

Title:

Fire Resistance Test
In Accordance With
BS EN 1365-2: 2014,
On A Loadbearing
Timber Floor
Construction Protected
By A Plasterboard
Ceiling Incorporating
Nine Down Lights

Date of Test:

2nd November 2019

Issue 1:

4th January 2020

WF Report No.

419718



Prepared for:

Ansell Electrical
Products Ltd

Unit 6B
Stonecross Ind. Park
Yew Tree Way
Warrington
WA3 3JD



0249

Test Specimen

Summary of Tested Specimen

The test assembly had overall nominal dimensions of 4400 mm long by 2960 mm wide by 272 mm deep. It comprised 'James Jones 220mm B+' engineered timber I joists at 450 mm centres, spanning the 4m length of the furnace. The upper surface of the floor comprised nominally 22 mm thick tongue and grooved chipboard flooring. The floor assembly was protected on its underside by a direct fixed ceiling, formed from two layers of 15 mm thick plasterboard referenced 'Gyproc Fireline'.

The ceiling incorporated nine down lighter light fittings, consisting of six model types referenced as follows:

Downlight Test Reference	Model Reference
A (1 & 2)	APRILEDP/G/MW
B1	APRILEDP/CW
B2	APRILEDP/WW
C (1 & 2)	APRILEDP/CCT
D	AEFRG/MW
E	AEFRD/MW
F	AEFRD/IP65/MW

The floor supported a uniformly distributed load of 152kg/m², the equivalent of 1.5kN/m². This load was provided by the test sponsor as to represent the expected working load for the timber floor construction in practice.

Detailed drawings of the test specimen(s) and a comprehensive description of the test construction based on a detailed survey of the specimen(s) 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

Loadbearing Capacity

The limiting deflection and the limiting rate of deflection for the specimen, as specified by the Standard, are calculated as:

(d) Depth of structural section, mm	220
(L) Length of clear span, mm	4243
Limiting deflection, mm	204.58
Limiting rate of deflection, mm/sec	9.09

The allowable rate of deflection criteria is not applicable for the first 10 minutes of the test. This criterion was satisfied for 99 minutes, after which the maximum deflection was exceeded.

Integrity

It is required that the specimen retains its separating function, without:

- causing ignition of a cotton pad when applied
- permitting the penetration of a gap gauge as specified in BS EN 1363-1: 2012
- sustained flaming on the unexposed surface
- subsequent failure of loadbearing capacity

These requirements were satisfied for the periods shown below:

Sustained flaming

99 minutes

Gap gauge

99 minutes No failure*

Cotton pad

99 minutes

Insulation

It is required that the mean temperature rise of the unexposed surface shall not be greater than 140°C and that the maximum temperature rise shall not be greater than 180°C. Insulation failure also occurs simultaneously with integrity failure.

These requirements were satisfied for the period shown below:

Specimen

99 minutes No failure*

*Test was discontinued after a period of 100 minutes.

Date of Test

2nd November 2019

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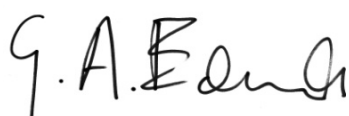
Signatories



Responsible Officer

J. King*

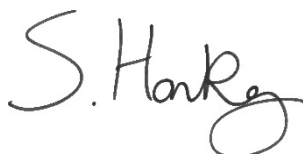
Technical Officer



Approved

G. Edmonds*

Senior Technical Officer



Head of Department

S. Hankey*

Business Unit Head – Fire Resistance

* For and on behalf of **Warringtonfire**.Report Issued: 4th January 2020

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Revision History

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

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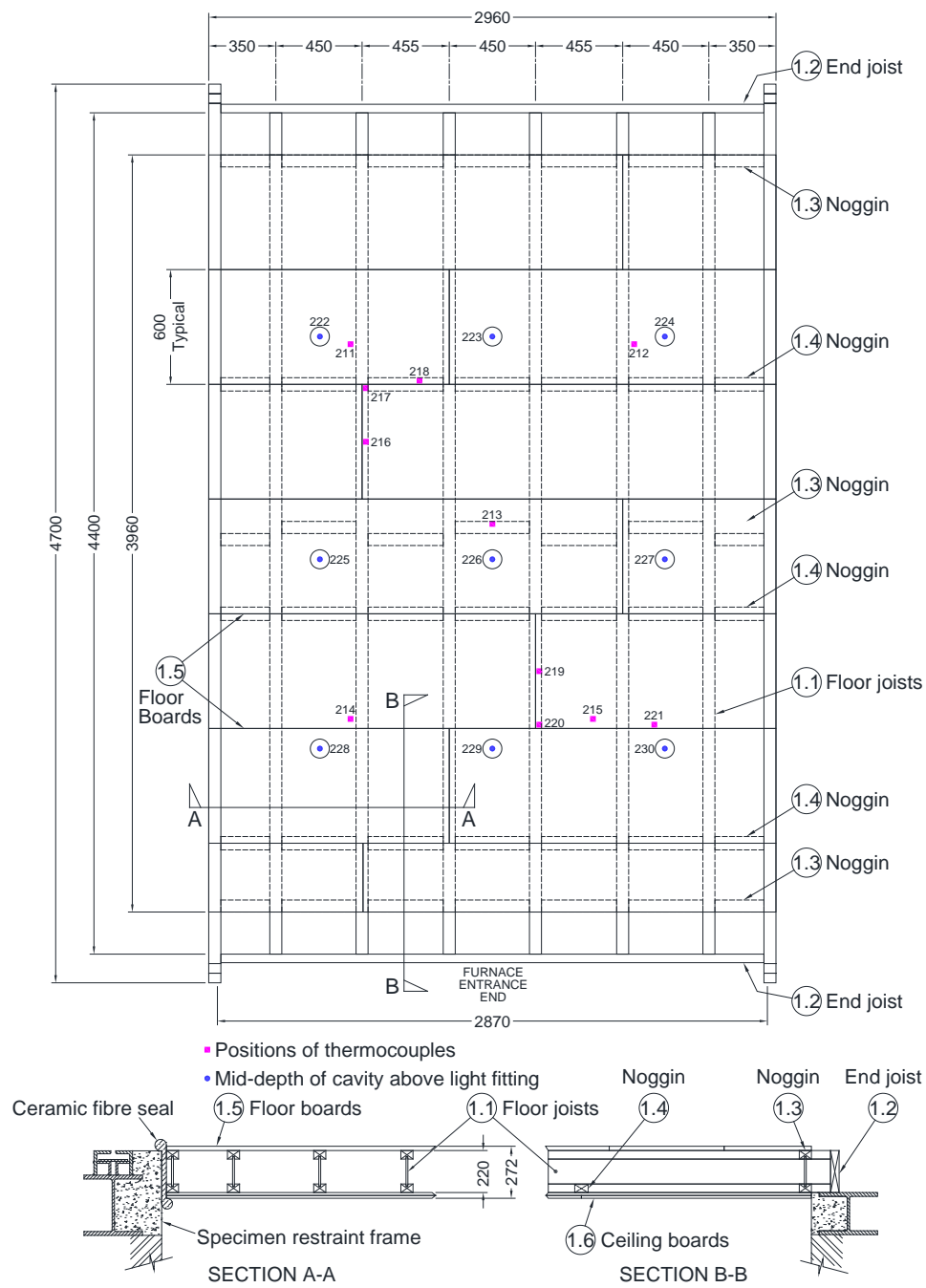
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Test Conditions

