backer rod—a flexible, compressible rod placed in a joint to reduce the depth of sealant and improve its shape factor; it also serves to support the sealant against sagging and indentation.

backpack grouting—see grouting, backpack.

back plastering—plaster applied to one face of a lath system following application and subsequent hardening of plaster applied to the opposite face. (See also parge.)

backshores—shores placed snugly under a concrete slab or structural member after the original formwork and shores have been removed from a small area without allowing the entire slab or member to deflect or support its own mass or existing construction loads.

backup wall—the inner layer of a masonry wall system.

balanced moment—moment capacity at simultaneous crushing of concrete and yielding of tension steel.

balanced reinforcement—an amount and distribution of reinforcement in a flexural member such that in working-stress design the allowable tensile stress in the steel and the allowable compressive stress in the concrete are attained simultaneously; or such that in strength design, the tensile reinforcement reaches its specified yield strength simultaneously with the concrete in compression reaching its assumed ultimate strain of 0.003.

band iron—thin metal strap used as a form tie, hanger, etc.

bar—an element, normally composed of steel, with a nominally uniform cross-sectional area used to reinforce concrete.

bar, coated—a bar on which a coating has been applied, usually to increase resistance to corrosion.

bar, deformed—a reinforcing bar with a manufactured pattern of surface ridges intended to reduce slip and increase pullout resistance of bars embedded in concrete.

bar, epoxy-coated—a reinforcing bar coated by an epoxy-resin system, usually to increase resistance to corrosion.
bar, high-bond—see bar, deformed (preferred term).

bar, plain—a reinforcing bar without surface deformations, or one having deformations that do not conform to the applicable requirements.

bar, reinforcement—see reinforcement.

bar, standard hooked—a reinforcing bar with the end bent into a hook to provide anchorage.

bar, tie—bar at right angles to, and tied to reinforcement to keep it in place.

bar bender—a tradesman who cuts and bends steel reinforcement; or a machine for bending steel reinforcement.

bar-end check—a check of the ends of reinforcing bars to determine whether they fit the devices intended for connecting the bars. (See also mechanical connection.)

bar schedule—a list of the reinforcement, showing the shape, number, size, and dimensions of every different element required for a structure or a portion of a structure.

bar spacing—the distance between parallel reinforcing bars, measured center to center of the bars perpendicular to their longitudinal axes.

bar support—hardware used to support or hold reinforcing bars in proper position to prevent displacement before and during concreting. (See also bat; bolster, slab; chair.)

barite—a mineral, barium sulfate (BaSO₄), used in either pure or impure form as concrete aggregate primarily for the construction of high-density radiation shielding concrete; designated “barytes” in the UK.

barrage—a low dam erected to control the level of a stream.

barrel (of cement)—a quantity of portland cement: 376 lb (4 bags) in the U.S. (obsolete); also wood or metal container formerly used for shipping cement.
barrel-vault roof—see roof, barrel-vault.

barrier, moisture—a vapor barrier.

barrier, vapor—membranes located under concrete floor slabs that are placed on grade to retard transmission of water vapor from the subgrade.

barrier wall—a wall system with two or more wythes of masonry with mortar-filled collar joint to form a solid wall.

bars, bundled—a group of not more than four parallel reinforcing bars in contact with each other, usually tied together.

bars, stem—bars used in the wall section of a cantilevered retaining wall or in the webs of a box; when a cantilevered retaining wall and its footing are considered as an integral unit, the wall is often referred to as the stem of the unit.

base—a subfloor slab or “working mat,” either previously placed and hardened or freshly placed, on which floor topping is placed in a later operation; also the underlying stratum on which a concrete slab, such as a pavement, is placed. (See also mud slab and subbase.)

base bead—see base screed (preferred term).

base coat—any plaster coat or coats applied before application of the finish coat.

base course—a layer of specified select material of planned thickness constructed on the subgrade or subbase of a pavement to serve one or more functions, such as distributing loads, providing drainage, or minimizing frost action; also the lowest course of masonry in a wall or pier.

