

Glossary of

Building and civil engineering terms —

Part 2: Civil engineering —

Section 2.5 Water engineering

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee (BDB/-) to Technical Committee BDB/3, upon which the following bodies were represented:

- Association of Builders Hardware Manufacturers
- Association of Building Component Manufacturers
- Brick Development Association
- British Precast Concrete Federation Ltd.
- British Standards Society
- Building Employers' Confederation
- Building Services Research and Information Association
- Chartered Institution of Building Services Engineers
- Concrete Society
- Contract Flooring Association
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Construction Industries Directorate)
- Department of the Environment (Property Services Agency)
- Department of the Environment for Northern Ireland
- Federation of Civil Engineering Contractors
- Fibre Building Board Organisation (FIDOR)
- Gypsum Products Development Association
- Incorporated Association of Architects and Surveyors
- Institution of Civil Engineers
- Institution of Highways and Transportation
- Institution of Structural Engineers
- Institution of Water and Environmental Management
- National Council of Building Material Producers
- National Federation of Roofing Contractors
- National House-building Council
- Royal Institute of British Architects
- Scottish Development Department
- Stone Federation
- Timber Trade Federation
- Water Companies Association
- Water Services Association of England and Wales

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Railways Board
- Department of Transport
- National Rivers Authority

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Foreword

This Section of Part 2 of BS 6100 has been prepared under the direction of the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee.

Where terms have been included in this Section that are also found in BS 3680-1 the definitions are considered to be technically equivalent in the cases where they are not identical.

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 and Subsections 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
- 2.2 Sub-structures. Earthworks. Foundations. Tunnels
- 2.3 Superstructures. Bridges, large span structures
- 2.4 Highway and railway engineering
- 2.6 Natural waters. Inland. Coastal. Marine
- 2.7 Public health. Environmental engineering
- 2.8 Pipelines. Ducts

Terms are listed alphabetically in the index and are referred to by numbers which are found against the terms in the body of the Section. 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 terms with their status indicated by “deprecated”. 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. “impounding reservoir” are written in a direct style, not as “reservoir, impounding”. The inverted term is included in the index with a reference to the direct term.

It has been necessary to repeat in this Section, certain terms from Section 1.0. Where this occurs, the definitions of such terms are preceded by a footnote symbol.

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

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

No.	Term	Definition
250 1 Base terms		
250 1001	water engineering	Engineering that deals with the flow, control, treatment and utilization of water.
250 1002	reservoir	Naturally occurring space or construction for storage, regulation and control of water.
250 1003	dam	^a Barrier constructed to hold back water in order to raise its level to form a reservoir or to prevent flooding.
250 1004	spillway wastewater, waste weir <i>deprecated</i>	Structure over which or through which excess water is discharged from a <i>reservoir</i> or channel.
250 1005	weir	Structure, over which water may flow, to control the upstream water level in a watercourse or other channel, or to measure the flow, or both.
250 1006	conduit	Pipe, channel or tunnel that conveys water.
250 1007	gate	Leaf or structure that is moved to stop or control the flow of water in a channel or through an opening.
250 1008	valve cock <i>deprecated</i>	Device that controls the rate of flow in a pipeline or from a vessel.
250 1009	pump	Mechanical device that produces pressure in a closed system or that causes a fluid to flow.
250 1010	water turbine	Prime mover, with a <i>turbine runner</i> rotated by water energy, used to generate power.
250 1011	head	Energy of liquid expressed as a vertical linear dimension.
250 2 Reservoirs and dams		
250 21 Reservoirs		
250 2101	impounding reservoir conservation reservoir <i>deprecated</i>	<i>Reservoir</i> , usually in the upper reaches of a watercourse, that collects surface water from an open area of land.
250 2102	pumped storage reservoir	High level <i>reservoir</i> in a <i>pumped storage</i> scheme.
250 2103	millpond	<i>Impounding reservoir</i> that serves a watermill.
250 2104	retention water level	Maximum level to which water rises under normal operating conditions, exclusive of any provision for <i>flood surcharge</i> .
250 2105	top water level (1)	Lowest overflow level of <i>crest of a spillway</i> .
250 2106	top water level (2) normal top water level, full supply level <i>deprecated</i>	Highest water level in a <i>reservoir</i> in which the overflow level is controlled, exclusive of any provision for flood storage.
250 2107	maximum water level	Highest still water level in a <i>reservoir</i> during the probable maximum flood.
250 2108	flood surcharge	Maximum rise of still water level above <i>top water level (1)</i> or <i>(2)</i> during a design flood.
250 2109	reservoir capacity gross storage, gross capacity of reservoir <i>deprecated</i>	Gross capacity of a <i>reservoir</i> from the bottom of the <i>reservoir</i> up to <i>top water level (1)</i> or <i>(2)</i> .
250 2110	active storage usable storage, useful storage, working storage <i>deprecated</i>	Volume of water in a <i>reservoir</i> that is available for its intended use.

