

6. LOAD TESTING

Load testing of components and structures or parts of structures should be carried out in accordance with Sections 9.5 and 9.6 of the British Standard Code of Practice BS 8110: Part 2.

7. ALTERNATIVE RECOMMENDATIONS

The recommendations of BS 8110, or BS 5400 as modified by the Civil Engineering Manual, Volume 5, Chapter 4, as appropriate to the type of structure, may be used as an alternative to recommendations of this Code. In such cases the following specific requirements shall apply—

- (1) The characteristic dead load, imposed load and wind load should be taken as the dead load, imposed load and wind load calculated in accordance with the provisions of the Building (Construction) Regulations;
- (2) The characteristic strength of concrete should be taken as the specified grade strength given in the Building (Construction) Regulations;
- (3) The characteristic strength of concrete used for design should not exceed 45 MPa;
- (4) The characteristic strength of concrete used for design should not be increased in respect of age at loading;
- (5) The short-term modulus of elasticity, creep, shrinkage and other properties of concrete should be taken from this Code instead of from the British Standards;
- (6) In ultimate strength design each of the combinations of loading given in Table 7.1 should be considered, instead of the load combinations given in BS 8110, or in addition to the load combinations given in BS 5400, as appropriate to the type of structure.
- (7) Specified characteristic strength of grade 460/425 reinforcement, f_y , should not to exceed—
 - 460 MPa—6 mm dia up to and including 16 mm dia
 - 425 MPa—Over 16 mm dia
- (8) Concrete material specification and construction Clauses 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11 of BS 8110 are not suitable and should not be used.

Table 7.1 Load combinations

Load combination	Load type					
	Dead		Imposed		Earth and Water Pressure	Wind
	Adverse	Beneficial	Adverse	Beneficial		
1. Dead and imposed (and earth and water pressure)	1.5	1.0	1.7	0	1.5	—
2. Dead and wind (and earth and water pressure)	1.5	1.0	—	—	1.5	1.5
3. Dead and wind and imposed (and earth and water pressure)	1.3	1.0	1.3	0	1.3	1.3

- (9) Immediately after compaction and finishing concrete should be protected against harmful effects of weather, running water and drying out. The protection should be applied by using one of the following methods—
 - (a) For non-liquid retaining structures
 - (i) Except for surfaces against which concrete or applied finishes have subsequently to be placed, the concrete should be cured by application of an approved liquid curing membrane. Application should be by a low-pressure spray at the rate recommended by the manufacturer. On horizontal surfaces the membrane should be applied immediately after finishing the concrete, and on vertical surfaces immediately after removing the formwork.
 - (ii) After thoroughly wetting, the concrete should be covered with a layer of approved water-proof paper or plastic membrane until the concrete has reached the age of 4 days.
 - (iii) The concrete should be completely covered with a layer of fine aggregate at least 25 mm thick, hessian, sacking, canvas or similar absorbent material. Such covering layer should be kept constantly wet until the concrete has reached the age of 4 days.

(b) For liquid-retaining structures

- (i) After completion of the finishing process, all exposed surfaces shall be covered with a layer of approved plastic sheeting until such time as the concrete has hardened sufficiently to permit water curing. Water curing shall be effected whenever possible by the continuous spraying of cool water for a period of 2 days. Particular care shall be taken to avoid thermal shock at the surface of the concrete caused by the intermittent application of large quantities of cold water.
- (ii) Curing method as detailed in sub-clause (b)(i) should continue or be substituted by the method detailed in sub-clause (a)(ii) until the concrete has reached the age of 7 days.
- (iii) Formwork to concrete walls and columns should be kept cool by water sprays as soon as the concrete has hardened sufficiently and until the formwork is removed, then one of the curing methods as detailed in sub-clauses (a)(ii) and (a)(iii) should be adopted until the concrete has reached the age of 7 days.