The Building Test Centre
Fire Acoustics Structures

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Report Number BTC 18407F

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 92MM STUD FRAMEWORK CLAD EACH SIDE WITH A SINGLE LAYER OF 15MM GYPROC SOUNDBLOC F EX KIRKBY THORE AND 100mm ISOVER MODULAR ROLL IN THE CAVITY, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1:1999.

Test Date: 13th August 2013

www.btconline.co.uk

Customer: **British Gypsum**
East Leake
Loughborough
Leicestershire
LE12 6HX

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1. FOREWORD

This test report details a fire resistance test conducted on a metal stud partition clad on each face with a single double layer of Gyproc SoundBloc F. The test sponsor was British Gypsum.

The test specimen was installed by Liam Woodford. The construction of the specimen took place on the 8th August 2013. The Building Test Centre played no role in the design or selection of materials comprising the test specimen.

The test was conducted on the 13th August 2013.

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 procedures outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in EN 1364-1 is not covered by this report.

"Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result" – BS EN 1363-1:2012 (page 30).

2. REPORT AUTHORISATION

Report Author	Authorised by
Samuel Potter Scientist	P.P. Phil Barnes **Paul Miller** BSc. (Hons.) Fire Test Manager

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3. TEST REPORT AMENDMENTS

Page	Amendments	Date

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4. TEST CONSTRUCTION

4.1 Description of Construction

The specimen was constructed in a refractory concrete lined steel restraint test frame with an opening of 3000 mm (high) x 3000 mm (wide).

Gypframe 94FEC50 Folded Edge Standard Floor and Ceiling Channels were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 92S50 ‘C’ Studs were positioned at 600mm centres between the channels. The right hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame, and the gap between the stud and the frame lining was filled with a 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 92S50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

Thermocouples were added to the studs at mid height on the web, hot and cold flanges of the central two studs.

A layer of 100mm Isover Modular Roll was positioned in the cavity.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of 15mm Gyproc SoundBloc F. The boards were fixed with 25mm Gyproc Drywall Screws at 300mm centres around the perimeter and within the field of the boards.

All vertical joints were staggered between layers, with a full board at the free end of the exposed face. A horizontal joint was positioned at 2400mm from the base, on both faces of the specimen. A Gypframe GFS1 Fixing Strap was used behind the horizontal outer layer board joint.

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler as appropriate. All screw heads were spotted using Gyproc Joint Filler.

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4.2 Test Construction Drawings

4.2.1 Horizontal Cross Section

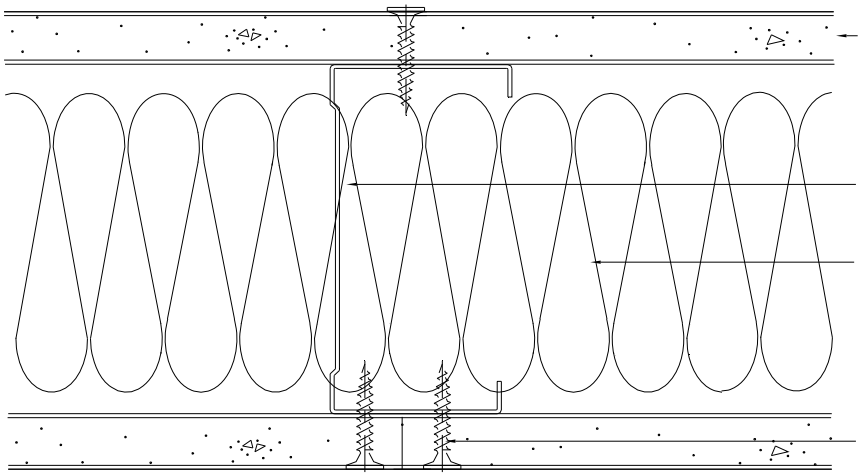

Figure 1 - Horizontal Cross Section

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4.2.2 Exposed Face Elevation

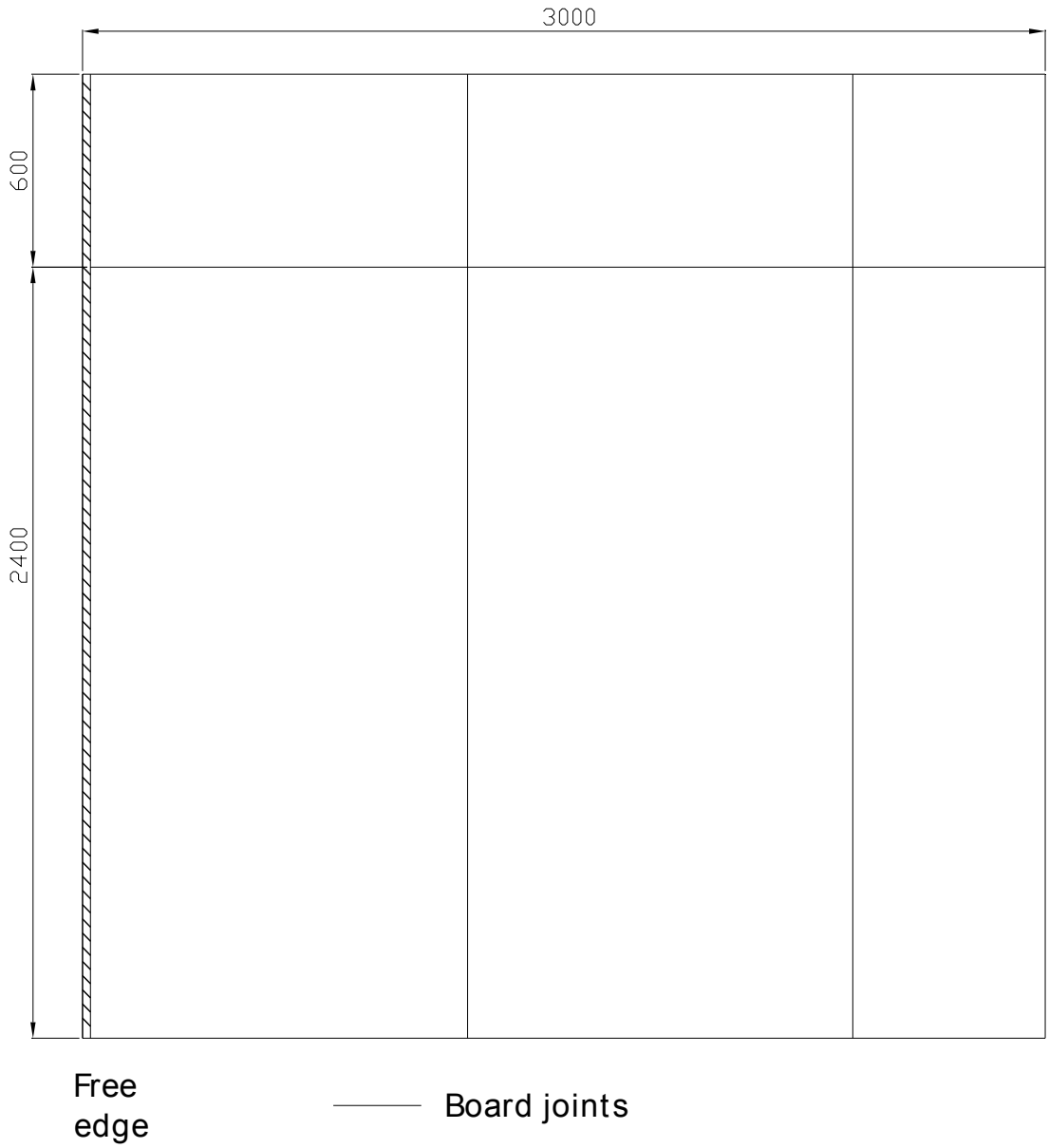

Figure 2 - Exposed Face Elevation

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4.2.3 Unexposed Face Elevation

