cabinet, moist—an upright and compartmented case having doors and shelves of moderate dimensions for storing and curing small test specimens of cement paste, mortar, and concrete in an atmosphere of approximately 73 F (23 C) and at least 95% relative humidity. (See also moist room.)
cable—see tendon (preferred term).
cage—a rigid assembly of reinforcement ready for placing in position.
caisson—part of a foundation, a watertight chamber used in construction underwater, or a hollow floating box used as a floodgate for a dock or basin.
caisson pile—see pile, caisson.
calcareous—containing calcium carbonate or, less generally, containing the element calcium.
calcine—to alter composition or physical state by heating below the temperature of fusion.
calcite—a mineral having the composition calcium carbonate (CaCO$_3$) and a specific crystal structure; the principal constituent of limestone, chalk, and marble; a major constituent in the manufacture of portland cement.
calcium—a silver-white metallic element of the alkaline-earth group occurring naturally only in combination with other elements.
calcium-aluminate cement—see cement, calcium-aluminate.
calcium chloride—a crystalline solid, CaCl$_2$; in various technical grades, used as a drying agent, as an accelerator of concrete, as a deicing chemical, a refrigerant, and to prevent dust. (See also admixture, accelerating.)
  calcium chloride, anyhydrous (CaCl$_2$)—a solid, usually 94% calcium chloride, typically in pellet form.
  calcium chloride, hydrous (CaCl$_2$·2H$_2$O)—a solid, usually 77% calcium chloride, in flake form.
calcium chloride solution—an aqueous solution of calcium chloride (usually at a specified concentration so that a given amount can be gauged to provide a specific concentration) usually expressed as a percent calcium chloride by mass of portland cement.
calcium hydroxide—see lime, hydrated.

calcium stearate—Ca(C18H35O2)2, commonly marketed in powder form, insoluble in water, used as a water repellent admixture in concrete.

calcium-silicate brick—see brick, calcium-silicate.

calcium-silicate hydrate—see hydrate, calcium-silicate.

calcium sulfate—in cement manufacture, a material composed essentially of calcium sulfate in one or more of its hydration states: anhydrite (CaSO₄), gypsum (CaSO₄·2H₂O), or calcium sulfate hemihydrate (CaSO₄·1/2H₂O).

California bearing ratio (CBR)—the ratio of the force per unit area required to penetrate a soil mass with a 3 in.² (1940 mm²) circular piston at the rate of 0.05 in. (1.3 mm) per min to the force required for corresponding penetration of a standard material; the ratio is usually determined at 0.1 in. (2.5 mm) penetration.

calorimeter—an instrument for measuring heat exchange during a chemical reaction, such as the quantity of heat liberated by the combustion of a fuel or hydration of a cement.

camber—a deflection that is intentionally built into a structural element or form to improve appearance or to nullify the deflection of the element under the effects of loads, shrinkage, and creep.

cant strip—see strip, chamfer (preferred term).

cap—a smooth plane surface of suitable material bonded to the bearing surfaces of test specimens to distribute the load during strength testing.

cap cables—short cables (tendons) introduced to prestress the zone of negative moment only.

capacity—a measure of the rated volume of a particular concrete mixer or agitator, usually limited by specifications to a maximum percentage of total gross volume; also the output of concrete, aggregate, or other product per unit of time (as plant capacity or screen capacity); also load-carrying limit of a structure.

capacity-reduction factor—see strength-reduction factor (preferred term).
capillarity—the movement of a liquid in the interstices of concrete, soil, or other finely porous material due to surface tension. (See also flow, capillary.)

capillary space—see space, capillary.

cap, pile— (1) a structural member that is placed on top of a group of piles and used to transmit loads from the structure through the pile group into the soil; the piles may be connected to the cap with reinforcement to resist uplift or with reinforcement to resist moment so as to form a bent; also known as a rider cap or girder; also a masonry, timber, or concrete footing resting on a group of piles; and (2) a metal cap or helmet temporarily fitted over the head of a precast pile to protect it during driving; some form of shock-absorbing material is often incorporated.

cap, rider—see cap, pile (preferred term).

carbon black—a finely divided form of carbon produced by the combustion or partial decomposition of hydrocarbon, used as an admixture to color concrete.

carbon fibers— see fibers, carbon.

carbonation—the conversion of calcium ions in hardened cementitious materials to calcium carbonate by reaction with atmospheric carbon dioxide in the presence of water (sufficient humidity); carbonation reduces the pH of the concrete and its ability to protect reinforcing steel and embedded metal items from corrosion.

carbonation shrinkage—see shrinkage, carbonation.

cast-in-place—frequently used repair technique in which mortar, concrete, or other materials are deposited in workable condition in the place where they harden and become part of the structure.

cast-in-place concrete—see concrete, cast-in-place.

cast-in-place pile—see pile, cast-in-place.

cast-in-situ—see cast-in-place (preferred term).

cast stone—see stone, cast.

castable refractory—see refractory, castable.
**Catalyst**—a substance that accelerates a chemical reaction and enables it to proceed under conditions more mild than otherwise required and which is not, itself, permanently changed by the reaction. (See also catalyst, negative.)

