The Building Test Centre
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Report Number **BTC 12487F**

FULL SCALE LOADED FIRE RESISTANCE TEST ON A TIMBER JOIST FLOOR PROTECTED BY A DOUBLE LAYER OF 15mm GYPROC SOUNDBLOC MOUNTED ON RB1 GYPFRAME RESILIENT BAR CONDUCTED IN ACCORDANCE WITH BS EN 1365-2: 2000.

Test Date: 19th February 2003

www.btconline.co.uk

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

UKAS TESTING
0296

The Building Test Centre
Fire Acoustics Structures

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FOREWORD

This test report details a full scale fire resistance test on a loaded timber joist floor. The test sponsor was British Gypsum Limited.

The test specimen was installed by the British Gypsum Limited. The construction of the specimen took place between the 14th and 19th February 2003. British Gypsum Limited designed and selected the materials comprising the test specimen.

The test was carried out on the 19th February 2003.

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, construction details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in EN 1365-2 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.

REPORT AUTHORISATION

Report Author	Authorised by
Robert Evans MEng (Hons.), AMIMechE, AIFireE *Technologist*	**Eur Ing. Paul Howard** BSc. (Hons.), CEng., MIOA *Head of Laboratory*

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TEST CONSTRUCTION

The specimen was constructed in a refractory concrete lined steel restraint frame having an opening of 4000mm long x 3000mm wide.

195mm x 38mm C24 grade timber joists were placed, nominally, at 600mm centres, spanning 4000mm length of the test frame. Full-depth noggings were fixed at each end of the joists (within the test aperture) and at mid-span of the specimen with 100mm round nails.

The tops of the joists were covered with a walking surface of 18mm (finished thickness) tongue and groove floor boarding (nominally 115mm wide) which was fixed using 40mm floor brads (2 per board at each joist position).

Gypframe RB1 Resilient Bar was fixed to the underside of the joists, at 450mm centres perpendicular to the joist span and around the perimeter of the floor, using 36mm Gyproc drywall screws.

100mm Isowool 1000 was positioned in the joist cavity.

The underside of the floor was lined with a double layer of 15mm Gyproc SoundBloc, perpendicular to the Resilient Bar. The inner layer was fixed at 200mm centres within the field of the board and at 150mm centres around the ceiling perimeter using 25mm Gyproc drywall screws. The outer layer was fixed at 200mm centres within the field of the board and at 150mm centres around the ceiling perimeter using 42mm Gyproc drywall screws.

All board joints were staggered between layers and all board ends coincided with Gypframe RB1 Resilient Bar in both layers.

All joints were finished using Gyproc Joint Tape and Joint Filler. All screw heads were spotted using Gyproc Joint Filler.

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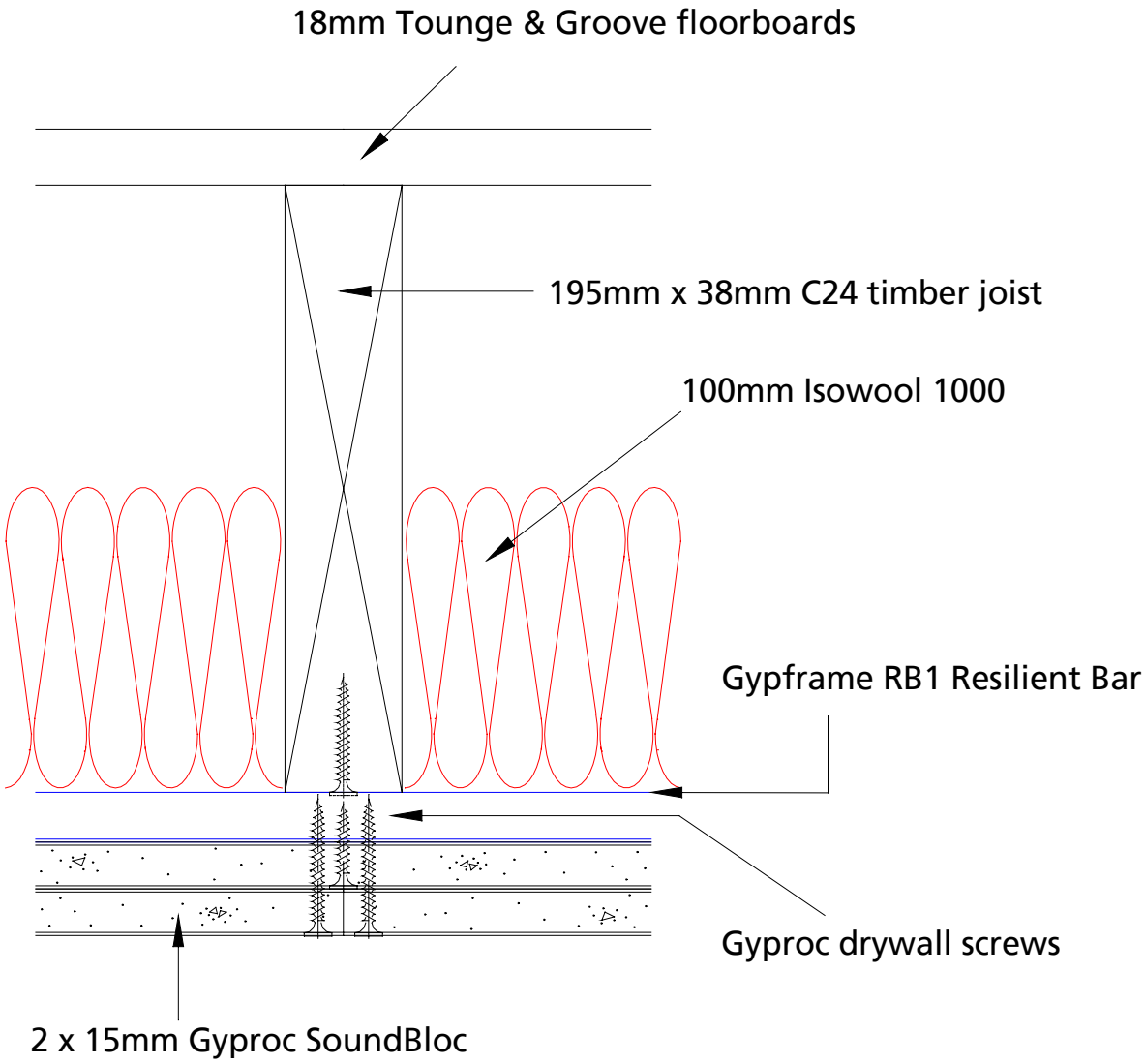

Figure 1. Cross section of floor showing Resilient Bar.