base plate—a plate of metal or other material formerly placed under pavement joints and the adjacent slab ends to prevent the infiltration of soil and moisture from the sides or bottom of the joint opening; also a steel plate used to distribute vertical loads, as for bridge beams, building columns, or machinery.

base screed—a preformed metal screed with perforated or expanded flanges to provide a guide for thickness and planeness of plaster and to provide a separation between plaster and other materials.

basic creep—see creep, basic.
basket—see load-transfer assembly (preferred term).

bat—a broken brick sometimes used to support reinforcement. (See also bar support.)

batch—*n.* quantity of material (concrete, mortar, grout, etc.) mixed at one time; *v.* to weigh or volumetrically measure and introduce into the mixer the ingredients for a quantity of either concrete or mortar.

  batch, trial—a batch of concrete prepared to establish or check proportions of the constituents.

batch box—container of known volume used for measuring constituents of a batch of either concrete or mortar in proper proportions.

batch method—a quantity of grout materials are mixed or catalyzed at one time prior to injection.

batch mixer—a machine that mixes batches of concrete, mortar, or grout, in contrast to a continuous mixer.

batch plant—an installation for batching or for batching and mixing concrete materials.

batch weights—the quantities of the various ingredients (cement, water, the several sizes of aggregate, and admixtures if used) that compose a batch of concrete.

batched water—the mixing water added by a batcher to a cementitious mixture either before or during the initial stages of mixing (also called batch water).

batcher—a device for measuring ingredients for a batch of concrete.

batcher, automatic—a batcher equipped with gates or valves that, when actuated by a single starter switch, will open automatically at the start of the weighing operation of each material, and will close automatically when the designated quantity of each material has been reached, interlocked in such a manner that: a) the charging mechanism cannot be opened until the scale has returned to zero; b) the charging mechanism cannot be opened if the discharge mechanism is open; c) the discharge mechanism cannot be opened if the charging mechanism is open; d) the discharge mechanism cannot be opened until the designated quantity has been reached within the allowable tolerance; and e) if different kinds of aggregates or different kinds of...
cements are measured cumulatively in a single batcher, interlocked sequential controls are provided.

batcher, manual—a batcher equipped with gates or valves that are operated manually, with or without supplementary power (pneumatic, hydraulic, or electrical), the accuracy of the weighing operation being dependent on the operator’s observation of the scale.

batcher, semiautomatic—a batcher equipped with gates or valves that are separately opened manually to allow the material to be weighed but that are closed automatically when the designated quantity of each material has been reached.

batching—weighing or volumetrically measuring and introducing into the mixer the ingredients for a batch of either concrete or mortar.

batching, cumulative—measuring more than one ingredient of a batch in the same container by bringing the batcher scale into balance at successive total weights as each ingredient is accumulated in the container.

batten (also batten strip)—a narrow strip of wood placed over the vertical joint of sheathing or paneling; also used to hold several boards together. (See also cleat.)

batter—inclination from the vertical or horizontal.

batter boards—pairs of horizontal boards nailed to wooden stakes adjoining an excavation; used as a guide to elevations and to outline the building.

batter pile—see pile, batter.

bauxite—a rock composed principally of hydrous aluminum oxides; the principal ore of aluminum and a raw material for manufacture of calcium-aluminate cement.

bay—the space, in plan, between the centerlines of adjacent piers, mullions, or columns; a small, well-defined area of concrete placed at one time in the course of placing large areas, such as floors, pavements, or runways.

bead—a strip of applied sealant, glazing compound, or putty.
beam—a structural member subjected to primarily flexure, but also to axial load; and, the graduated horizontal bar of a weighing scale on which the balancing poises ride. (See also beam, spandrel; girder; girt; joist; ledger; purlin; and stringer.)

beam, double-tee—a precast concrete member composed of two stems and a combined top flange, commonly used as a beam but also used vertically in exterior walls.

beam, drop-in—a precast element simply supported on adjacent cantilevered elements.

beam, edge—a stiffening beam at the edge of a slab.

beam, grade—a reinforced concrete beam, usually at ground level, that strengthens or stiffens the foundation or supports overlying construction.