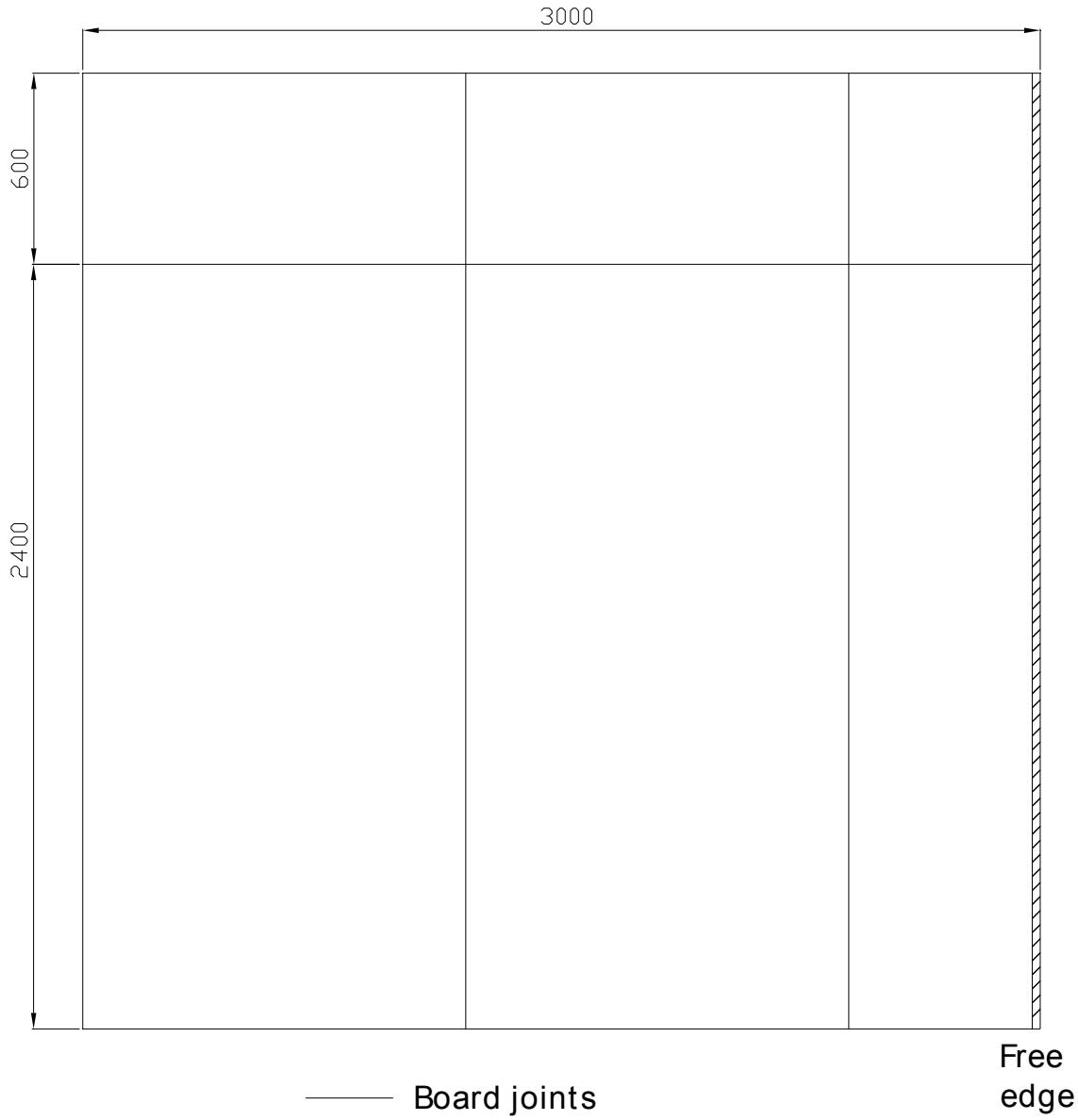

Figure 3 - Unexposed Face Elevation

The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

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5. TEST MATERIALS

5.1 Gyproc SoundBloc F

i) Nominally, 2400mm (long) x 1200mm (wide) x 15mm (thick), Gyproc SoundBloc F, manufactured and supplied by British Gypsum, ex Kirkby Thore.

Measured weight per unit area:	13.4 kg/m^2
Measured thickness:	15.3 mm
Board identification numbers:	26 207 13 11:41
	26 207 13 11:41
	26 207 13 11:41
Measured moisture content:	0.54 %

The surface density and board thickness were calculated using the actual weight and size of a selection of boards used in the test specimen. The moisture content of plasterboard was determined using samples dried to constant weight in an oven at 50^{o}C.

Material dimensions were supplied by British Gypsum.

5.2 Metal Components

ii) Gypframe 94FEC50 Folded Edge Standard Floor & Ceiling Channels.
iii) Gypframe 92S50 'C' Studs.
iv) Gypframe GFS1 Fixing Strap.

All metal components were supplied by British Gypsum.

5.3 Fasteners

v) 25mm Gyproc Drywall Screws, supplied by British Gypsum.
vi) 60mm fire resistant fixings, supplied by the Building Test Centre.

5.4 Miscellaneous Components

vii) Gyproc Paper Joint Tape, supplied by British Gypsum.
viii) Gyproc Joint Filler, supplied by British Gypsum.
ix) Rock mineral fibre gasket, supplied by the Building Test Centre.

Where measurements could not be taken then weight and dimensions were provided by the customer or the manufacturer e.g. from material labelling. Material information was recorded according to procedure MAT/1.

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6. TEST PROCEDURE

The test was conducted fully in accordance with BS EN 1364-1: 1999. The specimen was subjected to fire from one side, as specified in BS EN 1364-1: 1999.

As the test specimen is considered to be symmetrical one test is adequate to cover the fire resistance performance in both directions.

The test procedure used was EN 1364-1 Issue 3.

The ambient temperature at the commencement of the test was 19 ^{o}C.

The furnace pressure was set to control at 18 $\pm$ 2 Pa positive with respect to atmosphere, at the top of the specimen. Furnace pressure data is shown in figure 5.

The test conditions did not meet the full requirements of BS EN 1363-1: 2012 as the test frame stiffness did not fully comply.

The specimen and associated construction were not conditioned in accordance with clause 8 of BS EN 1363-1: 2012.

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7. TEST RESULTS

The requirements of the standard were satisfied for the following periods:

Integrity	**Sustained flaming**	**no failure** (the test having been discontinued at the request of the sponsor)
	6mm gap gauge	**83 minutes,**
	25mm gap gauge	**85 minutes,**
	Cotton Pad	**82 minutes,**
Insulation		**71 minutes,**

The test was terminated at 90 minutes at the request of the sponsor.

8. LIMITATIONS

The scope of the Field of Direct Application of the results and construction detailed in this test report is explained in BS EN 1364-1: 1999, section 13.