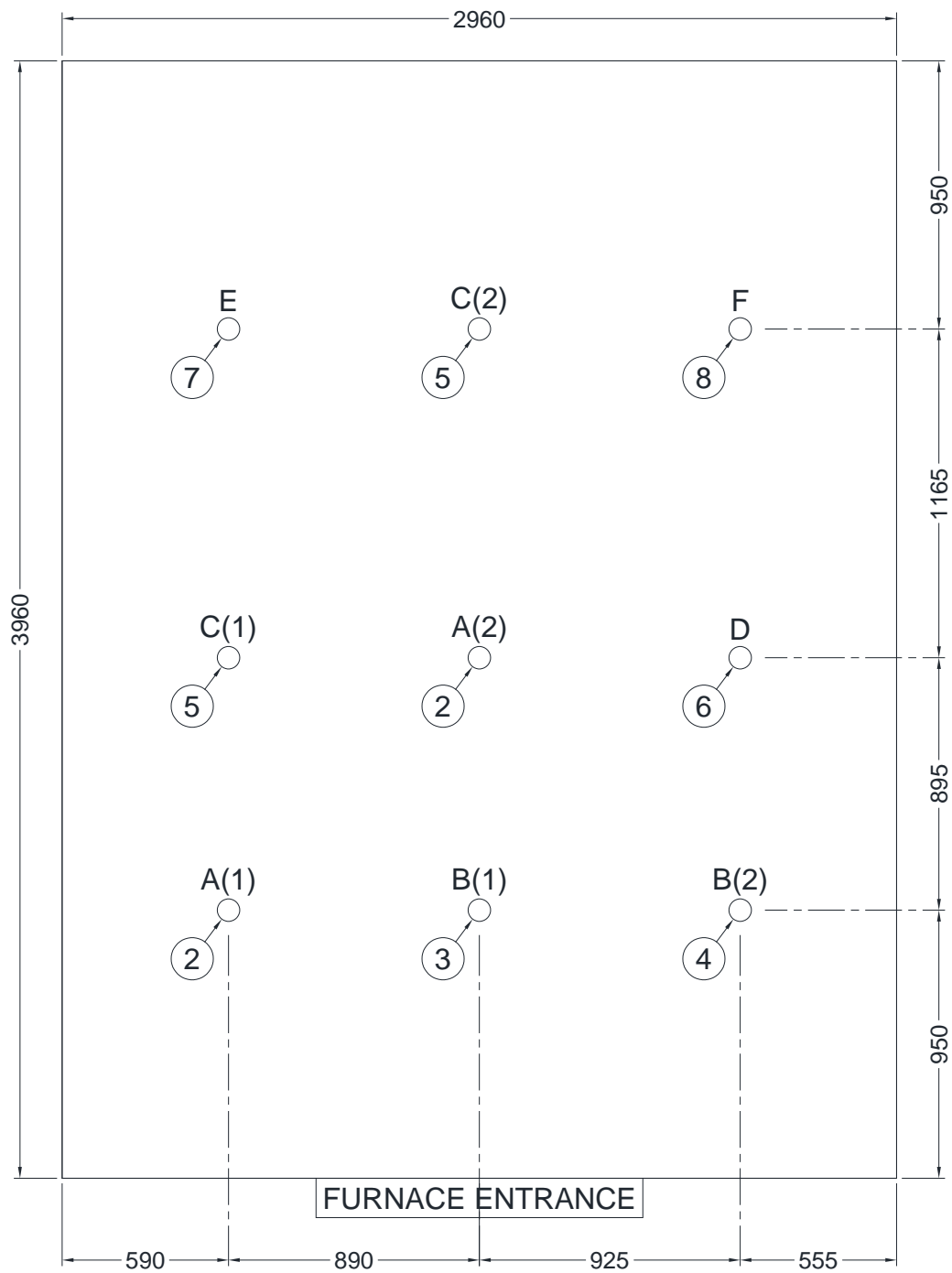
Standard	<p>BS EN 1365-2: 2014, 'Fire resistance tests for loadbearing elements – Part 2: Floors and Roofs'</p> <p>The purpose of the test was to evaluate the performance of a timber floor construction protected by a ceiling, when incorporating downlighter light fitting assemblies.</p>
Sampling	<p>Warringtonfire was not involved in the sampling or selection of the tested specimen or any of the components.</p>
Installation	<p>Representatives of Warringtonfire assembled the floor construction and installed the downlighters between the 24th October and 1st November 2019.</p>
Conditioning	<p>The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 10 days. Throughout this period of time both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 11°C to 23°C and 39.5% to 72.5% respectively.</p>
Instruction to Test	<p>The test was conducted on the 02 November 2019 at the request of Ansell Electrical Products Ltd, the test sponsor.</p> <p>Mr. A. Parkinson and Mr. J. Dwan, representatives of the test sponsor witness the test.</p>
Ambient Temperature	<p>The ambient air temperature in the vicinity of the test construction was 21°C at the start of the test with a maximum variation of -1 °C during the test.</p>
Furnace	<p>The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2012 Clause 5.1 using eight plate thermometers, distributed over a plane 100 mm from the underside of test assembly.</p>
Thermocouples	<p>Thermocouples were provided to monitor the unexposed surface of the specimen and the air temperature at mid depth of the joist above each light fitting. The output of all instrumentation was recorded at no less than one minute intervals. The locations and reference numbers of the various unexposed surface and internal thermocouples are shown in Figure 1.</p>
Application of the load	<p>The full test load was applied via dead load uniformly distributed over the test specimen 60 minutes before the commencement of the test.</p>
Loadbearing Capacity Criteria	<p>A linear deflection transducer was provided at the approximate centre on the unexposed surface of the specimen to record its vertical deflection.</p>
Furnace Pressure	<p>After the first five minutes of testing and for the remainder of the test, the furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 2012, clause 5.2.1 The calculated pressure differential relative to the laboratory atmosphere 100 mm below the soffit of the specimen was 19 (± 5) Pa between 5 and 10 minutes and 19 (± 3) Pa thereafter.</p>

Test Specimen Drawings

Figure 1- Plan View of Test Specimen

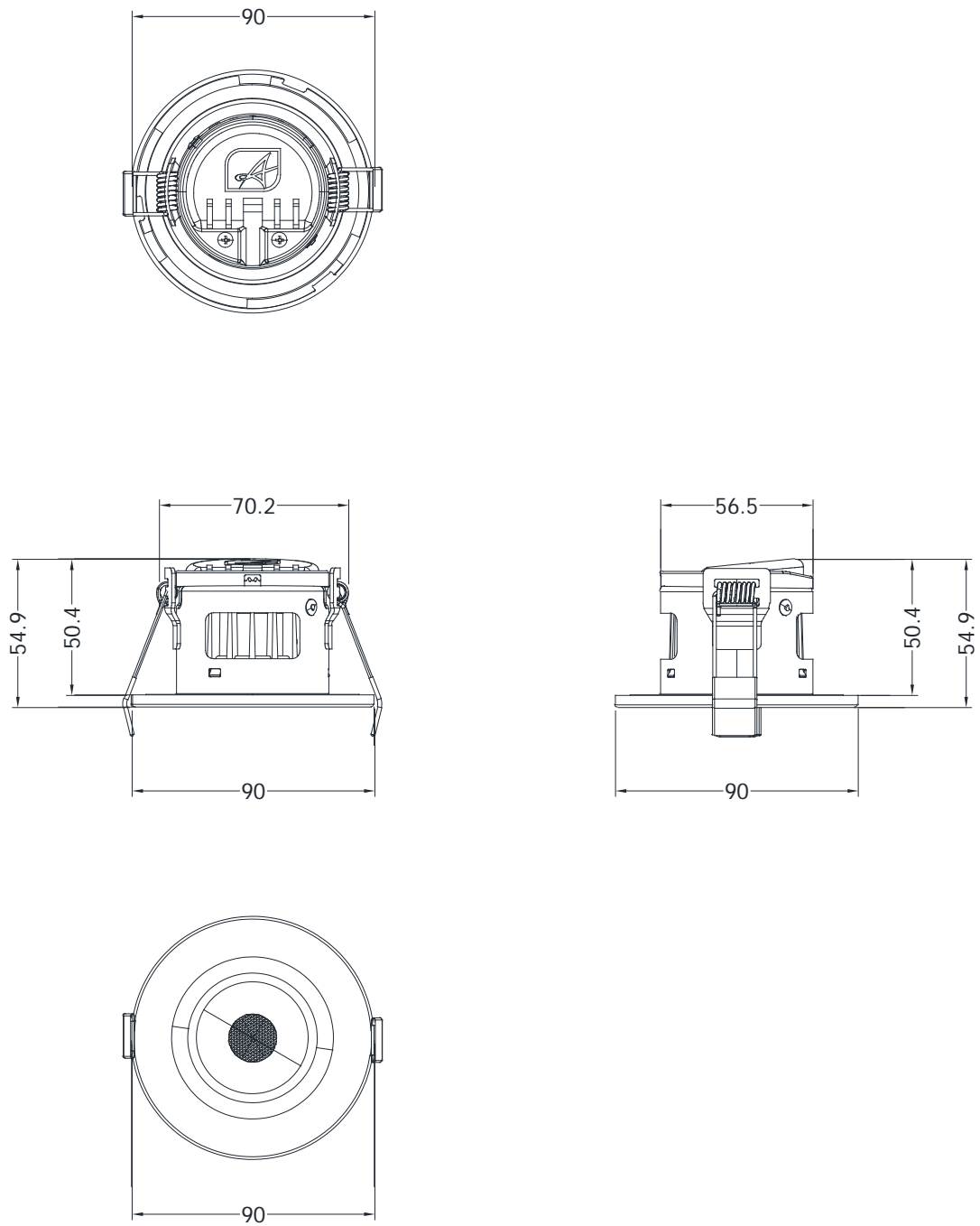


Do not scale. All dimensions are in mm

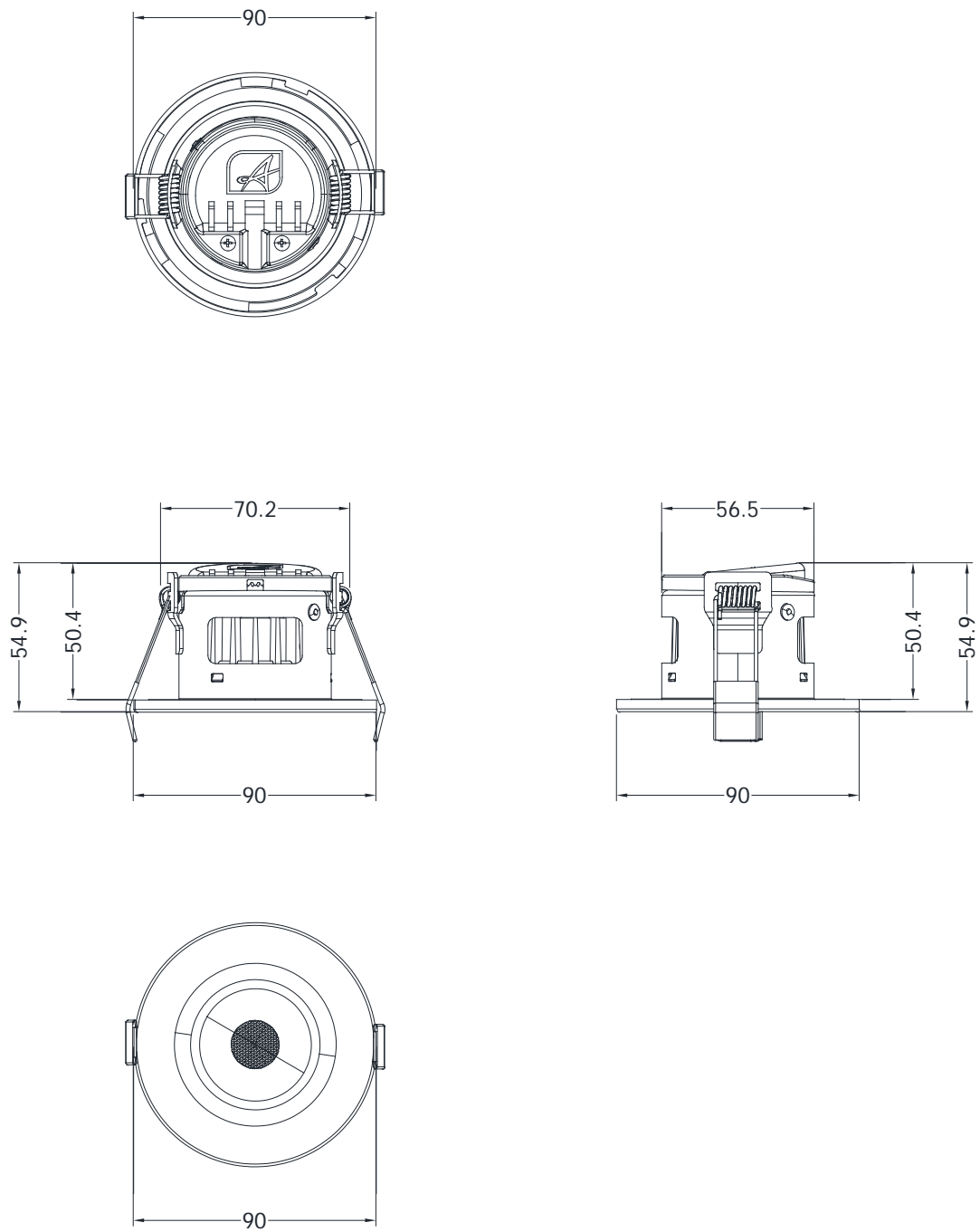
Figure 2 – Details of Downlighter Positions