beam, simple—a beam without rotational restraint or continuity at its supports; also known as a simply supported beam.

beam, slender—a beam that, if loaded to failure without lateral bracing of the compression flange, would fail by buckling rather than in flexure.

beam, spandrel—a beam in the perimeter of a building, spanning between columns and usually supporting a floor or roof.

beam-and-slab floor (roof)—a reinforced concrete system in which a slab is supported by and is often monolithic with reinforced-concrete beams.

beam bottom—soffit or bottom form for a beam.

beam-column—a structural member subjected to axial load and flexure forces but primarily axial load.

beam form—a retainer or mold so erected as to give the necessary shape, support, and finish to a concrete beam.

beam form-clamp—any of various types of tying or fastening units used to hold the sides of beam forms.

beam hanger—a wire, strap, or other hardware device that supports formwork from structural
members.

beam pocket—opening left in a vertical member in which a beam is to rest; also an opening in the column or girder form where forms for an intersecting beam will be framed.

beam saddle—see beam hanger (preferred term).

beam side—vertical or sloping side of a beam.

beam test—a method of measuring the flexural strength (modulus of rupture) of concrete by testing a standard unreinforced beam.

bearing capacity—see allowable bearing capacity.

bearing stratum—the soil or rock stratum on which a concrete footing or mat bears or that carries the load transferred to it by a concrete pile, caisson, or similar deep foundation unit.

bed joint—a horizontal mortar joint between a repair material and a substrate.

bench—see pretensioning bed.

bending moment—see moment, bending.

bending moment diagram—a graphical representation of the variation of bending moment along the length of the member for a given stationary system of loads.

beneficiation—improvement of the chemical or physical properties of a raw material or intermediate product by the removal or modification of undesirable components or impurities.

bent, pile—two or more piles driven in a row transverse to the long dimension of the structure and fastened together by capping and (sometimes) bracing.

bent bar—a reinforcing bar bent to a prescribed shape. (See also hook; bar, hooked; stirrup; and tie.)

bentonite—a clay composed principally of minerals of the montmorillonoid group, characterized by high adsorption and very large volume change with wetting or drying.

Berliner—a type of terrazzo topping using small and large pieces of marble paving, usually
with a standard terrazzo matrix between pieces, also called Palladiana.

billet steel—see steel, billet.

binder—a cementing material, either a hydrated cement or reaction products of cement or lime and reactive siliceous material, the kind of cement and curing conditions governing the characteristics of the product formed; also materials such as asphalt, resins, and other materials forming the matrix of concretes, mortars, and sanded grouts.

biological shielding—shielding provided to attenuate or absorb nuclear radiation, such as neutron, proton, alpha and beta particles, and gamma radiation; the shielding is provided mainly by the density of the concrete, except that in the case of neutrons the attenuation is achieved by compounds of some of the lighter elements (for example, hydrogen and boron). (See also concrete, shielding.)

bituminous cement—see cement, bituminous.

Blaine apparatus—air-permeability apparatus for measuring the surface area of a finely ground cement, raw material, or other product. (See ASTM C 204.)

Blaine fineness—the fineness of granular materials such as cement and pozzolans, expressed as total surface area in square centimeters per gram, determined by the Blaine air-permeability apparatus and procedure. (See also surface, specific.)

Blaine test—see test, Blaine.

blanket, curing—a covering of sacks, matting, burlap, straw, waterproof paper, or other suitable material placed over freshly finished concrete. (See also burlap.)

blanket grouting—see grouting, blanket.

blast-furnace slag—the nonmetallic product consisting essentially of silicates and aluminosilicates of calcium and other bases that is developed in a molten condition simultaneously with iron in a blast furnace; (1) air-cooled blast-furnace slag is the material resulting from solidification of molten blast-furnace slag under atmospheric conditions; subsequent cooling may be accelerated by application of water to the solidified surface; (2) expanded blast-furnace slag is the low density, cellular material obtained by controlled processing of molten blast-furnace slag with water, or water and other agents, such as steam, compressed air, or both; (3) granulated blast-furnace slag is the glassy, granular material formed when molten blast-furnace slag is rapidly chilled, as by immersion in water;
and (4) ground granulated blast-furnace slag is granulated blast-furnace slag that has been finely ground and is a hydraulic cement.