^a Repeated from Section 1.0.

No.	Term	Definition
250 2111	inactive storage	Volume of water in a <i>reservoir</i> measured between invert level of lowest outlet and minimum operating level.
250 2112	live storage	Sum of <i>active storage</i> and <i>inactive storage</i> .
250 2113	dead storage	Volume of water in a <i>reservoir</i> measured below the <i>invert level</i> of the lowest outlet.
250 2114	bank storage ground storage <i>deprecated</i>	Water that has infiltrated from a <i>reservoir</i> into the surrounding ground where it remains until water level in the <i>reservoir</i> is lowered.
250 2115	freeboard	Vertical distance between water level and lowest level of a water retaining structure at which uncontrolled overflow would occur.
250 2116	net freeboard dry freeboard, flood freeboard, wave freeboard <i>deprecated</i>	Vertical distance between <i>maximum water level</i> and <i>top of dam</i> or other water retaining structure.
250 2117	dam freeboard gross freeboard <i>deprecated</i>	Vertical distance between <i>top water level (1)</i> or <i>(2)</i> and <i>top of dam</i> .
250 2118	capacity curve	Graph that shows the volume of water in a <i>reservoir</i> or tank at any given water level.
250 2119	drawdown	Lowering or drop in water level of a <i>reservoir</i> .
250 2120	drawdown range	Difference between <i>top water level (2)</i> and the level of the top of the <i>inactive storage</i> .
250 2121	drawdown zone	Area of the bank of a <i>reservoir</i> and <i>dam</i> uncovered by <i>drawdown</i> .
250 2122	valve tower	Tower within a <i>reservoir</i> that houses valved draw-off pipes at various levels.
250 2123	scour outlet bottom outlet <i>deprecated</i>	Structure in bed of <i>reservoir</i> at upstream end of <i>scour pipe</i> or <i>scour tunnel</i> .
250 2124	scour pipe	Outlet pipe from a <i>reservoir</i> , usually an <i>impounding reservoir</i> , at the lowest possible level for discharging water.
250 2125	scour tunnel scour culvert <i>deprecated</i>	Outlet tunnel for discharging water and sediment from a <i>reservoir</i> , usually an <i>impounding reservoir</i> , at the lowest possible level.
250 2126	scour sluice	<i>Sluice gate</i> that controls flow through a <i>scour outlet</i> .

250 22 Dams: types

250 2201	embankment dam	<i>Dam</i> formed as an embankment.
250 2202	earth dam earth fill dam <i>deprecated</i>	<i>Embankment dam</i> constructed of soil.
250 2203	gravity dam	<i>Dam</i> that relies on its weight for stability.
250 2204	arch dam	<i>Dam</i> that obtains its resistance to the thrust of water from horizontal arching action, the thrust being transmitted to its abutments.
250 2205	gravity arch dam	<i>Dam</i> that obtains its resistance to the thrust of water both from horizontal arching action and from its own weight.
250 2206	buttress dam	<i>Dam</i> that consists of a watertight wall supported at intervals on the downstream side by a series of buttresses.
250 2207	rock fill dam	<i>Embankment dam</i> constructed mainly of rock.

