

BRITISH STANDARD CODE OF PRACTICE

CP 101 : 1972

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FOUNDATIONS AND SUBSTRUCTURES

**For Non-industrial Buildings of
not more than Four Storeys**

**THE COUNCIL FOR CODES OF PRACTICE
BRITISH STANDARDS INSTITUTION**

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**Incorporating amendments issued June 1975 (AMD 1754)
and February 1978 (AMD 2471)**

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FOUNDATIONS AND SUBSTRUCTURES FOR NON-INDUSTRIAL BUILDINGS OF NOT MORE THAN FOUR STOREYS

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This Code of Practice makes reference to the following British Standards:

- BS 12. Portland cement (ordinary and rapid-hardening). Part 2. Metric units.
- BS 65 & 540. Clay drain and sewer pipes including surface water pipes and fittings. Part 1. Pipes and fittings.
- BS 146. Portland-blastfurnace cement. Part 2. Metric units.
- BS 187. Calcium silicate (sandlime and flintlime) bricks. Part 2. Metric units.
- BS 368. Precast concrete flags.
- BS 410. Test sieves.
- BS 416. Cast iron spigot and socket soil, waste and ventilating pipes (sand cast and spun) and fittings.
- BS 493. Airbricks and gratings for wall ventilation. Part 2. Metric units.
- BS 743. Materials for damp proof courses. Metric units.
- BS 877. Foamed or expanded blastfurnace slag light weight aggregate for concrete. Part 2. Metric units.
- BS 882, 1201. Aggregates from natural sources for concrete (including granolithic). Part 2. Metric units.
- BS 890. Building limes.

- BS 988, 1097,
1076, 1451. Mastic asphalt for building (limestone aggregate).
- BS 1047. Air-cooled blast furnace slag coarse aggregate for concrete. Part 2. Metric units.
- BS 1162, 1410,
1418. Mastic asphalt for building (natural rock asphalt aggregate).
- BS 1180. Concrete bricks and fixing bricks.
- BS 1450. Black pitch mastic flooring.
- BS 2760. Pitch-impregnated fibre pipes, and fittings, for drainage below and above ground.
- BS 3656. Asbestos cement pipes and fittings for sewerage and drainage.
- BS 4466. Bending dimensions and scheduling of bars for the reinforcement of concrete.
- CP 102. Protection of buildings against water from the ground.
- CP 114. Structural use of reinforced concrete in buildings. Part 2. Metric units.
- CP 121.101. Brickwork.
- CP 121.201. Masonry walls ashlarred with natural stone or with cast stone.
- CP 121.202. Masonry. Rubble walls.
- CP 122. Walls and partitions of blocks and of slabs.
- CP 123.101. Dense concrete walls.
- CP 204. In-situ floor finishes Part 2. Metric units.
- CP 2001. Site investigations.
- CP 2003. Earthworks.
- *CP 2004. Foundations.

This Code of Practice also makes reference to the following Civil Engineering Code of Practice:

- No. 2. Earth retaining structures *(issued by the Institution of Structural Engineers).

*Under revision. To be issued as CP 2002.

British Standard Codes of Practice are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this Code of Practice:
Committee reference: BLC/39

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This Code of Practice represents a standard of good practice and takes the form of recommendations: compliance with it does not confer immunity from relevant legal requirements including regulations and byelaws.

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FOUNDATIONS AND SUBSTRUCTURES

FOR NON-INDUSTRIAL BUILDINGS OF NOT MORE
THAN FOUR STOREYS

FOREWORD

This Code of Practice has been metricated under the authority of the Codes of Practice Committee for Building. It differs from the 1963 revision in that the values affecting foundation designs are expressed in SI units and some minor amendments have been incorporated. It supersedes the 1963 edition.

Recent research following collapses in 1973 and 1974 has considerably altered the understanding of the behaviour and sensitivity of high alumina cement concrete. As a result of both the research and the events themselves there is not, at this time, the consensus of opinion necessary for agreement on the recommendations for the use of this material. Consequently, an engineer wishing to specify concrete made with high alumina cement must rely entirely on his own engineering judgement, based on his own experience in the use of this particular cement, without guidance from this Code of Practice.

*As added
June 1975*

1. GENERAL

1.1 SCOPE

This Code is intended to give guidance on good practice to designers, builders and the authorities concerned with the legal requirements relating to building. The Code relates to buildings of not more than four storeys in height, of such a type that their foundation loads are dispersed evenly on to the ground and where ground conditions can be proved to be adequate.

Buildings of a specialist nature or involving a large element of structural engineering design are not intended to be covered by this Code, although it may be applicable in some instances.

This Code does not cover foundations and structures made with high alumina cement.

*As added
June 1975*

1.2 DEFINITIONS

For the purposes of this Code the following definitions apply:

<i>Allowable bearing pressure</i>	The pressure applied to the ground by the load.
<i>Back-fill</i>	Materials used or reused to fill an excavation.
<i>Bearing capacity (presumed bearing value)</i>	The safe load per unit area which the ground can carry.
<i>Cohesive soils</i>	Soils such as clay consisting of the finer and altered products of rock weathering, possessing in their natural state cohesion and plasticity, the former even when dry.

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<i>Finished ground level</i>	The level of the final surface of the ground adjacent to the building.
<i>Footing</i>	A stepped construction to spread the load at the foot of a wall or column.
<i>Foundation</i>	That part of the structure in direct contact with and transmitting loads to the ground.
<i>Pad foundation</i>	An isolated foundation.
<i>Raft foundation</i>	A foundation continuous in two directions usually covering an area equal to or greater than the base area of the structure.
<i>Strip foundation</i>	A foundation providing a continuous longitudinal bearing.
<i>Wide-strip foundation</i>	A strip foundation of such width that transverse reinforcement is necessary.
<i>Ground beam</i>	A beam in a substructure transmitting a load to a pile, pad or other foundation.
<i>Ground-bearing (or supporting ground)</i>	The ground in contact with, and receiving load from, the foundation.
<i>Ground slab</i>	A concrete floor slab that rests on the ground within the external walls of the building.
<i>'Made' ground</i>	Ground that has been formed by using material to fill in a depression or to raise the level of a site.
<i>Non-cohesive soils</i>	Soils such as sands and gravels that include the coarser and largely siliceous and unaltered products of rock weathering. They possess no plasticity and tend to lack cohesion, especially when in the dry state.
<i>Oversite concrete</i>	A thin layer of concrete resting on the ground or filling, which does not act as a floor slab.
<i>Pile</i>	A long slender structural member used to transmit foundation loads to an underlying soil mass. The main types are bored and augered cast in place, driven cast in place and driven pre-cast.
<i>Retaining wall</i>	A wall designed to resist lateral pressure from retained material.
<i>Sleeper walls</i>	Low walls erected at intervals between the main walls to provide intermediate supports to a lower suspended floor.