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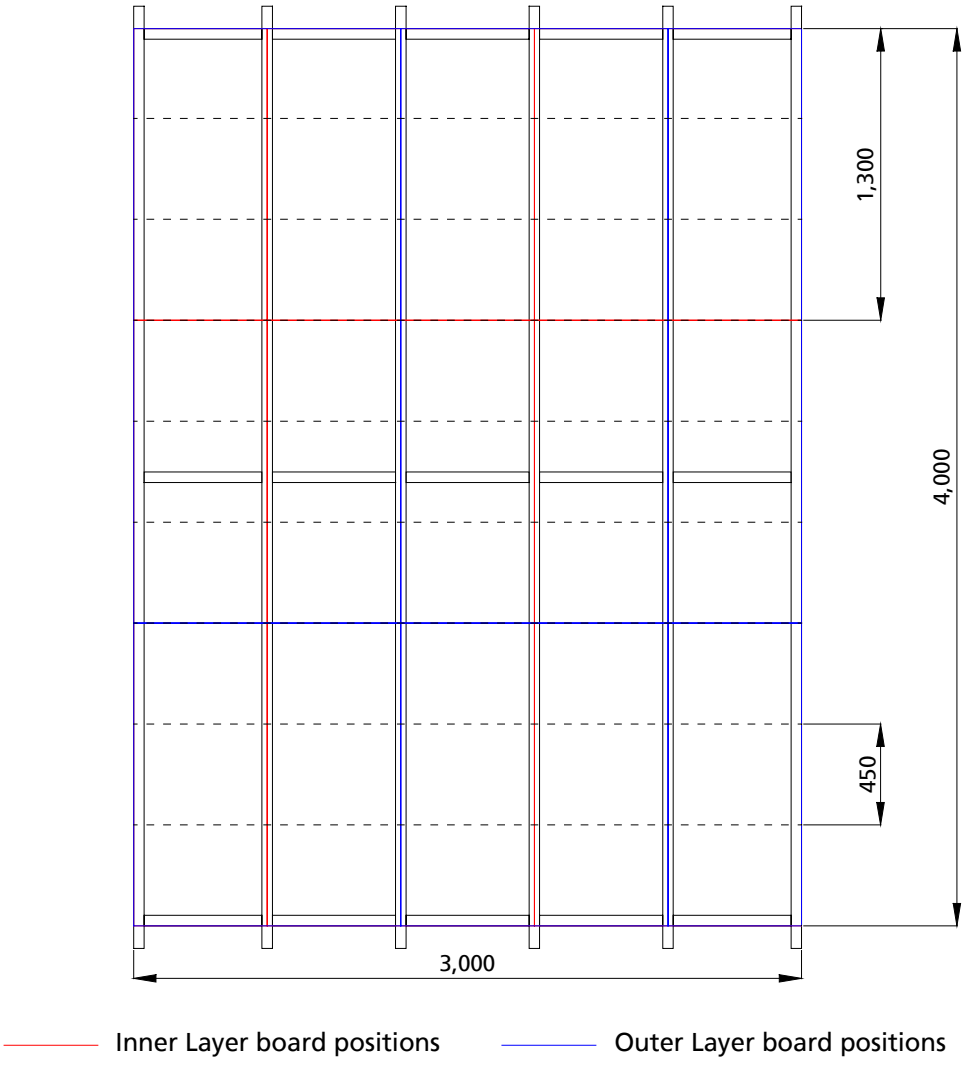

Figure 2. Board and Resilient Bar layout.

NB. Timber joist frame was larger than the test aperture.

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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TEST MATERIALS

Gyproc SoundBloc

Nominally, 3000mm (long) x 1200mm (wide) x 15mm (thick), Gyproc SoundBloc T/E manufactured and supplied by British Gypsum Limited, ex East Leake.

Actual surface density:	12.52kg/m^2.
Actual thickness:	15.03mm.
Board identification numbers:	16 256 2 01:37
Actual moisture content:	0.72%

The surface density was calculated using the actual weight and size of a selection of the boards used in the test specimen. The moisture content of the plasterboard has been established from measurements made using samples dried to constant weight in an oven at 40°C.

Timber Components

Nominally 4210mm (long) x 195mm (deep) x 38mm (wide), softwood joists special structural C24 grade.

Measured density:	471kg/m^3
Measured moisture content:	9.27%

Nominally 115mm (wide) x 18mm (thick) softwood Tongue and Groove flooring.

Actual thickness	18.46mm
Measured surface density:	7.24kg/m^2
Measured moisture content:	10.24%

The moisture content was established from measurements made using samples dried to constant weight in an oven at 40°C.

Timber supplied by Nixon Knowles & Co. Limited.

Insulation

Nominally 100mm thick Isowool 1000 supplied by British Gypsum-Isover Limited.

Measured surface density	1.04kg/m^2
Measured density	10.36kg/m^3

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Metal Components

i) RB1 Gypframe Resilient Bar supplied by British Gypsum Ltd.

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Fasteners

i) 25mm Gyproc drywall screws supplied by British Gypsum Limited.
ii) 36mm Gyproc drywall screws supplied by British Gypsum Limited.
iii) 42mm Gyproc drywall screws supplied by British Gypsum Limited.
iv) 40mm Floor brads.
v) 100mm round nails.

Miscellaneous Components

i) Gyproc Joint Filler supplied by British Gypsum Limited.
ii) Gyproc Paper Tape supplied by British Gypsum Limited.

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TEST PROCEDURE

The test was conducted fully in accordance with BS EN 1365-2: 2000. The asymmetrical specimen was subjected to fire from the underside (plasterboard side) this being the required direction of fire resistance as specified in BS EN 1363-1: 1999.

The test procedure used was EN 1365-2 Issue 1.

The ambient temperature at the commencement of the test was 12°C.

The furnace pressure was set to control at 18 ±2 Pa positive with respect to atmosphere, at the top of the specimen, except during the first 5 minutes of the test.

