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The Building Test Centre
Fire Acoustics Structures

Report Number BTC 18406F

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 70mm STUD FRAMEWORK CLAD EACH SIDE WITH A SINGLE LAYER OF 15mm GYPROC SOUNDBLOC F EX KIRKBY THORE, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1: 1999.

Test Date: 12th 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 layer of Gyproc SoundBloc F. The test sponsor was British Gypsum.

The test specimen was installed by Alltone Limited. The construction of the specimen took place between the 6th and 7th August 2013. The Building Test Centre played no role in the design or selection of materials comprising the test specimen.

The test was witnessed by Mr Robert Evans and was conducted on the 12th 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 P.P. Mark Shortland
Liam Woodford Scientist	**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 72FEC50 Standard Folded Edge Floor & Ceiling Channels were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 70S50 '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 70S50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of British Gypsum 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 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

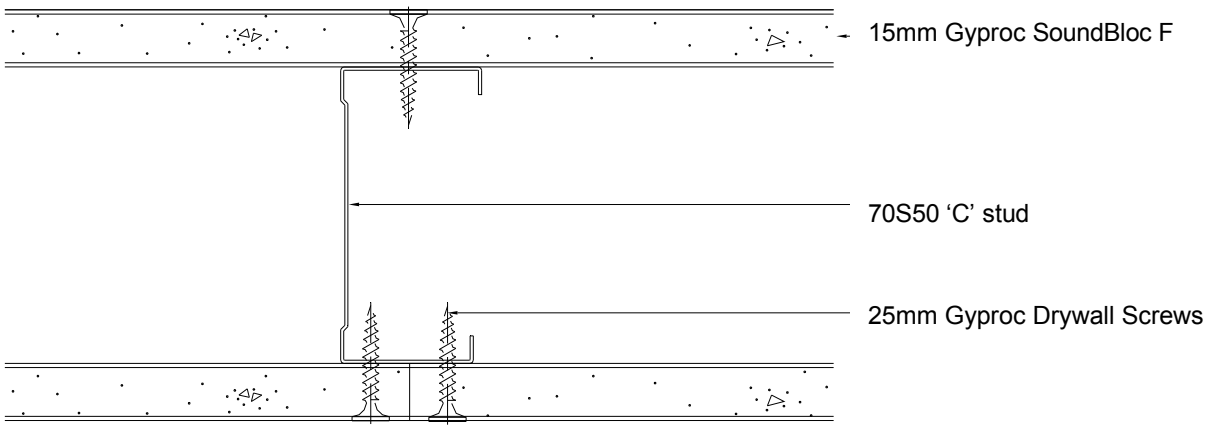

Figure 1 - Horizontal Cross Section

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4.2.2 Exposed Face Elevation

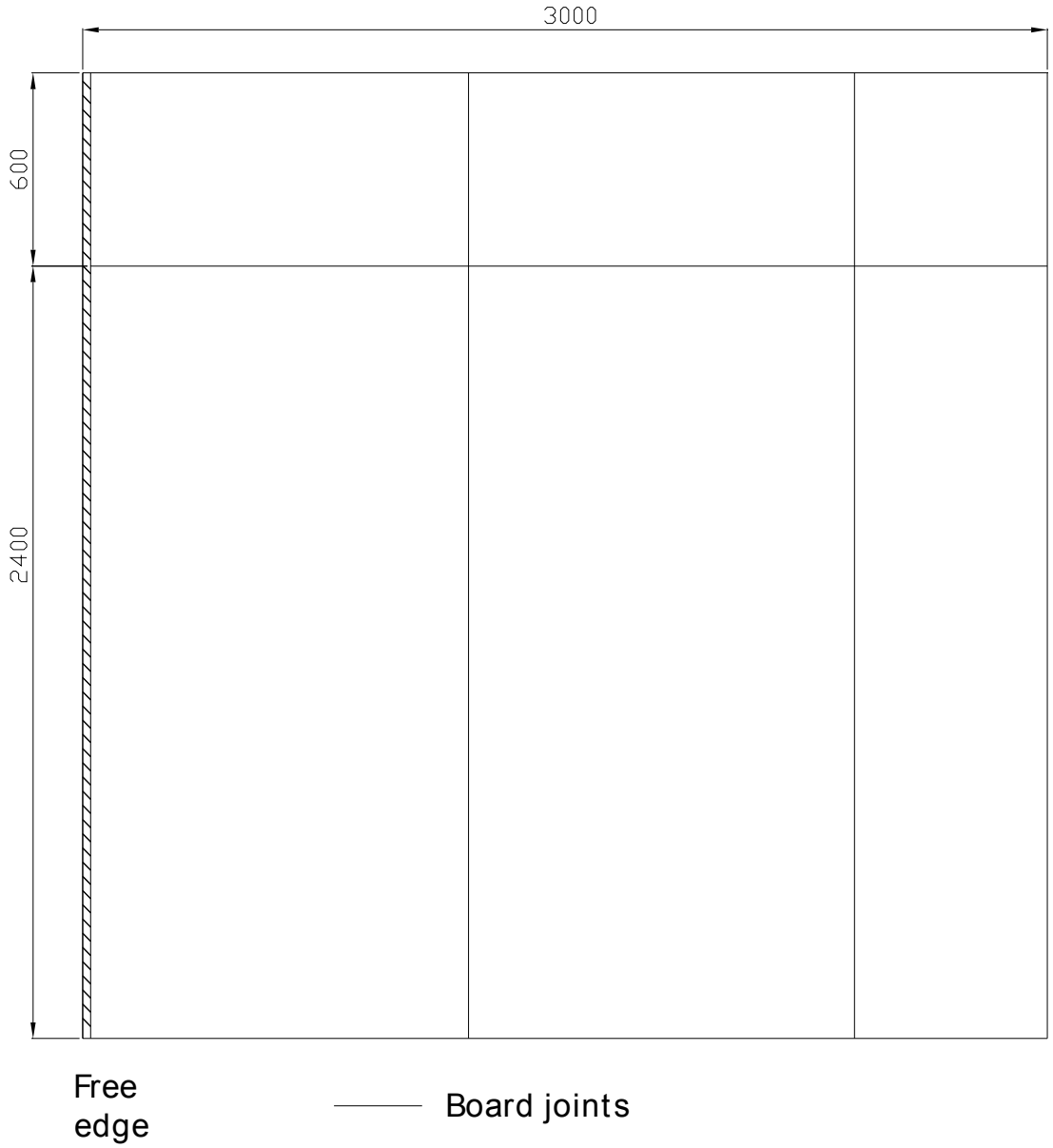

Figure 2 - Exposed Face Elevation

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4.2.3 Unexposed Face Elevation