bleaching—the fading of color toward white generally caused by exposure to chemicals or ultraviolet radiation.

bleeding—(1) the flow of mixing water within, or its emergence from newly placed concrete or mortar; (2) the absorption of oil resin or plasticizer from a compound into an adjacent porous surface; (3) the diffusion of color matter through a coating from underlying surfaces causing a color change.

bleeding capacity—the ratio of volume of water released by bleeding to the volume of paste or mortar.

bleeding rate—the rate at which water is released from a paste or mortar by bleeding.

blemish—any superficial defect that causes visible variation from a consistently smooth and uniformly colored surface of hardened concrete. (See also bleaching, bloom, bug holes, efflorescence, honeycomb, laitance, mottled, popout, rock pocket, and sand streak.)

blended cement—see cement, blended.

blended hydraulic cement—a hydraulic cement consisting of two or more inorganic constituents (at least one of which is not portland cement or portland cement clinker) which separately or in combination contribute to the strengthgaining properties of the cement, (made with or without other constituents, processing additions and functional additions, by intergrinding or other blending).

portland blast-furnace slag cement—a hydraulic cement consisting of an intimately interground mixture of portland cement clinker and granulated blast-furnace slag or an intimate and uniform blend of portland cement and fine granulated blast-furnace slag in which the amount of the slag constituent is within specified limits.

portland-pozzolan cement—a hydraulic cement consisting of an intimate and uniform blend of portland cement or portland blast-furnace slag cement and fine pozzolan produced by intergrinding portland cement clinker and pozzolan, by blending portland cement or portland blast-furnace slag cement and finely divided pozzolan, or a combination of intergrinding and blending, in which the amount of the pozzolan constituent is within specified limits.
blending—*in hydraulic cement manufacture*, a process in which two or more ingredients are combined into an intimate and uniform product of finely divided dry material, as by intergrinding or mixing, or both.

blinding—the application of a layer of lean concrete or other suitable material to reduce surface voids or to provide a clean, dry working surface; also the filling or plugging of the openings in a screen or sieve by the material being separated. (See concrete, lean.)

blistering—(1) the irregular raising of a thin layer at the surface of placed mortar or concrete during or soon after completion of the finishing operation; (2) bulging of the finish plaster coat as it separates and draws away from the base coat; (3) the formation of air or gas pockets trapped within a thin-film coating, elastomeric membrane, or any impervious membrane.

bloated—swollen, as in certain lightweight aggregates as a result of processing.

block, concrete—a concrete masonry unit, usually containing hollow cores.

block, end—an enlarged end section of a member intended to reduce anchorage stresses to allowable values and provide space needed for post-tensioning anchorages.

block, wood—a solid piece of wood used in concrete formwork to fill space or prevent movement of the formwork.

block beam—a flexural member composed of individual blocks that are joined together by prestressing. (See also member, segmental.)

blockout—a space within a concrete structure under construction in which fresh concrete is not to be placed, called core in the UK.

bloom—(1) a visible exudate of efflorescence on the surface of a material; (2) a haziness which develops on coated surfaces caused by the exudation of a component of the coating system.

blowdown period—time taken to reduce pressure in an autoclave from maximum to atmospheric.

blowholes—see surface air voids (preferred term).

blow pipe—air jet used in shotcrete gunning to remove rebound other loose material from the
work area.

blowup—the raising of two concrete slabs off the subgrade where they meet as a result of greater expansion than the joint between them will accommodate; typically occurs only in unusually hot weather where joints have become filled with incompressible material; often results in cracks on both sides of the joint and parallel to it.

blushing—a coating defect which manifests itself as a milky appearance which is generally caused by rapid solvent evaporation or the presence of excessive moisture during the curing process.

board butt joint—shotcrete construction joint formed by sloping gunned surface to a 1 in. (25 mm) board laid flat.

bolster, slab—continuous wire bar support used to support bars in the bottom of slabs; top wire is corrugated at 1 in. centers to hold bars in position. (See also bar support.)

