

Glossary of

Building and civil engineering terms

Part 2. Civil engineering

Section 2.2 Substructures. Earthworks. Foundations. Tunnels

Subsection 2.2.1 Earthworks

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee B/500, Basic data, upon which the following bodies were represented:

- Building Employers Confederation
- Consumer Policy Committee of BSI
- Convention of Scottish Local Authorities
- Department of Education and Science
- Department of the Environment
- Incorporated Association of Architects and Surveyors
- Meterological Office
- National Building Specification Ltd.
- National Council of Building Material Producers
- National House-building Council
- Royal Institute of British Architects
- Society of Chief Architects of Local Authorities

The following bodies were also represented in the drafting of the standard, through subcommittee B/500/4, Terminology:

- Association of Builders Hardware Manufacturers
- Brick Development Association
- British Cement Association
- British Waterways Board
- Chartered Institution of Building Services Engineers
- Clay Pipe Development Association Limited
- Department of the Environment (Property Services Agency)
- Department of Transport
- Federation of Civil Engineering Contractors
- Federation of Plastering and Drywall Contractors
- Glass and Glazing Federation
- Guild of Architectural Ironmongers
- Gypsum Products Development Association
- Institution of Civil Engineers
- Royal Institution of Chartered Surveyors
- Timber Trade Federation

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Foreword

This Subsection of Part 2 of BS 6100 has been prepared by Technical Committee B/500, Basic data. This Subsection covers that branch of civil engineering concerned with the planning, design and construction of earthworks and supersedes BS 6100 : Subsection 2.2.1 : 1990, which is withdrawn.

This edition introduces technical changes but it does not reflect a full review or revision of the standard, which will be undertaken in due course.

As far as possible the definitions in this Subsection of BS 6100 are technically equivalent to those in BS 8004 *Code of practice for foundations*, BS 6031 *Code of practice for earthworks* and BS 1377 *Methods of test for soils for civil engineering purposes*. It also includes a number of terms that were included in BS 892 which has been withdrawn. However, it has been necessary to change some terms and definitions to ensure that they are acceptable for general use and are in accordance with current practice. The definitions of terms in group 9 'Explosives and blasting' are consistent with BS 5607 *Code of practice for safe use of explosives in the construction industry* and are technically equivalent, though in some cases there have been minor stylistic changes.

The need for consistency in style and format throughout the glossary has also involved changes to terms and definitions included in other existing British Standards.

Only a few basic terms for ground anchorages have been included. More specific and detailed terms and definitions are given in BS 8081 *Code of practice for ground anchorages*.

A general introduction to and explanation of this glossary is given in Part 0 of BS 6100 which itemizes the Parts, Sections and Subsections into which this glossary is divided and provides a general alphabetical index of all the terms in the Sections and Subsections already published. Those using individual Sections of this glossary are urged to consult Part 0 when doing so.

The other Sections of this part are as follows.

- 2.1 *Structural design and elements*
- 2.3 *Superstructures. Bridges. Large span structures*
- 2.4 *Highway, railway and airport engineering*
- 2.5 *Water engineering*
- 2.6 *Natural waters. Inland. Coastal. Marine*
- 2.7 *Public health. Environmental engineering*
- 2.8 *Pipelines. Ducts*

The other Subsections in this section are as follows.

- 2.2.2 *Substructures and foundations*
- 2.2.3 *Tunnels*

Terms are listed alphabetically in the index and are referred to by numbers which are found against the term in the body of the Subsection. They are arranged in a classified order, each term having an individual number consisting of seven digits in two parts, the first of three digits, the second of four. The first three digits represent the number of the Part, Section and Subsection. The fourth digit represents the group of terms, the fifth digit represents the subgroup of terms and the last two digits represent the place within the subgroup.

Alternative terms are given in medium type below the preferred term with their status indicated, e.g. 'deprecated', 'non-preferred'. These terms are not individually numbered, but are included in the index with a reference to the preferred term. Terms of more than one word, e.g. 'cohesive soil' are written in a direct style, not as 'soil, cohesive'. The inverted term is included in the index with a reference to the direct term.

It is to be noted that, while this Subsection deals with the more basic terms connected with civil engineering, many of the head terms relating to more specific aspects will occur only in the other, relevant Sections.