**Catalyst, negative**—a substance that slows a chemical reaction and which, itself, does not enter into the reaction; inhibitor.

**Catalyst system**—those materials that, in combination, cause chemical reactions to begin; catalyst systems normally consist of an initiator (catalyst) and an activator.

**Catface**—blemish or rough depression in the finish plaster coat caused by variations in the base coat thickness.

**Cathead**—a notched wedge placed between two formwork members meeting at an oblique angle; a spindle on a hoist; the large, round retention nut used on she bolts.

**Cathode**—the electrode at which electrons are consumed and chemical reduction occurs.

**Cathodic protection**—a form of corrosion protection for steel in reinforced concrete wherein sufficient current is distributed to the reinforcement, thereby protecting the reinforcement from corrosion.

**Cathodic protection, impressed current**—a protection system that uses an external power supply to force a small amount of electric current through the reinforcing steel to counteract the flow of current caused by the corrosion process; a metal, such as platinum, niobium, coated titanium or a titanium sub-oxide that corrodes at a very slow rate, is typically provided as an anode.

**Cathodic protection, sacrificial**—protection system that does not require an external power supply; a metal, such as zinc that is less noble or more prone to corrosion than steel, corrodes in place of the reinforcing steel thus protecting the structure.

**Catwalk**—a narrow elevated walkway.

**Caulk**—to install or apply a sealant across or into joints, cracks, or crevices to prevent the passage of air or water. (See also joint filler or sealant, joint.)

**Cavitation damage**—pitting of concrete caused by implosion of water vapor bubbles in fast-flowing water; bubbles form in areas of subatmospheric pressures immediately downstream from an obstruction or offset and collapse as they enter areas of higher pressure.
celite—a name used to identify the calcium aluminoferrite constituent of portland cement. (See also alite and felite)

cellular concrete—see concrete, cellular.

cellular construction—see construction, cellular.

cement—any of a number of materials that are capable of binding aggregate particles together. (See also cement, hydraulic.)

  cement, air-entraining hydraulic—hydraulic cement containing an air-entraining agent in sufficient amount to entrain air in mortar within specified limits.

  cement, aluminous—see cement, calcium-aluminate (preferred term).

  cement, asphalt—asphalt that is refined to meet specifications for use in the manufacture of bituminous pavements.

  cement, bituminous—a black solid, semisolid, or liquid substance at natural air temperatures and appreciably soluble only in carbon disulfide or some volatile liquid hydrocarbon, being composed of mixed indeterminate hydrocarbons mined from natural deposits, produced as a residue in the distillation of petroleum, or obtained by the destructive distillation of coal or wood.

  cement, blended—a hydraulic cement essentially consisting of portland cement, slag cement, or both, uniformly mixed with each other or a pozzolan through intergrinding or blending.

  cement, bulk—cement that is transported and delivered in bulk (usually in specially constructed vehicles) instead of in bags.

  cement, calcium-aluminate—the product obtained by pulverizing clinker consisting essentially of hydraulic calcium aluminates resulting from fusing or sintering a suitably proportioned mixture of aluminous and calcareous materials; called high-alumina cement in the United Kingdom.

  cement, chemically prestressing—a type of expansive cement containing a higher percentage of expansive component than a shrinkage-compensating cement, when used in concretes with adequate internal or external restraint, that will expand sufficiently due to chemical reactions within the matrix, to develop the stresses
necessary for prestressing the concrete. (See also cement, expansive.)

cement, expansive—a type of cement that, when mixed with water, produces a paste that, after setting, increases in volume to a significantly greater degree than does portland-cement paste; used to compensate for volume decrease due to shrinkage or to induce tensile stress in reinforcement (post-tensioning).

1. cement, expansive, Type K—a mixture of portland cement, anhydrous tetracalcium triluminate sulfate (C₄A₃S), calcium sulfate (CaSO₄), and lime (CaO); the C₄A₃S is a constituent of a separately burned clinker that is interground with portland cement or alternately, it may be formed simultaneously with the portland-cement clinker compounds during the burning process;

2. cement, expansive, Type M—interground or blended mixtures of portland cement, calcium-aluminate cement, and calcium sulfate suitably proportioned; and

3. cement, expansive, Type S—a portland cement containing a high computed tricalcium aluminate (C₃A) content and an amount of calcium sulfate above the usual amount found in portland cement

cement, high-early-strength—portland cement characterized by attaining a given level of strength in mortar or concrete earlier than does normal portland cement; referred to in the United States as Type III.

cement, high-fineness—a hydraulic cement of substantially higher specific surface and substantially smaller mean particle diameter than typical for products of similar composition, produced by additional grinding or by separation by particle size.