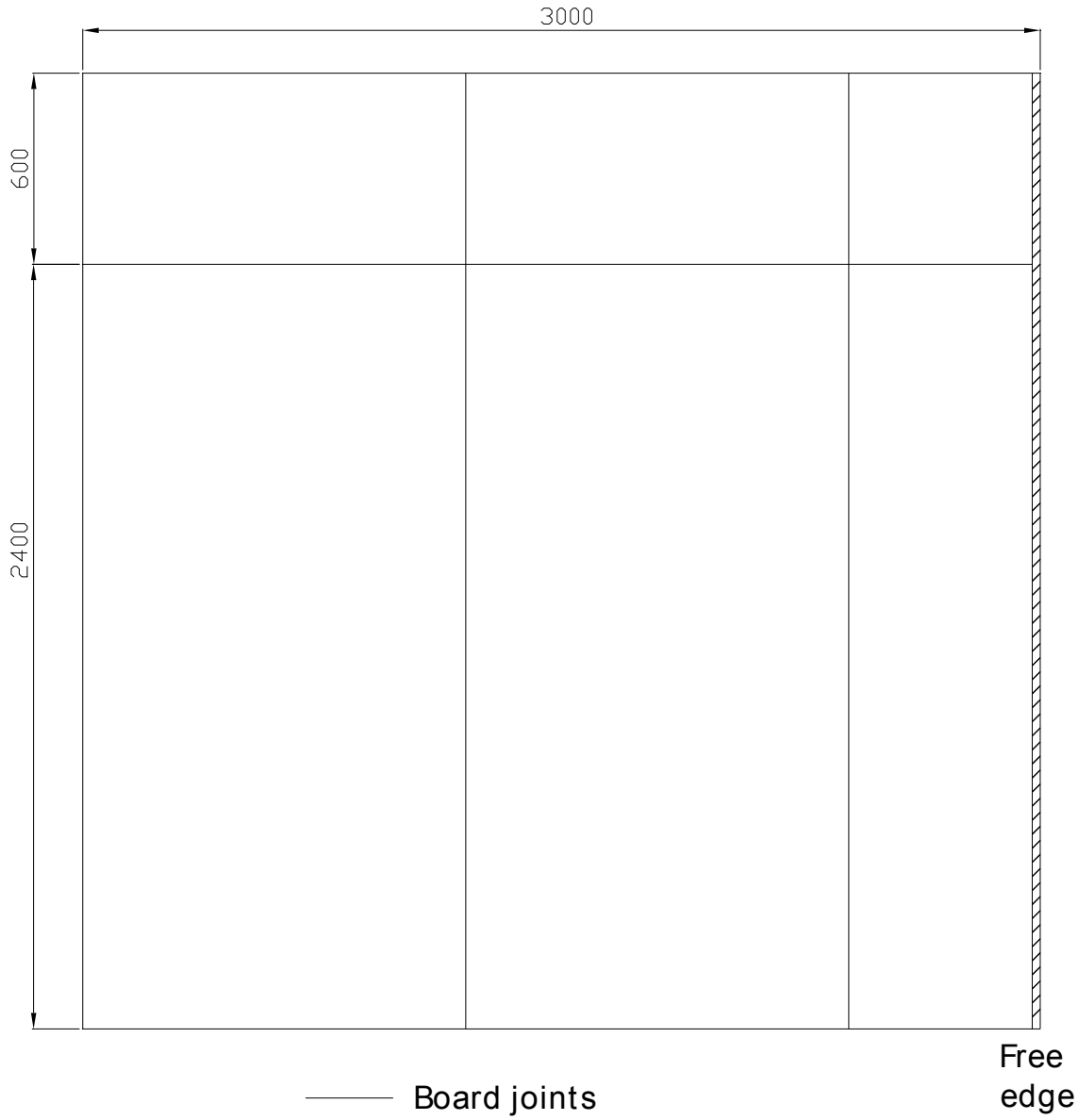

Figure 3 - Unexposed Face Elevation

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 (TE)

i) Nominally, 2400mm (long) x 1200mm (wide) x 15mm (thick), Gyproc SoundBloc F (TE), 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 72FEC50 Standard Folded Edge Floor & Ceiling Channels.
iii) Gypframe 70S50 '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**	**90 minutes, no failure** (the test having been discontinued at the request of the sponsor)
	6mm gap gauge	**88 minutes**
	25mm gap gauge	**90 minutes, no failure** (the test having been discontinued at the request of the sponsor)
	Cotton Pad	**80 minutes**
Insulation		**67 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 Liam Woodford
Exposed face Sam Potter

Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
0	0	Test started.
0	10	Face papers had charred. Jointing material was flaking away.
0	20	Left-hand vertical joint had opened to approximately 2-3mm. Right-hand vertical joint had opened to approximately 2-3mm. Horizontal joint had opened to approximately 2-3mm.
0	30	Left-hand vertical joint had opened to approximately 4-5mm. Right-hand vertical joint had opened to approximately 4-5mm. Horizontal joint had opened to approximately 4-5mm. *Unexposed face* No visible change.
0	40	Left-hand vertical joint had opened to approximately 5-6mm. Right-hand vertical joint had opened to approximately 5-6mm. Horizontal joint had opened to approximately 5-6mm. All boards had cracked around screw heads.
0	50	No visible change.
1	00	Left-hand vertical joint had opened to approximately 10mm. Right-hand vertical joint had opened to approximately 10mm. Horizontal joint had opened to approximately 10mm. *Unexposed face* Screw heads had discoloured on left-hand vertical joint and right-hand vertical joint.

