hundred and Eight) Minutes*
Thermal Insulation	108 (One Hundred and Eight) Minutes*
Radiation (time to 15 kW/m^2)	108 (One Hundred and Eight) Minutes*

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

Date of Test 20/04/2022

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: 02/02/2023

Revision History

Issue No :	Re-issue Date:
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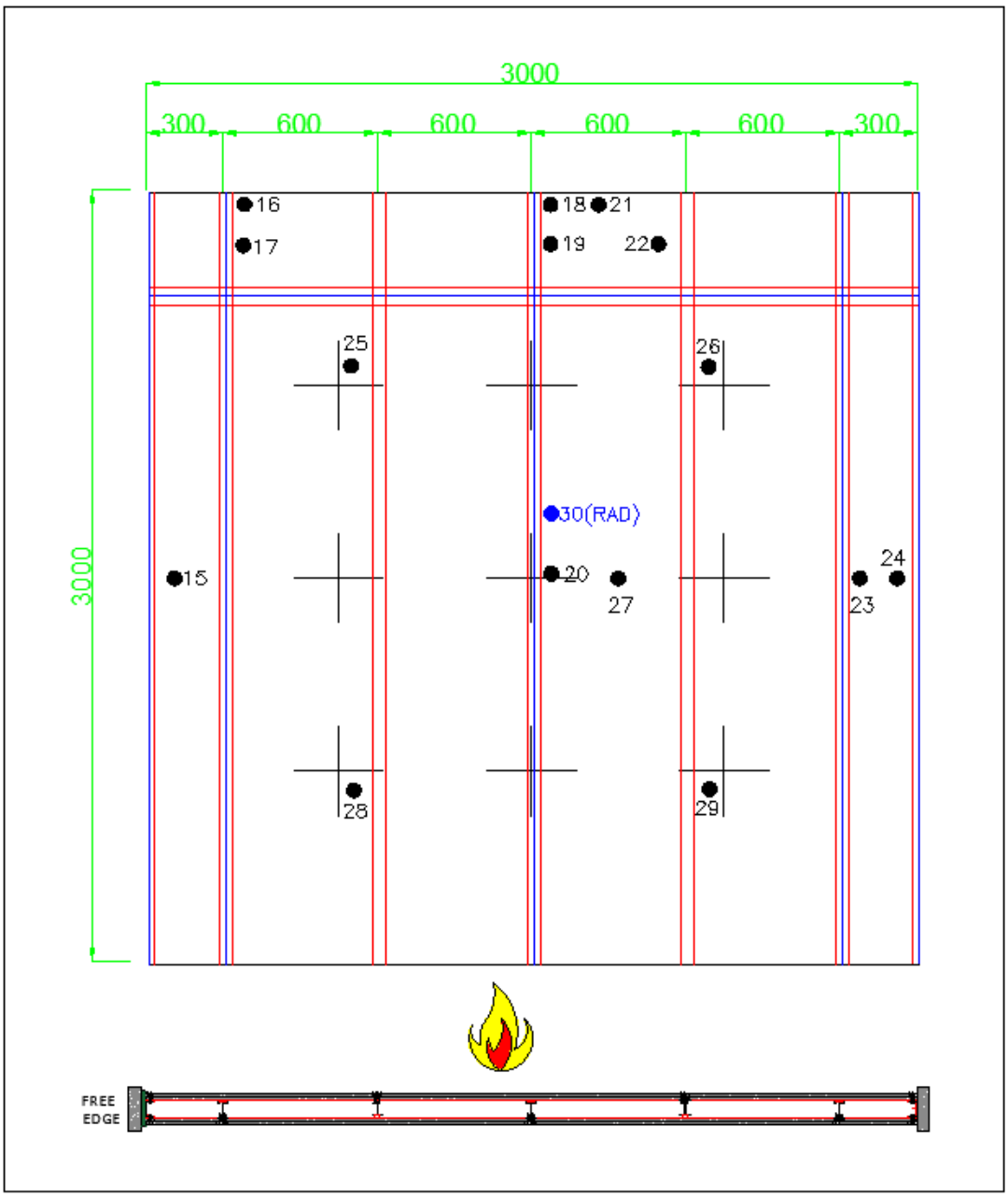
Test Conditions

Standard	BS EN 1364-1, Fire resistance tests for non-loadbearing elements Part 1: Walls and BS EN 1363-1, Fire resistance tests Part 1: General requirements.
Sampling	Warringtonfire was not involved in factory sampling of the products and materials used for the test specimen described in this report, and as such the results of this test apply to the sample as received.
Installation	The components were received during the month of March 2022. 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 16ºC at the start of the test with a maximum variation of +1ºC 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 nine 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 0.5 m from the notional floor level, equating to a pressure of 20 Pa 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