No.	Term	Definition
250 2208	hydraulic fill dam	<i>Embankment dam</i> constructed of <i>hydraulic fill</i> .
250 2209	mine tailings dam	<i>Dam</i> built to store waste materials from mining operations.
250 2210	constant radius arch dam	<i>Arch dam</i> in which every horizontal section of the <i>dam</i> has approximately the same radius of curvature.
250 2211	constant angle arch dam	<i>Arch dam</i> in which the angle subtended by any horizontal section is constant throughout the height of the <i>dam</i> .
250 2212	double curvature arch dam	<i>Arch dam</i> that is curved vertically as well as horizontally.
250 2213	arch buttress dam multiple arch dam <i>deprecated</i>	<i>Buttress dam</i> in which the upstream part comprises a series of arches.
250 2214	flat slab buttress dam	<i>Buttress dam</i> in which the upstream part is a relatively thin inclined flat slab usually made of reinforced concrete.
250 2215	solid head buttress dam	<i>Buttress dam</i> in which the upstream ends of all buttresses are enlarged symmetrically to meet those adjacent, thereby forming a continuous structure.
250 2216	prestressed dam	<i>Dam</i> the stability of which depends in part on the tension in vertical steel wires, cables or rods that pass through the <i>dam</i> and are anchored into the foundation rock.
250 2217	fabridam	<i>Dam</i> made of flexible membrane, anchored to the river bed, that can be inflated with water or air, or both, and is completely collapsible.
250 2218	gabion dam	<i>Gravity dam</i> built using gabions.
250 2219	crib dam	<i>Gravity dam</i> built using crossed timber members and fill.
250 23 Dams: parts		
250 2301	top of dam crest of dam <i>deprecated</i>	Uppermost surface of a <i>dam</i> , usually a road or walkway excluding any parapet wall, railings, etc.
250 2302	heel of dam	Junction of the upstream face of a <i>gravity dam</i> with the ground surface.
250 2303	toe of dam	Junction of the downstream face of a <i>gravity dam</i> or of the face of a <i>shoulder</i> with the ground surface.
250 2304	core	Zone of material of low permeability in an <i>embankment dam</i> that extends from the foundation to near the <i>top of dam</i> and that inhibits seepage in a broadly horizontal direction.
250 2305	core wall	Wall of material of low permeability in an <i>embankment dam</i> .
250 2306	shoulder	Part of <i>embankment dam</i> , on the upstream or downstream side of the <i>core</i> , that supports the <i>core</i> .
250 2307	cut-off trench	Trench excavated below the general foundation level to a layer of low permeability and then filled with a material of low permeability.
250 2308	cut-off wall	Wall of material of low permeability built into the foundation to reduce <i>seepage</i> .
250 2309	cut-off depth	Vertical distance from foundation level to the lowest level of a <i>cut-off trench</i> or <i>cut-off wall</i> .
250 2310	grout cut-off grout curtain <i>deprecated</i>	Thin vertical zone in the foundation into which grout is injected to reduce <i>seepage</i> under a <i>dam</i> .
250 2311	grout cap	Concrete pad constructed to facilitate subsequent pressure grouting of the <i>grout curtain</i> below.