The allowable tolerances are ±5 Pa from 5 minutes to 10 minutes and ±3 Pa from 10 minutes onwards. It is of the opinion of the laboratory that the variations in the furnace pressure exceeding the tolerances stated in BS EN 1363-1:1999 have not unduly influenced the results of this test. The furnace pressure graph is on page 16.

The test conditions did not meet the full requirements of BS EN 1363-1: 1999 as the test frame stiffness did not fully comply. The test centre is of the opinion that these deviations from the documented method will not unduly effect the result of the test.

A total load of 10.56kN was applied to twenty-four equally distributed loading points to represent 100% of the design load (see figure 7).

TEST RESULTS

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

Loadbearing capacity	**70 minutes**	No failure (test terminated at request of customer).
Integrity	**70 minutes**	No failure (test terminated at request of customer).
Insulation	**68 minutes**	

The test was terminated at 70 minutes.

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LIMITATIONS

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. The laboratory that issued the report 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.

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TEST DATA

Observations

Observers: Unexposed face R Evans and M Fountain
Exposed face J McLavy

Time		*Observations*
hrs	mins	All observations refer to the exposed face unless otherwise stated.
	0	Test started.
	5	The backing paper and jointing material had started to char.
	10	The backing paper and jointing material continued to char.
	15	Board joints not yet exposed.
	20	All board joints had opened to approximately 2-3mm where exposed.
	25	All board joints had opened to approximately 3mm. Boards had started to sag slightly between fixings.
	26	A crack had developed down the full length of the left-hand boards at mid board width.
	30	All board joints had opened to approximately 5-6mm. The crack left-hand boards had opened to approximately 2-3mm.
	35	All board joints had opened to approximately 7-8mm. Boards had sagged further between fixings.
	40	A piece of board, approximately 400mm long x 1200mm wide, fell into the furnace from the near centreboard adjacent to the short-edge board joint.

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Time		*Observations*
hrs	mins	All observations refer to the exposed face unless otherwise stated.
	43	Further first layer board, approximately 900mm wide x 300mm long, fell into the furnace from the full left-hand board adjacent to the short-edge board joint. Inner layer board joints had opened to 2-3mm where exposed.
	45	Further first layer board, approximately 900mm wide x 400mm long, fell into the furnace from the full left-hand board adjacent to the board fall noted at 43 minutes. Hairline cracks were visible in the exposed inner layer.
	46	Further first layer board, approximately 900mm wide x 300mm long, fell into the furnace from the near left-hand board adjacent to the short-edge board joint.
	48	Inner layer board joints had opened to approximately 3-4mm where exposed.
	49	Further first layer board, approximately 1200mm wide x 600mm long, fell into the furnace from the near centreboard adjacent to the board fall noted at 40 minutes.
	51	Further first layer board, approximately 1200mm wide x 400mm long, fell into the furnace from the full centreboard adjacent to the short-edge board joint.
	53	The right-hand board joint in the second layer had sagged between fixings where exposed.
	54	A section of board, approximately 300mm x 300mm, fell into the furnace from the second layer centreboard, approximately 750mm from the viewing platform. Flaming into the furnace was visible.

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Time		*Observations* All observations refer to the exposed face unless otherwise stated.
hrs	mins	
	55	Further first layer board, approximately 1200mm wide x 400mm long, fell from the full centreboard adjacent to the board fall noted at 51 minutes. *Unexposed face* Smoke issued from floorboard joints.
	57	Further first layer board, approximately 1200mm wide x 300mm long, fell from the centreboard adjacent to the board fall noted at 55 minutes.
	59	Increased flaming into the furnace was visible. Further second layer board, approximately 750mm x 300mm, fell into the furnace from the full centreboard approximately 750mm from the viewing platform.
1	00	Further second layer board, approximately 400mm x 300mm, fell into the furnace from the full centreboard approximately 750mm from the viewing platform.
1	01	Visibility in the furnace had become poor.
1	03	*Unexposed face* A glow was visible approximately 1200mm away from the viewing platform and at 1000mm from the right-hand side of the furnace (when viewed from the platform).
1	04	*Unexposed face* The glow noted at 1 hour 03 minutes had increased along floorboard joint.
1	05	*Unexposed face* The cotton pad failed to ignite or glow when placed over the glow noted at 1 hour 04 minutes.

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Time		*Observations*
hrs	mins	All observations refer to the exposed face unless otherwise stated.
1	07	*Unexposed face* The cotton pad failed to ignite or glow when placed over the glow noted at 1 hour 04 minutes Glows were visible from board joints adjacent to the area noted at 1 hour 03 minutes.
1	10	**TEST TERMINATED** at the request of the customer.