Figure 2 – Unexposed Face elevation

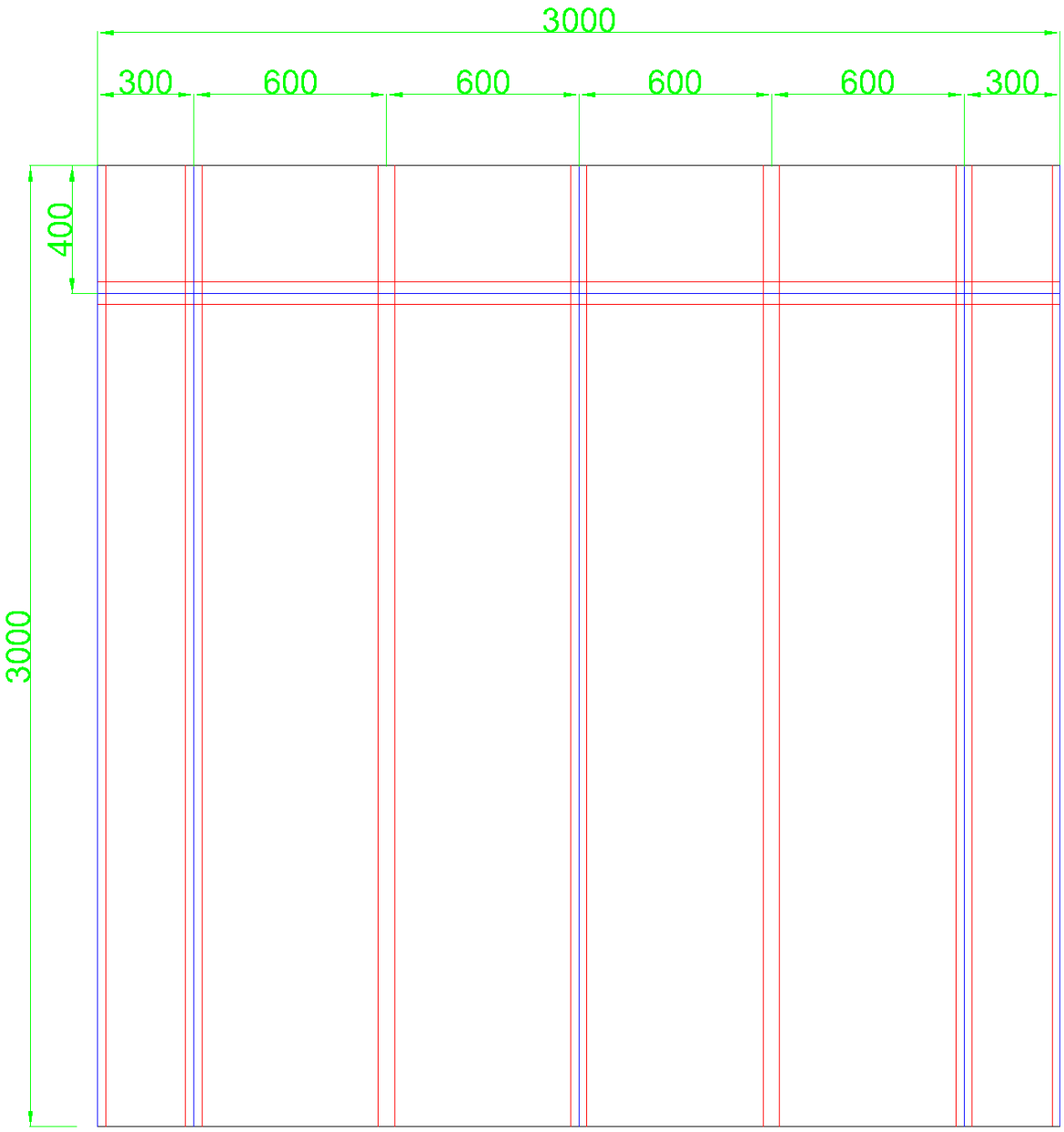


Figure 3 – Exposed Face Elevation

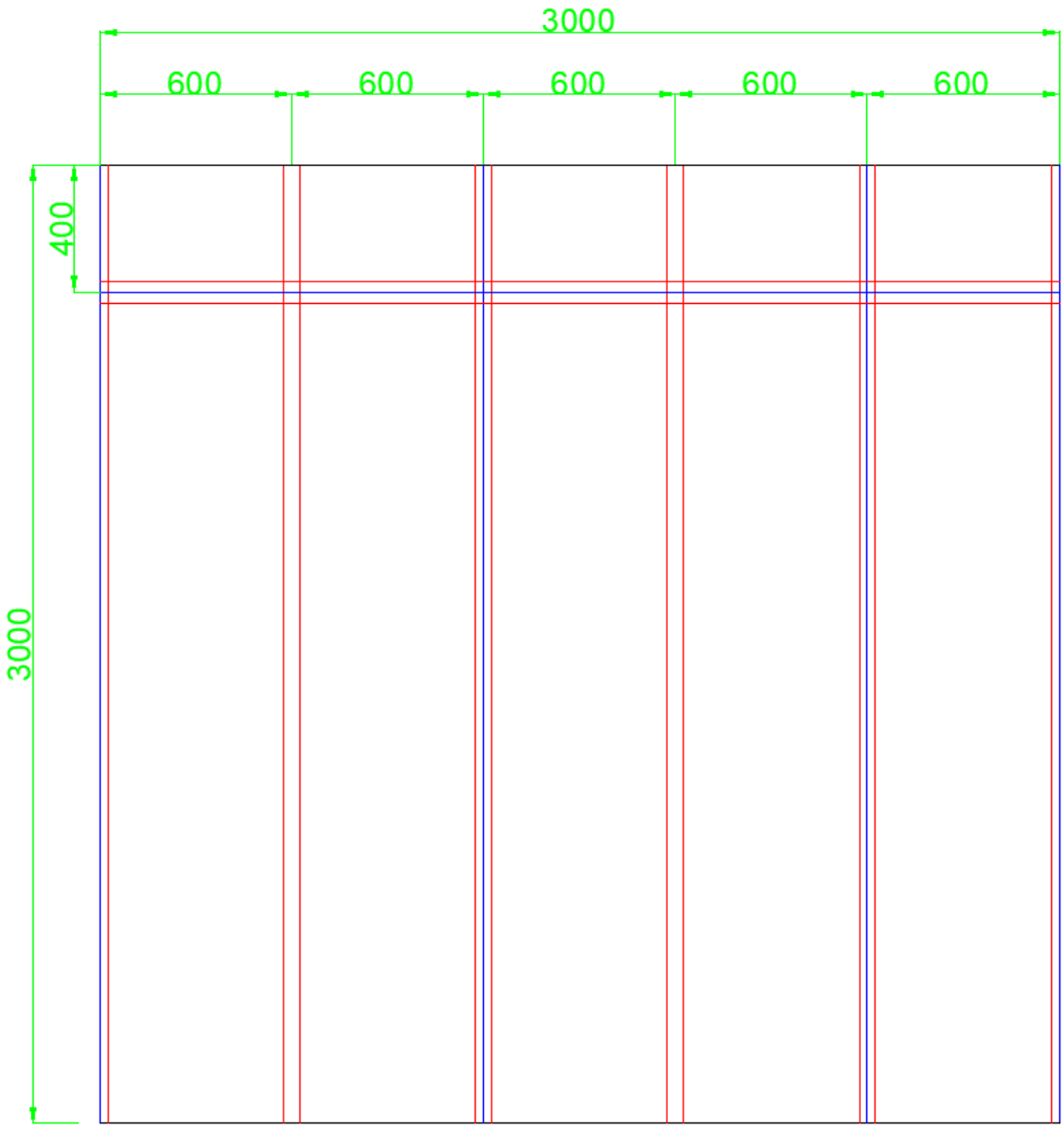


Figure 4 – Vertical Cross Section

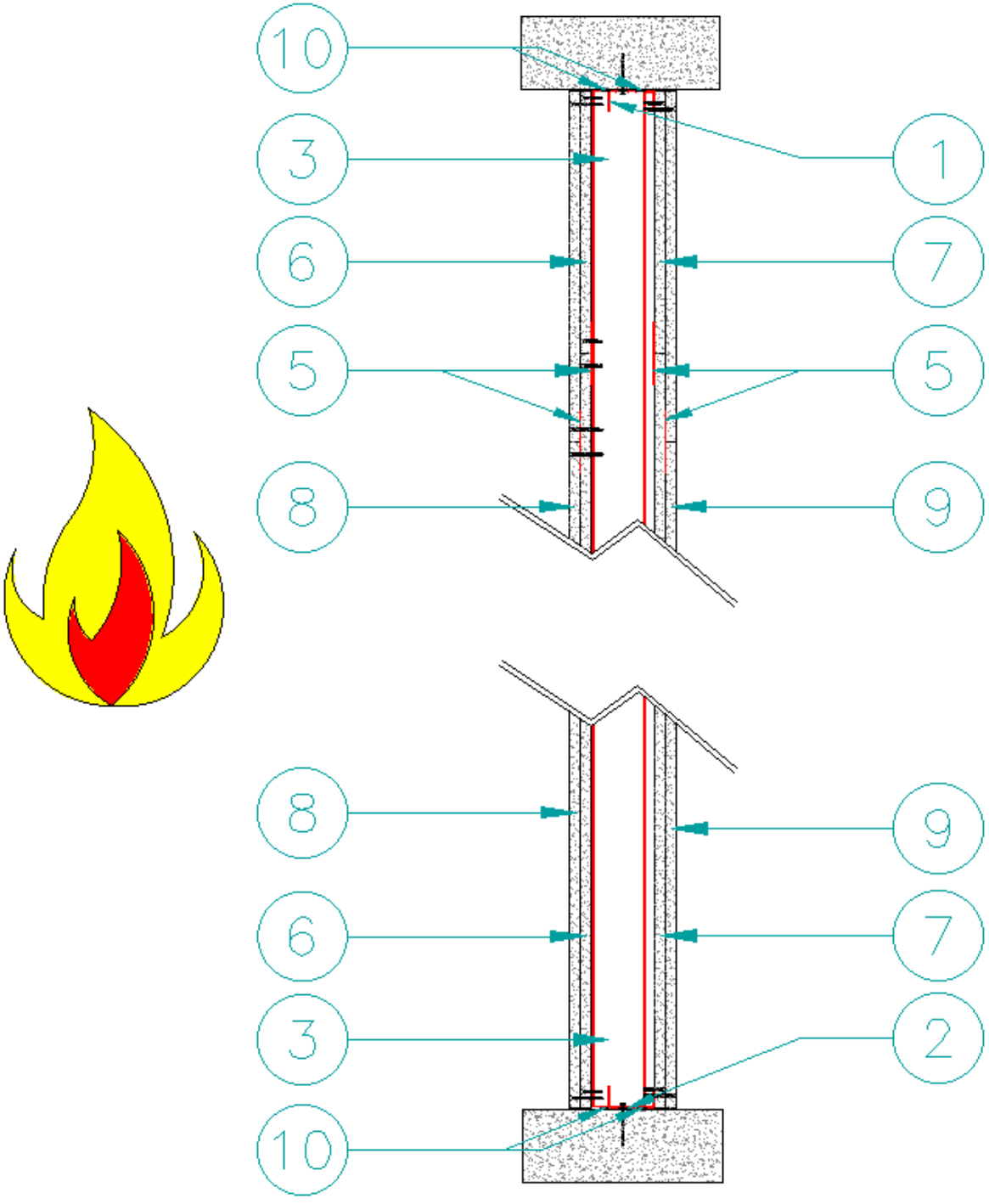
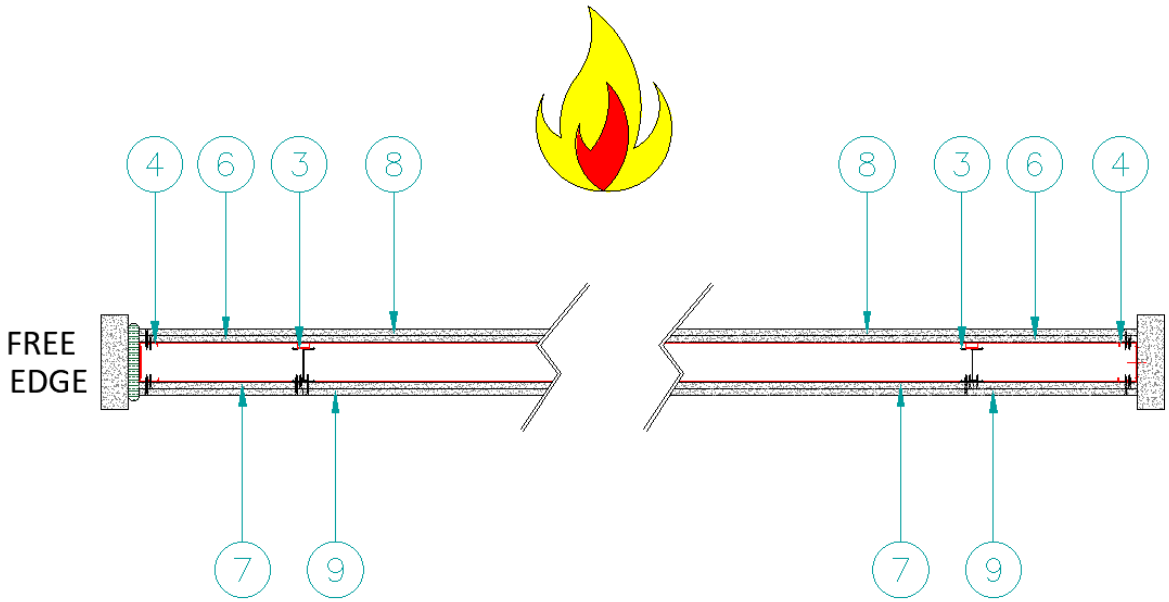


Figure 5 – Horizontal Cross Section



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

1. Head track		Description
Manufacturer or Supplier	:	Hadley Group
Reference	:	72mm Track*
Material	:	Mild steel
Overall size	:	72mm*
a. Depth	:	72mm*
b. Height	:	32mm*
c. Thickness	:	0.55mm*
Fixing Method to restraint frame and centres	:	Suitable Fixings for substrate at 600mm centres, within 50mm of each end.
Details of fixings to Restraint frame	:	
d. Manufacturer	:	Kingfisher International
e. Reference	:	Easydrive
f. Type & material	:	Zinc-Plated carbon steel
g. Overall size	:	7.5mm x 600mm
h. Spacing	:	600mm centres