Do not scale. All dimensions are in mm

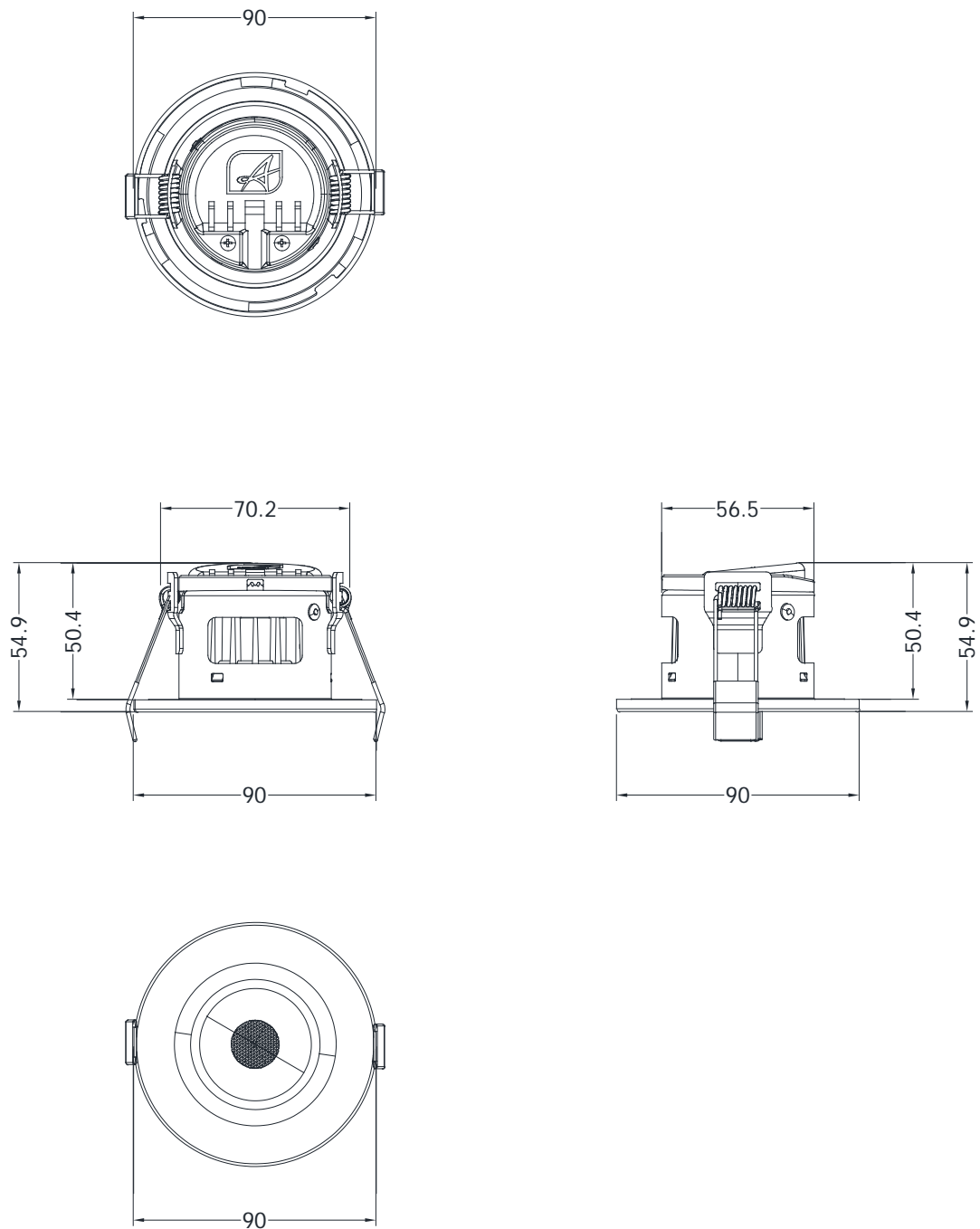
Figure 3 – Details of Downlighter Specimen A