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Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
1	05	*Unexposed face* Right-hand vertical joint had cracked from 900mm up to 2400mm height. Right-hand vertical joint had discoloured.
1	07	*Unexposed face* **INSULATION FAILURE**. The temperature rise of thermocouple no.31, positioned at mid-height on the left-hand vertical joint, exceeded 180°C. The mean temperature rise of the standard five thermocouples exceeded 140°C.
1	08	*Unexposed face* Left-hand side of centre board had discoloured. All screw heads had discoloured.
1	10	No visible change.
1	15	*Unexposed face* Right-hand board had discoloured. Right-hand side of left-hand board had discoloured. Left-hand vertical joint had opened to approximately 1-3mm. Right-hand vertical joint had opened to approximately 10-12mm at approximately mid-height.
1	20	Left-hand vertical joint had opened to approximately 30mm. Right-hand vertical joint had opened to approximately 20mm. Horizontal joint had opened to approximately 30mm. 20mm crack running through centre of lower centre board. *Unexposed face* **INTEGRITY FAILURE.** The cotton pad ignited (glowed) when placed on the right-hand vertical joint at approximately mid-height.
1	24	*Unexposed face* Left-hand vertical joint had opened to approximately 3-5mm. Right-hand vertical joint had opened to approximately 14-16mm.
1	25	No visible change.

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Time		Observations
hours	mins	*All observations refer to the exposed face unless otherwise stated.*
1	28	100% of lower centre board had fallen into the furnace. Studs had warped where visible. *Unexposed face* **FURTHER INTEGRITY FAILURE.** The gap at approximately mid-height on the left-hand vertical joint exceeded 6mm x 150mm (visual).
1	30	**TEST TERMINATED** at the request of the sponsor.

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9.2 Furnace Temperature Graph