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9. TEST DATA

9.1 Observations

Observers: Unexposed face S Potter
Exposed face L Cooper

Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
0	0	Test started.
0	10	Jointing material was cracking and falling.
0	20	Left-hand vertical joint had opened to approximately 5mm. Right-hand vertical joint had opened to approximately 3mm. Horizontal joint had opened to approximately 2mm.
0	30	Left-hand vertical joint had opened to approximately 6mm. Right-hand vertical joint had opened to approximately 3mm. Horizontal joint had opened to approximately 4mm. Cracks around screw heads adjacent to horizontal joints. *Unexposed face* No visible change
0	40	Left-hand vertical joint had opened to approximately 8mm. Right-hand vertical joint had opened to approximately 5mm. Horizontal joint had opened to approximately 4mm. Boards breaking around screw heads adjacent to vertical joints. Cracks around screw heads adjacent to horizontal joints.
0	50	Left-hand vertical joint had opened to approximately 15-18mm. Right-hand vertical joint had opened to approximately 10mm. Horizontal joint had opened to approximately 6mm.

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Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
1	00	Left-hand vertical joint had opened to approximately 25mm. Right-hand vertical joint had opened to approximately 10mm. Horizontal joint had opened to approximately 5-10mm. Vertical crack at mid-span, at top of lower left-hand board approximately 150mm long. Lower left-hand board broken away from screw heads adjacent to left-hand vertical joint. *Unexposed face* No visible change
1	09	*Unexposed face* Centre of centre boards discoloured from approximately 1200mm up to 3000mm height. Left hand vertical joint had opened to approximately 2-3mm. Right hand vertical joint had opened to approximately 2mm. All screw heads discoloured.
1	10	Left-hand vertical joint had opened to approximately 75-100mm. Right-hand vertical joint had opened to approximately 10mm. Horizontal joint had opened to approximately 10mm. All boards crazed. Lower left-hand and lower right-hand boards pulled away from screw heads adjacent to left-hand vertical joint.
1	11	*Unexposed face* **INSULATION FAILURE.** The temperature rise of thermocouple no.32, positioned at mid height in the centre of the centre board, exceeded 180°C.
1	14	*Unexposed face* Left-hand vertical joint had opened to approximately 4-5mm.
1	15	Insulation had melted away from cavity. Unexposed boards visible through left-hand vertical joint and surface appeared crazed.

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Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
1	20	Left-hand vertical joint had opened to approximately 150mm. Right-hand vertical joint had opened to approximately 150mm from mid-height downwards. Centre board pulled away from screw heads adjacent to right-hand vertical joint. Horizontal joint had opened to approximately 50mm. *Unexposed face* Cotton pad attempt – no failure.
1	21	*Unexposed face* The mean temperature rise of the standard five thermocouples exceeded 140°C.
1	22	Lower centre board fell and part of lower left-hand board fell approximately 600mm x 600mm from right-hand corner. *Unexposed face* **INTEGRITY FAILURE.** The cotton pad ignited (flamed) when placed on the right hand left hand vertical joint at approximately 2100mm height.
1	23	*Unexposed face* **FURTHER INTEGRITY FAILURE.** The gap at approximately 1500mm height on the left hand vertical joint exceeded 6mm x 150mm (6mm gap gauge).
1	25	Studs buckled at cut-out positions. More of lower left-hand board fell approximately 1800mm (long) x 600mm (wide) form right-hand side.
1	28	*Unexposed face* **FURTHER INTEGRITY FAILURE.** The gap at approximately 1500mm height on the left hand vertical joint exceeded 25mm diameter (25mm gap gauge).
1	30	TEST TERMINATED at the request of the sponsor.

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9.2 Furnace Temperature Graph