2. Base track		Description
Manufacturer or Supplier	:	Hadley Group
Reference	:	72mm Track*
Material	:	Mild steel
Overall size	:	72mm*
a. Depth	:	72mm*
b. Height	:	32mm*
c. Thickness	:	0.55mm*
Fixing Method to restraint frame and centres	:	Suitable Fixings for substrate at 600mm centres, within 50mm of each end.
Details of fixings to Restraint frame	:	
d. Manufacturer	:	Kingfisher International
e. Reference	:	Easydrive
f. Type & material	:	Zinc-plated carbon steel
g. Overall size	:	7.5mm x 600mm
h. Spacing	:	600mm centres

3. Vertical Studs		Description
Manufacturer or Supplier	:	Hadley Group
Reference	:	60mm I Stud*
Material	:	Mild steel
Location and Spacing	:	Studs at 600mm centres, offset by 300mm each side. Studs secured in place with 10mm Hadley Stagger Clips.*
Overall size	:	60mm*
a. Depth	:	60mm*
b. Width	:	32mm*
c. Height	:	0.55mm
Fixing Method to restraint frame and centres (If Applicable)	:	n/a
Details of fixings to Head and Base Track (If applicable)	:	
d. Manufacturer	:	n/a
e. Reference	:	n/a
f. Type & material	:	n/a
g. Overall size	:	n/a

4. Vertical Studs – Free & Fixed Edge		Description
Manufacturer or Supplier	:	Hadley Group
Reference	:	70mm C Stud*
Material	:	Mild steel
Location and Spacing	:	n/a
Overall size	:	
a. Depth	:	32mm*
b. Width	:	70mm*
c. Height	:	3000mm*
Fixing Method to restraint frame (fixed edge only)	:	
d. Manufacturer	:	Kingfisher International
e. Reference	:	Easydrive
f. Type & material	:	Zinc-Plated carbon steel
g. Overall size	:	7.5mm x 60mm
5. Flat Strap		**Description**
Manufacturer	:	Hadley Fixing plate
Reference	:	Hadley Fixing plate*
Material	:	Mild steel*
Location	:	Behind horizontal board joints*
Overall size	:	75mm x 2400mm*
a. Length	:	2400mm*
b. Height	:	75mm*
c. Thickness	:	0.55mm*
Fixing Method to vertical studs	:	Wafer Head Screws*
Details of fixings to vertical studs	:	
d. Manufacturer	:	Evolution*
e. Reference	:	Evolution Drywall Wafer Head Screws*
f. Type & material	:	Wafer Head Screws*
g. Overall size	:	4.2mm x 13mm*
h. Location	:	Fixed to Studs

Cladding Material

6. First Layer of board applied to the internal framing exposed face		Description
Manufacturer	:	Knauf
Reference	:	15mm SoundShield Plus*
Material	:	Plasterboard
Batch Reference/ Number	:	292678*
Individual board dimension	:	15mm x 3000mm x 1200mm*
Overall dimension	:	3000mm x 3000mm
Moisture Content (%)	:	Unknown
Board Weight (kg/m^2)	:	12.8*
Application method	:	Jack-Point Screws
Fixing Method to restraint frame and centres	:	Jack-Point Screws at 300mm centres*
Details of fixings to Internal framing	:	
a. Manufacturer	:	Evolution*
b. Reference	:	Evolution Drywall Screws*
c. Type & material	:	Drywall Screws*
d. Overall size	:	3.9mm x 32mm*
e. Spacing	:	300mm centres

7. First Layer of board applied to the internal framing unexposed face		Description
Manufacturer	:	Knauf
Reference	:	15mm SoundShield Plus*
Material	:	Plasterboard
Batch Reference/ Number	:	292678*
Individual board dimension	:	15mm x 3000mm x 1200mm*
Overall dimension	:	3000mm x 3000mm
Moisture Content (%)	:	Unknown
Board Weight (kg/m^2)	:	12.8*
Application method	:	Jack-Point Screws
Fixing Method to restraint frame and centres	:	Jack-Point Screws at 300mm centres
Details of fixings to Internal framing	:	
a. Manufacturer	:	Evolution*
b. Reference	:	Evolution Drywall Screws*
c. Type & material	:	Drywall Screws*
d. Overall size	:	3.9mm x 32mm*
e. Spacing	:	300mm centres

8. Second Layer of board applied to the internal framing exposed face		Description
Manufacturer	:	Knauf
Reference	:	15mm SoundShield Plus*
Material	:	Plasterboard
Batch Reference/ Number	:	292678*
Individual board dimension	:	15mm x 3000mm x 1200mm*
Overall dimension	:	3000mm x 3000mm
Moisture Content (%)	:	Unknown
Board Weight (kg/m^2)	:	12.8*
Application method	:	Jack-Point Screws
Fixing Method to restraint frame and centres	:	Jack-Point Screws at 300mm centres*
Details of fixings to Internal framing	:	
a. Manufacturer	:	Evolution*
b. Reference	:	Evolution Drywall Screws*
c. Type & material	:	Drywall Screws*
d. Overall size	:	3.9mm x 42mm*
e. Spacing	:	300mm centres

9. Second Layer of board applied to the internal framing unexposed face		Description
Manufacturer	:	Knauf
Reference	:	15mm SoundShield Plus*
Material	:	Plasterboard
Batch Reference/ Number	:	292678*
Individual board dimension	:	15mm x 3000mm x 1200mm*
Overall dimension	:	3000mm x 3000mm
Moisture Content (%)	:	Unknown
Board Weight (kg/m^2)	:	12.8*
Application method	:	Jack-Point Screws
Fixing Method to restraint frame and centres	:	Jack-Point Screws at 300mm centres*
Details of fixings to Internal framing	:	
a. Manufacturer	:	Evolution*
b. Reference	:	Evolution Drywall Screws*
c. Type & material	:	Drywall Screws*
d. Overall size	:	3.9mm x 42mm*
e. Spacing	:	300mm centres

Sealing Materials

10. Sealant 1		Description
Manufacturer	:	Rockwool*
Reference	:	212902*
Material	:	Intumescent Mastic
Location	:	Two continuous beads underneath head and base track, and also fixed edge. There is one continuous bead around the perimeter of the wall between the framework and the first layer of board on the unexposed side, then another between the first and second layer of board, then finally a third on the second layer of board where the board meets the restraint frame. Sealant is used on the horizontal board joints on the exposed side but none is used on the perimeter of the board*
Nominal Application thickness	:	10mm*

Tape and Fill

11. Jointing tape		Description
Manufacturer	:	Knauf*
Reference	:	Jointing Tape*
Material	:	Paper Tape*
Location	:	Placed on all board joints on the second layer only, no tape is used on the first layer. Used on the unexposed face only.*

12. Jointing compound		Description
Manufacturer	:	Knauf*
Reference	:	Fill & Finish 20kg*
Material	:	Mixture of calcium carbonate, perlite, water based polymer emulsion, thickeners and water*
Location	:	Used on all board joints on the second layer only, no jointing compound is used on the first layer. Also applied to screw heads on the second layer of board. Used on the unexposed face only.*
Nominal Application thickness	:	2mm, then tape applied another 2mm*

Test Observations

Time (minutes)	All observations are from the unexposed face unless noted otherwise.
00:00	The test has started.
3.30	There is an increase in the smoke issuing at the top left corner.
4.05	There is an increase in the smoke issuing at the centre of the head.
25.00	On the exposed face there are 3-4mm gaps in the board joints.
33.00	On the exposed face there are 4-6mm gaps in the board joints.
37.00	On the exposed face there are cracks at the fixing points.
43.00	On the exposed face there are 6-8mm gaps in the board joints.
50.00	There is a decrease in the smoke issuing across the head.
53.00	There is an increase in the smoke issuing at the top of the free edge.
78.00	There is an increase in the smoke issuing at the top left corner.
82.00	There is an increase in the smoke issuing at the top right corner.
82.20	On the exposed face, the first layer is coming away and there are cracks in the second layer.
85.00	On the exposed face, the first layer is falling off.
86.00	There is an increase in the smoke issuing at the centre of the free edge.
108:00	Test terminated.