cement, hot—newly manufactured cement that has not had an opportunity to cool after burning and grinding of the component materials.

cement, hydraulic—a binding material that sets and hardens by chemical reaction with water and is capable of doing so underwater. For example, portland cement and slag cement are hydraulic cements.

cement, hydrophobic—unhydrated cement treated so as to have reduced tendency to take up moisture.
cement, Keene’s—a cement composed of finely ground, anhydrous, calcined gypsum, the set of which is accelerated by the addition of other materials.

cement, low-alkali—a portland cement that contains a relatively small amount of sodium or potassium or both; in the U.S., a portland cement containing not more than 0.60% Na₂O equivalent, that is, percent Na₂O + 0.658 × percent K₂O.

cement, low-heat—a portland cement for use when a low heat of hydration is desired, referred to in U.S. as Type IV.

cement, magnesium phosphate—a blend of magnesium oxide and ammonium dihydrogen phosphate that reacts with water, rapidly producing strength and heat; rapid-setting cement that can be used at low temperatures.

cement, masonry—a hydraulic cement for use in mortars for masonry construction; contains one or more of the following materials: portland cement, portland blast-furnace slag cement, portland-pozzolan cement, natural cement, slag cement or hydraulic lime; and in addition usually contains one or more materials, such as hydrated lime, limestone, chalk, calcareous shell, talc, slag, or clay in finely ground condition.

cement, microfine—normally a proprietary blend of finely ground blast furnace slag and portland cement.

cement, moderate sulfate-resisting—a portland cement for use when either moderate sulfate resistance or moderate heat of hydration or both is desired, now referred to as Type II.

cement, modified—a portland cement for use when either moderate heat of hydration, moderate sulfate resistance, or both, is desired, now referred to as Type II (an obsolete term).

cement, natural—a hydraulic cement produced by calcining an argillaceous limestone at a temperature below the sintering point and then grinding to a fine powder.

cement, nonstaining—a masonry cement that contains not more than a stipulated amount of water-soluble alkali as measured by a stipulated test method.

cement, normal—general purpose portland cement, referred to in the U.S. as Type I.
cement, oil-well—hydraulic cement suitable for use under high pressure and temperature in sealing water and gas pockets, and setting casing during the drilling and repair of wells; often contains retarders to meet the requirements of use.

cement, ordinary portland—the term used in the United Kingdom and elsewhere to designate the equivalent of American normal portland cement or Type I cement; commonly abbreviated OPC.

cement, plastic—a special product manufactured for plaster and stucco application.

cement, portland—a hydraulic cement produced by pulverizing portland-cement clinker consisting essentially of crystalline hydraulic calcium silicates, and usually containing one or more of the following: water, calcium sulfate, up to 5 % limestone, and processing additions.

cement, portland blast-furnace slag—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.

cement, portland-pozzolan—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 pozzolan constituent is within specified limits.

cement, regulated set—a hydraulic cement containing fluorine-substituted calcium aluminate, capable of very rapid setting.

cement, Roman—a misnomer for a hydraulic cement made by calcining a natural mixture of calcium carbonate and clay, such as argillaceous limestone, to a temperature below that required to sinter the material but high enough to decompose the calcium carbonate, followed by grinding; so named because its brownish color resembles ancient Roman cements produced by use of lime-pozzolan mixtures.

cement, self-stressing—see cement, expansive.

cement, shrinkage-compensating—see cement, expansive.
cement, slag—granulated blast-furnace slag that has been finely ground and that is hydraulic cement.

cement, sticky—finished cement that develops low or zero flowability during or after storage in silos, or after transportation in bulk containers, hopper-bottom cars, etc.; may be caused by: a) interlocking of particles; b) mechanical compaction; c) electrostatic attraction between particles. (See also set, warehouse.)

cement, sulfate-resistant—portland cement, low in tricalcium aluminate, which makes concrete more resistant to damage from dissolved sulfates in water or soils.

cement, sulfoaluminate—see cement, expansive, Type K.

cement, supersulfated—a hydraulic cement made by intimately intergrinding a mixture of granulated blast-furnace slag, calcium sulfate, and a small amount of lime, portland cement, or portland cement clinker; so named because the equivalent content of sulfate exceeds that for portland blast-furnace slag cement.

cement, white—portland cement which hydrates to a white paste, made from raw materials of low iron content.

cement-aggregate ratio—see ratio, aggregate-cement.

cement bacillus—see ettringite (preferred term).

cement-bound macadam—see macadam, cement-bound.

cement content—quantity of cement contained in a concrete, mortar, or grout, preferably expressed as mass per unit volume of concrete, mortar, or grout.

cement factor—see cement content (preferred term).

cement gel—see gel, cement.

cement gun—see gun, cement.

cement kiln—see kiln, cement.

cement paint—see paint, cement.
cement paste—binder of concrete and mortar consisting essentially of cement, water, hydration products, and any admixtures together with very finely divided materials included in the aggregates.