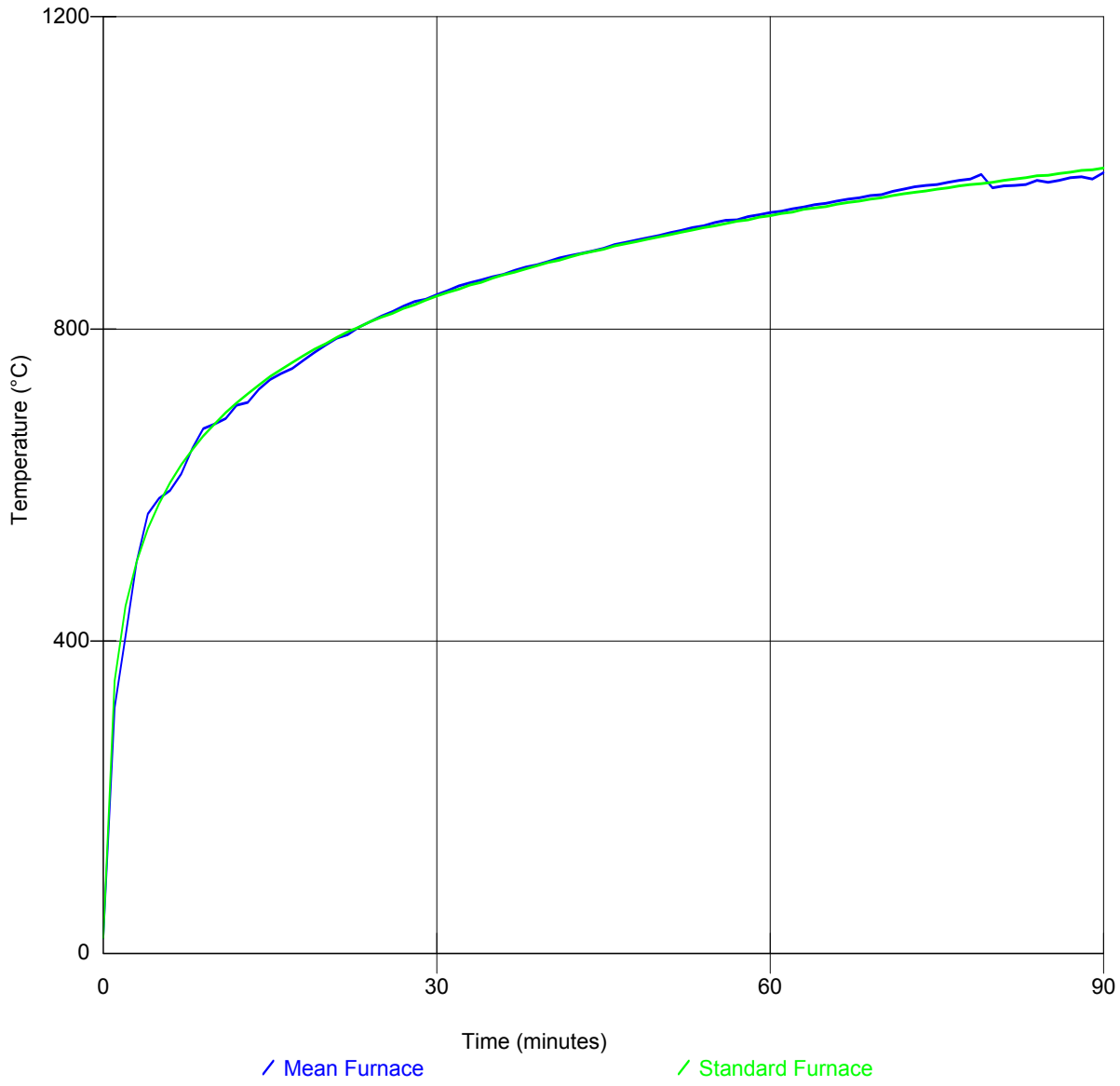

Figure 4 - Furnace temperature graph

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9.3 Furnace Pressure Graph

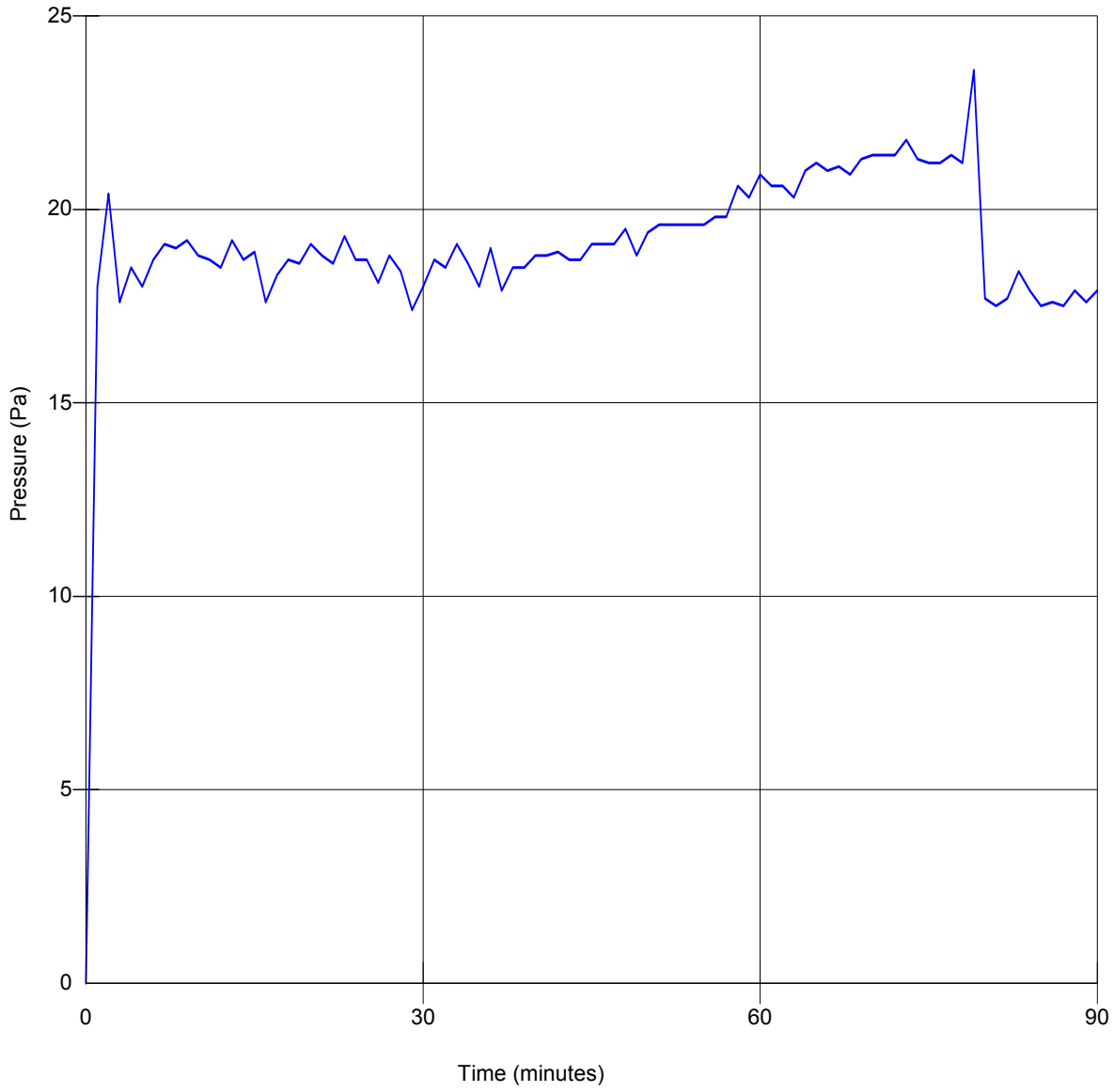

Figure 5 - Furnace pressure graph
The furnace pressure was set to control at 18 ± 2 Pa positive with respect to atmosphere, at the top of the specimen.

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9.4 Unexposed Face Temperature Graph

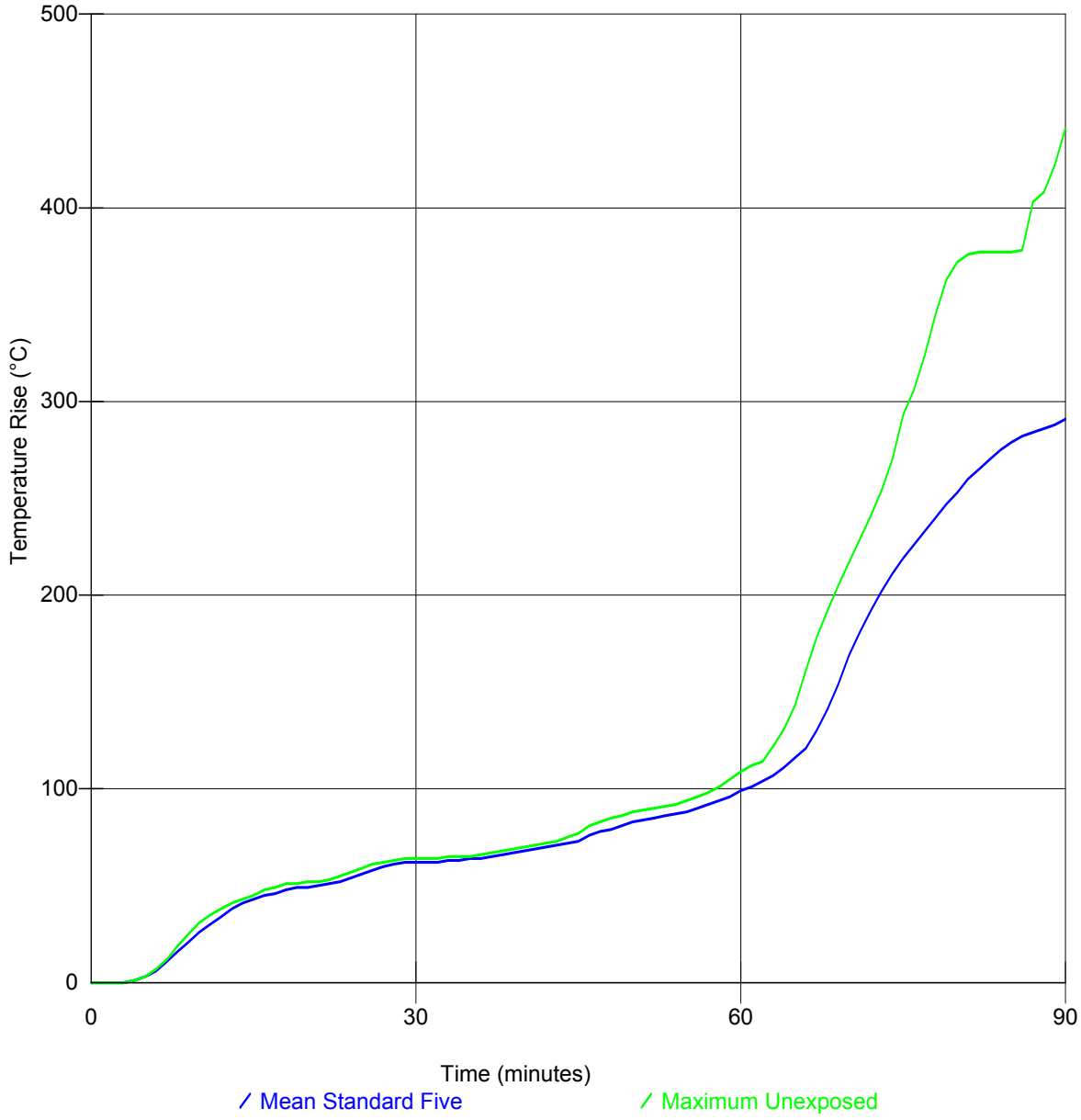

Figure 6 - Unexposed face temperature graph

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9.5 Unexposed Face Thermocouple Layout