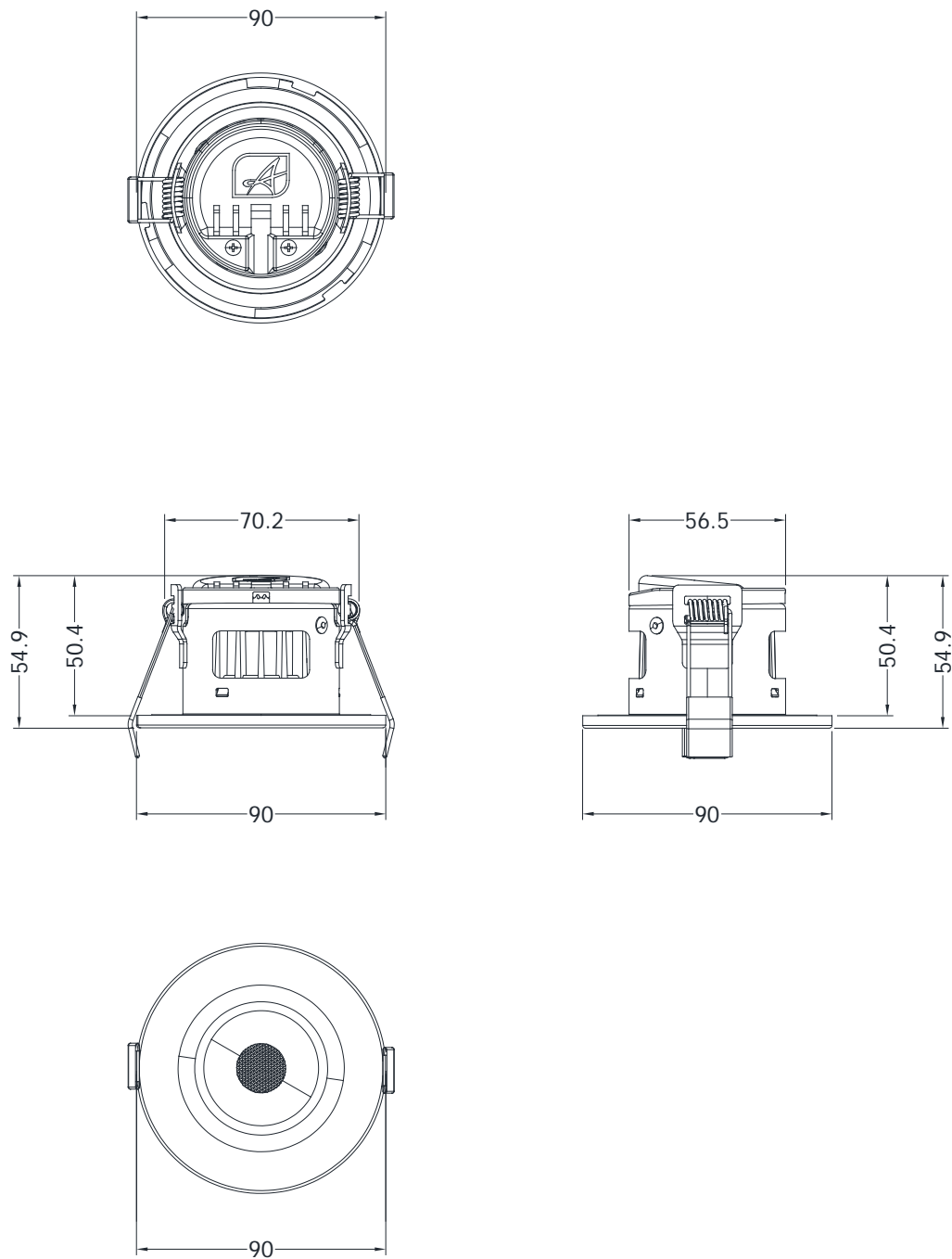
Do not scale. All dimensions are in mm

Figure 4 – Details of Downlighter Specimen B1

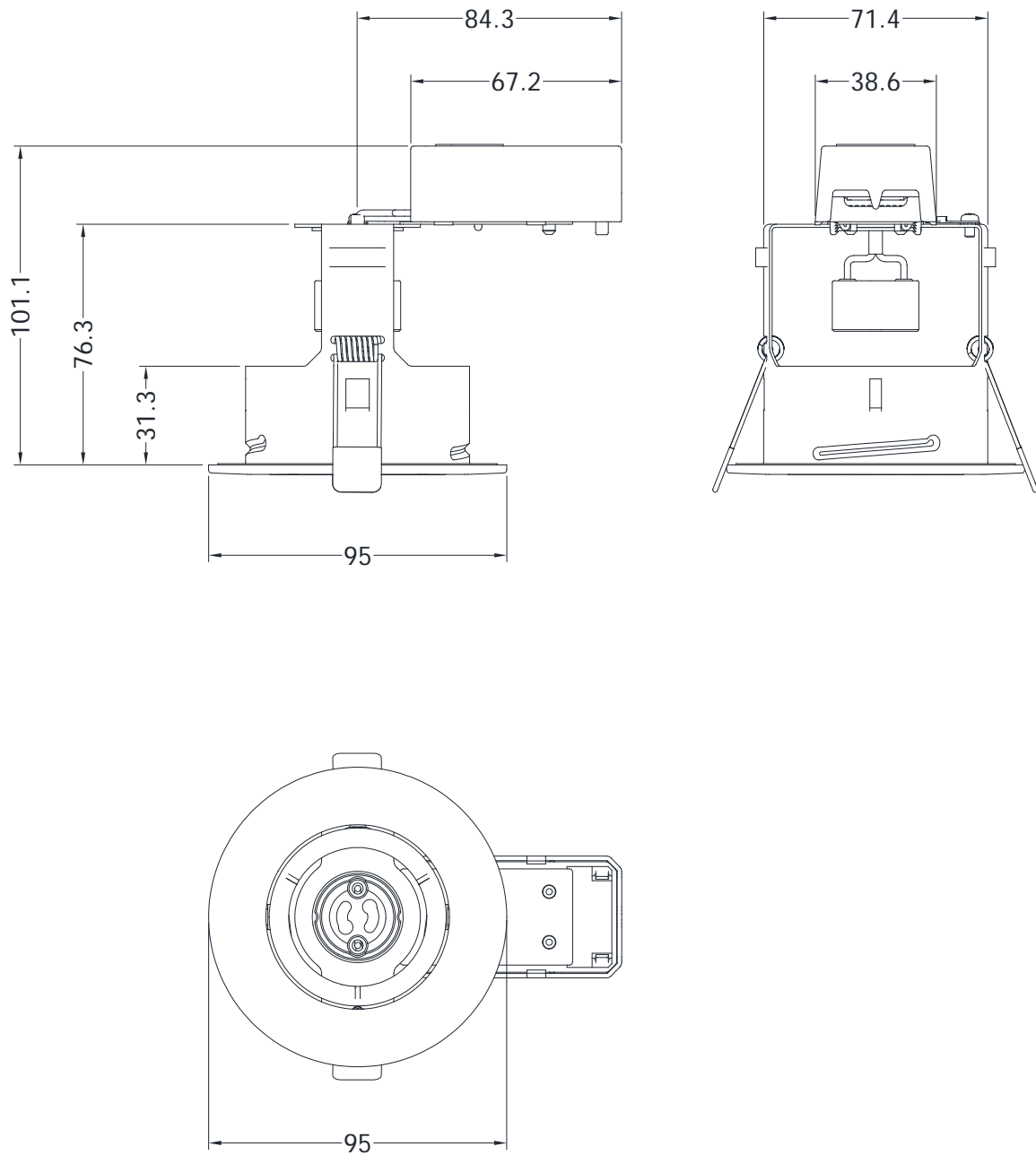
Do not scale. All dimensions are in mm

Figure 5 – Details of Downlighter Specimen B2

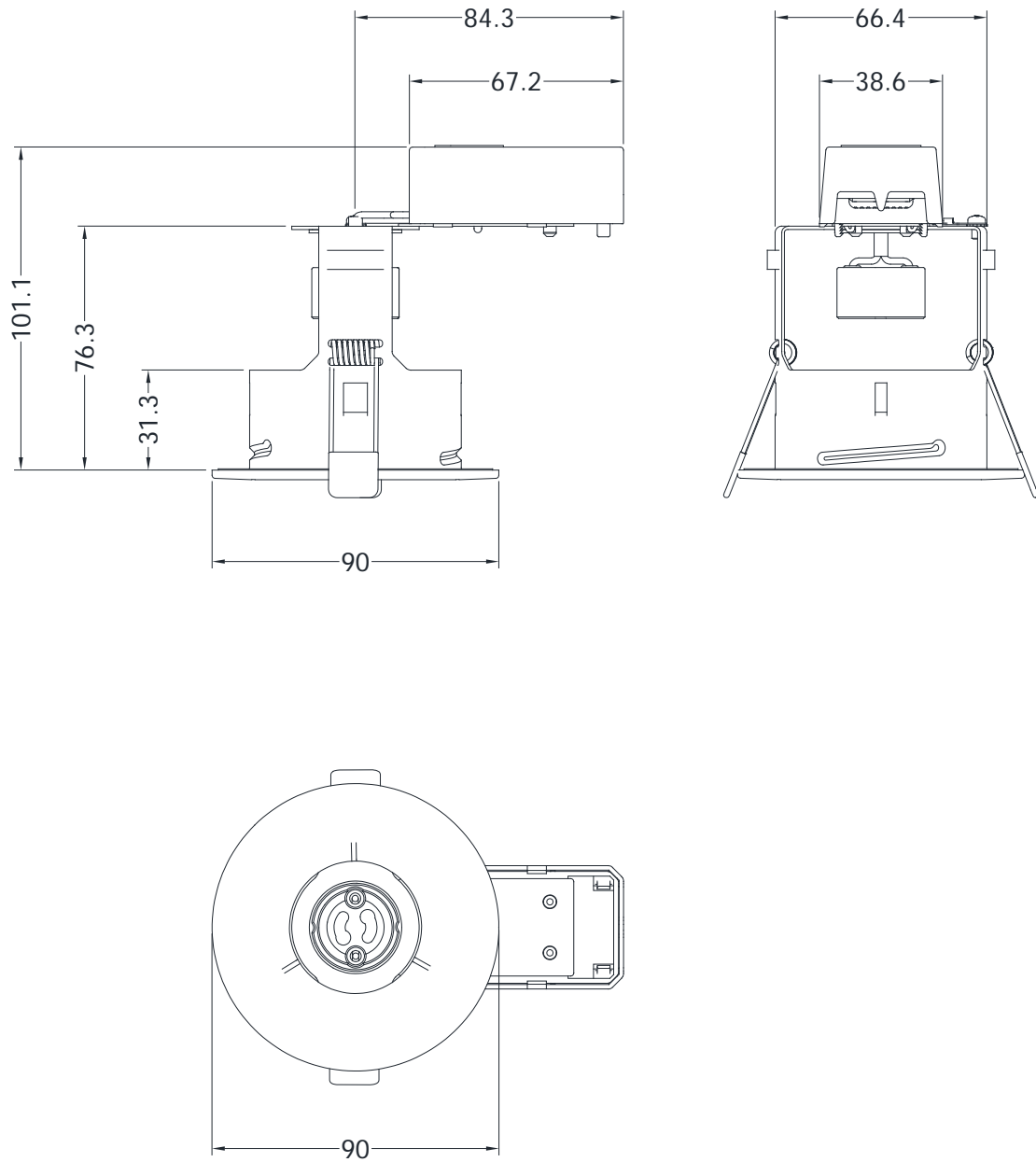
Do not scale. All dimensions are in mm

Figure 6 – Details of Downlighter Specimen C

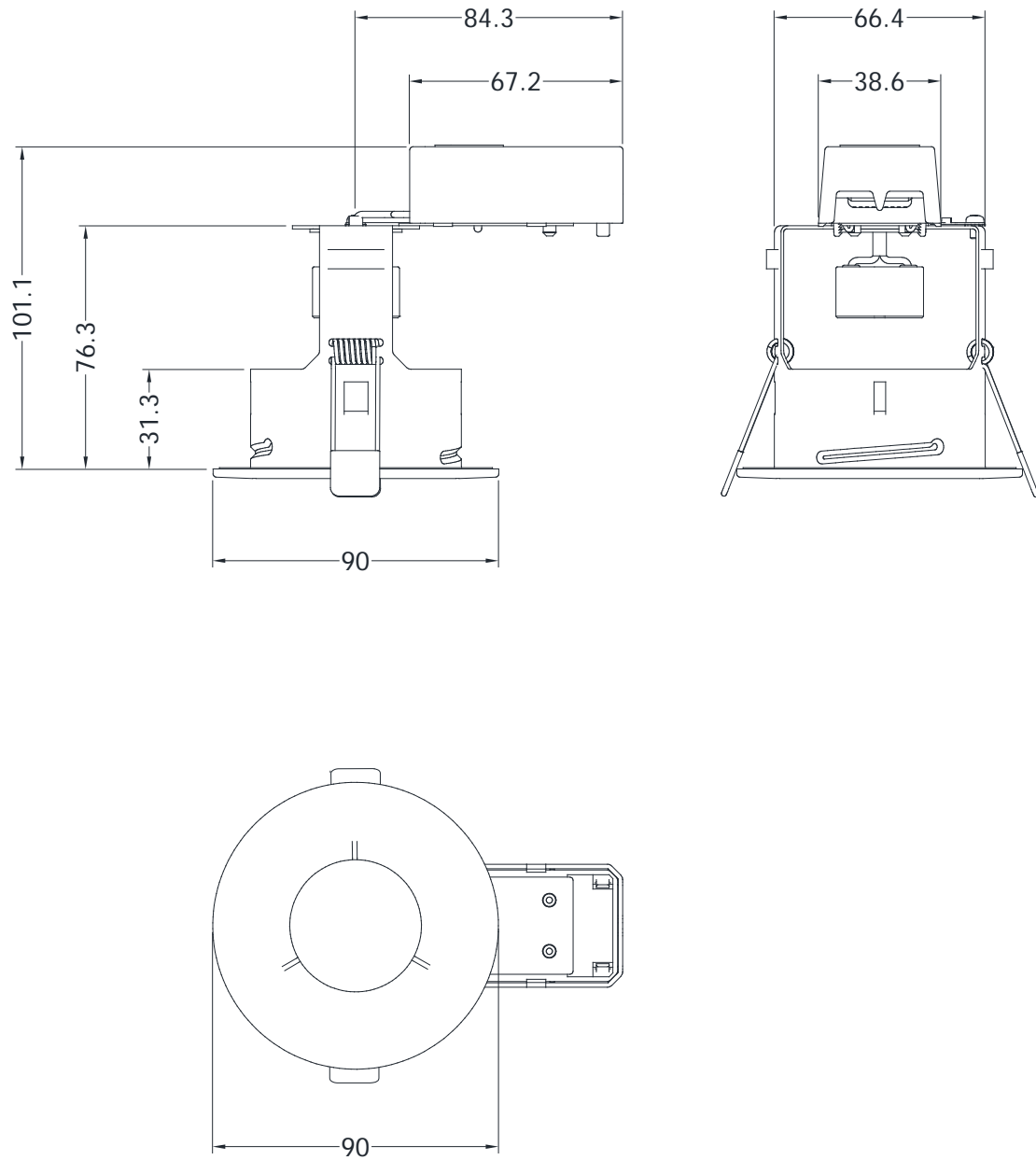
Do not scale. All dimensions are in mm

Figure 7 – Details of Downlighter Specimen D

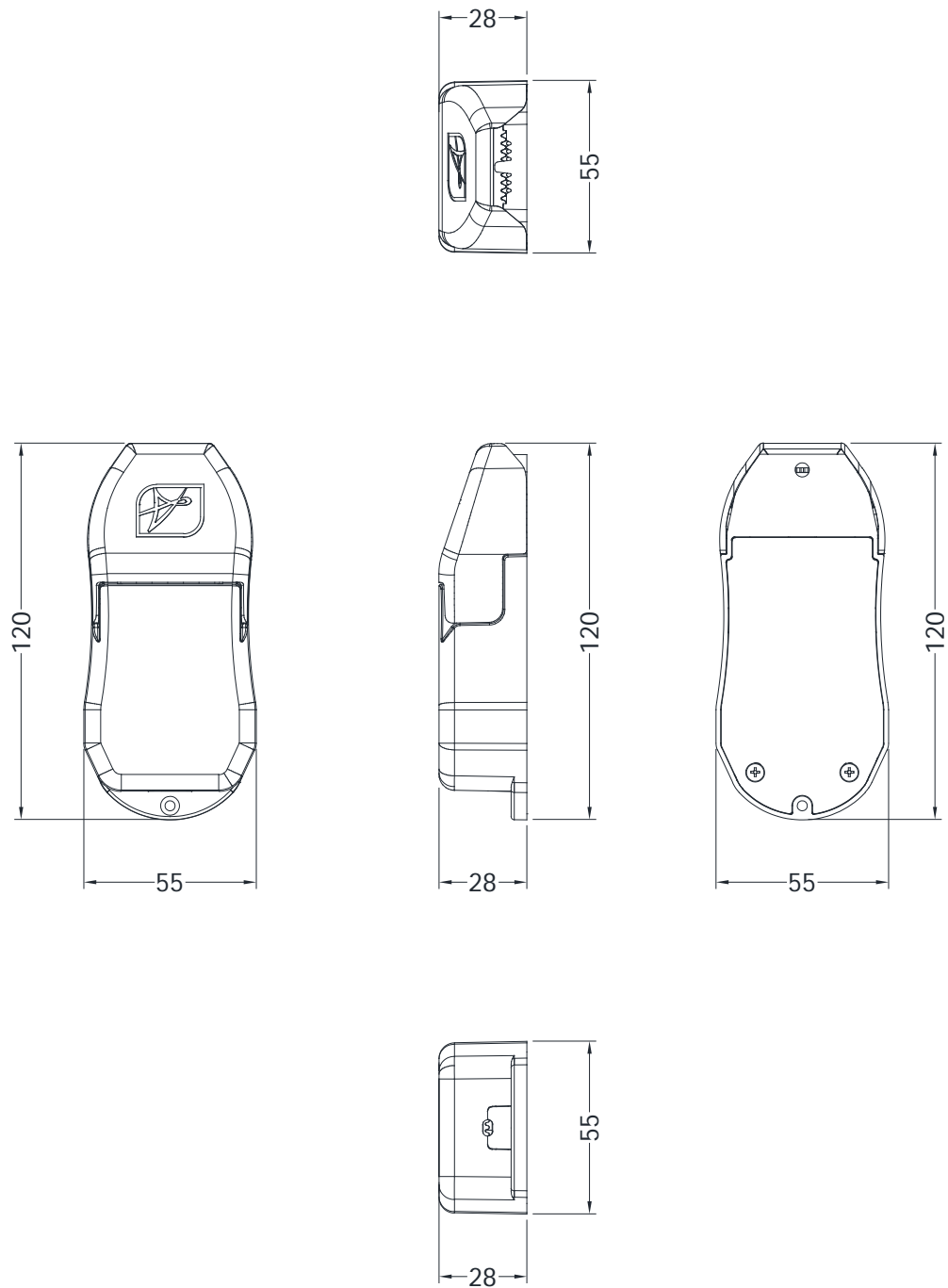
Do not scale. All dimensions are in mm

Figure 8 – Details of Downlighter Specimen E

Do not scale. All dimensions are in mm

Figure 9 – Details of Downlighter Specimen F

Do not scale. All dimensions are in mm

Figure 10 – Details of Driver for Downlighters

Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 10)

(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Timber Floor	
1.1. Engineered-Joints	
Assembled joist size	: 63 mm wide x 220 mm deep x 4400 mm long
Top and bottom chords	
i. material	: General commercial softwood
ii. density	: 528.6 kg/m ³ , measured
iii. cross section	: 44.9 mm high x 63 mm wide x 4400mm long
Web	
i. material	: Oriented strand board, OSB
ii. density	: 600.6 kg/m ³ , measured
iii. cross section	: 156 mm high x 9.8 mm thick x 4400 mm
Centres	: 600 mm, please see Figure 1
1.2. End Joists	
Material	: British home-grown, rough sawn softwood, kiln dried
Grade	: C24, to BS EN 519
Density	: 316 kg/m ³ , measured
Size	: 45 mm wide x 220 mm deep x 2887 long
Fixing method	: Fitted across the ends of the posi-joists and through screwed to the top and bottom chords of each joist
1.3. Noggins (Section of Engineered Joist)	
i. materials	: General commercial softwood top & bottom chord, OSB web
ii. cross section	: 63 mm wide x 220 mm deep
iii. fixing method	: Fitted between the joists, item 1.1, and fixed with fired nails. Please see Figure 1 for positions
1.4. Noggins	
i. material	: General commercial softwood
ii. density	: 433 kg/m ³ , measured
iii. cross section	: 70 mm wide x 42 mm high
iv. fixing method	: Fitted between the bottom chords of joist and fixed with fired nails. Please see Figure 1 for positions
1.5. Floor Boards	
i. material	: Flooring grade tongue and groove chipboards
ii. thickness	: 22 mm
iii. density	: 648.4 kg/m ³ , measured
iv. fixing method	: Fixed in a single layer with 60 mm long x 5 mm diameter countersunk steel screws to floor joists at 300 mm centres

Item**Description****1. Timber Floor (Continued)****1.6. Ceiling Boards**

Manufacturer	:	British Gypsum
Reference	:	Gyproc Fireline
Material	:	Type F gypsum complete with strong paper liners
Thickness	:	2 off layers 15 mm thick
Fixing method	:	The boards were screw fixed to the soffit of the joists. All joints of the second layer were staggered with respect to those of the first layer. All joints in the second layer were paper taped and skimmed with British Gypsum jointing compound

Fixings for first layer

i. manufacturer	:	Senco
ii. reference	:	Duraspin 39A35MP