cement paste, neat—a plastic mixture of hydraulic cement and water both before and after setting and hardening

cement plaster—see plaster and stucco.

cement rock—natural impure limestone that contains the ingredients for production of portland cement in approximately the required proportions.

cementation process—pressure injection of cement grout into certain types of ground (for example, gravel or fractured rock) to solidify it.

cementitious—having cementing properties.

cementitious material, (hydraulic)—an inorganic material or a mixture of inorganic materials that sets and develops strength by chemical reaction with water by formation of hydrates and that is capable of doing so underwater.

cementitious mixture—a mixture (mortar, concrete, or grout) containing hydraulic cement.

center matched—tongue-and-groove lumber with the tongue and groove at the center of the piece rather than offset as in standard matched. (See also standard matched.)

centering—falsework used in the construction of arches, shells, space structures, or any continuous structure where the entire falsework is lowered (struck or decentered) as a unit. (See also falsework and formwork.)

central-mixed concrete—see concrete, central-mixed.

centrifugally cast concrete—see concrete, centrifugally cast.

centrifugal process—see process, centrifugal.

ceramic bond—see bond, ceramic.

chain drag—a non-destructive testing method in which the sounds from chains dragged over a concrete surface are used to detect delaminations; dull or hollow sounds indicate
delaminated areas, whereas non-delaminated concrete exhibits a clear ringing sound. (See also sounding or, more broadly, acoustic impact.)

chair—see bar support (preferred term), and bat.

chalk—a soft limestone composed chiefly of the calcareous remains of marine organisms.

chalking—formation of loose powder caused by decomposition of a concrete surface or degradation of applied coating, such as cement paint.

chamfer—either a beveled edge or corner formed in concrete work by means of a chamfer strip.

chamfer strip—see strip, chamfer.

charge—to introduce, feed, or load materials into a concrete or mortar mixer, furnace, or other container or receptacle where they will be further treated or processed.

checking—development of shallow cracks at closely spaced but irregular intervals on the surface of plaster, cement paste, mortar, or concrete. (See also cracks and crazing.)

chemical attack—material degradation by reaction with, dissolution by, or reduction of physical continuity from contact with a chemical agent or agents.

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

chemical compatibility—see compatibility, chemical.

chemical grout—see grout, chemical.

chemical grout system—any mixture of materials used for grouting purposes in which all elements of the system are true solutions (no particles in suspension).

chemical-resistant—the ability of a material to resist degradation by reaction with, dissolution by, or reduction of physical continuity from contact with a chemical agent or agents, thereby retaining its capacity to perform as a structural or aesthetic element.

chert—a very fine-grained siliceous rock characterized by a variety of colors, by hardness and conchoidal fracture in dense varieties, and the fracture becoming splintery and the hardness
decreasing in porous varieties; it is composed of silica in the form of chalcedony, cryptocrystalline or microcrystalline quartz, opal, or combinations of any of these minerals.

chipping—to remove all or part of a hardened concrete section with a chisel.

chips—broken fragments of marble or other mineral aggregates screened to specified sizes.

chisel point—point with two major planes forming a “V” and a pair of minor planes on each flank; forming a hexagonal cross section.

chloride contamination—contamination of concrete with chloride ions commonly used in deicing salts and accelerating admixtures such as calcium chloride and sodium chloride; chloride contamination above the threshold for corrosion can result in corrosion of the reinforcing steel.

chloride content—total amount of chloride ion present in concrete or mortar.

chloride diffusion—the movement of chlorides over time within a concrete section due to concentration gradients.

chloride ion (Cl−)—anion of common deicing salts (sodium chloride) and of the accelerating admixtures calcium chloride.

chloride threshold—the amount of chloride required to initiate steel corrosion in reinforced concrete under a given set of exposure conditions; commonly expressed in percent of chloride ion by mass of cement.

chlorinated rubber—resin produced by the reaction of natural rubber with chlorine gas; coatings formulated from this resin have good resistance to acids, alkalis, and chemicals generally, but not to aromatic solvents, gasoline, etc.

chopped strand—roved fibers that are chopped into short lengths for use in mats, spray-up, or molding compounds.

chord modulus—see modulus of elasticity.

chute—a sloping trough or tube for conducting concrete, cement, aggregate, or other free flowing materials from a higher to a lower point.

circuit grouting—see grouting, circuit.
clamp—see coupler (preferred term).

class (of concrete)—an arbitrary characterization of concrete of various qualities or usages, usually by compressive strength.

clay—natural mineral material having plastic properties and composed of very fine particles; the clay mineral fraction of a soil if usually considered to be the portion consisting of particles finer than 2μm; clay minerals are essentially hydrous aluminum silicate or occasionally hydrous magnesium silicates.

clay, fire—an earthy or stony mineral aggregate that has as the essential constituent hydrous silicates of aluminum with or without free silica, and that is plastic when sufficiently pulverized and wetted, rigid when subsequently dried, and of suitable refractoriness for use in commercial refractory products.