No.	Term	Definition
250 2312	grout blanket	Area of foundation of an <i>embankment dam</i> systematically grouted to a uniform depth.
250 2313	upstream blanket	Layer of impervious material placed on a <i>reservoir</i> bed or under the upstream <i>shoulder</i> of an <i>embankment dam</i> , or both.
250 2314	clay blanket	Layer of clay placed on the <i>reservoir</i> bed or the upstream face of an <i>embankment dam</i> , or both.
250 2315	finger drain	One of a series of narrow parallel trenches filled with pervious material constructed in the foundation material of the downstream <i>shoulder</i> of an <i>embankment dam</i> to relieve pore water pressure.
250 2316	filter zone	Band of granular material incorporated in an <i>embankment dam</i> and graded to allow <i>seepage</i> through it without causing the migration of material within the <i>dam</i> .
250 2317	transition zone semi-pervious zone <i>deprecated</i>	Part of an <i>embankment dam</i> between a <i>filter zone</i> and a less permeable zone and whose grading is intermediate between the two.
250 2318	drainage curtain	Line of <i>relief wells</i> .
250 2319	dam membrane	Sheet or thin zone of a flexible impervious material placed on the upstream face of an <i>embankment dam</i> .
250 2320	slope protection	Layer of material placed on an embankment slope to protect it against wave action and other sources of damage.
250 2321	weighting of a slope berm <i>deprecated</i>	Additional material placed on the slope of an embankment, so as to form a <i>berm</i> to improve stability.
250 2322	berm	Ledge formed in the side slope of earthworks.
250 2323	toe weight	Additional material placed predominantly at the toe of an <i>embankment dam</i> to increase its stability.
250 2324	relief well	Vertical well or borehole downstream of, or in downstream <i>shoulder</i> of, a <i>dam</i> to collect <i>seepage</i> water passing through or under the <i>dam</i> and so reduce pore water pressure.
250 2325	toe filter	Graded filter material forming the downstream toe of an <i>earth dam</i> .
250 2326	hydraulic fill	Embankment material conveyed in suspension and allowed to settle in place.
250 2327	inspection gallery	Passage in a <i>gravity dam</i> to give access for observation of readings from instruments in the <i>dam</i> to monitor performance of the structure.
250 2328	drainage gallery	Passage in a <i>gravity dam</i> to collect <i>seepage</i> from <i>uplift</i> relief pipes.
250 2329	fish pass	Artificial passage, down which water flows, to enable migratory fish to surmount an obstruction such as a <i>weir</i> or a <i>dam</i> .
250 2330	fish ladder	<i>Fish pass</i> in the form of an ascending series of pools.
250 2331	seepage collar	Projecting collar of concrete built around the outside of a <i>conduit</i> under an <i>embankment dam</i> , to reduce <i>seepage</i> through a material adjacent to the <i>conduit</i> .
250 2332	toe loading	Material deposited at the foot of a soil or rock fill slope to improve slope stability.

No.	Term	Definition
250 24 Dams: instrumentation		
250 2401	settlement gauge	Device used for measuring settlement within fill that comprises nominally vertical telescopic tubing with protruding crossarms at various levels, installed in fill, the vertical movement at the joints in the tubing being measured by lowering down a torpedo with spring-loaded pawls.
250 2402	magnetic settlement gauge	Device used for measuring settlement within fill that comprises nominally vertical non-magnetic tubing installed in fill or a borehole with magnetic plates at various levels anchored in the fill, the vertical movement being measured by lowering down the tubing a probe that responds to the local magnetic field at each plate.
250 2403	settlement plate	Device used for measuring settlement within fill by means of a horizontal plate connected to riser pipes.
250 2404	inverted plumb line	Device for measuring horizontal movement of a structure such as a <i>dam</i> by reference to a vertical wire strung between a fixed base in stable ground and a floating top.
250 2405	borehole extensometer	Device to determine displacements, that comprises a set of rods, each of a different length and individually anchored within a borehole, terminating at a measuring instrument at the surface.
250 2406	slip rod	One of a series of rods of various lengths used to measure the magnitude and position of deflection of a buried vertical tube by whether or not the rod will pass down the tube, from which horizontal displacements of the surrounding soil can be determined.
250 2407	hydraulic piezometer	Piezometer from which pore water pressure is relayed to the ground surface for measurement.
250 2408	pneumatic piezometer	Piezometer read by measuring the pressure of a gas, typically nitrogen, required to balance a <i>diaphragm valve</i> near a porous tip.
250 2409	electrical piezometer	Piezometer read by measuring the deflection of a diaphragm near a porous tip, using an electrical transducer.
250 2410	Casagrande pot	Porous tubular element attached to the base of a pipe embedded in soil to measure pore water pressure.
250 2411	total pressure cell	Device for measuring total soil pressure normal to the face of the cell.
250 2412	strain gauge	Device for measuring small displacements from which strains can be calculated.
250 2413	vibrating wire strain gauge	<i>Strain gauge</i> in which the changes in frequency of a vibrating wire are related to strain.
250 2414	electrical resistance strain gauge	<i>Strain gauge</i> in which the changes in resistance of an electrical element are related to strain.
250 2415	mechanical strain gauge	<i>Strain gauge</i> that gives a direct measure of the change in distance between two or more reference points.
250 2416	optical strain gauge	<i>Strain gauge</i> that uses optical means of measurement.
250 2417	stand pipe	Vertical pipe installed in the ground to enable the groundwater level to be determined.
250 2418	tell tale	Strip of glass or other brittle material, firmly anchored either side of a crack that, when broken, gives a coarse indication of movement.