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Furnace Temperature Graph

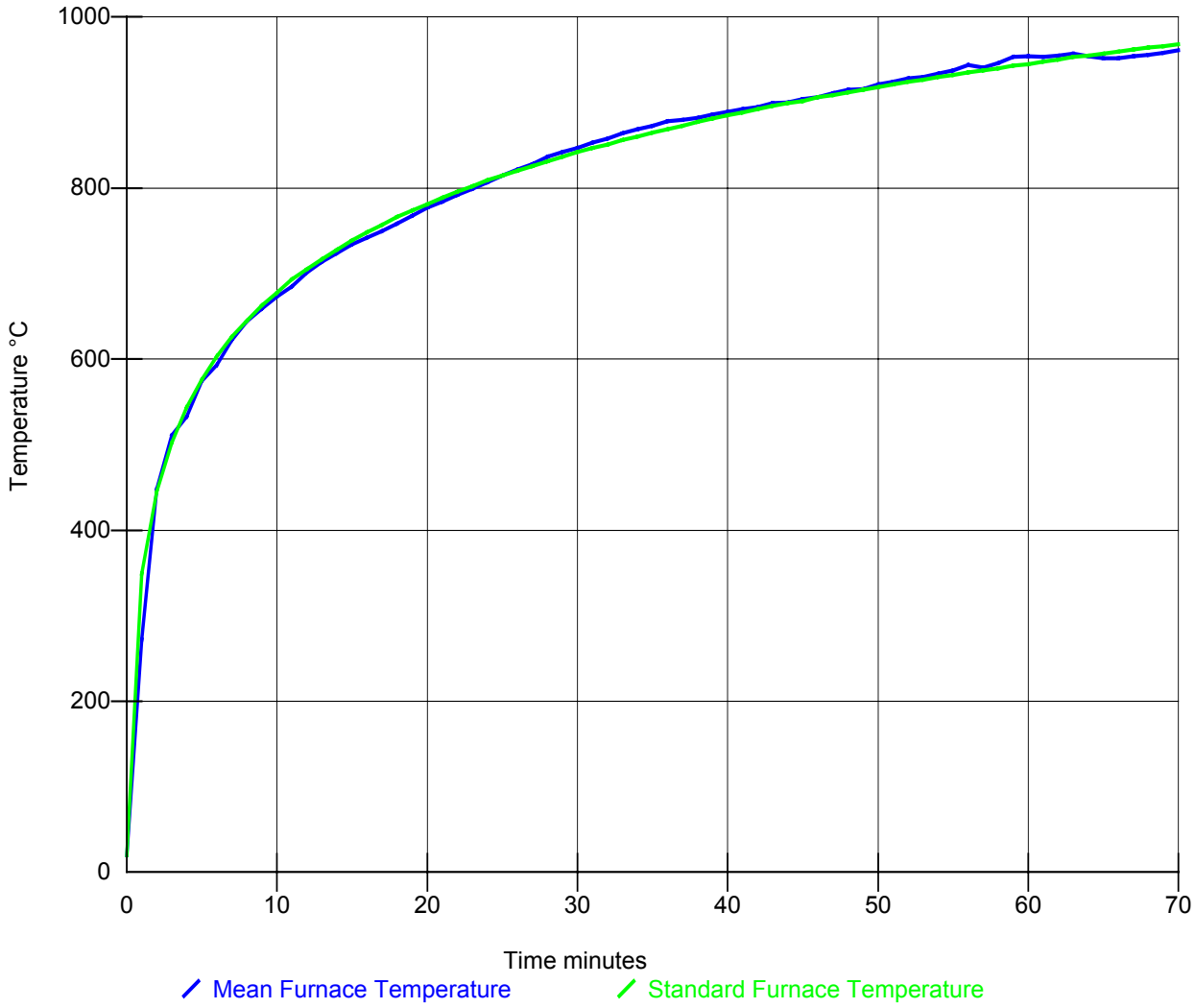

Figure 3. Furnace temperature graph.

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Furnace Pressure Graph

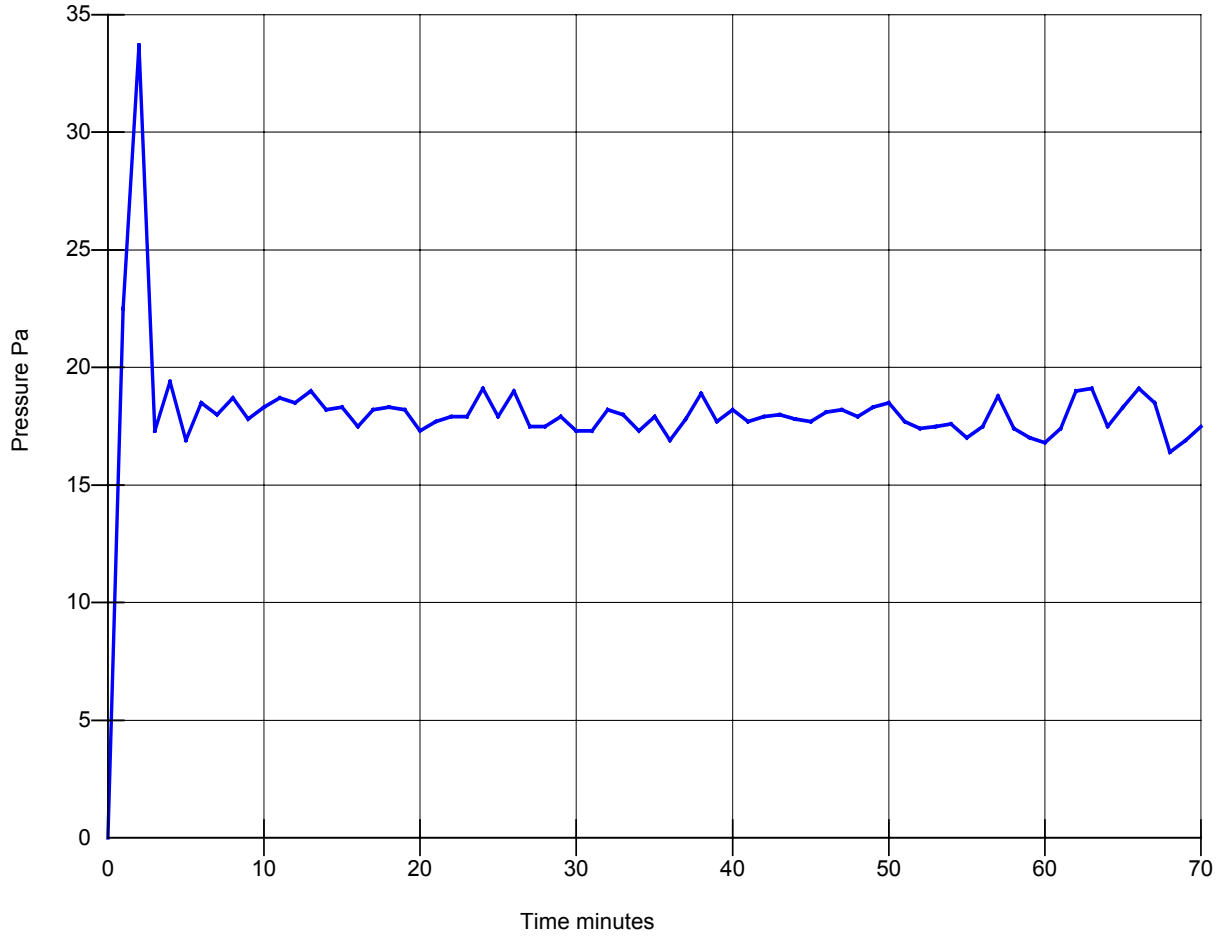

Figure 4. Furnace pressure graph.