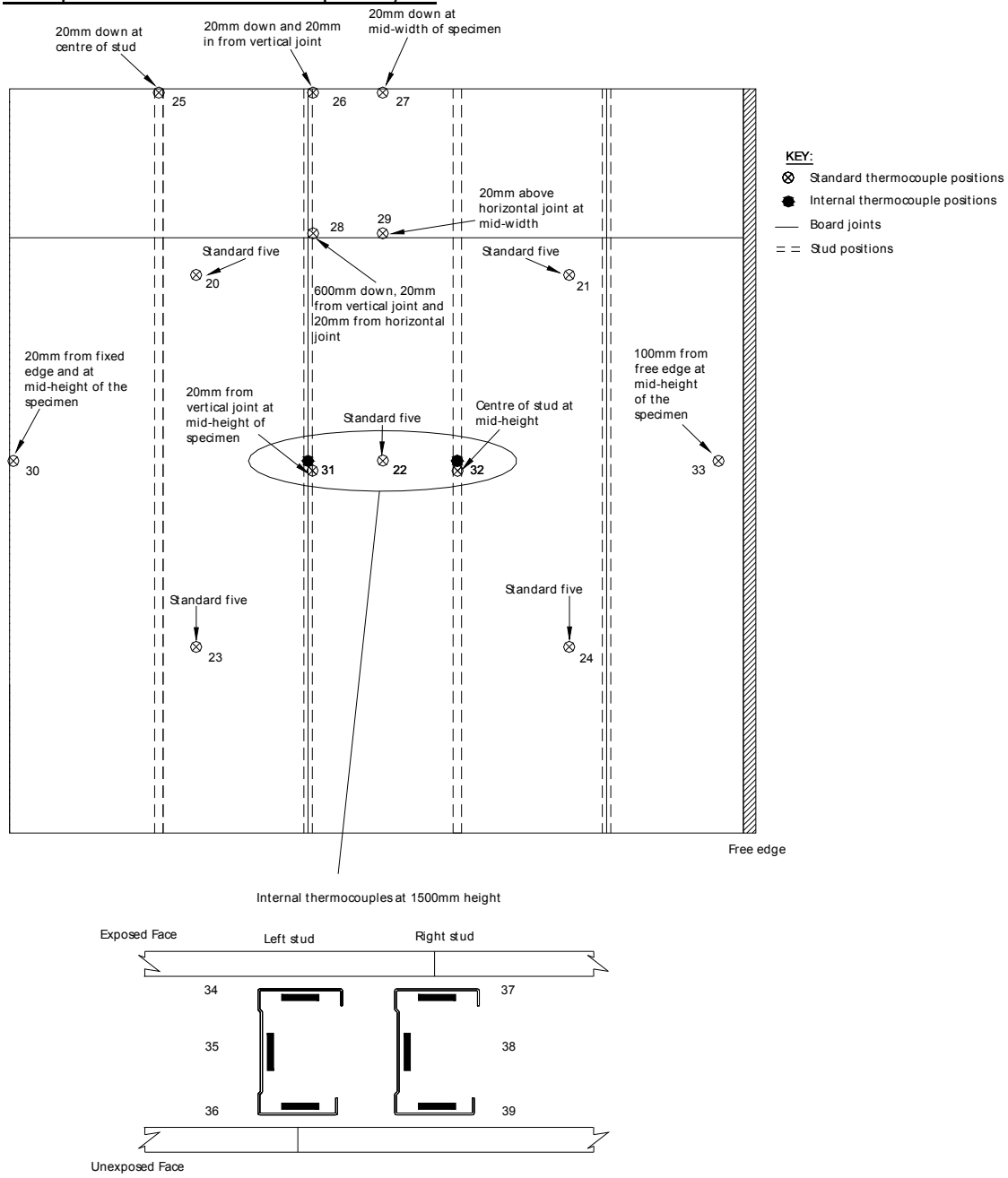

Figure 7 - Unexposed face thermocouple layout

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

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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	65	65	69	68	67	67
40	66	66	70	69	68	68
41	66	67	71	70	69	69
42	68	68	72	71	70	70
43	69	69	73	72	71	71
44	69	69	75	74	72	72
45	70	70	77	75	74	73
46	71	72	81	78	76	76
47	72	74	83	81	79	78
48	73	76	85	83	80	79
49	75	78	86	84	82	81
50	78	80	88	85	83	83
51	80	81	89	87	84	84
52	81	82	90	87	85	85
53	82	83	91	89	86	86
54	83	84	92	90	87	87
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60	92	93	109	103	97	99
61	94	95	111	105	100	101
62	97	98	112	107	105	104
63	101	102	114	108	109	107
64	104	107	120	111	111	111
65	107	111	133	114	113	116
66	110	113	141	125	117	121
67	115	117	161	133	125	**130**
68	125	128	179	140	133	141
69	134	140	193	157	145	154
70	150	159	207	170	158	169
71	166	173	218	180	169	181
72	180	186	230	188	178	192
73	191	196	241	196	186	202
74	201	206	251	203	192	211
75	210	215	262	208	198	219
76	217	223	273	213	203	226
77	224	231	284	218	208	233
78	231	238	296	222	213	240
79	237	244	308	226	218	247

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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
80	243	251	319	230	222	253
81	249	259	329	234	227	260
82	255	265	337	238	231	265
83	261	272	343	241	235	270
84	268	278	344	244	239	275
85	275	283	345	247	243	279
86	281	286	344	251	248	282
87	287	287	341	254	252	284
88	292	288	335	258	257	286
89	296	289	328	263	263	288
90	301	289	322	269	272	291