clay content—mass fraction of clay of a heterogeneous material, such as a soil or a natural concrete aggregate or crushed stone.

cleanout—an opening in the forms for removal of refuse, to be closed before the concrete is placed; a port in tanks, bins, or other receptacles for inspection and cleaning.

cleanup—treatment of existing concrete substrate to remove all surface material and contamination down to a condition of cleanness corresponding to that of a freshly broken surface of concrete.

cleat—small board used to connect formwork members or used as a brace. (See also batten.)

climbing form—see form, climbing.

clinker—a partially fused product of a kiln, which is ground to make cement; also other vitrified or burnt material.

clinker, portland-cement—a partially fused ceramic material consisting primarily of hydraulic calcium silicates and calcium aluminates. (See also clinker.)

clip—wire or sheet-metal device used to attach various types of lath to supports or to secure adjacent lath sheets.

closed-circuit grouting—see grouting, closed-circuit.
closure—achieving the desired reduction in grout take by splitting the hole spacing; if closure is being achieved, there will be a progressive decrease in grout take as primary, secondary, tertiary, and quaternary holes are grouted.

coal tar—a material produced by the destructive distillation of coal; coal tar epoxies are coatings in which the binder is a combination of coal tar and epoxy resins.

crude aggregate—see aggregate, coarse.

crude-aggregate factor—see factor, coarse-aggregate.

crude-grained soil—see soil, coarse-grained.

crude—a film or layer as of paint or plaster applied in a single operation.

  coat, brown—the second coat in three-coat plaster application.

  coat, dash-bond—a thick slurry of portland cement, sand, and water flicked on surfaces with a paddle or brush to provide a base for subsequent portland cement plaster coats; sometimes used as a final finish on plaster.

  coat, finish—final thin coat of shotcrete preparatory to hand finishing; also exposed coat of plaster and stucco.

  coat, flash—a light coat of shotcrete used to cover minor blemishes on a concrete surface.

  coat, scratch—the first coat of plaster or stucco applied to a surface in three-coat work; usually cross-raked or scratched to form a mechanical key with the brown coat.

coated bar—see bar, coated.

coating—(1) on concrete - liquid, with or without fillers or reinforcement, that is applied to a surface by brushing, dipping, mopping, spraying, troweling, etc., to form a material that will bond to and preserve, protect, decorate, seal, or smooth the substrate (2) on aggregate particles—foreign or deleterious substances found adhering to the aggregate particles; or (3) on architectural concrete—material used to protect a concrete surface from atmospheric contaminants and those that penetrate slightly and leave a visible clear or pigmented film on the surface. (See also sealer.)
coating, high-build—protective surface treatment with a dry thickness greater than 10 mils (0.25 mm) and less than 30 mils (0.75 mm) applied to the surface of concrete.

coeating, polysulfide—a protective-coating system prepared by polymerizing a chlorinated alkyl polyether with an inorganic polysulfide.

coeating, form—a liquid applied to formwork surfaces for a specific purpose, such as to promote easy release from the concrete, to preserve the form material, or to retard setting of the near-surface matrix for preparation of exposed-aggregate finishes.

coaXial dispenser—see dispenser, coaxial.

cobble—in geology, a rock fragment between 2-1/2 and 10 in. (64 and 256 mm) in diameter; as applied to coarse aggregate for concrete, the material in the nominal size range (3 to 6 in. [75 to 150 mm]).

cobblestone—a rock fragment, usually rounded or semi-rounded, with an average dimension between 3 and 12 in. (75 and 300 mm).

coefficient of friction—the ratio of the force required to move one surface over another, to the total force applied normal to those surfaces.

coefficient of permeability—the rate of discharge of water under laminar-flow conditions through a unit cross-sectional area of a porous medium under a unit hydraulic gradient and standard temperature conditions (usually 68 °F (20 °C)).

coefficient of subgrade friction—the coefficient of friction between a slab and its subgrade, commonly used in design of slabs-on-grade to estimate the force induced in the slab due to volume changes and elastic shortening if pre-stressed.

coefficient of subgrade reaction—ratio of: a) load per unit area of horizontal surface of a mass of soil; to b) corresponding settlement of the surface; determined as the slope of the secant, drawn between the point corresponding to zero settlement and the point of 0.05 in. (1.3 mm) settlement, of a load-settlement curve obtained from a plate load test on a soil using a 30 in. (762 mm) or greater diameter loading plate; used in the design of concrete pavements by the Westergaard method; also called modulus of subgrade reaction or subgrade modulus.

coefficient of thermal expansion—change in linear dimension per unit length or change in volume per unit volume per degree of temperature change.
coefficient of variation (V)—the standard deviation expressed as a percentage of the average.
(See also standard deviation.)

cofferdam—a temporary structure enclosing all or part on a construction area so that construction or repair can proceed in the dry.

cohesion—the mutual attraction by which the molecules of a solid or liquid are held together.