iii. type	:	Bugle head sharp point, coarse thread drywall screws
iv. material	:	Black phosphate finished steel
v. overall size	:	35 mm long x 3.9 mm diameter
vi. centres	:	150 mm centres along joints and 150 mm to the perimeter of the ceiling

Fixings for second layer

i. manufacturer	:	Senco
ii. reference	:	Duraspin 39A50MP
iii. type	:	Bugle head sharp point, coarse thread drywall screws
iv. material	:	Black phosphate finished steel
v. overall size	:	50 mm long x 3.9 mm diameter
vi. centres	:	150 mm centres along joints and 150 mm to the perimeter of the ceiling

2. Specimen A (1 & 2)

Manufacturer	:	Ansell Electrical Products Ltd
Reference	:	APRILEDP/G/MW
Overall dimensions and construction	:	See Figure 3 for details
Luminaire Details		
i. body materials	:	Die-cast Aluminium, Polycarbonate, Steel
ii. diffuser material	:	PMMA
iii. diffuser rating	:	650°C
iv. chipset	:	SUNPU 2828
v. weight	:	0.31Kg
vi. input voltage	:	220-240V
vii. input frequency	:	50-60Hz
viii. inrush current	:	≤5A 2.2μS
ix. running current	:	0.033A
x. electrical class	:	II
xi. lamp type	:	LED
xii. maximum lamp size	:	28 mm x 28 mm
xiii. MacAdam steps	:	6
xiv. lumen depreciation	:	70lm – 60,000hrs
xv. LED driver manufacturer	:	D&S
xvi. IP rating	:	IP65
xvii. operating temperature	:	-5 °C to 25 °C
xviii. correlated colour temperature	:	2700K - 3000K - 4000K & 6000k
xix. colour rendering index	:	Ra80
xx. forward voltage	:	27V

<u>Item</u>	<u>Description</u>
2. Specimen A (1 & 2) (Continued)	
xxi. total power	: 7W
xxii. power factor	: 0.9
xxiii. cut out size	: 73 mm
3. Specimen B (1)	
Manufacturer	: Ansell Electrical Products Ltd
Reference	: APRILEDP/CW
Overall dimensions and construction	: See Figure 4 for details
Luminaire Details	
i. body materials	: Die-cast Aluminium, Polycarbonate, Steel
ii. diffuser material	: PMMA
iii. diffuser rating	: 650°C
iv. chipset	: Nationstar 3528
v. weight	: 0.28Kg
vi. input voltage	: 220-240V
vii. input frequency	: 50-60Hz
viii. inrush current	: ≤5A 2.2μS
ix. running current	: 0.032A
x. electrical class	: II
xi. lamp type	: LED
xii. maximum lamp size	: 35 mm x 28 mm
xiii. MacAdam steps	: 6
xiv. lumen depreciation	: 70lm – 60,000hrs
xv. LED driver manufacturer	: D&S
xvi. IP rating	: IP65
xvii. operating temperature	: -5 °C to 25 °C
xviii. correlated colour temperature	: 4000K
xix. colour rendering index	: Ra80
Luminaire Details (Continued)	
xx. forward voltage	: 27V
xxi. total power	: 6.4W
xxii. power factor	: 0.9
xxiii. cut out size	: 73 mm diameter
3. Specimen B (2)	
Manufacturer	: Ansell Electrical Products Ltd
Reference	: APRILEDP/WW
Overall dimensions and construction	: See Figure 5 for details
Luminaire Details	
i. body materials	: Die-cast Aluminium, Polycarbonate, Steel
ii. diffuser material	: PMMA
iii. diffuser rating	: 650°C
iv. chipset	: Nationstar 3528
v. weight	: 0.28Kg
vi. input voltage	: 220-240V
vii. input frequency	: 50-60Hz
viii. inrush current	: ≤5A 2.2μS
ix. running current	: 0.032A
x. electrical class	: II
xi. lamp type	: LED
xii. maximum lamp size	: 35 mm x 28 mm
xiii. MacAdam steps	: 6