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

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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	55	57	64	62	62
40	56	58	65	63	62
41	57	59	65	63	63
42	57	59	66	64	64
43	58	61	66	64	65
44	59	61	67	65	65
45	59	61	68	66	66
46	59	62	68	66	66
47	60	62	69	67	67
48	60	63	69	67	68
49	61	63	69	67	68
50	61	63	70	68	69
51	62	63	70	69	69
52	63	63	71	72	70
53	63	64	71	74	71
54	64	64	72	76	71
55	65	64	72	77	73
56	67	65	73	79	74
57	68	67	74	81	76
58	69	68	75	82	78
59	71	69	77	84	79
60	72	70	80	86	81
61	73	72	82	88	83
62	74	73	83	91	84
63	74	74	85	94	86
64	75	75	86	97	88
65	76	76	87	99	91
66	77	78	89	102	93
67	78	79	90	105	96
68	79	81	92	111	99
69	80	82	94	116	102
70	81	84	97	126	104
71	82	87	100	141	107
72	84	90	102	155	109
73	85	93	105	169	114
74	86	96	107	186	123
75	88	100	110	204	136
76	89	103	113	221	153
77	91	105	116	237	179
78	92	108	122	251	202
79	95	111	131	263	220

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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	96	115	141	277	235
81	98	121	154	291	251
82	101	131	167	304	265
83	103	143	179	315	278
84	107	159	190	327	293
85	110	181	201	345	309
86	114	203	215	378	330
87	118	221	228	403	350
88	123	240	243	408	376
89	130	259	259	422	398
90	142	277	274	441	402

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

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Time (mins)	Temperature Rise (ºC)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
39	58	67	65	65
40	59	68	65	66
41	59	68	66	67
42	61	69	67	68
43	62	70	68	69
44	64	70	69	69
45	65	72	69	70
46	66	73	70	71
47	67	76	71	73
48	68	78	72	74
49	70	80	72	75
50	71	83	73	77
51	72	84	75	79
52	74	86	77	82
53	75	88	79	83
54	76	90	81	85
55	77	92	83	86
56	78	94	85	87
57	79	96	86	88
58	80	99	88	89
59	81	103	90	90
60	81	109	92	92
61	82	112	95	93
62	83	114	98	95
63	84	122	101	97
64	85	131	105	99
65	86	143	108	102
66	87	161	111	105
67	89	**178**	116	107
68	91	192	126	109
69	92	205	141	110
70	94	217	164	113
71	96	229	184	118
72	98	241	201	128
73	100	254	216	136
74	103	270	230	145
75	107	293	243	161
76	114	306	256	174
77	121	324	269	185
78	129	345	285	195
79	147	363	299	203

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Time (mins)	Temperature Rise (°C)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
80	168	372	313	210
81	189	376	325	217
82	205	377	337	224
83	218	377	346	230
84	229	377	353	236
85	240	377	357	242
86	249	378	359	247
87	256	382	357	252
88	262	388	353	256
89	268	399	349	261
90	274	413	344	266

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 (°C)					
	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	21	20	20	21	20	20
1	21	21	20	21	21	20
2	30	24	22	27	23	21
3	51	38	29	45	36	28
4	76	58	45	73	58	45
5	90	72	59	95	71	59
6	95	78	68	98	78	67
7	97	83	73	98	82	72
8	98	86	77	98	85	75
9	99	89	79	98	87	78
10	100	91	82	98	89	80
11	101	93	84	99	92	82
12	102	94	85	100	94	84
13	104	96	86	101	97	86
14	108	98	88	102	100	87
15	112	100	89	102	102	88
16	118	102	90	106	106	90
17	124	105	90	113	111	91
18	132	109	91	132	118	92
19	141	114	92	159	126	94
20	159	126	94	177	140	98
21	188	141	98	194	154	105
22	219	160	112	211	170	118
23	246	182	126	230	187	129
24	272	203	139	251	205	141
25	294	223	153	275	222	154
26	315	240	168	299	237	167
27	333	255	183	320	250	179
28	348	268	196	334	264	189
29	360	278	205	356	275	196
30	370	288	214	386	284	202
31	380	297	223	415	295	208
32	388	305	232	440	307	217
33	396	313	240	460	319	226
34	403	322	248	482	331	235
35	410	330	256	511	343	247
36	416	338	263	521	356	262

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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	423	346	271	530	369	280
38	428	354	279	538	380	298
39	434	361	288	542	390	313
40	441	370	299	545	400	327
41	447	378	310	548	408	341
42	452	387	322	551	417	353
43	454	396	336	554	425	366
44	458	404	348	559	433	379
45	464	413	360	563	442	392
46	470	421	372	567	450	404
47	476	429	383	571	458	416
48	482	437	393	577	465	427
49	488	445	401	582	470	439
50	494	453	409	587	476	450
51	500	462	420	592	483	459
52	506	470	430	598	489	467
53	511	477	442	602	495	475
54	516	484	454	608	501	482
55	522	492	464	613	507	489
56	527	499	473	618	513	496
57	533	506	483	624	519	504
58	539	513	491	631	526	512
59	545	521	499	636	533	519
60	551	528	508	643	539	527
61	557	535	516	649	546	535
62	564	543	524	660	554	544
63	571	551	532	676	564	555
64	579	560	541	689	575	567
65	588	572	551	705	591	583
66	598	585	560	717	607	602
67	608	599	571	731	623	622
68	619	612	586	743	638	640
69	630	626	601	755	651	653
70	641	639	615	765	659	668
71	654	654	633	774	677	684
72	670	669	654	784	690	698
73	694	700	685	796	706	716
74	723	731	718	810	724	742
75	769	782	763	829	748	778

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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	784	790	777	835	765	796
77	807	814	798	834	778	805
78	832	836	822	828	786	807
79	850	866	841	817	786	801
80	847	-	836	803	779	785
81	847	-	837	795	772	777
82	856	-	844	791	770	776
83	867	-	853	791	773	781
84	862	-	851	792	777	787
85	862	-	852	793	782	798
86	870	-	862	797	788	808
87	884	-	882	803	792	820
88	909	-	906	812	804	834
89	969	-	1030	848	842	884
90	974	-	1028	881	877	924

- Indicates a broken thermocouple.