Italicized words indicate terms that are defined elsewhere in this Subsection.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

No.	Term	Definition
221 1	Base terms	
221 1001	earthwork	Work of excavating or raising of ground.
221 1002	earthworks	Result of <i>earthwork</i> .
221 1003	excavation	Result of digging, lifting and removing earth, <i>fill</i> or other materials from the ground.
221 1004	soil	Mineral material that results from the weathering of <i>rock</i> .
221 1005	rock	Relatively hard naturally occurring part of the earth's crust that has not been broken down into loose material that can be readily excavated by hand. NOTE. A geological definition for rock is given in BS 6316 as 'A natural mass of one or more minerals that may be consolidated or loose (excluding top soil)'.
221 1006	stratum <i>strata plural</i>	Naturally occurring layer of a single <i>soil</i> or <i>rock</i> type.
221 1007	retaining wall	Wall that provides lateral support to the ground or to resist pressure from a mass of other material.
221 1008	ground anchorage	Installation capable of transmitting an applied tensile load to a loadbearing <i>stratum</i> .
221 1009	drainage	Removal of surplus water.
221 1010	dewatering	Procedure to lower the level of groundwater locally.
221 2	Soils	
221 21	Soil types and strata	
221 2101	topsoil	Surface layer of <i>soil</i> given fertility by the action of living organisms and the presence of organic matter.
221 2102	subsoil	<i>Soil</i> immediately below <i>topsoil</i> .
221 2103	peat	Dark, usually fibrous, spongy <i>soil</i> of vegetable origin and characterized by a high degree of compressibility.
221 2104	clay	Loose, extremely fine grained sediment or soft <i>rock</i> composed of particles with diameters less than 0.002 mm, mainly of clay minerals and other minerals, especially quartz, feldspars and carbonates.
221 2105	clay puddle <i>pug deprecated</i>	<i>Clay</i> that has been remoulded with water to such a consistency that it is pliable under hand pressure.
221 2106	cohesive soil	<i>Soil</i> that, by virtue of its <i>clay</i> content and moisture, will form a coherent mass.
221 2107	non-cohesive soil	<i>Soil</i> that will not form a coherent mass.
221 2108	overconsolidated clay	<i>Clay</i> that still retains some of the imposed stress from a previous greater <i>overburden</i> (1).

No.	Term	Definition
221 2109	colluvial deposit	<i>Rock</i> deposited by gravity from its place of formation.
221 2110	drift	<i>Soil</i> deposited as a result of glacial action.
221 2111	aeolian deposit wind deposit <i>deprecated</i>	<i>Soil</i> deposited as a result of wind action.
221 2112	alluvial deposit	<i>Soil</i> deposited by a stream or river, in its channel or on its flood plain.
221 2113	silt	Sediment with particle size ranging from 0.002 mm to 0.06 mm.
221 2114	granular soil	<i>Non-cohesive soil</i> the particle size of which is greater than 0.06 mm.
221 2115	sand	Non-cohesive granular material that results from natural disintegration of <i>rock</i> and consists of particles between 0.06 mm and 2.00 mm in size.
221 2116	running sand	<i>Sand</i> that exhibits flow characteristics similar to liquid due to lack of confinement or water flow.
221 2117	gravel shingle <i>deprecated</i>	Non-cohesive granular material that results from natural disintegration of <i>rock</i> and consists of particles between 2 mm and 60 mm in size.
221 2118	cobble	Rounded to sub-angular <i>rock</i> fragments between 60 mm and 200 mm in size.
221 2119	boulder	Rounded fragment of <i>rock</i> , usually large (more than 256 mm).
221 2120	hoggin	Naturally occurring material that consists mainly of <i>gravel</i> and <i>sand</i> and contains sufficient <i>clay</i> to bind the mixture together when compacted.
221 2121	loam	Fertile <i>soil</i> , chiefly of <i>clay</i> , <i>silt</i> and <i>sand</i> , often containing decayed vegetable matter.
221 2122	marl	Mixture of calcite and <i>clay</i> .
221 2123	non-plastic soil	<i>Soil</i> with a <i>plasticity index</i> of zero or one of which the <i>plastic limit</i> cannot be determined.
221 2124	overburden (1)	<i>Soil</i> or <i>rock</i> that overlies other material.
221 2125	overburden (2)	Material, including <i>topsoil</i> and <i>subsoil</i> , overlying the mineral or minerals to be extracted.
221 2126	heavy ground	Ground in which excavated faces require support relatively quickly.
221 2127	saturated soil	<i>Soil</i> in which all <i>voids</i> are filled with water.
221 2128	stabilized soil	<i>Soil</i> that has been modified by techniques such as <i>compaction</i> , chemical means or <i>dewatering</i> to improve and maintain its load-carrying capacity and resistance to weathering.