Item**Description****3. Specimen B (2) (Continued)**

xiv. lumen depreciation	: 70lm – 60,000hrs
xv. LED driver manufacturer	: D&S
xvi. IP rating	: IP65
xvii. operating temperature	: -5 °C to 25 °C
xviii. correlated colour temperature	: 3000K
xix. colour rendering index	: Ra80
xx. forward voltage	: 27V
xxi. total power	: 6.4W
xxii. power factor	: 0.9
xxiii. cut out size	: 73 mm diameter

4. Specimen C (1 & 2)

Manufacturer	: Ansell Electrical Products Ltd
Reference	: APRILEDP/CCT
Overall dimensions and construction	: See Figure 6 for details
Luminaire Details	
i. body materials	: Die-cast Aluminium, Polycarbonate, Steel
ii. diffuser material	: PC
iii. diffuser rating	: 650°C
iv. chipset	: SUNPU 2828
v. weight	: 0.28Kg
vi. input voltage	: 220-240V
vii. input frequency	: 50-60Hz
viii. inrush current	: ≤5A 2.2μS
ix. running current	: 0.033A
x. electrical class	: II
xi. lamp type	: LED
xii. maximum lamp size	: 28 mm x 28 mm

4. Specimen C (1 & 2) (Continued)

Luminaire Details (Continued)	
xiii. MacAdam steps	: 6
xiv. lumen depreciation	: 70lm – 60,000hrs
xv. LED driver manufacturer	: D&S
xvi. IP rating	: IP65
xvii. operating temperature	: -5 °C to 25 °C
xviii. correlated colour temperature	: 2700K - 3000K - 4000K & 6000k
xix. colour rendering index	: Ra80
xx. forward voltage	: 27V
xxi. total power	: 7W
xxii. power factor	: 0.9
xxiii. cut out size	: 73 mm diameter

5. Specimen D

Manufacturer	: Ansell Electrical Products Ltd
Reference	: AEFRG/MW
Overall dimensions and construction	: See Figure 7 for details
Luminaire Details	
i. body materials	: Aluminium
ii. weight	: 0.19Kg
iii. input voltage	: 230v
iv. input frequency	: 50Hz

Item**Description****5. Specimen D (Continued)**

v.	electrical class	:	I
vi.	lamp type	:	GU10
vii.	maximum lamp size	:	50 mm x 60 mm
viii.	IP rating	:	IP20
ix.	operating temperature	:	5 °C to 25 °C
x.	total power	:	50W
xi.	cut out size	:	76 mm diameter

6. Specimen E

Manufacturer	:	Ansell Electrical Products Ltd
Reference	:	AEFRD/MW
Overall dimensions and construction	:	See Figure 7 for details
Luminaire Details		
i. body materials	:	Aluminium
ii. weight	:	0.18Kg
iii. input voltage	:	230v
iv. input frequency	:	50Hz
v. electrical class	:	I
vi. lamp type	:	GU10
vii. maximum lamp size	:	50 mm x 60 mm
viii. IP rating	:	IP20
ix. operating temperature	:	5 °C to 25 °C
x. total power	:	50W
xi. cut out size	:	76 mm diameter

7. Specimen F

Manufacturer	:	Ansell Electrical Products Ltd
Reference	:	AEFRD/IP65/MW
Overall dimensions and construction	:	See Figure 8 for details
Luminaire Details		
i. body materials	:	Aluminium
ii. weight	:	0.19Kg
iii. input voltage	:	230v
iv. input frequency	:	50Hz
v. electrical class	:	I
vi. lamp type	:	GU10
vii. maximum lamp size	:	50 mm x 60 mm
viii. IP rating	:	IP65
ix. operating temperature	:	5 °C to 25 °C
x. total power	:	50W
xi. cut out size	:	76 mm diameter

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	secs	
00	00	The test commences.
10	48	When viewed from the exposed face, joint tape is detaching and exposing the board joints.
12	08	Steam/smoke release is seen from perimeter of specimen only.
17	16	When viewed from the exposed face, fittings from Specimens B1, A1, A2, C1 and F have detached.
21	35	No significant visible change.
26	32	When viewed from the exposed face Specimens B2 and D have detached.
27	55	When viewed from the exposed face, board joints are beginning to darken.
30	00	Specimen continues to satisfy insulation integrity and load bearing capacity criteria.
35	25	No significant visible change. No steam/smoke release from specimen. Steam/smoke release from perimeter edge continues.
42	15	When viewed from the exposed face, boards are glowing bright orange in colour, joints are darkening and opening to approximately 7mm.
45	32	No significant visible change.
58	45	No significant visible change.
60	00	Specimen continues to satisfy insulation, integrity and load bearing performance criteria.
64	32	When viewed from the exposed face, No significant visible change.
72	00	Steam/smoke release from perimeter edges is reduced.
80	05	When viewed from the exposed face, flaming can be seen from board joints in the central area of the specimen.
85	31	When viewed from the exposed face, locations corresponding with the locations of Specimen B1 can be seen to be flaming slightly.
90	00	Specimen continues to satisfy insulation, integrity and load bearing performance criteria.

Time**mins secs**

92	58	When viewed from the exposed face, flaming is now visible from all joint locations. Joints have opened up to 15-20mm.
93	35	When viewed from the exposed face, first layer board begins to detach. Joints in second layer of board are approximately 15mm wide.
97	00	When viewed from the exposed face, the joints in the second layer of boards continues to open to approximately 25mm.
98	02	Increased steam/smoke from specimen perimeter. No steam/smoke release from floor board joints.
100	00	Test discontinued at clients request.

Test Photographs

The exposed face of the floor assembly prior to test



The unexposed face of the floor assembly prior to test



The unexposed face of the floor assembly after 30 minutes of testing



The unexposed face of the floor assembly after 70 minutes of testing



The unexposed
face of the floor
assembly after 100
minutes of testing



Temperature, Pressure and Deflection Data

Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard BS EN 1363-1: 2012

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	60
3	502	525
6	603	588
9	663	660
12	706	706
15	739	739
18	766	763
21	789	787
24	809	814
27	826	831
30	842	846
33	856	862
36	869	874
39	881	881
42	892	891
45	902	902
48	912	909
51	921	917
54	930	930
57	938	940
60	945	949
63	953	956
66	960	964
69	966	967
72	973	974
75	979	980
78	985	987
81	990	994
84	996	999
87	1001	1004
90	1006	1008
93	1011	1011
96	1016	1016
99	1020	1062
100	1022	1081

Individual Temperatures And Mean Recorded On The Unexposed Surface Of The Specimen

Time Mins	T/C Number 211 Deg. C	T/C Number 212 Deg. C	T/C Number 213 Deg. C	T/C Number 214 Deg. C	T/C Number 215 Deg. C	Mean Temp Deg. C
0	18	18	18	18	20	18
3	18	18	19	18	20	19
6	18	18	18	18	20	18
9	18	18	18	18	20	18
12	18	18	18	19	21	19
15	19	18	18	20	22	19
18	21	20	18	21	23	21
21	23	22	19	23	25	22
24	25	25	19	25	27	24
27	27	27	20	27	29	26
30	29	29	22	29	31	28
33	31	31	22	31	33	30
36	33	32	23	32	34	31
39	34	34	24	34	36	32
42	36	35	25	35	37	34
45	37	36	26	36	38	35
48	38	37	27	37	39	36
51	39	38	28	37	39	36
54	40	39	29	38	40	37
57	40	39	29	39	40	37
60	41	40	31	39	41	38
63	42	41	31	40	41	39
66	42	41	32	40	41	39
69	43	43	32	41	42	40
72	45	45	33	41	42	41
75	47	48	33	41	42	42
78	51	53	34	43	43	45
81	55	57	34	46	45	47
84	60	62	35	50	51	52
87	66	66	36	55	58	56
90	70	68	37	59	67	60
93	72	69	38	63	73	63
96	74	69	41	67	75	65
99	73	70	48	70	76	67
100	73	70	52	71	76	68

Individual Temperatures Recorded On The Unexposed Surface Of The Specimen Adjacent to Joints

Time Mins	T/C Number 216 Deg. C	T/C Number 217 Deg. C	T/C Number 218 Deg. C	T/C Number 219 Deg. C	T/C Number 220 Deg. C	T/C Number 221 Deg. C
0	21	22	22	22	21	22
3	21	22	22	22	21	22
6	21	21	22	21	21	22
9	20	21	21	21	21	22
12	20	21	22	21	21	23
15	21	22	22	22	21	25
18	22	25	23	22	22	27
21	24	28	25	23	23	29
24	27	32	26	25	24	31
27	29	36	28	26	25	33
30	31	39	29	28	27	35
33	34	42	31	29	28	37
36	36	45	33	31	30	38
39	37	47	34	33	31	40
42	39	48	36	35	33	41
45	41	49	38	37	35	42
48	42	50	39	39	37	43
51	43	51	40	41	39	45
54	44	52	42	43	41	46
57	44	52	43	45	42	47
60	45	53	44	46	44	48
63	45	53	44	48	45	49
66	46	54	45	49	46	50
69	47	55	46	50	46	51
72	47	57	46	51	47	53
75	49	61	47	51	48	58
78	53	68	48	52	49	63
81	58	72	49	54	49	68
84	64	75	52	57	51	73
87	70	77	57	60	55	77
90	73	77	65	64	58	78
93	75	77	71	69	62	78
96	76	77	76	73	66	79
99	77	76	78	75	69	79
100	77	76	79	76	69	80