Test Photographs

The unexposed face prior to testing

The unexposed face after a test duration of 10 minutes

The unexposed face after a test duration of 20 minutes

The unexposed face after a test duration of 30 minutes

The unexposed face after a test duration of 40 minutes

The unexposed face after a test duration of 50 minutes

The unexposed face after a test duration of 60 minutes

The unexposed face after a test duration of 70 minutes

The unexposed face after a test duration of 80 minutes

The unexposed face after a test duration of 90 minutes

The unexposed face after a test duration of 100 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: 2012

Time	Mean Furnace Temperature	ISO834
min	°C	°C
0	20	20
1	230	349
2	371	445
3	491	502
4	604	544
5	597	576
6	607	603
7	620	626
8	636	645
9	663	663
10	677	678
11	686	693
12	702	705
13	713	717
14	720	728
15	734	739
16	747	748
17	756	757
18	762	766
19	769	774
20	775	781
21	782	789
22	791	796
23	799	802
24	805	809
25	811	815
26	818	820
27	823	826
28	829	831
29	835	837
30	840	842
31	844	847
32	851	851
33	855	856
34	859	860
35	864	865
36	867	869
37	873	873
38	876	877
39	881	881
40	884	885
41	888	888

Time	Mean Furnace Temperature	ISO834
min	°C	°C
42	892	892
43	895	896
44	900	899
45	902	902
46	907	906
47	910	909
48	913	912
49	916	915
50	919	918
51	923	921
52	925	924
53	929	927
54	931	930
55	933	932
56	937	935
57	938	938
58	940	940
59	942	943
60	946	945
61	947	948
62	950	950
63	953	953
64	955	955
65	958	957
66	960	960
67	962	962
68	965	964
69	967	966
70	970	968
71	971	971
72	973	973
73	976	975
74	978	977
75	980	979
76	982	981
77	984	983
78	987	985
79	989	986
80	992	988
81	993	990
82	995	992
83	997	994

Time	Mean Furnace Temperature	ISO834
min	°C	°C
84	998	996
85	1000	997
86	1000	999
87	1003	1001
88	1004	1003
89	1006	1004
90	1008	1006
91	1010	1008
92	1011	1009
93	1012	1011
94	1014	1012
95	1017	1014
96	1018	1016

Time	Mean Furnace Temperature	ISO834
min	°C	°C
97	1019	1017
98	1022	1019
99	1025	1020
100	1025	1022
101	1027	1023
102	1029	1025
103	1031	1026
104	1032	1028
105	1034	1029
106	1034	1030
107	1035	1032
108	1036	1033

Individual And Mean Temperatures Recorded On The Unexposed Face

Time	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29	Mean
min	°C	°C	°C	°C	°C	°C
0	16	16	17	17	17	17
1	16	17	18	17	17	17
2	16	17	18	17	17	17
3	16	16	18	17	17	17
4	17	16	18	17	17	17
5	16	17	18	17	17	17
6	16	17	18	17	17	17
7	16	17	18	17	17	17
8	16	17	18	17	17	17
9	16	17	18	17	17	17
10	16	17	18	17	17	17
11	16	16	18	17	17	17
12	16	16	18	17	17	17
13	16	17	18	17	18	17
14	16	16	18	18	18	17
15	16	17	18	18	18	17
16	16	17	19	18	18	18
17	16	17	19	19	19	18
18	16	17	20	19	19	18
19	16	17	20	20	20	19
20	17	17	21	21	20	19
21	16	17	22	21	21	19
22	17	18	23	22	22	20
23	16	18	24	23	23	21
24	16	17	25	23	23	21
25	16	17	25	24	24	21
26	16	17	26	25	25	22
27	16	17	27	26	26	22
28	16	17	28	27	27	23
29	16	18	29	27	28	24
30	16	18	30	28	28	24
31	16	18	31	29	29	25
32	16	18	31	30	30	25
33	16	18	33	30	31	26
34	17	19	34	32	32	27
35	18	19	35	33	33	28
36	16	19	36	34	34	28
37	17	19	37	35	35	29
38	16	19	38	35	36	29
39	16	19	39	36	37	29
40	17	19	39	37	38	30
41	16	19	40	38	39	30
42	16	19	41	38	40	31
43	16	19	42	39	41	31
44	16	19	43	40	42	32
45	16	20	44	41	43	33
46	16	19	45	42	44	33
47	16	20	46	43	45	34

Time	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29	Mean
min	°C	°C	°C	°C	°C	°C
48	16	20	47	44	46	35
49	17	20	47	45	47	35
50	16	20	48	46	48	36
51	16	21	49	46	48	36
52	16	20	50	47	49	36
53	17	21	50	48	50	37
54	17	21	50	48	50	37
55	17	20	51	49	51	38
56	17	20	51	49	51	38
57	16	20	51	49	52	38
58	17	21	52	50	52	38
59	17	21	52	51	53	39
60	17	21	53	51	53	39
61	17	21	53	51	54	39
62	16	21	53	52	54	39
63	17	21	53	52	54	39
64	17	21	53	52	54	39
65	16	20	53	52	55	39
66	17	21	53	52	55	40
67	16	21	54	52	55	40
68	16	21	54	53	55	40
69	16	22	55	53	56	40
70	17	20	55	53	57	40
71	16	22	56	54	57	41
72	16	21	56	53	57	41
73	16	20	57	53	57	41
74	15	21	57	55	58	41
75	15	21	58	56	59	42
76	16	20	58	56	60	42
77	16	21	58	57	60	42
78	16	21	59	57	60	43
79	16	22	59	58	61	43
80	16	21	59	58	61	43
81	16	20	59	57	61	43
82	16	21	60	57	61	43
83	16	22	60	58	62	44
84	17	21	60	59	62	44
85	16	22	61	59	62	44
86	16	21	61	59	63	44
87	17	21	61	59	63	44
88	17	21	61	59	63	44
89	17	21	62	59	63	44
90	16	20	62	59	64	44
91	16	21	62	59	64	44
92	16	22	62	60	65	45
93	16	21	62	60	65	45
94	16	22	63	61	65	45
95	16	22	62	61	65	45
96	16	21	63	61	65	45
97	16	22	63	62	66	46
98	17	22	63	62	66	46
99	16	20	63	62	66	45

Time	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29	Mean
min	°C	°C	°C	°C	°C	°C
100	16	21	64	62	66	46
101	16	21	64	62	67	46
102	16	21	64	62	67	46
103	17	21	65	63	67	47
104	16	21	65	63	67	46
105	16	20	65	62	67	46
106	16	21	65	62	67	46
107	16	21	65	63	67	46
108	16	21	65	63	67	46

Individual Temperatures Recorded On The Maximum Thermocouples

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

Time	Chan 15	Chan 16	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23	Chan 24
min	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
50	51	56	44	62	43	46	51	26	44	51
51	51	56	45	63	43	47	51	26	44	52
52	52	57	46	63	44	48	52	26	45	53
53	53	58	47	64	44	49	52	27	46	53
54	53	58	48	64	44	49	52	27	46	53
55	54	59	48	64	44	50	53	27	47	54
56	54	59	49	65	45	50	53	27	47	54
57	55	60	49	65	45	51	53	26	48	55
58	55	60	50	65	45	51	53	28	48	55
59	55	60	50	65	45	52	54	26	48	55
60	56	61	50	65	45	52	54	28	49	56
61	56	61	51	65	45	52	54	27	49	56
62	56	61	51	66	46	53	54	27	50	56
63	56	61	51	66	46	53	54	27	50	56
64	56	61	51	66	46	53	54	26	50	56
65	56	62	51	66	46	53	54	27	50	56
66	56	62	51	66	46	53	55	27	50	56
67	56	62	51	66	46	54	55	27	50	56
68	56	62	52	66	46	54	55	27	50	57
69	56	62	52	67	47	54	55	28	50	57
70	56	62	52	67	47	55	55	27	50	57
71	56	62	52	67	48	55	56	28	50	57
72	56	63	53	68	48	55	56	27	51	57
73	56	63	53	68	49	56	57	27	51	57
74	56	63	54	69	49	57	57	27	51	57
75	56	63	54	69	50	58	57	28	52	58
76	57	64	54	70	51	59	58	27	52	58
77	57	64	55	71	52	59	58	27	53	59
78	58	65	56	71	53	60	59	27	54	59
79	58	65	56	72	54	61	60	28	54	60
80	59	66	57	72	55	62	60	28	55	61
81	59	67	57	73	55	62	61	28	56	61
82	60	68	58	73	56	63	61	28	57	62
83	61	69	59	74	56	63	62	28	57	62
84	61	69	59	74	57	63	63	28	58	62
85	62	70	60	75	57	64	63	28	59	62
86	62	70	61	75	58	64	64	27	59	62
87	62	71	61	75	58	65	64	29	59	62
88	62	71	62	75	59	65	65	28	59	62
89	62	72	62	75	59	65	65	29	59	63
90	62	72	63	76	59	65	65	27	60	63
91	62	72	63	76	60	66	66	28	60	63
92	62	73	64	76	60	66	64	29	60	64
93	62	73	64	76	60	66	65	29	60	64
94	63	73	65	76	61	66	65	28	61	64
95	63	73	65	76	61	67	64	28	61	64
96	63	73	66	76	61	67	64	29	61	65
97	63	73	67	76	61	67	64	29	61	65
98	63	73	68	76	61	67	65	28	61	65
99	64	73	68	77	62	67	67	28	61	66
100	64	75	69	77	62	68	68	29	62	66
101	63	75	69	77	63	68	67	27	62	66

Time	Chan 15	Chan 16	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23	Chan 24
min	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
102	64	75	69	77	63	69	66	29	62	66
103	64	76	70	77	63	69	67	28	62	66
104	64	76	70	77	63	70	68	28	62	66
105	64	76	71	77	64	70	66	28	62	66
106	64	77	71	77	64	70	64	29	62	67
107	64	76	71	77	65	70	64	29	62	67
108	64	76	72	77	65	71	64	30	63	67

Recorded Radiation Intensity From The Partition Specimen

Time	Chan 30
min	kW/m²
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	0.2
22	0.2
23	0.2
24	0.2
25	0.2
26	0.2
27	0.2
28	0.2
29	0.2
30	0.2
31	0.1
32	0.2
33	0.1
34	0.1
35	0.1
36	0.1
37	0.1
38	0.1
39	0.1
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