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Unexposed Face Temperature Graph

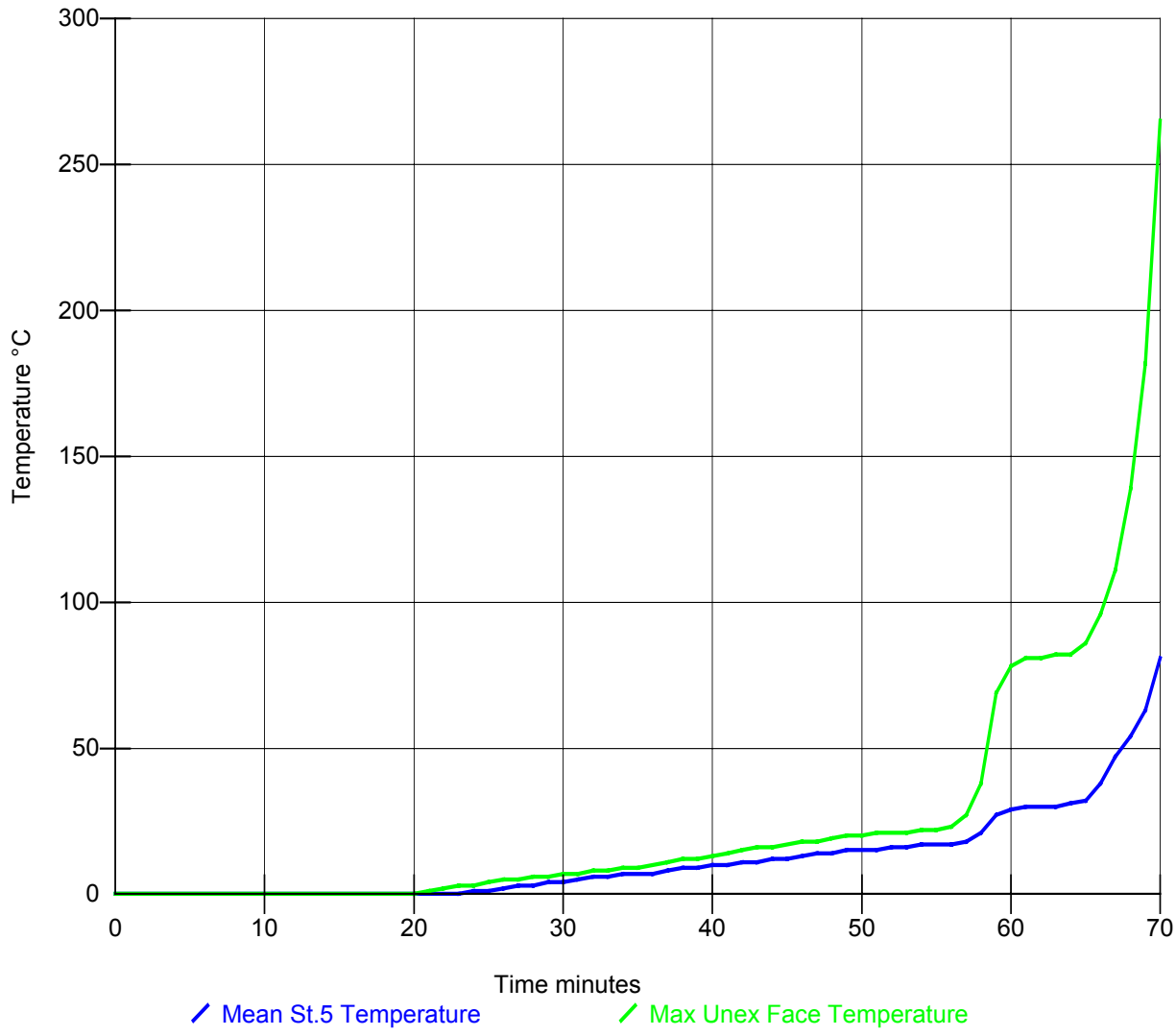

Figure 5. Unexposed face temperature graphs.

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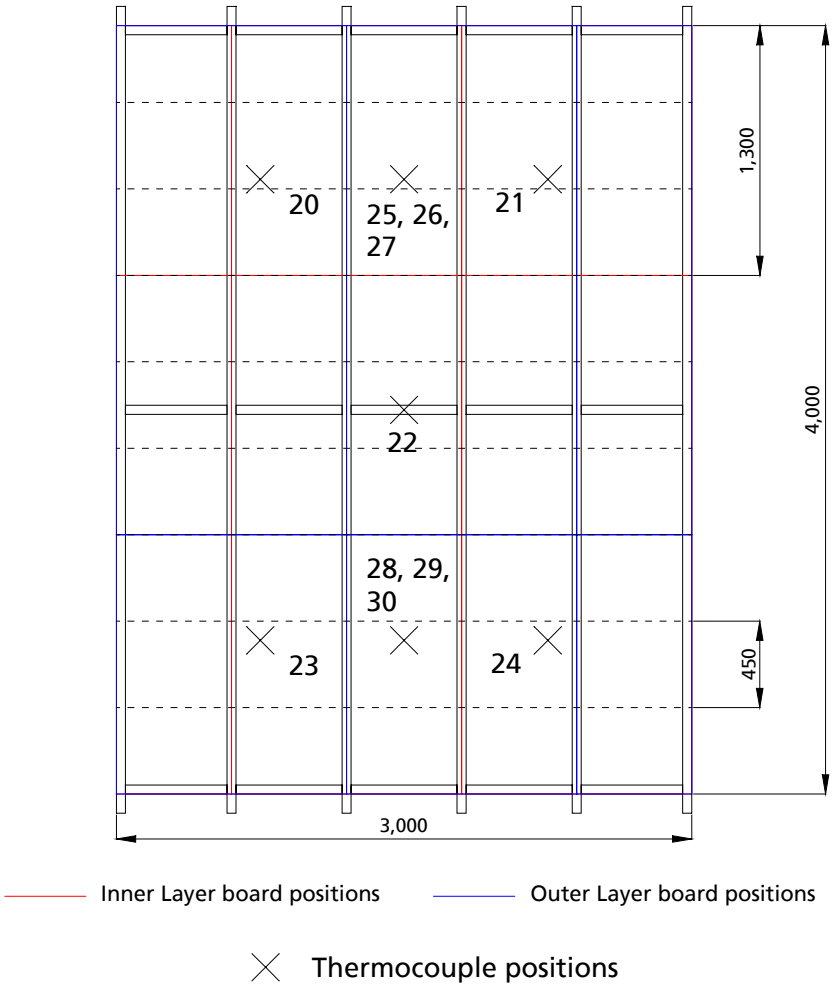
Unexposed Face Thermocouple Layout



Thermocouple No.25 & No.28 is on the underside of the walking surface.
Thermocouple No.26 & No.29 is on the centre-most joint.
Thermocouple No.27 & No. 30 is in the cavity.