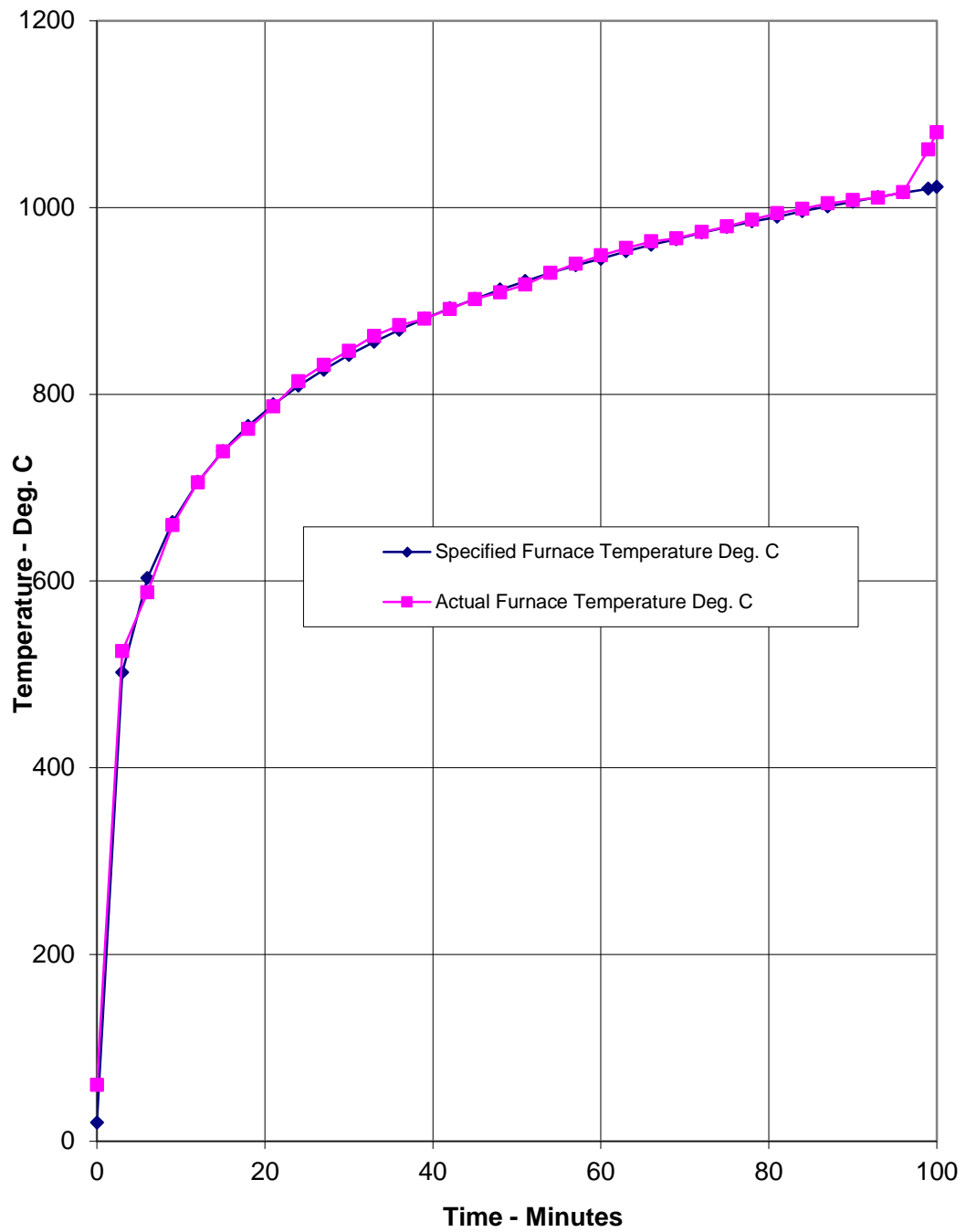
Individual Temperatures Recorded At Mid-Height Of The Cavity Coincidental With The Light Fittings

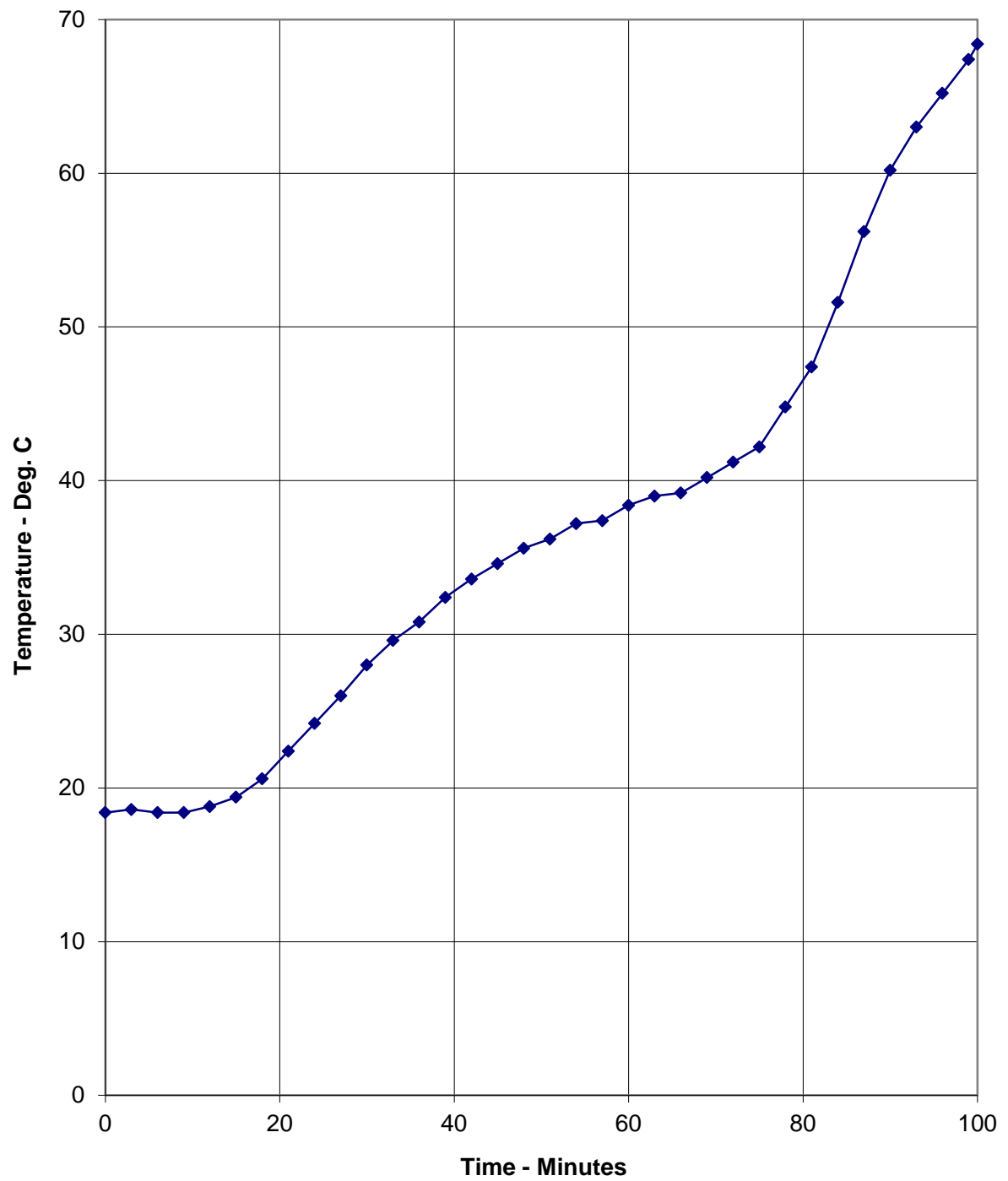
Time Mins	T/C Number 222 Deg. C	T/C Number 223 Deg. C	T/C Number 224 Deg. C	T/C Number 225 Deg. C	T/C Number 226 Deg. C	T/C Number 227 Deg. C	T/C Number 228 Deg. C	T/C Number 229 Deg. C	T/C Number 230 Deg. C
0	37	33	39	31	36	65	33	31	35
3	42	66	47	39	46	89	47	61	46
6	44	96	56	74	47	94	65	70	90
9	107	107	65	63	57	92	67	74	95
12	159	116	176	75	73	130	81	61	74
15	181	140	152	80	85	111	96	70	81
18	176	148	151	89	94	114	101	77	87
21	189	182	156	93	107	114	107	106	94
24	176	170	176	98	115	119	98	116	97
27	162	143	135	101	121	119	101	93	116
30	159	133	125	110	111	123	104	95	111
33	160	116	135	109	115	126	114	123	111
36	142	105	147	108	129	130	116	131	109
39	123	101	149	131	134	130	125	135	111
42	120	100	156	142	132	129	128	148	120
45	123	101	162	144	126	126	124	141	127
48	124	102	159	124	126	126	130	117	126
51	140	104	152	107	125	123	128	108	124
54	141	106	158	107	133	122	124	109	114
57	125	108	139	109	138	122	117	113	109
60	141	118	146	111	143	125	114	111	117
63	148	133	156	117	156	136	118	117	127
66	165	152	178	127	170	152	127	130	142
69	181	163	190	140	179	163	144	147	159
72	196	176	199	151	194	174	170	170	173
75	208	189	211	160	205	186	187	173	188
78	222	202	224	168	216	195	201	191	199
81	233	214	238	176	230	205	211	212	212
84	246	228	250	183	233	215	226	231	226
87	258	241	263	193	246	226	241	243	240
90	270	256	274	202	262	239	247	252	250
93	282	277	290	207	279	251	254	257	260
96	296	331	331	214	283	268	259	272	271
99	710	394	372	223	303	284	275	280	283
100	789	438	388	228	462	297	279	307	294