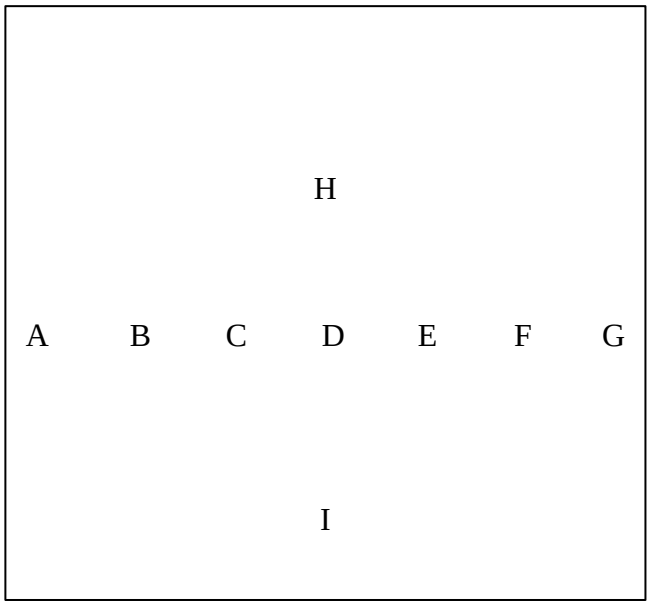
Time	Chan 30
min	kW/m²
49	0.1
50	0.1
51	0.1
52	0.1
53	0.1
54	0.1
55	0.1
56	0.1
57	0.1
58	0
59	0.1
60	0.1
61	0.1
62	0.1
63	0
64	0
65	0
66	0
67	0
68	0
69	0
70	0
71	0
72	0.1
73	0
74	0
75	0
76	0
77	0
78	0
79	0
80	0
81	0
82	0.1
83	0
84	0
85	0
86	0
87	0
88	0
89	0
90	0
91	0
92	0.1
93	0
94	0
95	0
96	0
97	0

Time	Chan 30
min	kW/m²
98	0
99	0
100	0
101	0
102	0
103	0

Time	Chan 30
min	kW/m²
104	0
105	0
106	0
107	0
108	0

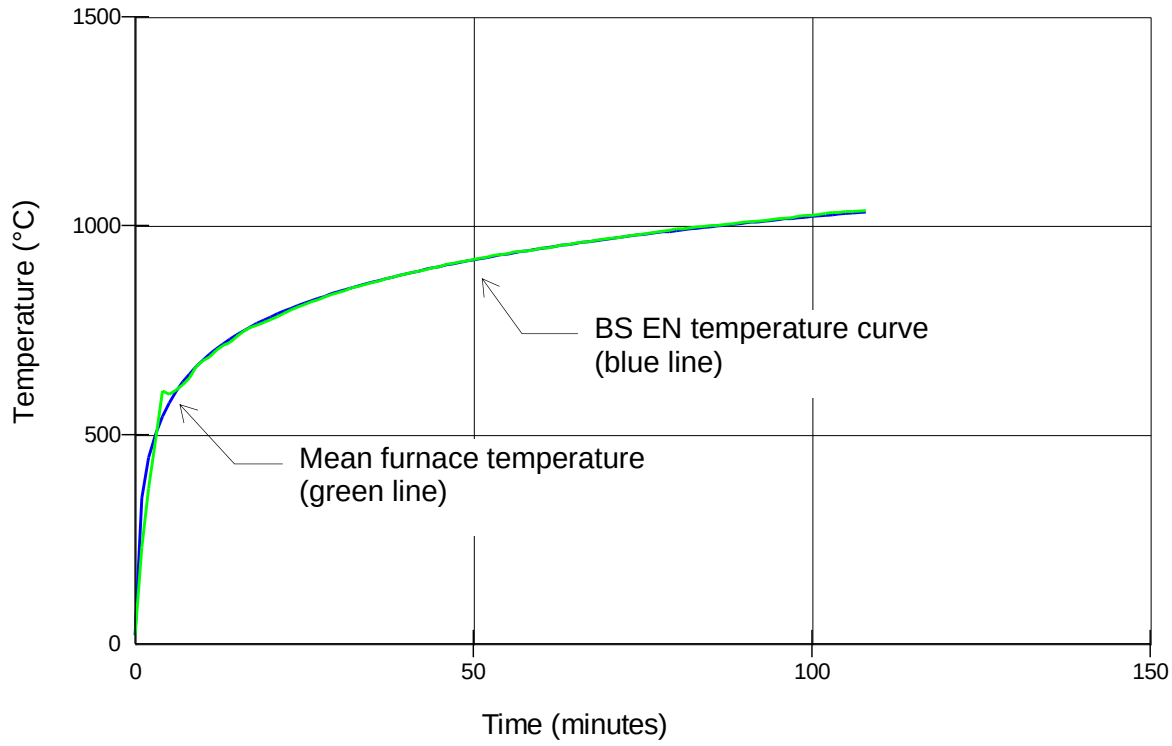
Horizontal Deflections Of The Partition Specimen

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.

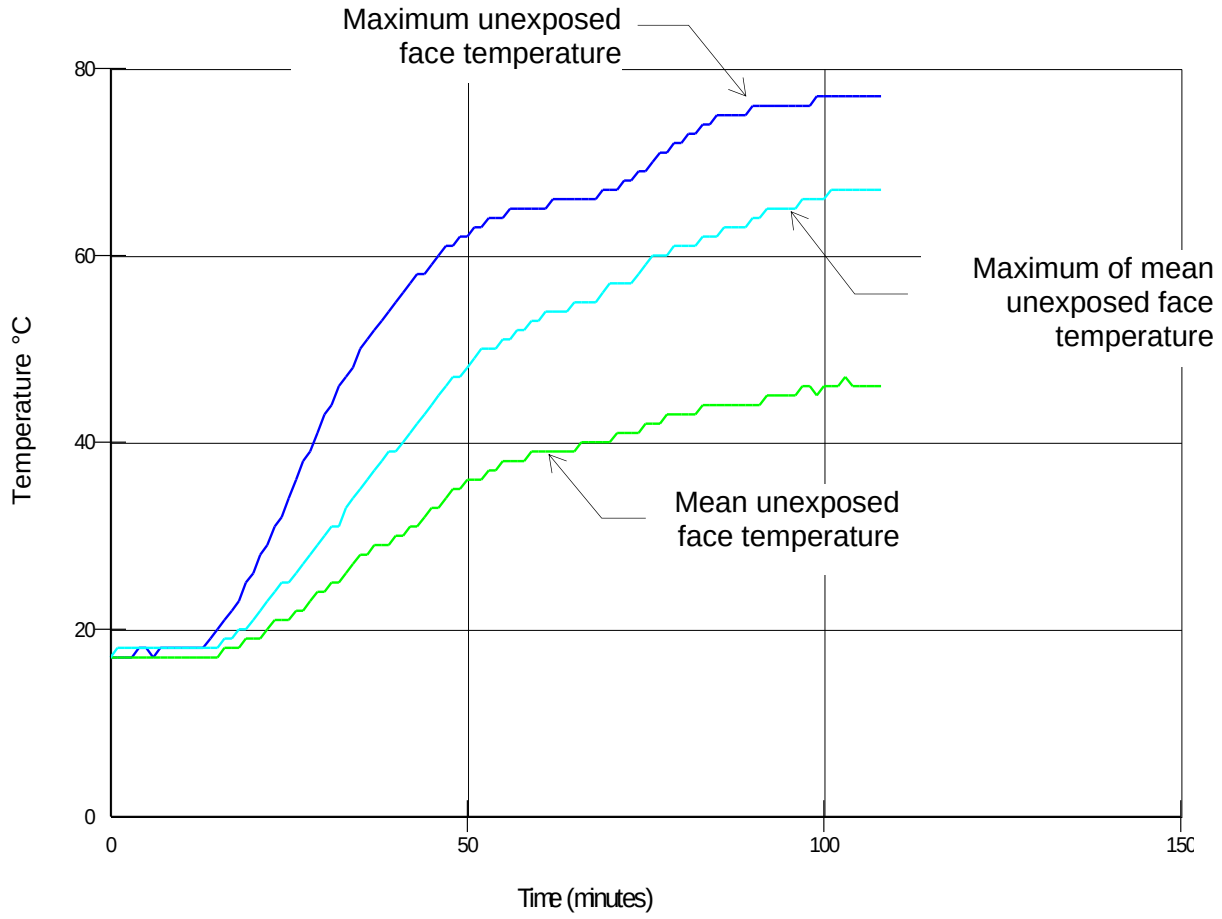


TIME mins	A	B	C	D	E	F	G	H	I
10	-4	-8	4	6	4	4	1	7	4
20	-4	-8	4	4	4	3	1	4	5
30	-4	-7	3	3	2	1	1	4	1
40	5	-7	2	0	1	0	1	2	-1
50	-4	-8	2	0	0	0	1	2	-1
60	-3	-8	3	2	2	0	1	4	1
70	2	1	16	17	16	7	2	14	12
80	11	12	27	27	29	17	3	22	20
90	15	18	32	33	36	21	5	26	26
100	18	22	42	46	46	28	8	35	36