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	4
2	-1	4
3	-1	4
4	2	4
5	3	4
6	3	4
7	3	4
8	3	4
9	3	4
10	3	4
11	3	4
12	3	4
13	3	4
14	3	4
15	3	4
16	3	4
17	5	4
18	5	4
19	6	4
20	9	4
21	12	4
22	14	6
23	16	7
24	19	8
25	23	9
26	25	11
27	27	12
28	29	13
29	31	14
30	32	15
31	33	16
32	35	17
33	35	17
34	36	18
35	37	18
36	37	18
37	38	19

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
38	38	19
39	40	19
40	41	19
41	41	19
42	43	20
43	44	20
44	45	20
45	46	20
46	47	21
47	47	21
48	48	21
49	48	22
50	49	22
51	49	22
52	50	22
53	51	23
54	51	23
55	51	23
56	52	23
57	52	23
58	52	23
59	53	23
60	53	24
61	53	24
62	53	24
63	53	24
64	53	24
65	53	24
66	53	24
67	54	24
68	54	24
69	56	24
70	57	24
71	57	24
72	58	24
73	58	24
74	58	24
75	58	24
76	58	24
77	58	24

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
78	58	24
79	58	24
80	59	24
81	59	24
82	59	24
83	59	24
84	60	23
85	62	23
86	64	22
87	65	22
88	67	22
89	72	21
90	74	21

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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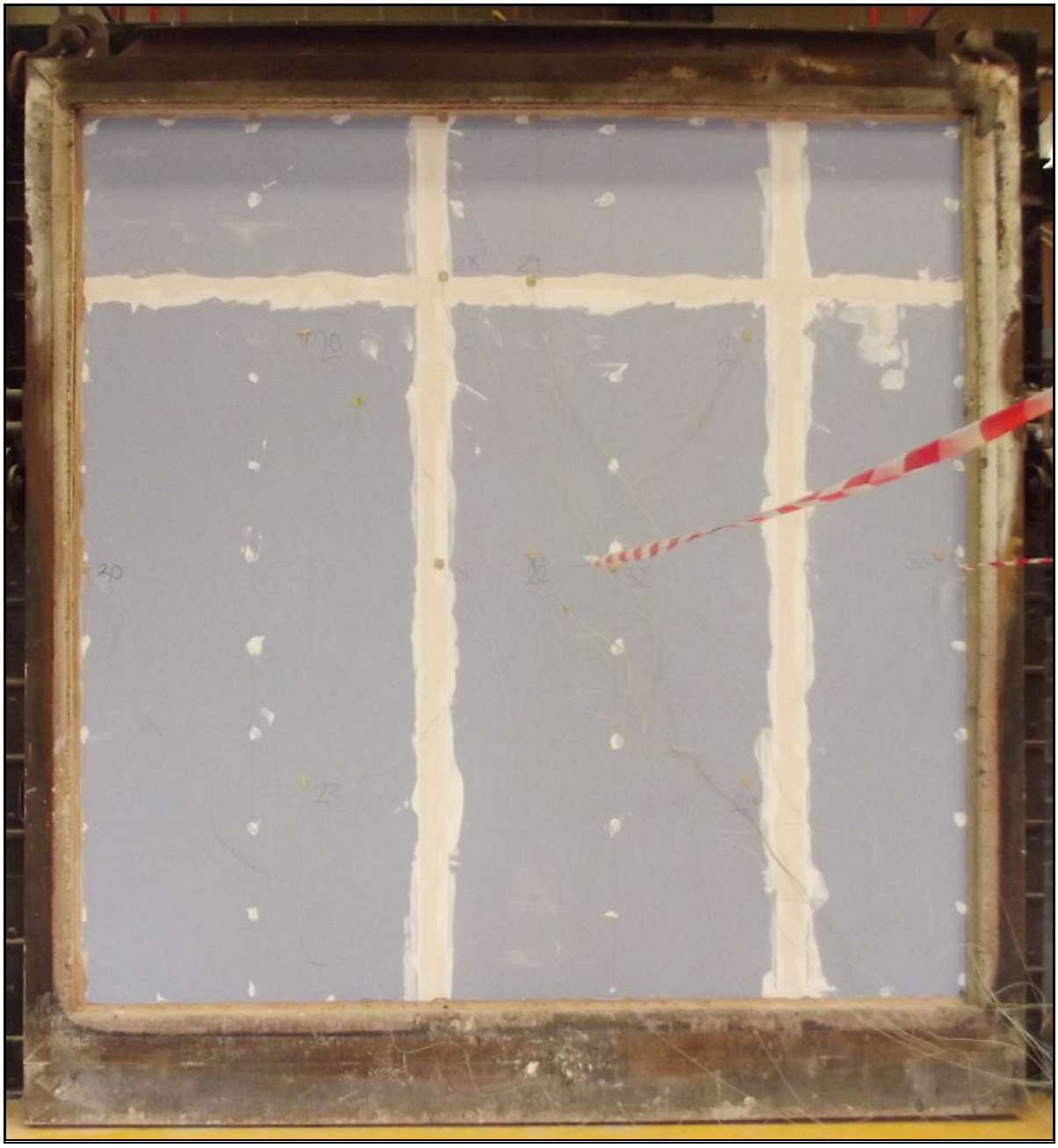
10.2 Unexposed face prior to test