No.	Term	Definition
221 2129	spoil	Excavated material that is unsuitable or surplus to the requirements of the works.
221 22 Characteristics and testing		
221 2201	bulk density	Mass per unit volume of material, including voids and liquids.
221 2202	dry density	Mass of material, dried to constant mass at 105 °C, per unit volume of undried materials.
221 2203	maximum dry density	<i>Dry density</i> of soil obtained by a specified amount of <i>compaction</i> at the <i>optimum moisture content</i> .
221 2204	relative completion	Ratio of the <i>dry density</i> of a soil to its <i>maximum dry density</i> .
221 2205	moisture content of a soil	Mass of water that can be removed from a <i>soil</i> , usually by heating at 105 °C, expressed as a percentage of the dry mass.
221 2206	optimum moisture content Proctor optimum <i>deprecated</i>	Moisture content of a soil granular material that, when compacted under specified conditions, will produce the greatest <i>dry density</i> .
221 2207	liquid limit	<i>Moisture content of a soil</i> at which it becomes too wet to be in a plastic condition. NOTE. This is determined by the liquid limit test given in BS 1377.
221 2208	Atterberg limits	Limits of <i>moisture content of a soil</i> below which a <i>cohesive soil</i> is no longer plastic and above which it is liquid (i.e. <i>plastic limit</i> and <i>liquid limit</i>).
221 2209	plastic limit	<i>Moisture content of a soil</i> at which it becomes too dry to be in a plastic condition. NOTE. This is determined by the plastic limit test given in BS 1377.
221 2210	liquidity index	Ratio of the difference between <i>moisture content of a soil</i> and <i>plastic limit</i> to <i>plasticity index</i> . NOTE. The liquidity index (I_L) is determined from the equation: $I_L = \frac{W - W_p}{W_L - W_p}$ where W is the <i>moisture content of a soil</i> W_p is the <i>plastic limit</i> W_L is the <i>liquid limit</i>
221 2211	plasticity index	Numerical difference between the <i>liquid limit</i> and the <i>plastic limit</i> of a soil.
221 2212	dry density/moisture content relationship	Relationship between <i>dry density</i> and <i>moisture content of a soil</i> when a given amount of <i>compaction</i> is applied.
221 2213	clay fraction	Fraction of a <i>soil</i> composed of particles smaller in size than 0.002 mm.

No.	Term	Definition
221 2214	gravel fraction	Fraction of a <i>soil</i> composed of particles between 2 mm and 60 mm in size.
221 2215	sand fraction	Fraction of a <i>soil</i> composed of particles between 0.06 mm and 2.00 mm in size.
221 2216	silt fraction	Fraction of a <i>soil</i> composed of particles between 0.002 mm and 0.06 mm in size.
221 2217	uniformity coefficient	Ratio of the particle size of a graded <i>soil</i> below which 60 % by mass of the <i>soil</i> sample passes, to the particle size below which 10 % by mass of the <i>soil</i> sample passes.
221 2218	particle size distribution	Percentage of prescribed grain sizes present in a <i>soil</i> .
221 2219	voids	Spaces filled with fluids, unusually air or water, between particles.
221 2220	voids ratio	Ratio of the volume of <i>voids</i> to the volume of solid particles in a mass of material.
221 2221	porosity	Characteristic of a material of having pores or other <i>voids</i> , measured as the ratio of <i>voids</i> to the volume.
221 2222	perched water table	Water table maintained, usually by an impervious <i>stratum</i> , above the general standing water level in the ground below.
221 2223	pore water pressure	Pressure of water contained in <i>soil</i> or <i>rock</i> .
221 2224	total stress	Combination of all stresses acting at a point in a <i>soil</i> or <i>rock</i> mass.
221 2225	total pressure	Pressure, at any horizon in the ground, principally from the weight of <i>overburden</i> (1).
221 2226	effective stress	Difference between <i>total stress</i> and <i>pore water pressure</i> . NOTE. For most purposes effective stress is that part of the <i>total stress</i> that is borne by inter-particle contact.
221 2227	boiling blowing <i>deprecated</i>	Displacement of <i>soil</i> at the base of an <i>excavation</i> or adjacent to the toe of an <i>embankment</i> caused by pressure of water.
221 2228	pore pressure ratio	Ratio of the <i>pore water</i> pressure to the <i>total pressure</i> .
221 2229	internal erosion	Removal of <i>soil</i> particles caused by flow of water through a <i>soil</i> .
221 2230	pipng	<i>Internal erosion</i> that leads to sudden collapse.
221 2231	artesian	Condition existing in an aquifer in which its head of water is sufficient to cause the water to rise above the surface of the ground.
221 2232	cryoturbation	Disturbance of a <i>soil</i> structure by the action of ground ice.
221 2233	permeability	Characteristic of a material that determines the rate at which fluids pass through it under the influence of differential pressure.