cohesive failure—see also failure, cohesive.

cold-drawn wire reinforcement—see reinforcement, cold-drawn wire.

cold face—the surface of a refractory section not exposed to the source of heat; surface of concrete or masonry exposed to low ambient temperatures.

cold joint—see joint, cold.

cold-joint lines—visible lines on the surfaces of formed concrete indicating the presence of discontinuities where one layer of concrete had hardened before subsequent concrete was placed. (See also joint, cold.)

cold strength—see strength, cold.

cold-water paint—see paint, cold-water.

cold weather—a period in which for more than three successive days the average daily outdoor temperature drops below 40 F (5 C). Note: The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50 F (10 C) occur during more than half of any 24-h duration, the period shall no longer be regarded as cold weather.

cold-weather concreting—special concreting and construction practices used to offset the limiting effects of cold conditions.

colemanite—a mineral, hydrated calcium borate (Ca$_2$B$_6$O$_{11}$·5H$_2$O). (See also concrete, boron-loaded.)

collar—(1) jackets which surround only a portion of a column or pier; typically used to provide increased support to the structural member at the top of the column or pier. (2) the surface opening of a borehole.
colloid—a substance that is in a state of division preventing passage through a semi-permeable membrane, consisting of particles ranging from 0.1 to 0.001 mm in diameter.

colloidal concrete—see concrete, colloidal.

colloidal mixer—see mixer, colloidal.

colloidal grout—see grout, colloidal.

colloidal particle—see particle, colloidal.

column—a member used primarily to support axial compression loads and with a height of at least three times its least lateral dimension.

  column, composite—a concrete compression member reinforced longitudinally with structural steel shapes, pipe, or tubing with or without longitudinal reinforcing bars.

  column, long—a column whose load capacity is limited by buckling rather than strength. (See also column, slender.)

  column, pipe—a column made of steel pipe; often filled with concrete.

  column, short—a column whose load capacity is limited by strength rather than buckling; a column that is customarily so stocky and sufficiently restrained that at least 95% of the cross-sectional strength can be developed.

  column, slender—a column whose load capacity is reduced by the increased eccentricity caused by secondary deflection moments.

  column, spirally reinforced—a column in which the vertical bars are enveloped by spiral reinforcement, that is, closely spaced continuous hooping.

  column, tied—a column laterally reinforced with ties.

column capital—an enlargement of a column below a slab intended to increase the shearing resistance.

column clamp—any of various types of tying or fastening units to hold column form sides together.
column side—one of the vertical panel components of a column form.

column strip—the portion of a flat slab over the columns and consisting of the two adjacent quarter panels on each side of the column center line.

combined-aggregate grading—see grading, combined-aggregate.

combined footing—see footing, combined.

come-along — (1) a hoe-like tool with a blade approximately 4 in. (100 mm) high and 20 in. (500 mm) wide and curved from top to bottom, used for spreading concrete; or (2) a colloquial name for a device (load binder) used to tighten chains holding loads in place on a truck bed.

communication—subsurface movement of grout from an injection hole to another hole or opening.

compacting factor—the ratio obtained by dividing the observed mass of concrete that fills a container of standard size and shape when allowed to fall into it under standard conditions of test, by the mass of fully compacted concrete which fills the same container.

compaction—see consolidation (preferred term).

compaction grout—see grout, compaction.

compatibility—(1) a balance of physical, chemical, and electrochemical properties and dimensions between a repair material and the existing substrate; (2) the capacity of two or more materials to combine or remain together without undesirable after-effects; (3) mutual tolerance.

compatibility, chemical—any combination of materials that results in a chemically stable repair system.

compatibility, dimensional—a balance of dimensions, or volumetric stability, between a repair material and the existing substrate.

compatibility, electrochemical—a balance of electrochemical properties of two materials in contact.

compatibility, thermal—a balance of thermal properties between a repair material and
the existing substrate.

component, expansive—the portion of an expansive cement that is responsible for the expansion, generally one of several anhydrous calcium aluminate or sulfooaluminate compounds and a source of sulfate, with or without free lime, (CaO); the expansive component may be produced separately and later ground or blended with a normal portland cement clinker; in other instances, produced by firing in a kiln with the constituents of portland cement.

composite—a product or system made from two or more constituent materials that remain distinct, but combine to form a material with properties not possessed by any of the individual constituents; e.g., a composite repair that includes a concrete substrate, adhesive bonding agent, and repair material.

composite column—see column, composite.

composite concrete flexural members—concrete flexural members consisting of concrete elements constructed in separate placements but so interconnected that the elements respond to loads as a unit.

composite construction—a type of construction with different materials and structural elements that are sufficiently interconnected that the combined components respond to loads as a unit.

composite pile—see pile, composite.

composite sample—see sample, composite.

compound—a mixture of a polymer with other ingredients such as fillers, stabilizers, catalysts, processing aids, lubricants, modifiers, pigments, or curing agents.