Figure 6. Unexposed face thermocouple layout.

NB. Joist framework was larger than the test aperture.

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Unexposed Face Standard Five Thermocouple Data

Time (mins)	Temperature Rise (°C)				
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24
0	0	0	0	0	0
1	0	0	-1	-1	0
2	0	0	-1	-2	0
3	0	0	-1	-2	0
4	0	0	-1	-2	0
5	0	0	-1	-2	0
6	0	0	-1	-2	0
7	0	0	-1	-2	0
8	0	0	-1	-2	0
9	0	-1	-1	-2	0
10	-1	-1	-1	-3	0
11	0	-1	-1	-3	0
12	0	-1	-1	-3	0
13	0	0	-1	-3	0
14	0	0	-1	-3	0
15	0	0	-1	-2	1
16	1	0	-1	-2	1
17	1	0	-1	-2	1
18	2	1	-1	-1	2
19	3	1	0	-1	2
20	3	2	0	0	3
21	4	2	0	1	3
22	5	3	1	1	4
23	6	4	1	2	5
24	6	5	1	3	5
25	7	5	2	3	6
26	8	6	2	4	7
27	8	7	3	5	7
28	9	8	3	5	8
29	9	8	3	6	9
30	10	9	4	7	9
31	10	9	4	7	10
32	11	10	4	8	11
33	11	11	5	8	11
34	12	11	5	9	12
35	12	12	6	9	12

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Time (mins)	Temperature Rise (°C)				
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24
36	12	13	6	9	13
37	13	14	6	10	14
38	13	15	7	10	15
39	14	15	7	11	15
40	14	16	8	11	16
41	15	17	8	12	17
42	15	18	8	12	17
43	16	18	9	12	18
44	16	19	9	13	19
45	17	20	10	13	19
46	17	21	10	13	20
47	18	21	11	14	21
48	19	22	11	14	21
49	19	23	12	14	21
50	20	23	12	14	22
51	21	24	13	14	22
52	21	24	13	14	23
53	22	24	13	14	23
54	23	25	14	15	24
55	23	25	14	15	25
56	23	25	14	15	26
57	23	25	15	15	30
58	24	25	15	16	41
59	24	26	15	16	72
60	24	25	15	17	81
61	24	26	15	17	84
62	24	25	15	18	85
63	24	25	16	19	85
64	24	25	16	21	85
65	24	26	16	25	89
66	24	26	16	43	99
67	25	26	16	69	114
68	25	26	17	77	142
69	25	27	17	79	186
70	25	28	18	81	267

See figure 6 for the location of the thermocouples.
Values highlighted in red indicate time and position of insulation failure.

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Internal Temperature Data

Time (mins)	Actual Temperature (°C)		
	Underside Walking Thermocouple No. 25	Joist Thermocouple No. 26	Cavity Thermocouple No. 27
0	16	16	17
1	16	16	17
2	16	16	17
3	16	16	17
4	16	16	17
5	16	18	17
6	16	23	18
7	16	30	22
8	16	39	29
9	17	56	38
10	18	65	47
11	20	73	53
12	22	79	58
13	26	84	62
14	31	86	65
15	37	86	67
16	46	87	69
17	55	88	71
18	61	88	73
19	65	88	74
20	68	87	76
21	70	87	76
22	71	87	77
23	73	87	78
24	74	88	79
25	76	88	80
26	77	88	80
27	78	88	81
28	79	89	82
29	80	89	83
30	81	90	84
31	82	90	85
32	83	90	85
33	83	90	86
34	84	91	87
35	84	91	87

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Time (mins)	Actual Temperature (°C)		
	Underside Walking Thermocouple No. 25	Joist Thermocouple No. 26	Cavity Thermocouple No. 27
36	85	91	87
37	85	92	88
38	86	92	89
39	86	93	89
40	87	93	90
41	88	93	91
42	88	94	91
43	89	94	91
44	89	94	92
45	90	94	91
46	90	94	92
47	90	94	92
48	90	93	91
49	90	93	91
50	89	93	91
51	89	92	90
52	88	92	90
53	88	91	89
54	88	91	89
55	87	90	87
56	86	89	86
57	84	89	86
58	83	88	85
59	82	87	84
60	81	85	83
61	80	87	94
62	79	90	114
63	78	94	135
64	79	98	157
65	82	102	177
66	84	111	198
67	87	199	235
68	90	314	242
69	93	351	183
70	96	330	189

See figure 6 for the location of the thermocouples.

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Internal Temperature Data

Time (mins)	Actual Temperature (°C)		
	Underside Walking Thermocouple No. 28	Joist Thermocouple No. 29	Cavity Thermocouple No. 30
0	18	13	17
1	18	13	17
2	18	13	17
3	18	13	17
4	18	13	17
5	18	13	18
6	18	14	18
7	18	14	19
8	18	14	23
9	18	15	30
10	18	16	38
11	18	18	47
12	19	20	53
13	20	22	58
14	21	25	62
15	22	27	64
16	24	28	66
17	25	30	67
18	27	31	69
19	29	33	69
20	32	34	71
21	34	35	72
22	35	37	73
23	37	38	75
24	38	40	77
25	40	41	78
26	41	43	80
27	43	45	81
28	46	46	82
29	49	48	83
30	52	50	83
31	52	52	84
32	53	54	85
33	55	55	85
34	57	57	86
35	59	59	87

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Time (mins)	Actual Temperature (°C)		
	Underside Walking Thermocouple No. 28	Joist Thermocouple No. 29	Cavity Thermocouple No. 30
36	61	61	87
37	63	62	86
38	66	64	86
39	68	65	86
40	70	66	88
41	73	68	90
42	76	71	92
43	79	73	93
44	80	75	93
45	81	77	90
46	81	78	88
47	80	77	86
48	79	77	140
49	78	77	199
50	77	78	251
51	78	79	292
52	79	79	327
53	80	81	359
54	82	83	389
55	83	84	409
56	86	87	421
57	88	89	434
58	90	90	440
59	93	92	458
60	97	96	569
61	105	100	328
62	165	101	430
63	445	222	761
64	630	789	827
65	762	861	868
66	816	877	881
67	846	893	894
68	867	908	910
69	882	918	919
70	894	929	932

See figure 6 for the location of the thermocouples.