No.	Term	Definition
250 3 Spillways and energy dissipating works		
250 31 Spillway types		
250 3101	bellmouth spillway shaft spillway, morning glory spillway <i>deprecated</i>	<i>Spillway</i> that consists of a vertical shaft with a bellmouth inlet.
250 3102	ski jump spillway	<i>Spillway</i> with a <i>chute</i> at the bottom of which there is a <i>flip bucket</i> that throws water up into the air to dissipate energy at a safe distance from the bottom of the <i>spillway</i> .
250 3103	siphon spillway	<i>Spillway</i> that operates on the siphon principle.
250 3104	air regulated siphon spillway	<i>Siphon spillway</i> in which automatic regulation of the flow to match the discharge of water without appreciable change in the upstream water level is achieved by the admission of air, as necessary, at the inlet.
250 3105	side channel spillway	<i>Spillway</i> the <i>crest</i> of which is roughly parallel to the channel immediately downstream of the <i>spillway</i> .
250 3106	auxiliary spillway emergency spillway <i>deprecated</i>	Secondary <i>spillway</i> designed to operate only during exceptionally large floods.
250 3107	fuse plug spillway	Embankment that, when overtopped, erodes in a controlled manner to form an <i>auxiliary spillway</i> .
250 3108	bye channel byewash <i>deprecated</i>	Channel constructed to divert run off around and not into a <i>reservoir</i> .

250 32 Spillway parts

250 3201	spillway crest	Upper part of an uncontrolled <i>spillway</i> .
250 3202	training wall	Wall built to guide the flow of water in a watercourse.
250 3203	siphon hood	Structural member that provides the upper surface to contain flow in a <i>siphon spillway</i> .
250 3204	nappe deflector	Projection downstream of <i>crest</i> of a <i>siphon spillway</i> to deflect the flow against the <i>siphon hood</i> to prime the <i>siphon</i> .
250 3205	flip bucket	Structure that deflects high velocity water into an upwards trajectory.
250 3206	spillway channel	Channel that conveys water from the <i>crest</i> of a <i>spillway</i> to the river downstream.
250 3207	flashboard	Length of timber, concrete or steel placed on the <i>crest</i> of a <i>spillway</i> to raise the <i>retention water level</i> but which may be quickly removed at time of flood.

250 33 Energy dissipating works

250 3301	energy dissipator	Device constructed in a waterway to reduce substantially the kinetic energy of fast flowing water.
250 3302	stilling basin water cushion, stilling pool <i>deprecated</i>	Basin constructed downstream of a structure to dissipate the energy of fast flowing water and to protect the bed and banks from erosion.
250 3303	baffle block impact block <i>deprecated</i>	Block constructed in a channel or <i>stilling basin</i> to increase turbulence and thereby dissipate the energy of water flowing at high velocity.
250 3304	chute block	<i>Baffle block</i> constructed in the <i>chute</i> of a <i>spillway</i> .
250 3305	plunge pool	Deep water-filled basin for dissipating the energy of a free-trajectory jet entering it from a <i>spillway</i> .