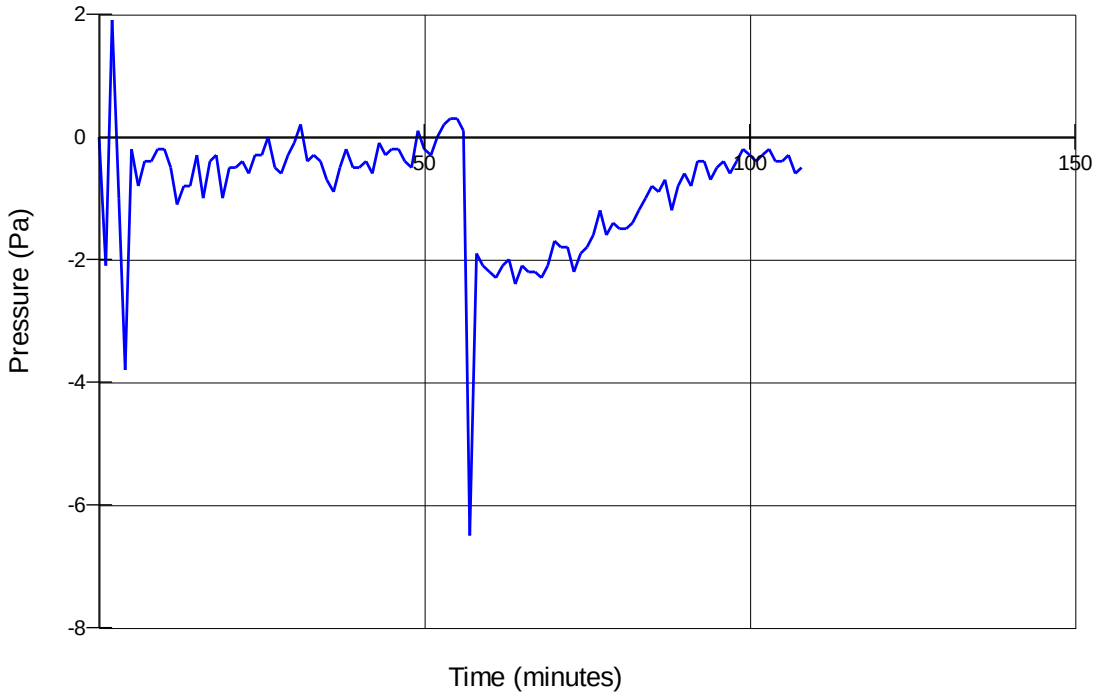
Graph Showing Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In BS EN 1363-1: 2020



Graph Showing Mean and Maximum Temperatures Recorded On The Unexposed Surface



Graph Showing Recorded Furnace Pressure At 0.5 m 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 test sponsor, 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.

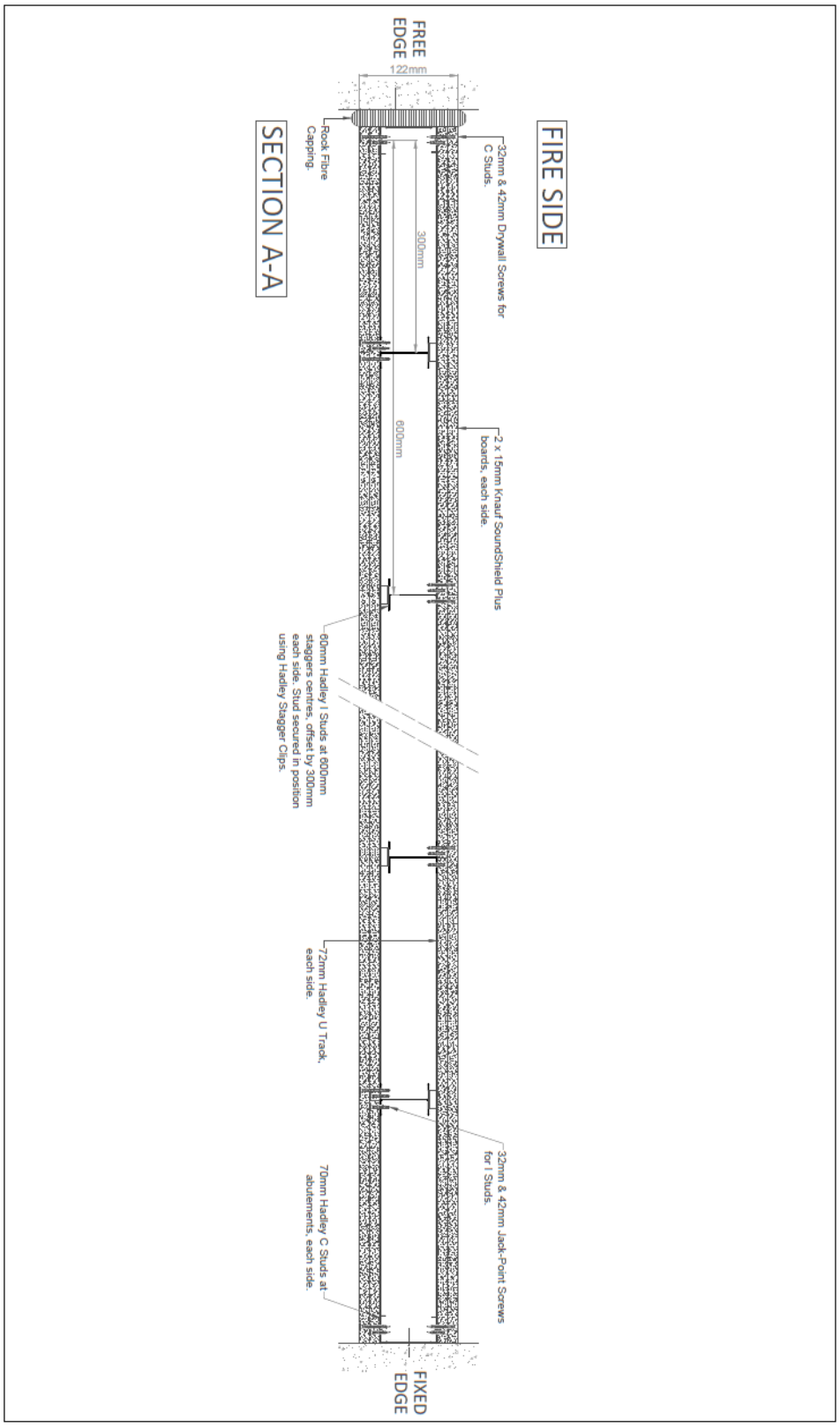
EGOLF

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

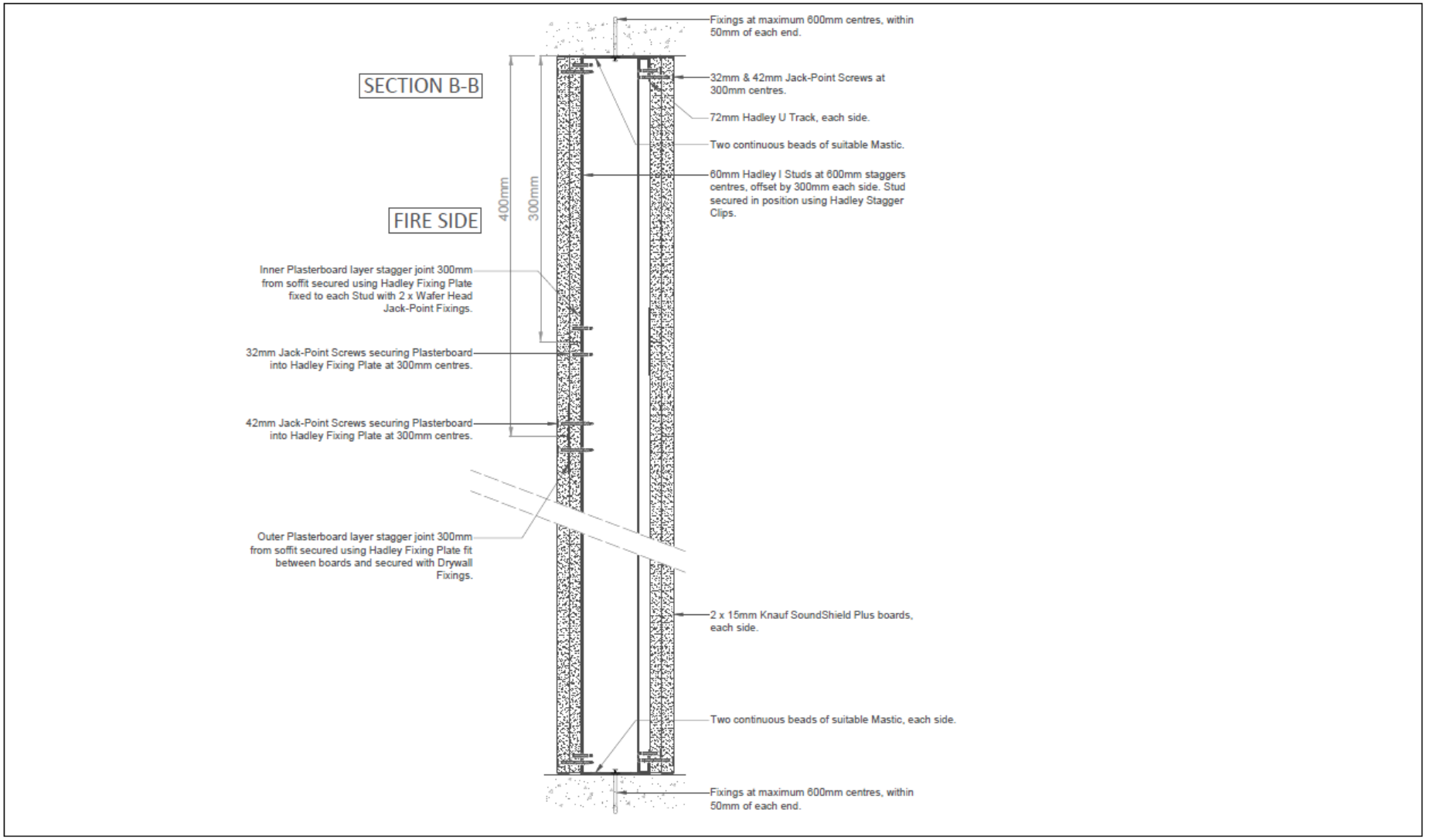
BS EN 1363-1:2020, Fire resistance tests - Part 1: General requirements, states within Section 12.1, Clause v) that “The field of direct application of the results for the specimen being evaluated, either in the form of the full text from the appropriate standard, or only those clauses which are relevant 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)
SYSTEM:	2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM
DWG_NUMBER:	HG-WFT-08-01
TEST_REF:	08
TEST_DATE:	21/04/2022
DATE:	20/01/2022
DRN:	SD
SCALE:	NTS