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Specimen Deflection

Time (mins)	Deflection (mm)
0	0
1	1.2
2	0.8
3	1
4	1.1
5	0.9
6	0.8
7	0.8
8	1
9	1.2
10	1.4
11	1.7
12	1.9
13	2.3
14	2.5
15	2.7
16	3
17	3.3
18	3.5
19	3.8
20	4
21	4.3
22	4.6
23	4.8
24	5
25	5.4
26	5.9
27	5.9
28	6.3
29	6.6
30	6.8
31	7.2
32	7.4
33	7.7
34	8.1
35	8.3
36	8.7

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Time (mins)	Deflection (mm)
37	9
38	9.3
39	9.7
40	9.8
41	10
42	10.4
43	10.6
44	10.9
45	11.2
46	11.8
47	11.6
48	11.9
49	12.3
50	12.6
51	13
52	13.3
53	13.7
54	14
55	14.6
56	15
57	15.5
58	16.1
59	16.8
60	17.7
61	18.7
62	20
63	21.6
64	23.7
65	27
66	32.7
67	40.6
68	52.7
69	80.7
70	133.5

The deflection was recorded on the walking surface at the approximate centre of the specimen.

Positive readings indicate deflection into the furnace.

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PHOTOGRAPHS

Photograph 1. Exposed face prior to test.

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LOADING CALCULATIONS

The dead load was applied by dividing the floor are of 4m x 3m into 6 x 4 matrix of equal rectangles creating 24 uniformly distributed point loads, the load being applied to each geometric centre of each rectangle. This takes no account of joist positions. The test load was calculated based on the joist carrying the heaviest load being subjected to the maximum allowable stress, in accordance with BS 5268: Part 2: 1996.
NOTE: Final loading value was calculated using unrounded intermediate results.

1. Weights and densities of materials used in construction

Joist data:	Actual joist breadth, b	=	38	mm
	Actual joist depth, d	=	195	mm
	Nominal joist spacing, s	=	600	mm
	Clear span, L	=	4000	mm
	Rows of load points	=	4	
	Total length	=	4200	mm
	Weight	=	14.7	kg
	Density, ρ	=	471.2	kg/m^3
	Weight per unit length	=	3.50	kg/m
Walking Surface:	Weight per unit area	=	7.24	kg/m^2
Ceiling:	Weight per unit area	=	25.04	kg/m^2

2. Joist reactions

	Joist No. and distances between load points and joists (mm)							
Load points	1	2	3	4	5	6	7	8
First left	0	0	600	600	600	600		
Second left	0	0	0	0	0	0		
First right	600	600	600	600	0	0		
Second right	0	0	0	0	0	0		
TOTAL =	0	0.5	1.0	1.0	0.5	0		

Max. joist load = 1.00 x P where P is point load

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3. Bending calculations

Structural Use of Timber, BS 5268: Part 2: 1996, was used to obtain modification factors and timber grade bending stress.

Grade bending stress, $\sigma_{m,g}$ (Table 7) = 7.5 N/mm^2

Load duration, K_3 (Table 14) = 1
Depth, K_7 (clause 2.10.6) = 1.049
Load Sharing, K_8 (clause 2.9) = 1.1

Permissible bending stress, $\sigma_{m,adm}$ = $(\sigma_{m,g}) \times K_7 \times K_8$

= 8.650 N/mm^2

Permissible applied bending stress, $\sigma_{m,a}$ = $(\sigma_{m,adm})$

= 8.650×10^3 kN/m^2

Section elastic modulus for joists, Z_x = $\frac{b \times d^2}{6}$

= 0.241×10^{-3} m^3

Maximum bending moment, M_0, to be induced in joists:

M_0 = $(\sigma_{m,a}) \times Z_x$

= 2.083 kNm

Required loading, W, to produce maximum bending moment, M_0:
For uniformly distributed load (U.D.L) of W kN/m

M_0 = $\frac{W \times L^2}{8}$

Therefore, W = $\frac{8 \times M_0}{L^2}$

= 1.041 kN/m
= 1.736 kN/m^2

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4. Calculation of self loading

Self weights per 600mm bay (joist centres) per metre run.

Joists:	3.5 x 1 x 9.81	=	34.34 N/m
Walking surface:	7.24 x 0.6 x 9.81	=	42.61 N/m
Ceiling:	25.04 x 0.6 x 9.81	=	147.4 N/m
Total		=	224.3 N/m
		=	0.224 kN/m

5. Applied load

Applied loading required = Req'd loading – self loading

= 1.041 – 0.224

= 0.817 kN/m

Considering the position of the 4 rows of point loads and the resulting joist reactions, the worst affected joist, from section 2, will carry a load 1.0 x P.

Hence, applied load required = 1.0 x P

$$P = \frac{0.817}{1.0}$$

= 0.82 kN/m

and, 4P = 3.28 kN/m

Total floor load = 4P x clear span

= 13.12 kN

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6. Deflection check

Since a load sharing system is assumed, E_{mean} and G_{mean} will be assumed from table 9 of BS 5268: Part 2: 1996 as follows:

Modulus of Elasticity, E_{mean} = 10800 N/mm^2

Modulus of Rigidity, G_{mean} = $\frac{10800}{16}$

= 675 N/mm^2

Moment of inertia, I = $\frac{b \times d^3}{12}$

= $23.5 \times 10^6 mm^4$

Bending defection = $\frac{5 \times W \times L^4}{384 \times E \times I}$

= 13.69 mm

Shear deflection = $\frac{K_{form} \times M_0}{A \times G_{mean}}$

(Where K_{form} = 1.2 & A = joist section area)

= 0.500 mm

Total deflection = 14.19 mm

Permissible deflection = 0.003 x clear span

= 12.0 mm

(BS 5268: Part 2: 1996, clause 2.10.7)

Permissible deflection 12.0 mm < Calculated total deflection 14.19 mm

Calculated total deflection ABOVE permissible deflection – SEE LOADING CORRECTION.