compound, curing—a liquid that can be applied as a coating to the surface of newly placed concrete to retard the loss of water or, in the case of pigmented compounds, and also to reflect heat so as to provide an opportunity for the concrete to develop its properties in a favorable temperature and moisture environment. (See also curing and curing, membrane.)

compound, joint-sealing—an impervious material used to fill joints in pavements or structures.
compound, sealing—see sealer.

compound, waterproofing—material used to impart water repellency to a structure or a constructional unit.

compression flange—see flange, compression.

compression member—see member, compression.

compression reinforcement—see reinforcement, compression.

compression seal—a seal that is attained by a compressive force on the sealing material.

compressive strength—see strength, compressive.

compressive-strength, average—the average compressive strength of a given class or strength level of concrete; in ACI 214, defined as average compressive strength required to statistically meet a designated specific strength.

compressive stress—see stress.

compression test—see test, compression.

concentration—amount of a constituent substance expressed in relationship to the whole.

concentric tendons—see tendons, concentric.

concordant tendons—see tendons, concordant.

concrete—a composite material that consists essentially of a binding medium within which are embedded particles or fragments of aggregate, usually a combination of fine aggregate and coarse aggregate; in portland cement concrete, the binder is a mixture of portland cement and water, with or without admixtures.

concrete, aerated—see concrete, foamed and concrete, cellular.

concrete, aluminate—concrete made with calcium-aluminate cement; used primarily where high-early-strength and refractory or acid-resistant concrete is required.

concrete, architectural—concrete that will be permanently exposed to view and

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therefore requires special care in selection of the concrete materials, forming, placing, and finishing to obtain the desired architectural appearance.

concrete, asphaltic—a mixture of asphalt cement and aggregate.

concrete, backfill—nonstructural concrete used to correct over-excavation, fill excavated pockets in rock, or prepare a surface to receive structural concrete.

concrete, boron-loaded—high density concrete including a boron-containing admixture or aggregate, such as the mineral colemanite, boron frits, or boron metal alloys, to act as a neutron attenuator. (See also biological shielding and concrete, shielding.)

concrete, cast-in-place—concrete that is deposited and allowed to harden in the place where it is required to be in the completed structure, as opposed to precast concrete.

concrete, cellular—a low-density product consisting of portland cement, cement-silica, cement-pozzolan, limepozzolan, lime-silica pastes, or pastes containing blends of these ingredients and having a homogeneous void or cell structure, attained with gas-forming chemicals or foaming agents (for cellular concretes containing binder ingredients other than, or in addition to, portland cement, autoclave curing is usually employed).

concrete, central-mixed—concrete that is completely mixed in a stationary mixer from which it is transported to the delivery point.

concrete, centrifugally cast—concrete compacted by centrifugal action, for example, in the manufacture of pipe and poles. (See also centrifugal process.)

concrete, chemically prestressing—concrete made with expansive cement and reinforcement under conditions such that the expansion of the cement induces tensile stress in the reinforcement so as to produce prestressed concrete.

concrete, colloidal—concrete in which the aggregate is bound by colloidal grout.

concrete, confined—concrete containing closely spaced special transverse reinforcement that is provided to restrain the concrete in directions perpendicular to the applied stress.

concrete, cyclopean—mass concrete in which large stones, each of 100 lb (50 kg) or more, are placed and embedded in the concrete as it is deposited. (See also concrete,
concrete, dense—concrete containing a minimum of voids.

concrete, dry-mix—concrete of very low water content used in the dry-cast process. (See also process, drycast.)

concrete, dry-packed—concrete placed by dry packing.

concrete, epoxy—a mixture of epoxy resin, curing agent, fine aggregate, and coarse aggregate. (See also concrete, polymer; mortar, epoxy; andresins, epoxy.)

concrete (mortar or grout), expansive-cement—concrete (mortar or grout) made with expansive cement.

concrete, exposed—concrete surfaces formed so as to yield an acceptable texture and finish for permanent exposure to view. (See also concrete, architectural.)

concrete, fair-face—a concrete surface that, on completion of the forming process, requires no further (concrete) treatment other than curing. (See also concrete, architectural.)

concrete, fat—concrete containing a relatively large amount of plastic and cohesive mortar.

concrete, fiber-reinforced—concrete containing dispersed, randomly oriented fibers.

concrete, fibrous—see concrete, fiber-reinforced.

concrete, field—concrete delivered or mixed, placed, and cured on the job site.

concrete, flowing—concrete that is characterized by a slump greater than 7-1/2 in. (190 mm) while remaining cohesive.

concrete, foamed—low-density concrete made by the addition of a prepared foam or by generation of gas within the unhardened mixture.

concrete, fresh—concrete that possesses enough of its original workability so that it can be placed and consolidated by the intended methods.
concrete, gap-graded—concrete containing a gap-graded aggregate.