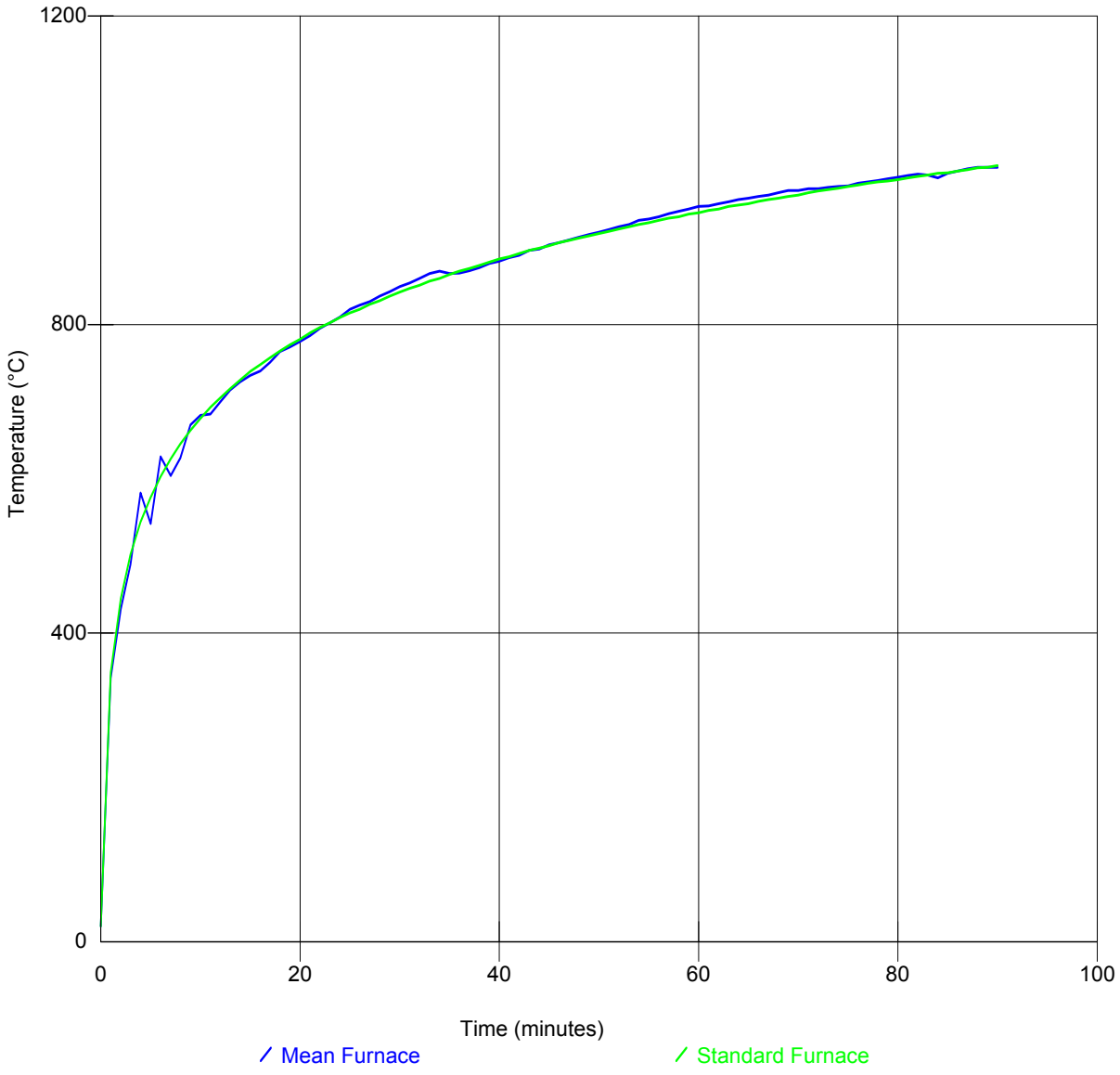

Figure 4 - Furnace temperature graph

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9.3 Furnace Pressure Graph

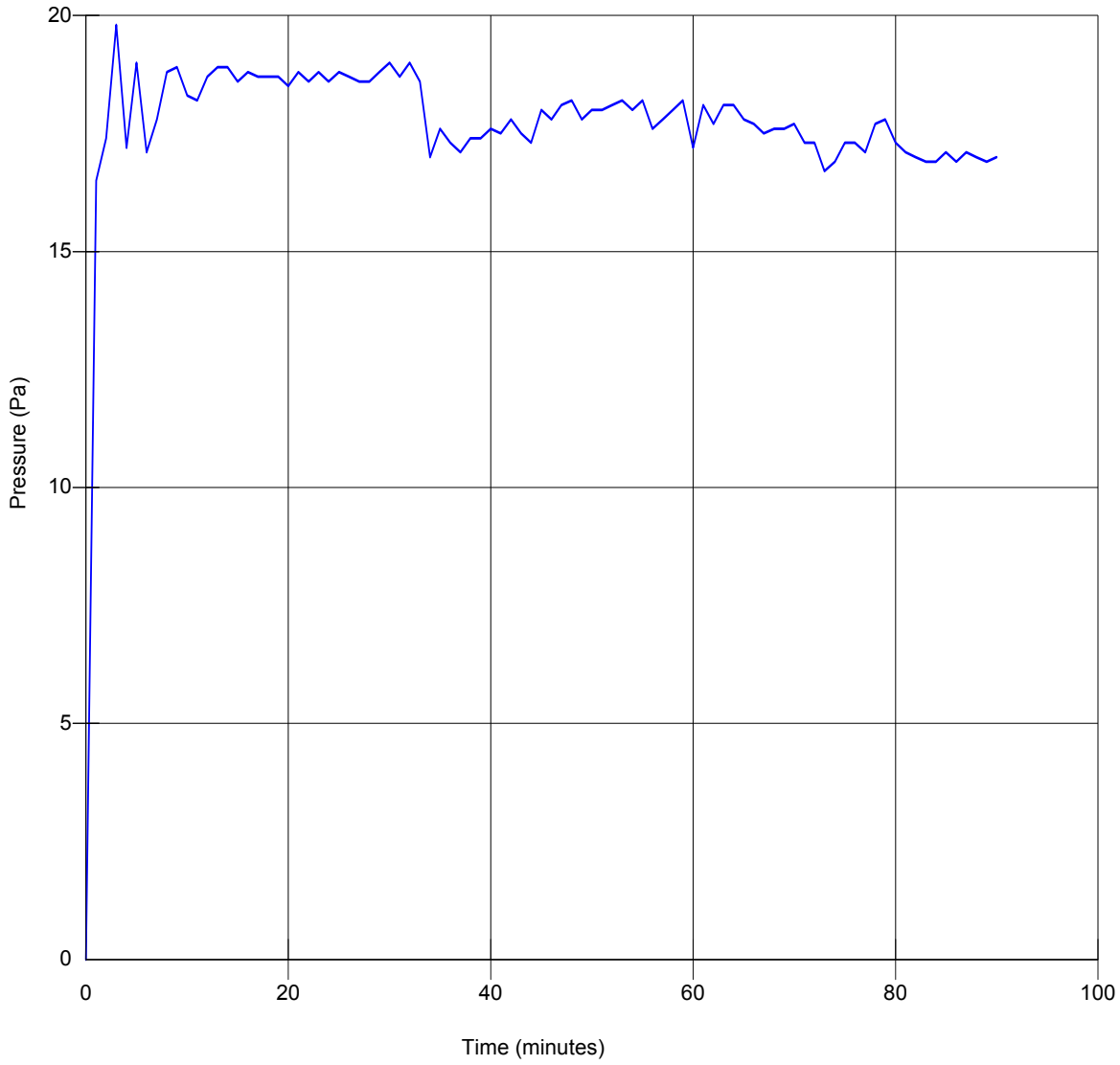

Figure 5 - Furnace pressure graph
The furnace pressure was set to control at 18 ± 2 Pa positive with respect to atmosphere, at the top of the specimen.

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9.4 Unexposed Face Temperature Graph