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7. Bearing compression check

From Table 7 of BS 5268: Part 2: 1996, for material grade C24:

Grade compression stress $\sigma(_{c,a,tra})$	=	2.4 N/mm^2
Load on most highly stressed joist	=	1.00 P + self weight
	=	1.044 kN/m
	=	4.386 kN (for effective length)
Total bearing area	=	b x d x 2
	=	14820 mm^2
Actual stress at bearing	=	Max. Joist load / Bearing area
	=	0.3 N/mm^2

Permissible comp. Stress 2.4 > Actual bearing stress 0.3

8. Corrected applied load for permissible deflection excess

Corrected required loading	=	Permissible defln / Calculated defln x Req'd loading
	=	0.881 kN/m
	=	1.468 kN/m^2
Applied loading required	=	Required loading – self loading
	=	0.881 – 0.224
	=	0.656 kN/m

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Considering the position of the 4 rows of point loads and the resulting joist reactions, the worst affected joist, from section 2, will carry a load of 1.00 x P.

Hence, Applied load required = 1.00 x P

$$P = \frac{0.656}{1.0}$$

= 0.66 kN/m

and 4P = 2.64 kN/m

Total floor load = 4P x clear span

= **10.56 kN**

$$\text{Total dead weight} = \frac{10.56 \times 10^3}{9.81}$$

= 1076 kg

$$\text{Therefore, total dead weight per foot} = \frac{1076}{6}$$

= **179.4 kg**

The accuracy of the individual dead weights used in the test were within the tolerance stated in BS EN 1363-1: 1999.

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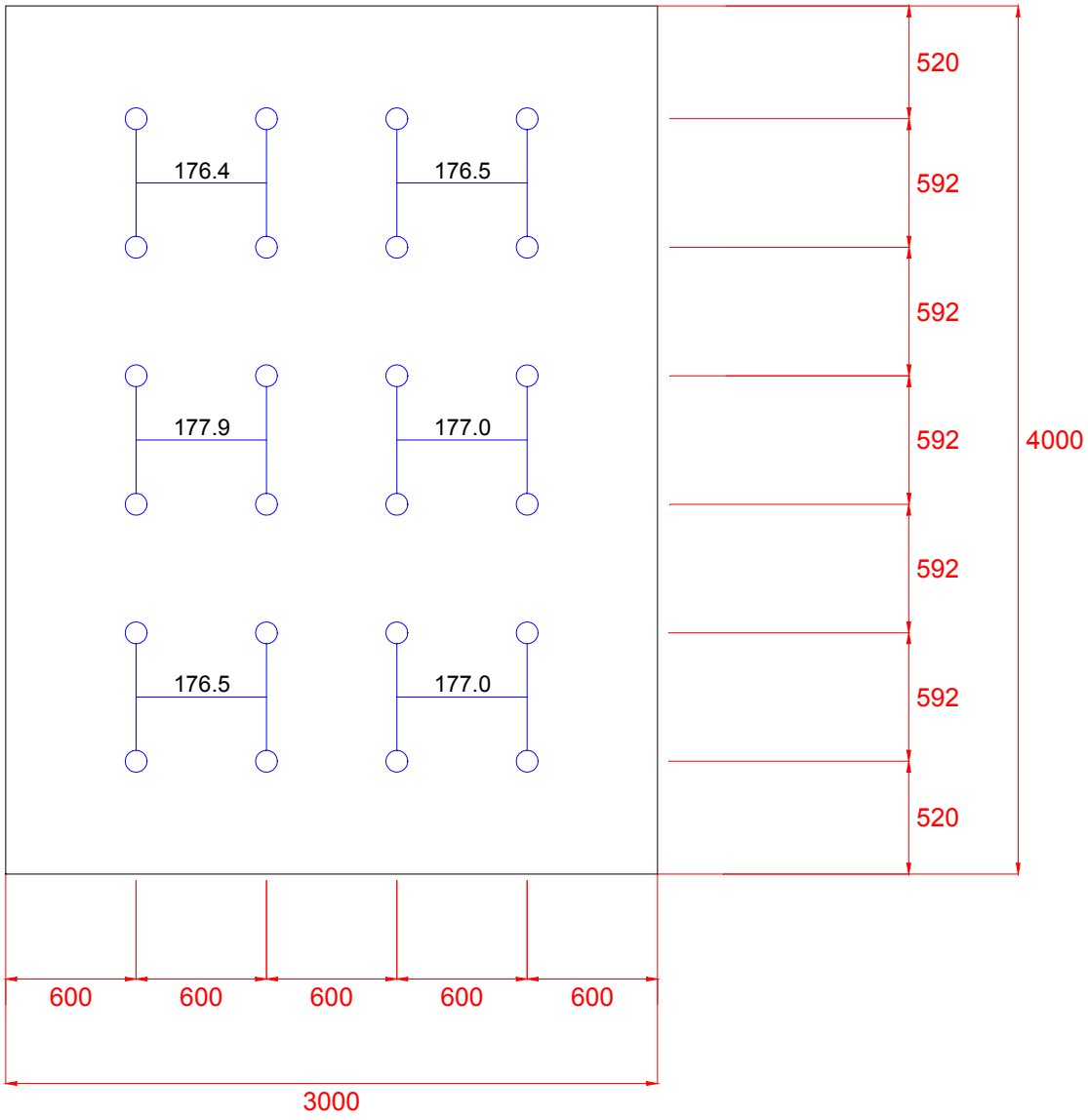

Figure 7. Layout of the actual dead load weights.

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FIELD OF DIRECT APPLICATION

The test results are directly applicable to a similar untested floor construction provided the following is true:

i) With respect to the structural member:

- The maximum moments and shear forces, which when calculated on the same basis as the test load, shall not be greater than those tested.

ii) With respect to the ceiling system:

- The size of panels of the ceiling lining shall not be changed.
- The total area occupied by fixtures and fittings relative to the area of the ceiling lining is not increased and the maximum tested opening in the lining is not exceeded.

iii) With respect to the cavity:

- The height of the cavity or cavities is equal or greater than the height tested.
- No combustible or insulating material is added to the cavity unless the same amount (fire load) of combustible or insulating material was included in the test specimen.