bolt, anchor—a metal bolt or stud, headed or threaded, either cast in place, grouted in place, or drilled into finished concrete, used to hold various structural members or embedments in the concrete, and to resist shear, tension, and vibration loadings from various sources, such as wind and machine vibration; also known as a hold-down bolt or a foundation bolt.

bolt, foundation—see bolt, anchor.

bolt, hold-down—anchor bolt provided near the ends of shear walls for transferring boundary-member loads from the shear wall to the foundation. (See also bolt, anchor.)

bolt, she—a type of form tie and spreader bolt in which the end fastenings are threaded into the end of the bolt, thus eliminating cones and reducing the size of holes left in the concrete surface.

bolt sleeve—a tube surrounding a bolt in a concrete wall to prevent concrete from adhering to the bolt and acting as a spreader for the formwork.

bond—adhesion and grip of a material to other surfaces against which it is placed; adherence between repairs and existing substrates.

bond, ceramic—the development of fired strength as a result of thermochemical reactions between materials exposed to temperatures approaching the fusion point of the mixture such as that which may occur, under these conditions, between calcium-
aluminate cement and a refractory aggregate.

bond, chemical—bond between materials that is the result of cohesion and adhesion developed by chemical reaction.

bond, flexural stress—in structural-concrete members, the stress between the concrete and the reinforcing element that results from the application of external load.

bond, mechanical—(1) in general concrete construction, the physical interlock between cement paste and aggregate, or between concrete and reinforcement (specifically, the sliding resistance, not the adhesive resistance, of an embedded bar); and (2) in plastering, the physical keying of a plaster coat to: a) another; b) to the plaster base by means of plaster keys to the lath; or c) through interlock with adjacent plaster casts created by means of scratching or cross raking.

bond, transfer—in pretensioning, the bond stress resulting from the transfer of stress from the tendon to the concrete.

bond area—the nominal area of interface between two elements across which adhesion develops or may develop, as between cement paste and aggregate.

bond failure—fracture that results when applied force exceeds adhesion between two bonded surfaces such as a repair material or coating and concrete substrate.

bond breaker—a material used to prevent adhesion at a designated interface.

bond line—the interface between two surfaces bonded together with an adhesive.

bond plaster—a specially formulated gypsum plaster designed as first-coat application over monolithic concrete.

bond prevention—measures taken to prevent adhesion of concrete or mortar to surfaces against which it is placed.

bond strength—see strength, bond.

bond stress—see stress, bond.

bond stress, average—the force in a bar divided by the product of the perimeter and the development length of the bar.
bond stress, development—see stress, anchorage bond (preferred term).

bonded anchors—see anchor, bonded.

bonded hollow-wall masonry—see masonry, bonded hollow-wall.

bonded member—a prestressed-concrete member in which the tendons are bonded to the concrete either directly or through grouting.

bonded post-tensioning—see post-tensioning, bonded.

bonded tendon—see tendon, bonded.

bonder—a masonry unit that ties two or more withes (leaves) of a wall together by overlapping. (See also header and wythe [leaf].)

bonding agent—(see agent, bonding.)

bonding layer—see layer, bonding.

boom-mounted breakers—see concrete breakers, boom-mounted.

bored pile—see pier, drilled.

borescope—a device composed of a rigid or flexible tube with mirrors and lenses that is inserted into a small drill hole or other access channel to provide a visual image of internal conditions.

boring—the removal by drilling of rock; a sample of soil or concrete for tests.

boron frits—clear, colorless, synthetic glass produced by fusion and quenching, containing boron. (See also concrete, boron-loaded.)

boron-loaded concrete—see concrete, boron-loaded.

box out—to form an opening in concrete by a box-like form.

brace—a structural member used to provide lateral support for another member, generally for the purpose of ensuring stability or resisting lateral loads.
bracing—see brace (preferred term).

bracket—an overhanging member projecting from a wall or other body to support weight acting outside the wall, or a similar piece to strengthen an angle. (See also corbel.)

breccia—rock composed of angular fragments of older rock cemented together.