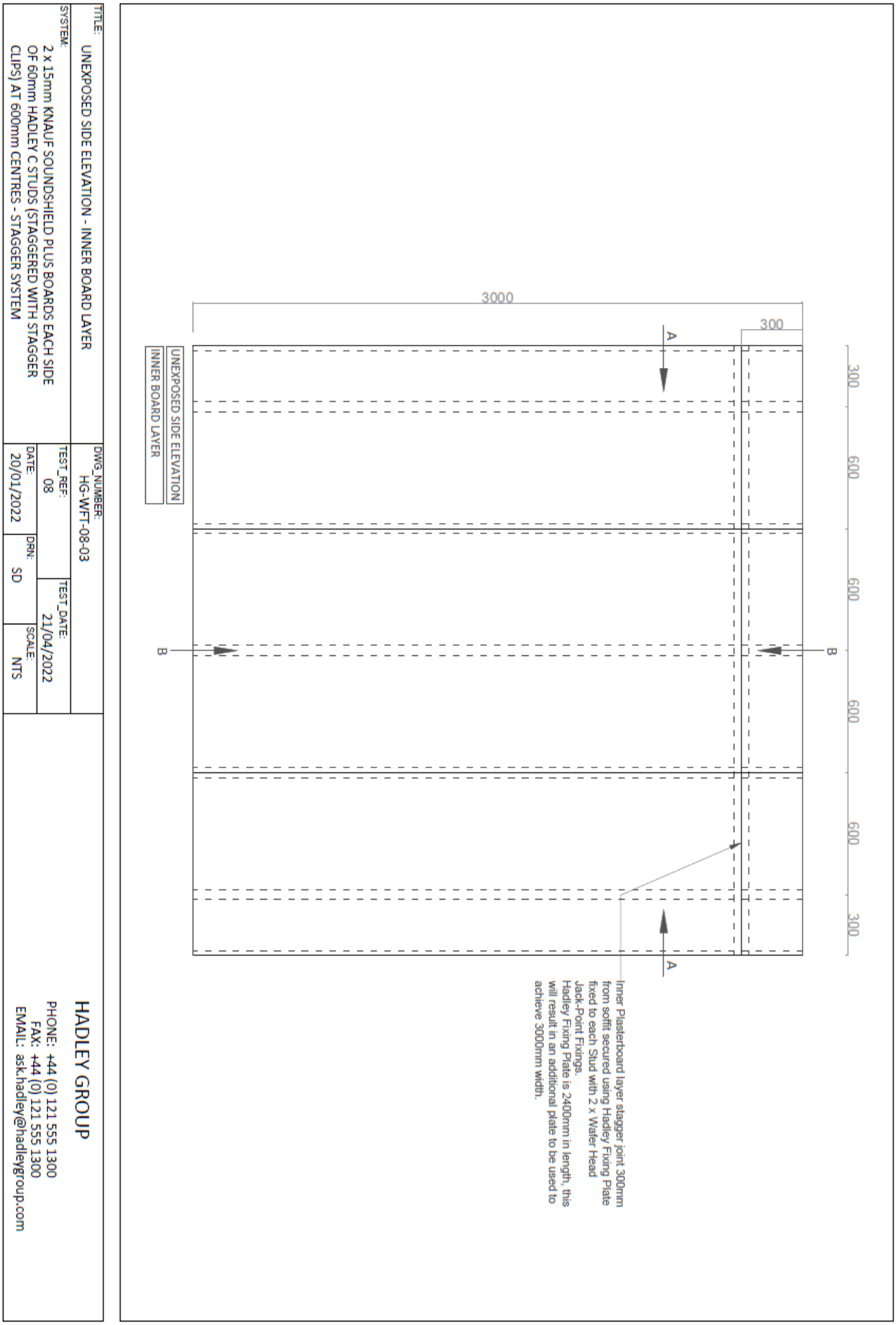
HADLEY GROUP
PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadley@hadleygroup.com

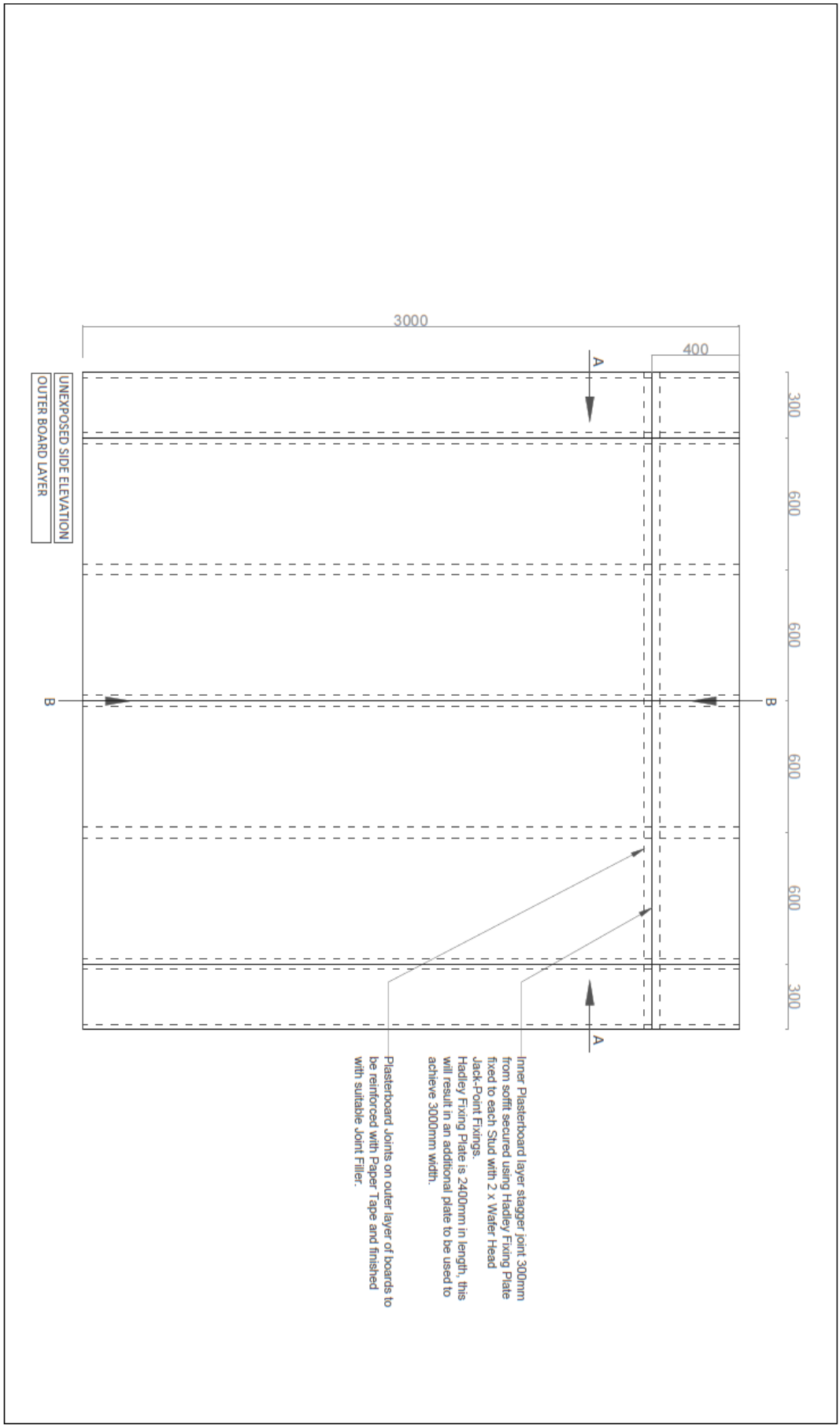


TITLE: VERTICAL CROSS SECTIONS (SECTION B-B)	DWG_NUMBER: HG-WFT-08-02		
SYSTEM: 2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM	TEST_REF: 08	TEST_DATE: 21/04/2022	
	DATE: 20/01/2022	DRN: SD	SCALE: NTS

HADLEY GROUP

PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadley@hadleygroup.com


3000
300
300
600
600
600
600
300
A
B
B
A
UNEXPOSED SIDE ELEVATION
INNER BOARD LAYER
Inner Plasterboard layer stagger joint 300mm from soffit secured using Hadley Fixing Plate fixed to each Stud with 2 x Wafer Head Jack-Point Fixings.
Hadley Fixing Plate is 2400mm in length, this will result in an additional plate to be used to achieve 3000mm width.
TITLE:
UNEXPOSED SIDE ELEVATION - INNER BOARD LAYER
DWG_NUMBER:
HG-WFT-08-03
SYSTEM:
2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM
TEST_REF:
08
TEST_DATE:
21/04/2022
DATE:
20/01/2022
DRN:
SD
SCALE:
NTS
HADLEY GROUP
PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadley@hadleygroup.com