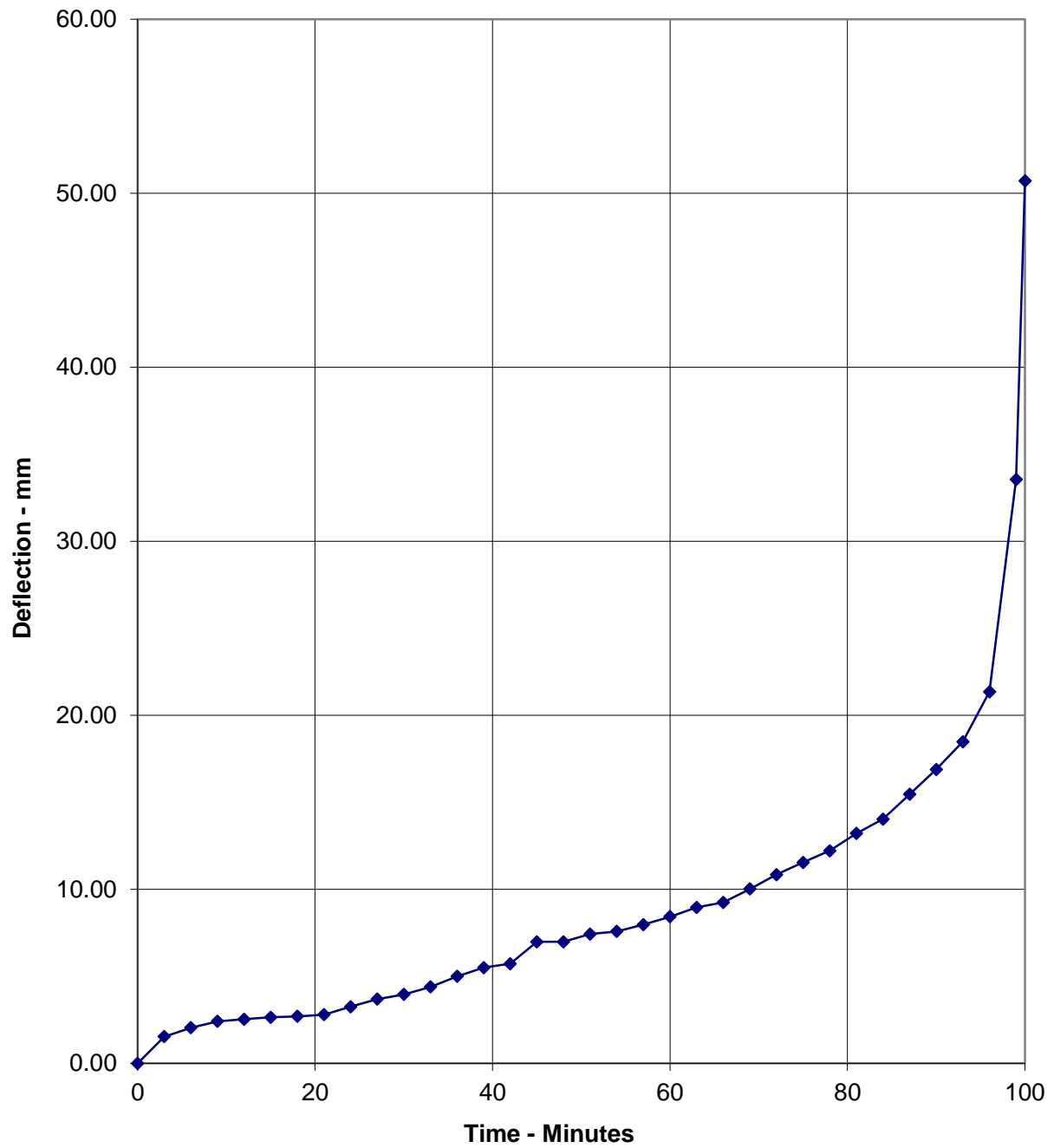
Central Vertical Deflection Of The Specimen

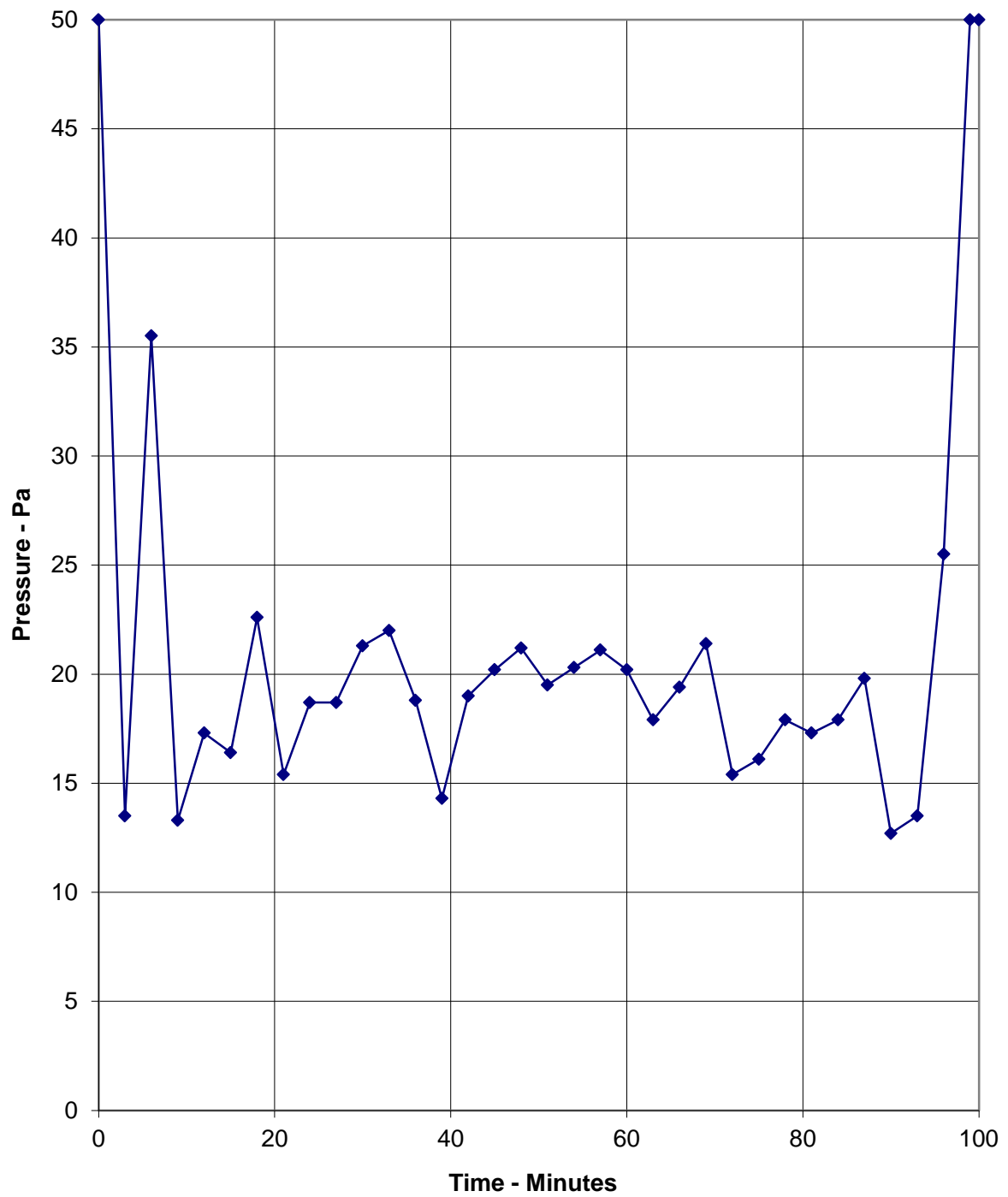
Time Mins	Central Vertical Deflection mm	Rate Of Deflection mm/min
0	0.00	0.00
3	1.54	0.27
6	2.05	0.17
9	2.42	0.10
12	2.54	0.00
15	2.65	0.07
18	2.70	0.05
21	2.80	0.05
24	3.26	0.17
27	3.69	0.05
30	3.96	0.17
33	4.40	0.22
36	5.00	0.32
39	5.51	0.17
42	5.72	0.10
45	6.98	1.04
48	6.98	0.00
51	7.44	0.34
54	7.59	0.00
57	7.97	0.15
60	8.43	0.17
63	8.96	0.27
66	9.25	0.07
69	10.02	0.22
72	10.84	0.44
75	11.55	0.22
78	12.22	0.22
81	13.21	0.29
84	14.03	0.17
87	15.46	0.66
90	16.89	0.39
93	18.48	0.71
96	21.35	1.16
99	33.55	6.16
100	50.71	17.15

Graph Showing Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard



Graph Showing Mean Temperature Recorded On The Unexposed Surface Of The Specimen

Graph Showing The Recorded Vertical Deflection Of The Specimen

Graph Showing Recorded Furnace Pressure 100 mm Below The Underside Of The Specimen

On-going Implications

Limitations

This report details the method of construction, the test conditions and the results obtained when the specific elements of construction described herein were tested following the procedure outlined in BS EN 1363-1: 2012, and where appropriate BS EN 1363-2: 1999. 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 the relevant test method is not covered by this report. Annex A of BS EN 1363-1: 2012, provides guidance information on the application of fire resistance tests and the interpretation of test data.

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

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

a) With respect to the structural building 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.

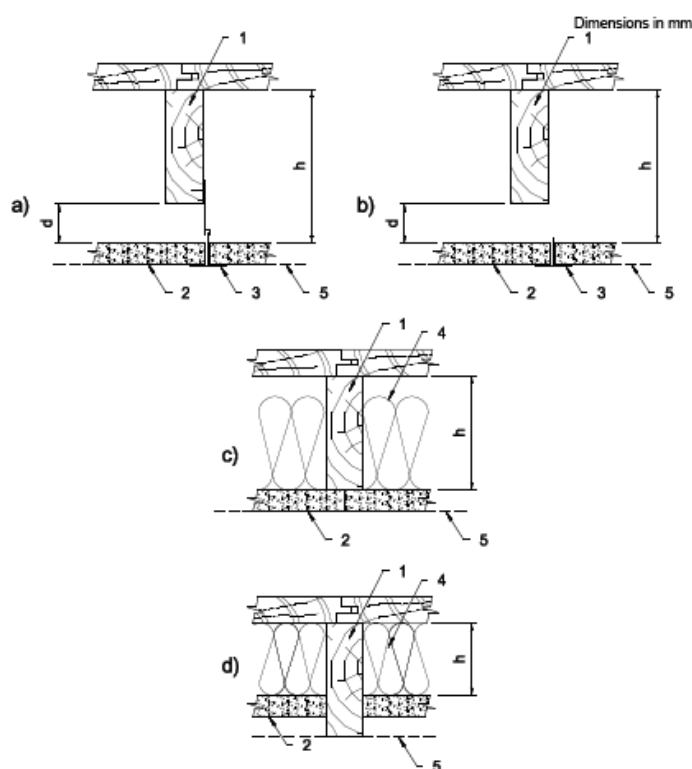
b) With respect to the ceiling system:

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.

c) With respect to the cavity:

The height of the cavity 'h' and the minimum distance 'd' between the ceiling and the structural members (see Figure below) are equal to or greater than those tested.



KEY

a) suspended ceiling

b) self-supported ceiling

c) and d) direct fixed ceiling with insulation in cavity

1 supporting construction (joist)

2 ceiling lining

3 supporting frame

4 insulation

5 pressure reference line

d distance between ceiling and structural members

h height of cavity