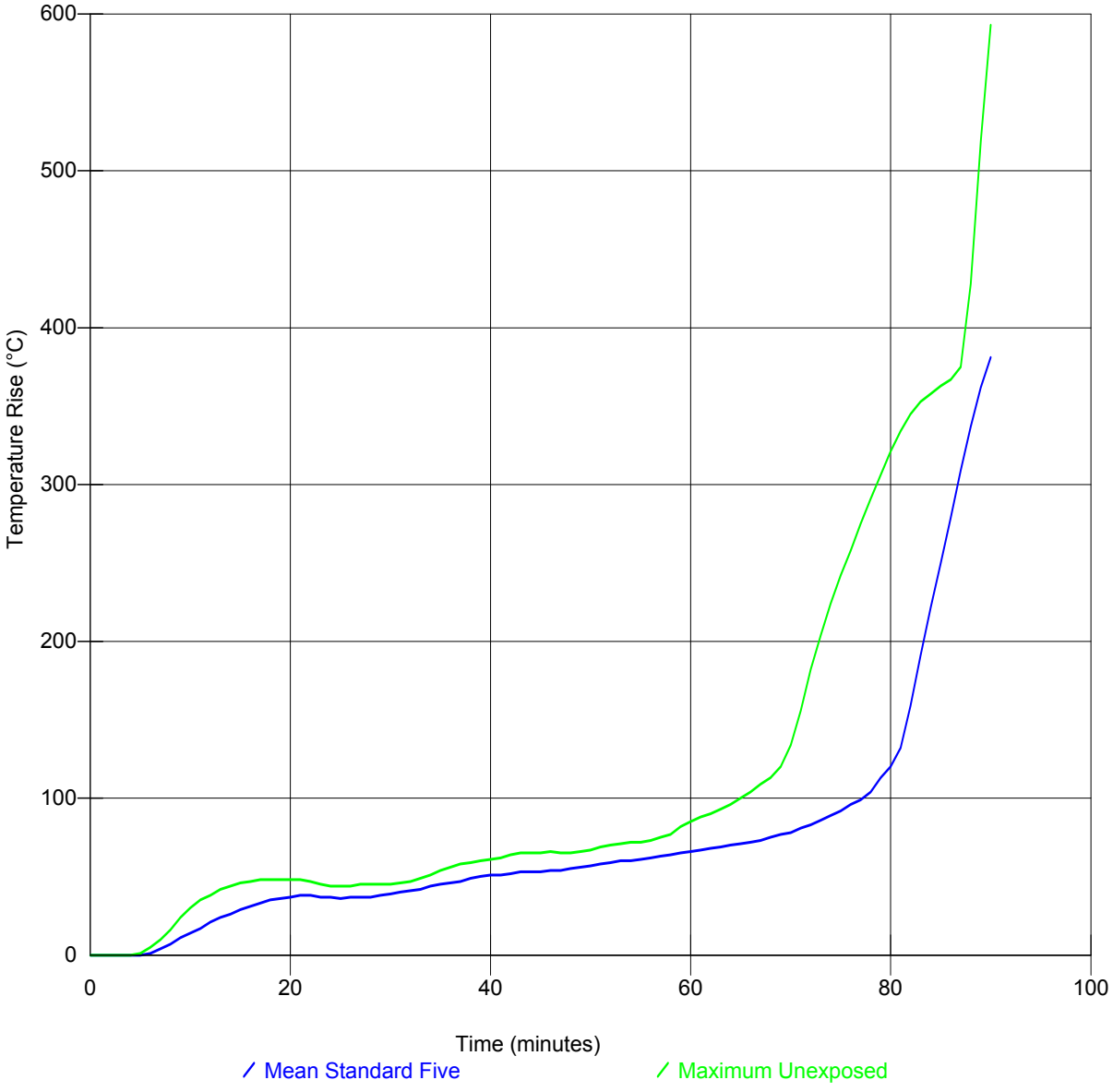

Figure 6 - Unexposed face temperature graph

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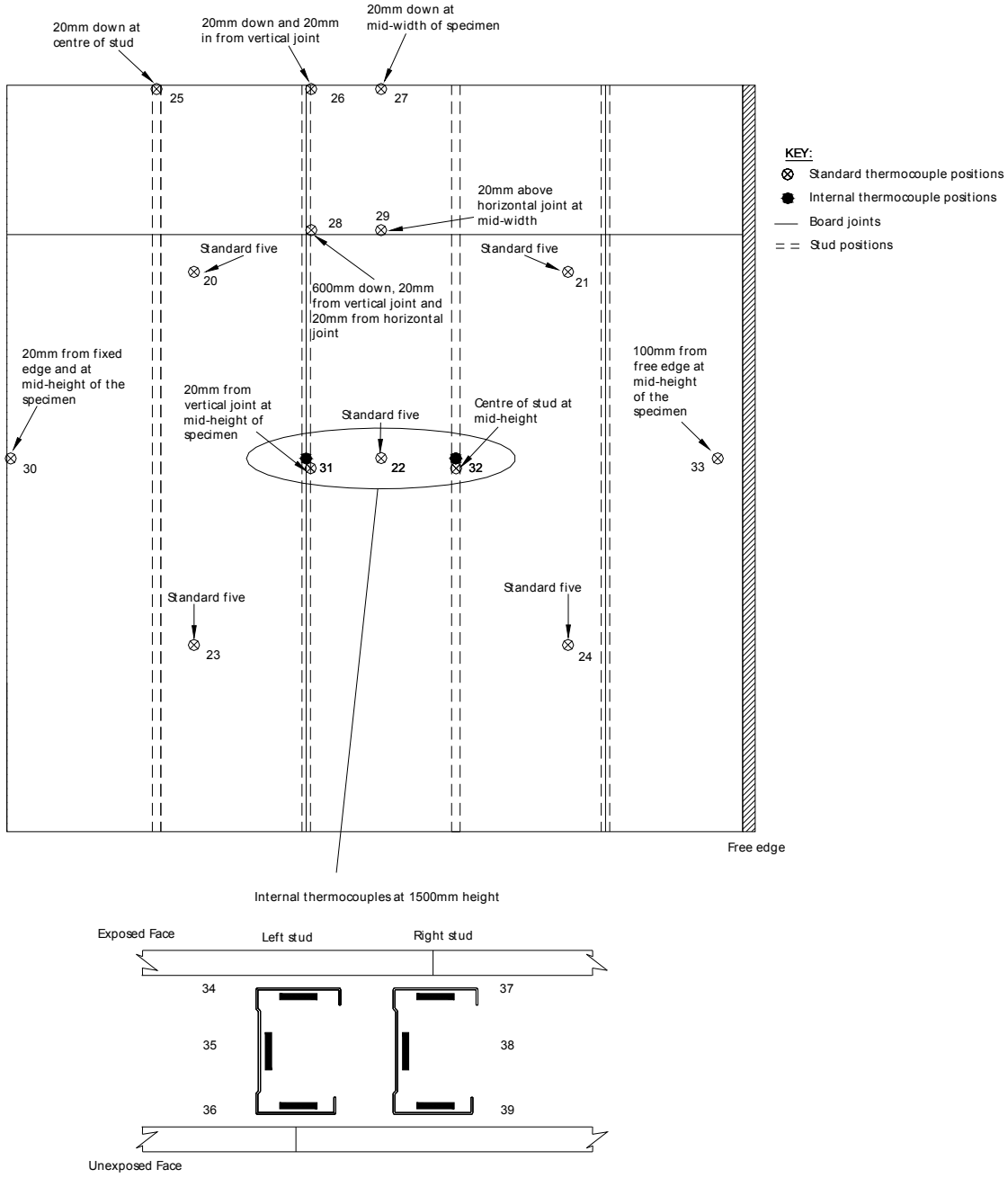
9.5 Unexposed Face Thermocouple Layout



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9.6 Unexposed Face Standard Five Temperature Data

Time (mins)	Temperature Rise (ºC)					
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24	Mean Standard 5
0	0	0	0	0	0	0
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	1	0	0	0
6	1	1	3	1	1	1
7	4	4	7	3	2	4
8	7	7	12	5	5	7
9	11	10	17	8	7	11
10	14	14	22	11	10	14
11	18	18	25	13	13	17
12	21	22	29	16	16	21
13	24	26	32	18	18	24
14	26	29	35	20	21	26
15	29	32	37	22	24	29
16	31	35	40	25	26	31
17	33	37	41	27	28	33
18	34	39	42	28	31	35
19	35	40	43	30	32	36
20	36	41	43	31	34	37
21	36	42	43	32	35	38
22	36	42	42	32	36	38
23	36	41	41	32	36	37
24	36	40	41	32	35	37
25	35	40	40	32	35	36
26	35	40	40	33	35	37
27	36	39	41	34	36	37
28	36	39	41	35	36	37
29	37	40	42	36	37	38
30	38	40	43	37	37	39
31	39	40	45	39	38	40
32	40	41	46	41	39	41
33	41	42	47	42	40	42
34	42	43	49	44	41	44
35	44	44	50	45	42	45
36	45	45	51	46	44	46
37	46	46	52	48	45	47
38	47	48	53	49	46	49

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Time (mins)	Temperature Rise (ºC)					
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24	Mean Standard 5
39	48	49	54	50	47	50
40	49	50	55	51	48	51
41	50	51	55	51	49	51
42	50	51	56	52	49	52
43	51	52	57	53	50	53
44	51	52	57	53	50	53
45	51	53	57	54	51	53
46	52	54	57	54	51	54
47	52	55	58	55	52	54
48	53	56	59	56	53	55
49	54	57	59	57	54	56
50	55	58	60	58	55	57
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66	72	74	75	70	70	72
67	74	75	75	71	72	73
68	75	76	77	73	73	75
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74	89	93	89	86	88	89
75	92	97	92	89	92	92
76	94	101	95	93	95	96
77	98	104	99	96	98	99
78	103	111	105	100	103	104
79	110	122	115	105	113	113

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Time (mins)	Temperature Rise (°C)					
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24	Mean Standard 5
80	117	128	122	112	121	120
81	123	146	137	118	137	**132**
82	143	179	178	124	172	159
83	174	207	220	147	205	191
84	203	232	255	184	234	222
85	229	254	289	217	261	250
86	258	278	324	248	288	279
87	286	303	360	280	315	309
88	314	328	390	309	345	337
89	340	358	399	340	374	362
90	364	380	405	368	386	381

Figures highlighted in red indicate the minute in which the mean temperature rise exceeded 140°C.

See figure 7 for the location of the thermocouples.