TITLE: UNEXPOSED SIDE ELEVATION - OUTER BOARD LAYER

DWG_NUMBER: HG-WFT-08-04

SYSTEM: 2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM

TEST_REF: 08

TEST_DATE: 21/04/2022

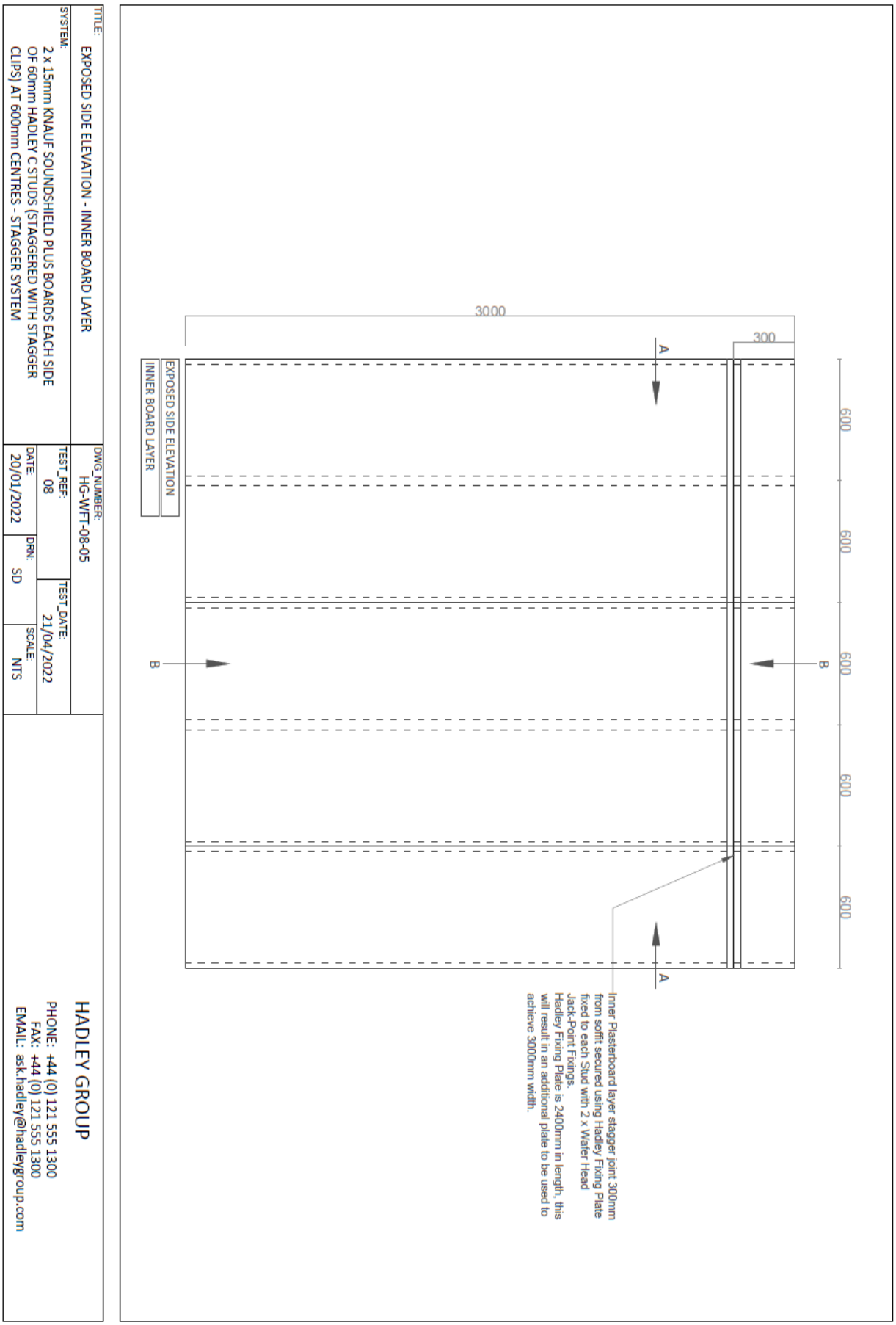
DRN: SD

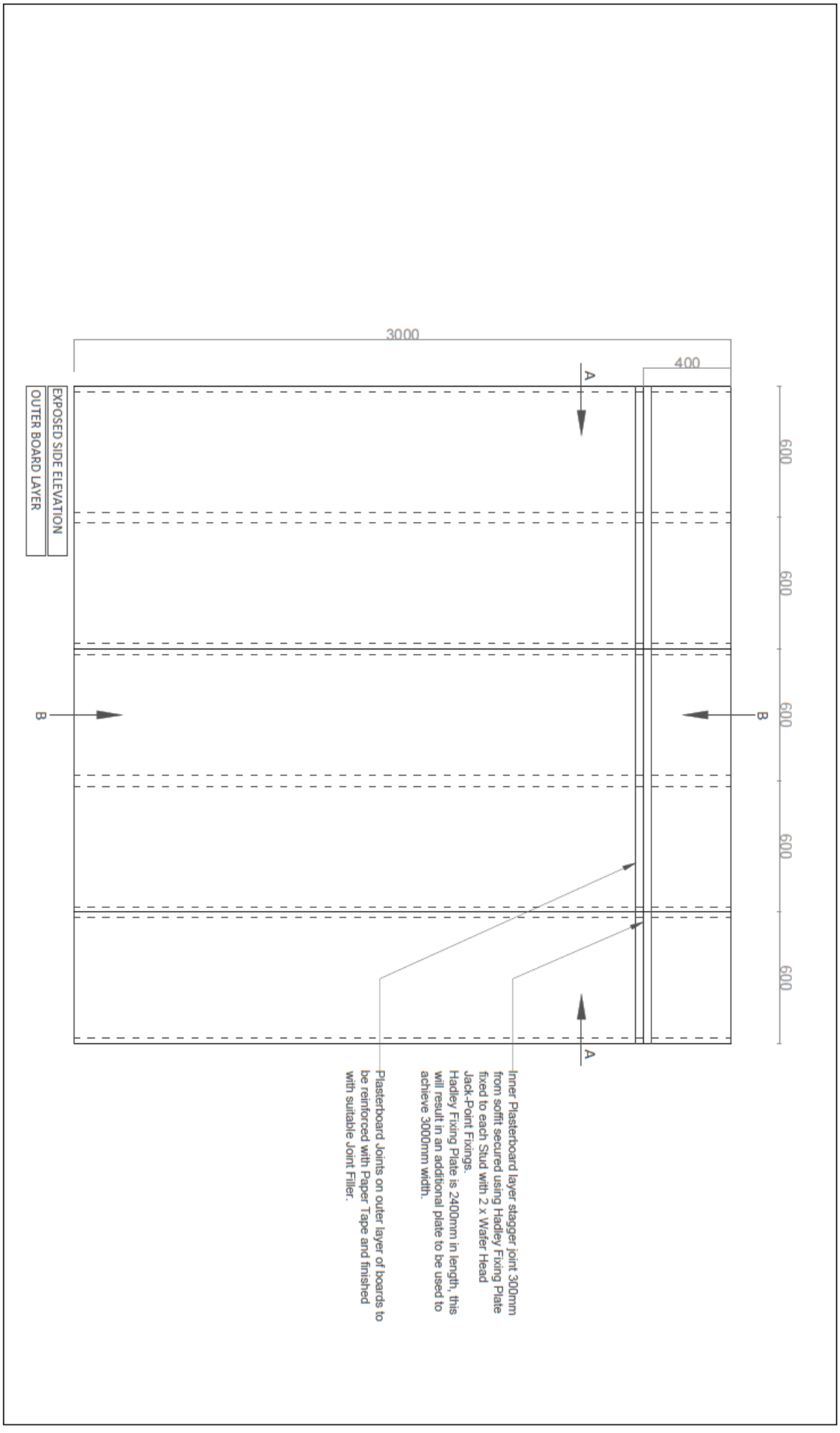
DATE: 20/01/2022

SCALE: NTS

HADLEY GROUP

PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadleygroup.com


3000
300
600
600
600
600
600
A
A
B
B
EXPOSED SIDE ELEVATION
INNER BOARD LAYER
Inner Plasterboard layer stagger joint 300mm from soffit secured using Hadley Fixing Plate fixed to each Stud with 2 x Wafer Head Jack-Point Fixings.
Hadley Fixing Plate is 2400mm in length, this will result in an additional plate to be used to achieve 3000mm width.
TITLE:
EXPOSED SIDE ELEVATION - INNER BOARD LAYER
DWG_NUMBER:
HG-WFT-08-05
SYSTEM:
2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM
TEST_REF:
08
TEST_DATE:
21/04/2022
DRN:
SD
SCALE:
NTS
DATE:
20/01/2022
HADLEY GROUP
PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadley@hadleygroup.com


3000
400
600
600
600
600
600
A
B
B
A
EXPOSED SIDE ELEVATION
OUTER BOARD LAYER
Inner Plasterboard layer stagger joint 300mm from soffit secured using Hadley Fixing Plate fixed to each Stud with 2 x Wafer Head Jack-Point Fixings. Hadley Fixing Plate is 2400mm in length, this will result in an additional plate to be used to achieve 3000mm width.
Plasterboard Joints on outer layer of boards to be reinforced with Paper Tape and finished with suitable Joint Filler.
TITLE:
EXPOSED SIDE ELEVATION - INNER BOARD LAYER
SYSTEM:
2 x 15mm KNAUF SOUNDSHIELD PLUS BOARDS EACH SIDE OF 60mm HADLEY C STUDS (STAGGERED WITH STAGGER CLIPS) AT 600mm CENTRES - STAGGER SYSTEM
DWG_NUMBER:
HG-WFT-08-06
TEST_REF:
08
TEST_DATE:
21/04/2022
DATE:
20/01/2022
DRN:
SD
SCALE:
NTS
HADLEY GROUP
PHONE: +44 (0) 121 555 1300
FAX: +44 (0) 121 555 1300
EMAIL: ask.hadley@hadleygroup.com