breeze—usually clinker; also fine, divided material from coke production.

brick, calcium-silicate—a concrete product made principally from sand and lime that is hardened by autoclave curing.

brick, concrete—solid concrete masonry units of relatively small prescribed dimensions.

brick, rubbing—a silicon-carbide brick used to smooth and remove irregularities from surfaces of hardened concrete.

brick, sand-lime—see brick, calcium-silicate (preferred term).

brick seat—ledge on wall or footing to support a course of masonry.

bridge deck—see deck, bridge.

briquette (also briquet)—a molded specimen of mortar with enlarged extremities and reduced center having a cross section of definite area, used for measurement of tensile strength.

brittle—a tendency to crack or break when subjected to deformation; frangible.

broadcast—to toss or otherwise distribute granular material, such as sand, over a horizontal surface so that a thin, uniform layer is obtained.

broom and seed—a method for application of polymer concrete in which alternate layers of resin and aggregate are built up to form an overlay.

brown coat—see coat, brown.

brown out—to complete application of base coat plaster.

brown oxide—see oxide, brown.
brucite—a mineral having the composition magnesium hydroxide, Mg(OH)₂, and a specific crystal structure.

bruised surface—a surface layer weakened by interconnected microcracks in concrete substrates caused by use of high-impact, mechanical methods for concrete removal and surface preparation; fractured layer typically extends to a depth of 1/8 to 3/8 in. (3 to 10 mm) and, if not removed, frequently results in lower bond strengths as compared to surfaces prepared with nonimpact methods.

brushed surface—see surface, brushed.

bubbling—a temporary or permanent film defect in which bubbles of air or solvent vapor are present in the applied film.

buck—framing around an opening in a wall; a door buck encloses the opening in which a door is placed.

buckling—failure by lateral or torsional instability of a structural member, occurring with stresses below the yield or ultimate values.

bug holes—see surface air voids (preferred term)

buggy—a two-wheeled hand or motor-driven cart, usually rubber-tired, for transporting small quantities of concrete from hoppers or mixers to forms; sometimes called a concrete cart.

build—the wet or dry thickness of a coating or film.

building official—the official charged with administration and enforcement of the applicable building code, the duly authorized representative of the official.

build-up—spraying of shotcrete in successive layers to form a thicker mass; also the accumulation of residual hardened concrete in a mixer.

bulk cement—see cement, bulk.

bulk density—see density, bulk.

bulk loading—see loading, bulk.

bulk modulus—see modulus, bulk.
bulk specific gravity—see specific gravity, absolute and density, bulk.

bulkhead—a partition in formwork blocking fresh concrete from a section of the form, or a partition closing a section of the form, such as at a construction joint; a partition in a storage tank or bin, as for cement or aggregate.

bulking—increase in the volume occupied by a quantity of sand in a moist condition over the volume of the same quantity dry or completely inundated.

bulking curve—graph of change in volume of a quantity of sand due to change in moisture content.

bulking factor—see factor, bulking.

bull float—see float, bull.

bundled bars—see bars, bundled.

burlap—a coarse fabric of jute, hemp, or less commonly, flax, for use as a water-retaining covering in curing concrete surfaces; also called Hessian.

bush-hammer—a serrated hammer with rows of pyramidal points used to roughen or dress a surface; to finish a surface with a bush-hammer.

bush-hammer finish—see finish, bush-hammer.

butt joint—see joint, butt.

butter—to spread mortar on a masonry unit with a trowel; also the process by which the interior of a concrete mixer, transportation unit, or other item coming in contact with fresh concrete is provided with a mortar coating so that fresh concrete coming in contact with it will not be depleted of mortar.

buttonhead—a cold-formed flare at the end of individual wires in post-tensioning tendon that bears against an anchorage assembly; also the term used to describe an early-generation post-tensioning system that utilized cold formed buttons to anchor individual parallel wires in a tendon.

buttress—a projecting structure to support either a wall or a building.
butyl stearate—a colorless, oily, and practically odorless material \((C_{17}H_{35}COOC_4H_9)\) used as an admixture for concrete to provide dampproofing.