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9.7 Additional Unexposed Face Temperature Data

Time (mins)	Temperature Rise (ºC)				
	Thermocouple No. 25	Thermocouple No. 26	Thermocouple No. 27	Thermocouple No. 28	Thermocouple No. 29
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	1	0	0	0
4	0	5	0	0	0
5	1	12	1	0	0
6	5	19	4	0	0
7	10	27	8	1	1
8	16	34	15	2	2
9	22	39	22	4	4
10	27	44	29	6	7
11	31	47	34	8	9
12	34	49	38	11	12
13	37	51	42	13	14
14	39	52	44	15	17
15	41	54	46	18	19
16	42	54	47	20	21
17	42	55	48	22	23
18	44	55	48	24	25
19	44	55	48	25	26
20	45	54	48	27	28
21	45	53	48	28	29
22	44	52	47	29	30
23	44	52	45	30	31
24	44	51	44	30	31
25	44	52	42	31	31
26	44	53	41	31	31
27	45	53	41	32	31
28	45	55	40	32	30
29	45	56	40	32	30
30	45	57	41	33	31
31	46	58	41	33	31
32	47	59	41	34	31
33	47	60	42	35	32
34	48	61	42	36	32
35	49	62	43	38	33
36	50	63	44	39	34
37	51	63	44	41	35
38	52	64	45	42	36

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Time (mins)	Temperature Rise (ºC)				
	Thermocouple No. 25	Thermocouple No. 26	Thermocouple No. 27	Thermocouple No. 28	Thermocouple No. 29
39	53	65	45	44	38
40	53	66	45	45	39
41	54	67	45	47	41
42	54	68	45	49	42
43	55	68	45	50	44
44	56	69	45	52	45
45	56	70	46	52	46
46	57	71	47	54	48
47	58	72	49	54	49
48	58	73	50	54	50
49	59	74	52	55	51
50	60	75	55	56	52
51	61	77	56	56	54
52	61	79	58	57	55
53	63	81	60	58	56
54	64	83	62	59	57
55	65	86	63	60	57
56	66	88	65	61	58
57	67	90	65	62	58
58	68	92	66	62	59
59	69	94	67	63	60
60	70	96	68	63	61
61	71	99	69	64	61
62	72	102	69	64	61
63	72	105	70	66	62
64	73	108	70	67	63
65	74	111	71	68	64
66	74	114	73	69	65
67	74	118	75	71	66
68	75	121	77	73	69
69	75	126	83	74	70
70	76	130	87	76	72
71	76	135	90	79	73
72	77	141	92	81	74
73	78	148	94	84	75
74	78	156	96	86	76
75	79	164	99	89	78
76	79	174	103	91	83
77	80	185	107	93	89
78	81	195	110	95	94
79	82	207	114	98	100

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Time (mins)	Temperature Rise (ºC)				
	Thermocouple No. 25	Thermocouple No. 26	Thermocouple No. 27	Thermocouple No. 28	Thermocouple No. 29
80	82	217	117	101	107
81	83	230	129	105	112
82	84	243	142	112	118
83	85	259	161	120	135
84	87	274	182	142	161
85	88	291	202	165	206
86	90	309	220	205	251
87	90	326	238	245	292
88	91	344	258	293	347
89	92	365	292	359	412
90	94	385	316	404	447

See figure 7 for the location of the thermocouples.

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9.8 Additional Unexposed Face Temperature Data

Time (mins)	Temperature Rise (°C)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	1
6	1	1	3	3
7	2	2	8	7
8	3	3	16	11
9	6	5	24	16
10	9	7	30	20
11	11	10	35	24
12	14	12	36	28
13	17	14	36	31
14	20	17	36	33
15	23	20	36	35
16	25	23	36	37
17	28	25	36	39
18	30	28	36	40
19	32	30	36	41
20	33	32	36	42
21	35	34	37	42
22	36	35	36	42
23	37	36	36	42
24	37	36	36	41
25	37	37	36	41
26	37	38	36	41
27	37	38	36	41
28	36	38	37	41
29	36	39	38	40
30	36	39	40	41
31	37	40	43	41
32	37	41	46	42
33	37	43	49	43
34	38	44	51	44
35	38	46	54	46
36	39	47	56	47
37	40	48	58	49
38	40	50	59	50

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Time (mins)	Temperature Rise (°C)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
39	41	52	60	51
40	42	53	61	51
41	42	55	62	52
42	43	56	64	53
43	43	57	65	53
44	44	59	65	53
45	44	59	65	53
46	44	60	66	54
47	45	61	65	54
48	45	61	65	54
49	45	61	66	55
50	45	62	67	55
51	45	63	69	56
52	45	63	70	57
53	46	64	71	58
54	46	64	72	59
55	46	64	72	59
56	47	64	73	60
57	47	65	75	61
58	47	66	77	61
59	48	67	82	62
60	48	68	85	63
61	48	69	88	64
62	49	70	90	66
63	50	73	93	67
64	51	75	96	67
65	52	77	100	68
66	53	78	104	69
67	54	80	109	69
68	56	81	113	70
69	58	83	120	70
70	59	84	134	71
71	61	86	**156**	71
72	63	89	182	72
73	64	91	204	73
74	65	93	224	74
75	66	95	242	74
76	67	97	258	75
77	67	99	275	76
78	67	103	291	77
79	68	110	306	77

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Time (mins)	Temperature Rise (ºC)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
80	67	123	321	78
81	67	148	334	79
82	67	177	345	80
83	67	216	353	81
84	67	257	358	83
85	67	293	363	84
86	67	329	367	85
87	67	368	375	87
88	67	428	383	89
89	67	519	391	91
90	67	593	398	95

Figures highlighted in red indicate the minute in which the temperature rise exceeded 180°C.

See figure 7 for the location of the thermocouples.

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9.9 Internal Temperature Data at 1500mm Height

Time (mins)	Actual Temperature (ºC)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
0	26	24	22	27	25	23
1	27	24	22	28	25	23
2	36	25	22	37	26	23
3	61	34	23	63	39	24
4	93	57	28	97	90	35
5	99	81	45	99	99	65
6	100	86	58	101	99	79
7	101	89	67	102	100	86
8	101	91	72	103	100	88
9	101	92	77	103	99	88
10	103	93	80	103	97	87
11	104	95	83	103	94	84
12	106	98	85	104	93	83
13	108	100	87	105	91	82
14	111	101	88	106	92	81
15	115	102	89	107	93	81
16	120	103	89	110	94	82
17	125	104	92	120	95	82
18	132	105	92	144	97	83
19	141	104	93	172	99	83
20	159	104	90	202	101	83
21	193	110	89	233	102	81
22	227	123	92	260	105	81
23	272	139	94	286	109	83
24	303	164	96	318	116	84
25	334	187	102	346	128	87
26	362	210	110	376	147	89
27	385	228	122	408	187	93
28	407	245	131	447	229	98
29	415	257	139	477	263	98
30	428	266	150	505	291	106
31	440	277	160	532	316	109
32	452	289	168	555	339	120
33	462	300	175	578	360	137
34	474	310	182	598	378	156
35	481	321	191	617	395	176
36	486	331	202	634	411	191

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Time (mins)	Actual Temperature (ºC)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
37	497	345	212	650	426	205
38	507	356	221	661	442	217
39	515	365	230	676	461	230
40	522	375	237	689	483	245
41	529	385	245	698	508	263
42	536	394	252	704	532	283
43	543	403	259	709	555	303
44	550	410	265	715	575	323
45	557	417	271	722	593	343
46	563	424	277	728	610	363
47	569	431	282	734	624	382
48	575	438	288	739	634	409
49	581	445	294	742	641	427
50	586	452	300	744	646	442
51	591	459	306	746	649	446
52	596	466	313	747	652	416
53	600	471	318	748	653	421
54	602	471	319	750	651	429
55	602	469	318	755	651	436
56	601	469	320	763	654	443
57	600	476	329	768	658	449
58	599	472	338	786	667	460
59	596	469	342	783	686	483
60	596	474	348	788	697	527
61	597	480	355	779	692	602
62	599	486	363	758	676	639
63	600	492	370	760	675	663
64	602	499	379	760	675	676
65	606	511	389	756	675	677
66	612	525	405	759	690	698
67	618	535	420	755	722	705
68	628	546	447	761	747	724
69	630	552	474	737	735	785
70	654	612	554	750	748	807
71	692	678	642	757	744	798
72	724	723	701	772	752	789
73	746	749	735	777	759	778
74	757	760	750	773	760	778
75	774	779	770	779	771	787

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Time (mins)	Actual Temperature (ºC)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
76	766	785	781	776	770	788
77	761	785	786	775	769	789
78	772	783	790	777	770	786
79	792	782	793	771	768	784
80	792	782	796	771	767	788
81	798	786	801	771	767	798
82	810	799	806	777	766	809
83	857	827	805	791	753	831
84	861	866	790	756	541	866
85	864	853	811	752	635	855
86	856	867	845	819	766	847
87	828	845	808	802	732	823
88	828	847	775	811	561	848
89	840	848	764	829	452	878
90	881	861	762	871	398	893

See figure 7 for the location of the thermocouples.