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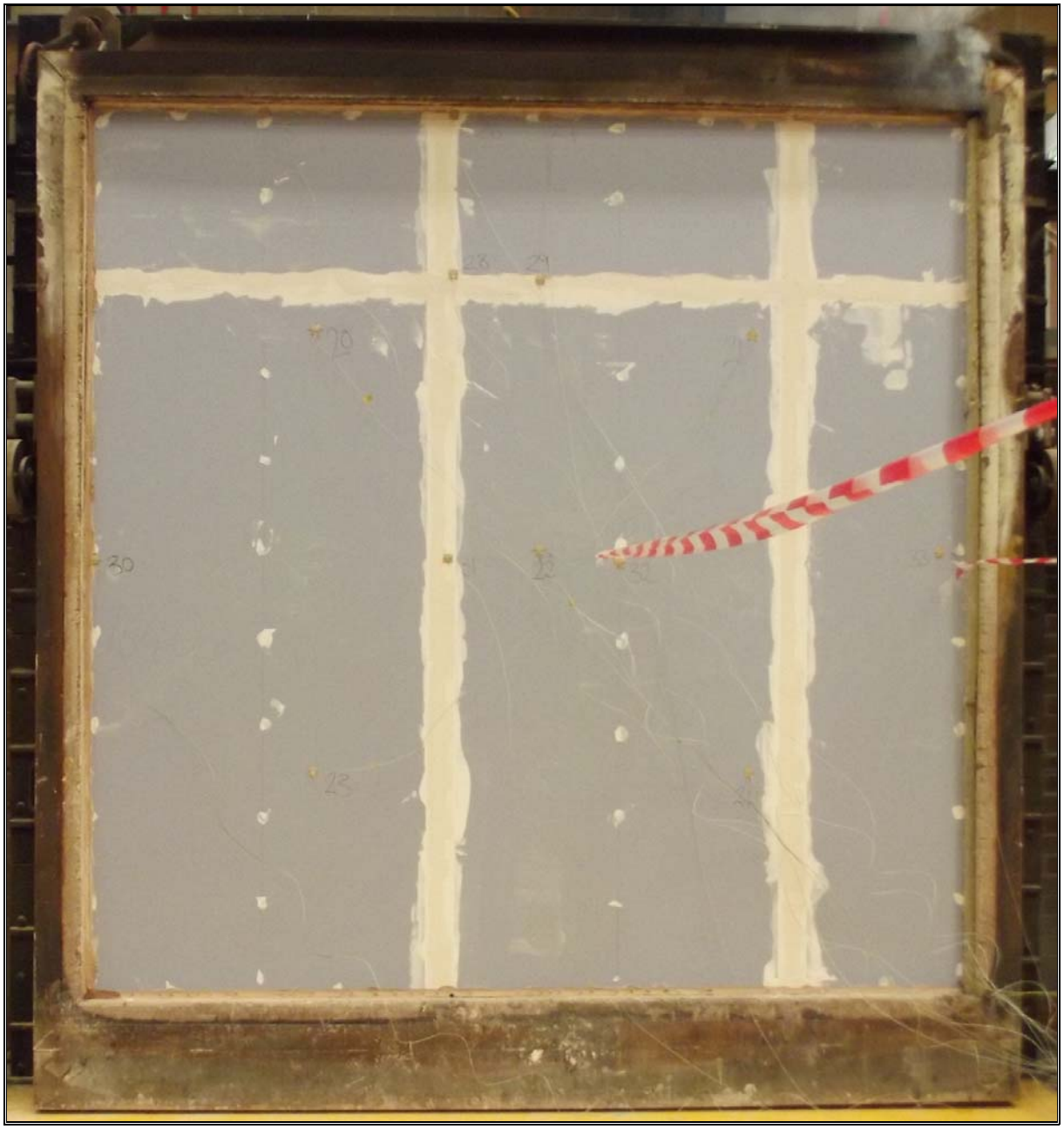
10.3 Unexposed face at 30 minutes



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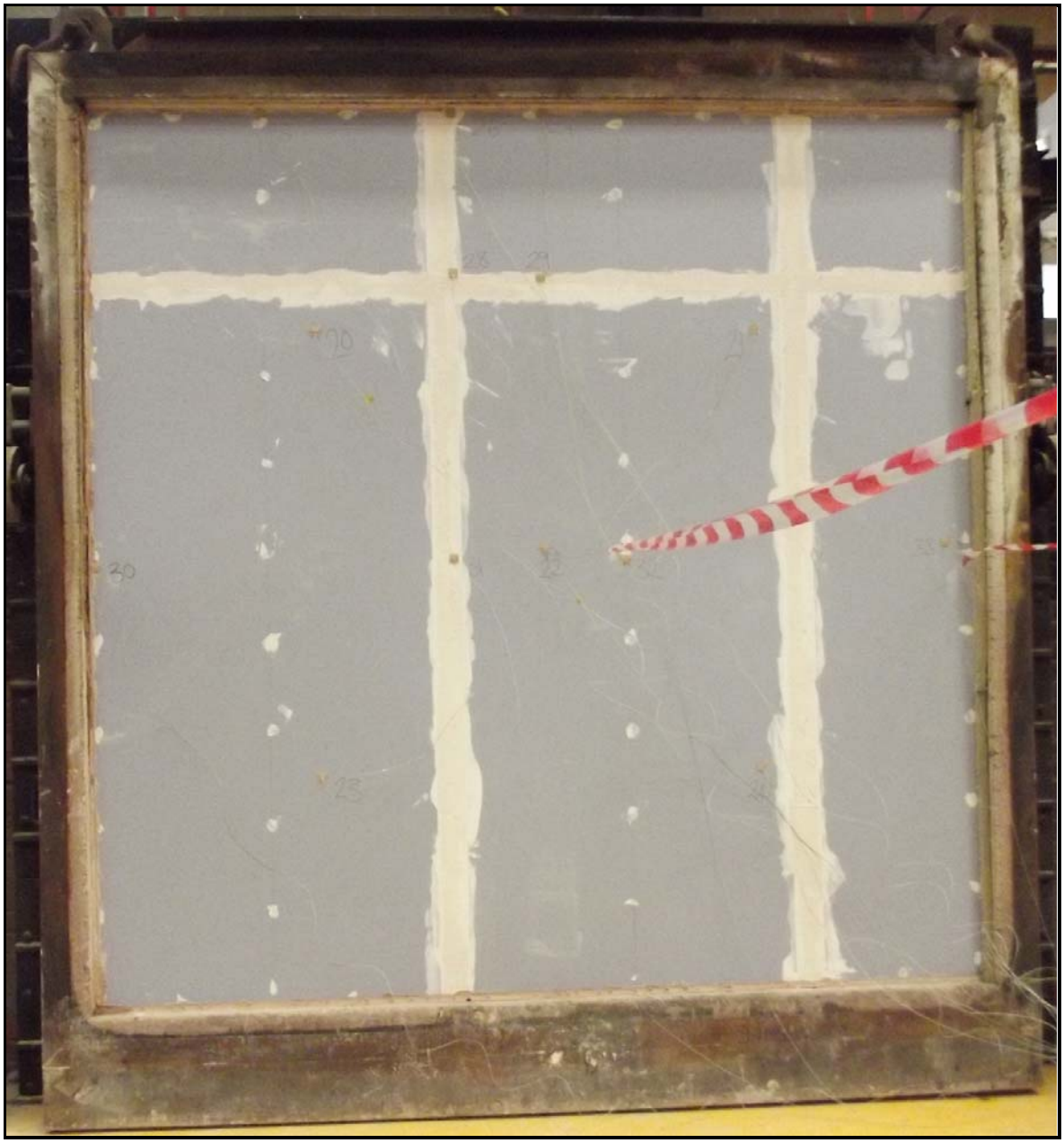
10.4 Unexposed face at 1 hour



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

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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 102mm).

(iii) Increase thickness of component materials (minimum Gypframe stud depth 70mm, 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