

(JA/8 )

## **Fire Resistance and Fire Protection**

## Tina Donoghue

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**From:** Andy Fewings <Andy.Fewings@hjplondon.co.uk>  
**Sent:** 14 June 2017 10:09  
**To:** Allen, John: CP-Plan: RBKC  
**Subject:** Fire Resistance and Fire Protection  
**Attachments:** BS8110 - FP and FR.pdf

John,

Here is the current requirement, just hunting down a 1970's version.

Kind Regards,

Andy

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### 3.3.5 Method of specifying concrete for durability

Concrete to meet the requirements of **Table A.4**, **Table A.8** and **Table A.9** of BS 8500-1:2006 **4.4** should be specified as designated concrete, designed concrete or standardized prescribed concrete in accordance with BS 8500-1 and BS 8500-2.

3.3.5.1 — *deleted*

3.3.5.2 — *deleted*

3.3.5.3 — *deleted*

**Table 3.2** — *deleted*

### 3.3.6 Cover as fire protection

Cover for protection against corrosion may not suffice as fire protection. The values given in **Table 3.4** and **Figure 3.2** will ensure that fire resistance requirements are satisfied. The tables are based on recommendations given in Section 4 of BS 8110-2:1985; however, in columns and beams the covers included in the tables have been adjusted to permit nominal covers to be specified to all steel (including links). Minimum dimensions of members for fire resistance are also included in **Figure 3.2**. In some circumstances a more detailed treatment of the design for fire may give significant economies. Section 4 of BS 8110-2:1985 gives further information on design for fire, including information on surface treatments for improving fire resistance.

### 3.3.7 Control of cover

Good workmanship is required to ensure that the reinforcement is properly placed and that the specified cover is obtained. Recommendations for this are given in 7.3.

NOTE Further information on cover is given in the following:

- a) durability in general (see 3.1.5 of this standard and Annex A of BS 8500-1:2002);
- b) prestressed concrete (see 4.12.3);
- c) control of cover (see 7.3);
- d) fire resistance (see Section 4 of BS 8110-2:1985);
- e) lightweight aggregate concrete (see Section 5 of BS 8110-2:1985).

**Table 3.3** — *deleted*

**Table 3.4** — Nominal cover to all reinforcement (including links) to meet specified periods of fire resistance (see NOTE 1 and NOTE 2)

Fire resistance  h	Nominal cover mm						
	Beams <sup>a</sup>		Floors		Ribs		Columns <sup>a</sup>
	Simply supported	Continuous	Simply supported	Continuous	Simply supported	Continuous	
0.5	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>	20 <sup>b</sup>
1	20 <sup>b</sup>	20 <sup>b</sup>	20	20	20	20 <sup>b</sup>	20 <sup>b</sup>
1.5	20	20 <sup>b</sup>	25	20	35	20	20
2	40	30	35	25	45	35	25
3	60	40	45	35	55	45	25
4	70	50	55	45	65	55	25

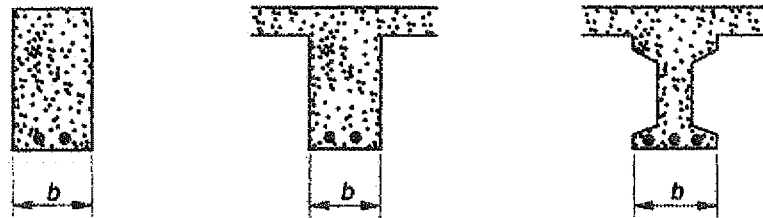
NOTE 1 The nominal covers given relate specifically to the minimum member dimensions given in Figure 3.2. Guidance on increased covers necessary if smaller members are used is given in Section 4 of BS 8110-2:1985.

NOTE 2 Cases that lie below the bold line require attention to the additional measures necessary to reduce the risks of spalling (see Section 4 of BS 8110-2:1985).

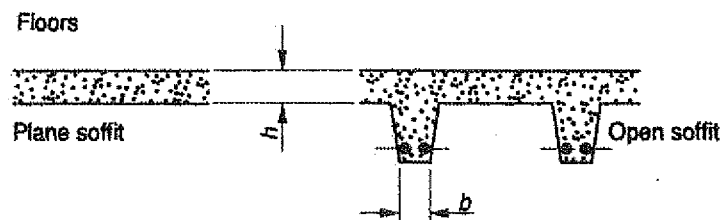
<sup>a</sup> For the purposes of assessing a nominal cover for beams and columns, the cover to main bars which would have been obtained from Table 4.2 and Table 4.3 of BS 8110-2:1985 has been reduced by a notional allowance for stirrups of 10 mm to cover the range 8 mm to 12 mm (see also 3.3.6).

<sup>b</sup> These covers may be reduced to 15 mm provided that the nominal maximum size of aggregate does not exceed 15 mm (see 3.3.1.3).

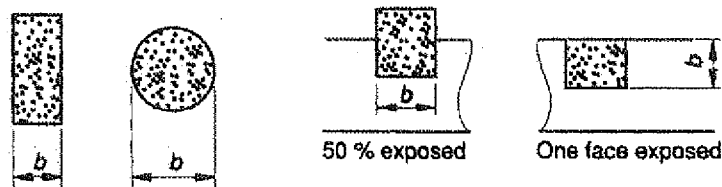
Beams



Floors



Columns



Fully exposed

Fire resistance	Minimum beam width (b)	Rib width (b)	Minimum thickness of floors (h)	Column width (b)			Minimum wall thickness		
				Fully exposed	50 % exposed	One face exposed	$p < 0.4 \%$	$0.4 \% < p < 1 \%$	$p > 1 \%$
h	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.5	200	125	75	150	125	100	150	100	75
1	200	125	95	200	160	120	150	120	75
1.5	200	125	110	250	200	140	175	140	100
2	200	125	125	300	200	160	—	160	100
3	240	150	150	400	300	200	—	200	150
4	280	175	170	450	350	240	—	240	180

NOTE 1 These minimum dimensions relate specifically to the covers given in Table 3.4 and Table 4.9.

NOTE 2  $p$  is the area of steel relative to that of concrete.

Figure 3.2 — Minimum dimensions of reinforced concrete members for fire resistance