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9.10 Specimen Lateral Deflection

Time (mins)	Deflection (mm)	
	Centre	Free Edge
0	0	0
1	1	0
2	1	0
3	3	0
4	7	0
5	7	0
6	7	0
7	7	0
8	6	0
9	7	0
10	7	0
11	7	0
12	7	0
13	7	0
14	7	0
15	8	0
16	9	0
17	10	0
18	11	0
19	13	0
20	16	0
21	20	1
22	25	2
23	30	4
24	35	6
25	39	8
26	43	10
27	46	11
28	49	11
29	51	11
30	52	11
31	54	11
32	54	11
33	55	11
34	55	11
35	56	11
36	56	11
37	56	11

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
38	56	11
39	56	11
40	56	11
41	56	11
42	57	11
43	58	11
44	59	11
45	59	11
46	60	11
47	61	11
48	62	11
49	63	11
50	63	11
51	64	11
52	65	11
53	65	11
54	66	11
55	66	11
56	67	11
57	67	11
58	68	11
59	68	11
60	69	11
61	69	11
62	70	11
63	71	11
64	71	11
65	72	11
66	73	11
67	73	11
68	74	11
69	74	11
70	75	11
71	78	11
72	79	11
73	80	11
74	80	11
75	80	11
76	80	11
77	79	11

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
78	79	11
79	79	11
80	78	11
81	79	11
82	80	11
83	81	11
84	82	9
85	81	10
86	82	9
87	87	9
88	92	8
89	93	8
90	93	7

The deflection was recorded at the approximate centre of the specimen and at mid-height at the free edge. Positive readings indicate deflection into the furnace.

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10. PHOTOGRAPHS

10.1 Exposed face prior to test

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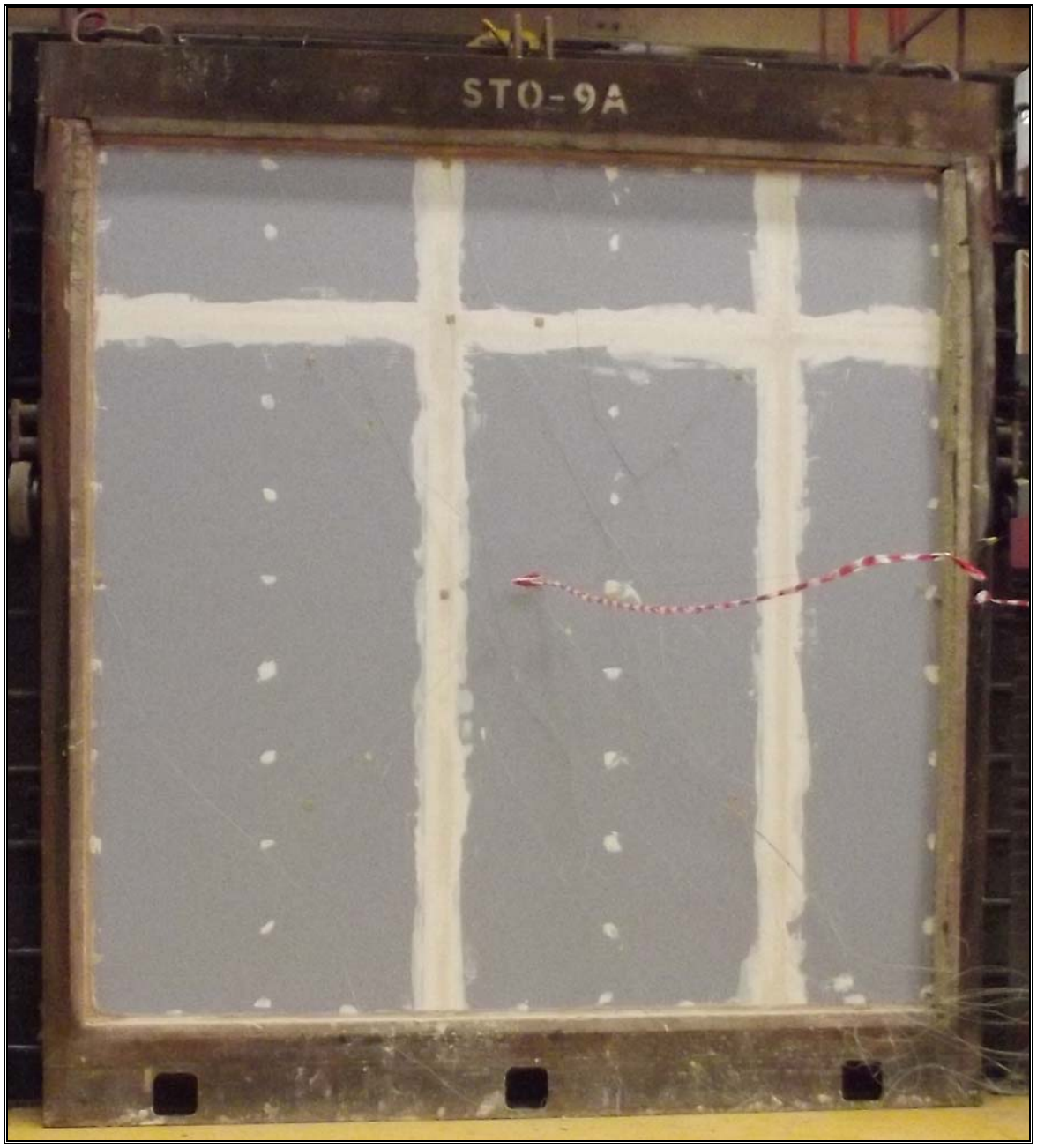
10.2 Unexposed face prior to test



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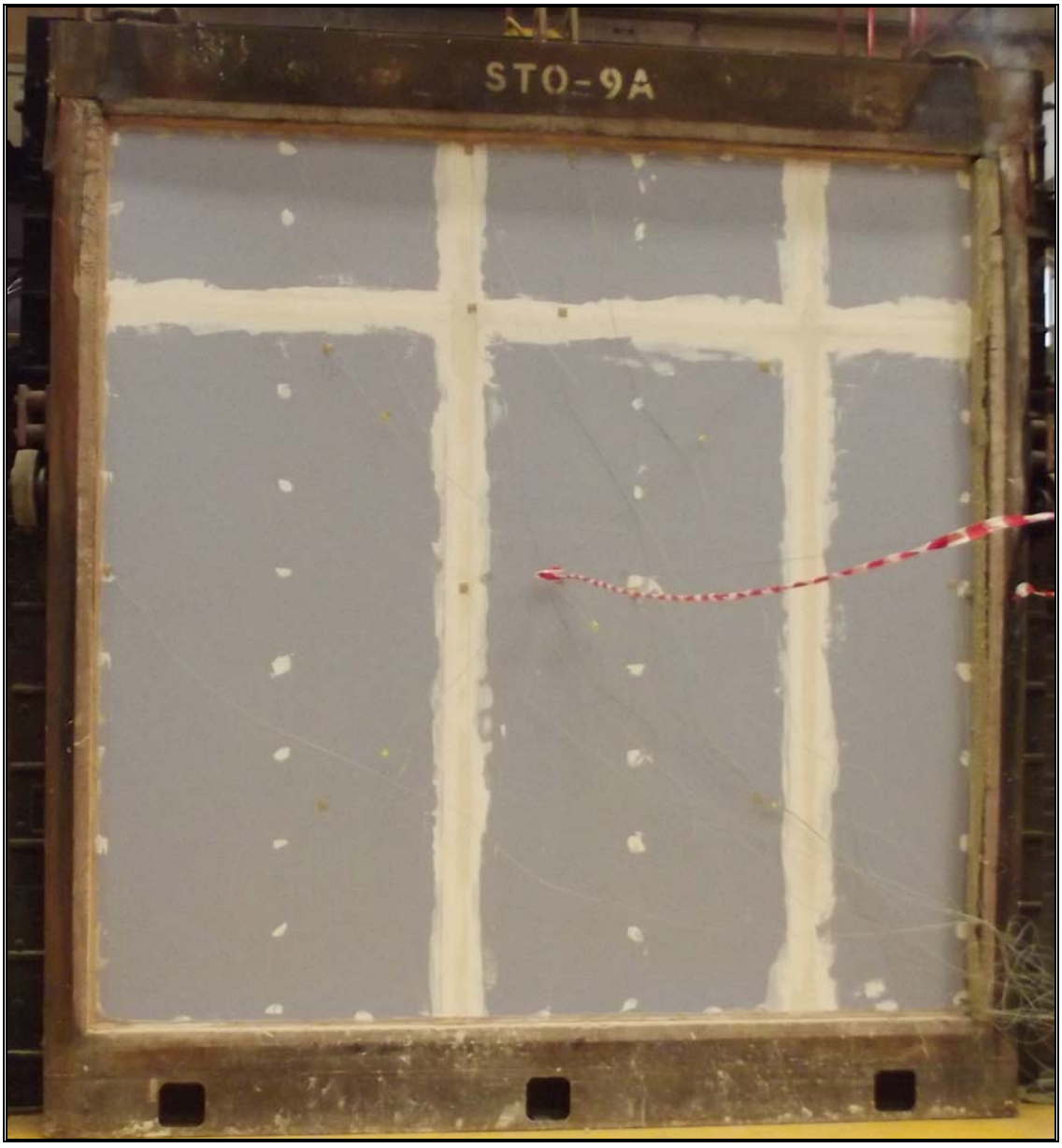
10.3 Unexposed face at 30 minutes



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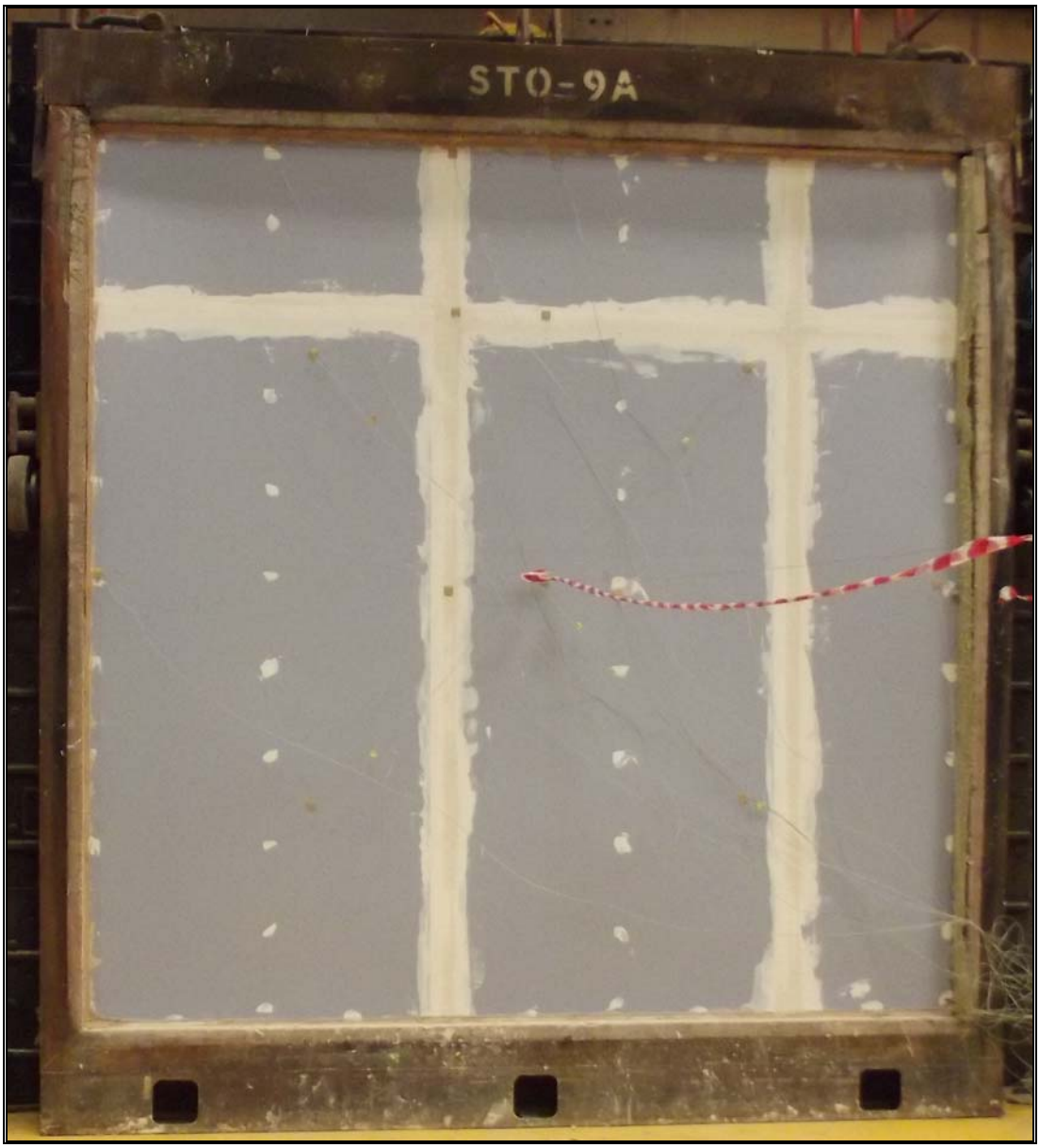
10.4 Unexposed face at 1 hour



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10.5 Unexposed face at 1 hour, 30 minutes at test termination

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11. FIELD OF DIRECT APPLICATION

11.1 General

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

(i) Decrease in height from 3000mm.

(ii) Increase in the thickness of the wall (minimum thickness 122mm).

(iii) Increase thickness of component materials (minimum Gypframe stud depth 92mm, minimum Gypframe 'C' stud gauge 0.50mm).

(iv) Decrease in the linear dimensions of the boards but not thickness (≤ 2400mm (long) x ≤ 1200mm (wide) Gyproc SoundBloc F).

(v) Decrease stud spacing from 600mm.

(vi) Decrease in fixing centres from 300mm.

(vii) Horizontal and vertical joints, of the type tested.

11.2 Extension of width

The width of an identical construction may be increased as the specimen was tested at nominally 3000mm wide with one vertical edge without restraint.

11.3 Extension of height

The height of constructions tested at a minimum of 3000mm, maybe increased to 4000mm at the following fire resistance periods as the lateral deflection was below 100mm.

30 minutes	60 minutes	90 minutes
≤100mm, ∴4000mm	≤100mm, ∴4000mm	≤100mm, ∴4000mm