concrete, gas—lightweight concrete produced by developing voids with gas generated within the fresh mixture (usually from the action of cement alkalies on aluminum powder used as an admixture). (See also concrete, foamed.)

concrete, grouted-aggregate—concrete suitable for use as a wearing surface finish to floors, made with specially selected aggregate of suitable hardness, surface texture, and particle shape.

concrete, green—concrete that has set but not hardened appreciably.

concrete, grouted-aggregate—see concrete, preplaced aggregate.

concrete, gypsum—concrete in which the cementitious constituent is partially dehydrated calcium sulfate (plaster).

concrete, hardened—concrete that has developed sufficient strength to serve some purpose or resist breaking under stipulated loading.

concrete, heat-resistant—any concrete that will not disintegrate when exposed to constant or cyclic heating at any temperature below that at which a ceramic bond is formed.

concrete, heavy—see concrete, high-density (preferred term).

concrete, heavy—concrete of substantially higher density than that made using normal-density aggregates, usually obtained by use of high-density aggregates and used especially for radiation shielding.

concrete, high-early-strength—concrete which, through the use of high-early-strength cement or admixtures, attains a given level of strength earlier than normal concrete does.

concrete, high-strength—concrete that has a specified compressive strength for design of 8000 psi (55 MPa) or greater.

concrete, high-performance—concrete meeting special combinations of performance...
and uniformity requirements that cannot always be achieved routinely using conventional constituents and normal mixing, placing, and curing practices.

concrete, in-situ—see concrete, cast-in-place (preferred term).

concrete, insulating—concrete having low thermal conductivity; used as thermal insulation. (See also concrete, lightweight and concrete, low-density.)

concrete, lean—concrete of low cementitious material content.

concrete, lightweight—concrete of substantially lower density than that made using aggregates of normal density. (See also concrete, insulating and concrete, low-density.)

concrete, low-density—concrete having an oven-dry density of less than 50 lb/ft3 (800 kg/m3). (See also concrete, insulating and concrete, lightweight.)

concrete, mass—any volume of concrete with dimensions large enough to require that measures be taken to cope with generation of heat from hydration of the cement and attendant volume change, to minimize cracking.

concrete, monolithic—concrete cast with no joints other than construction joints.

concrete, nailable—concrete, usually made with a suitable low-density aggregate, with or without the addition of sawdust, into which nails can be driven.

concrete, negative-slump—concrete of a consistency such that it not only has zero slump but still has zero slump after adding additional water. (See also concrete, zero-slump and concrete, no-slump.)

concrete, no-fines—a concrete mixture containing little or no fine aggregate.

concrete, no-slump—freshly mixed concrete exhibiting a slump of less than 1/4 in. (6 mm). (See also concrete, zero-slump and concrete, negative-slump.)

concrete, nonair-entrained—concrete in which neither an air-entraining admixture nor air-entraining cement has been used.

concrete, nonslip—(1) a floor, pavement, or walkway of concrete the surface of which has been roughened, before final set, either by sprinkling fine particles of abrasive
material thereon and then troweling or by swirling with either a coarse-bristled brush or a trowel; or (2) a concrete surfaced roughened after final set by acid etching, mechanically abrading, or grooving.

concrete, normalweight—concrete having a density of approximately 150 lb/ft³ (2400 kg/m³) made with normal-density aggregates.

concrete, normalweight refractory—refractory concrete having a bulk density greater than 100 lb/ft³ (1600 kg/m³).

concrete, plain—structural concrete with no reinforcement or with less reinforcement than the minimum amount specified in ACI 318 for reinforced concrete; also used loosely to designate concrete containing no admixture and prepared with no special treatment.

concrete, polymer—concrete in which an organic polymer serves as the binder; also known as resin concrete; sometimes erroneously employed to designate hydraulic cement mortars or concretes in which part or all of the mixing water is replaced by an aqueous dispersion of a thermoplastic copolymer. (See also concrete.)

concrete, polymer-cement—a mixture of water, hydraulic cement, aggregate, and a monomer or polymer; polymerized in place when a monomer is used.

concrete, polymer-modified—a mixture of water, hydraulic cement, aggregate, and a monomer or polymer; polymerized in place when a monomer is used.

concrete, popcorn—no-fines concrete containing insufficient cement paste to fill voids among the coarse aggregate so that the particles are bound only at points of contact. (See also concrete, no-fines.)

concrete, precast—concrete cast elsewhere than its final position.

concrete, prepacked—see concrete, preplaced-aggregate.

concrete, preplaced-aggregate—concrete produced by placing coarse aggregate in a form and later injecting a portland cement-sand grout, usually with admixtures, to fill the voids.

concrete (mortar, grout), preshrunk—(1) concrete that has been mixed for a short period in a stationary mixer before being transferred to a transit mixer. (2) grout,
mortar, or concrete that has been mixed 1 to 3 hr before placing in order to reduce shrinkage during hardening.

concrete, prestressed—concrete in which internal stresses of such magnitude and distribution are introduced that the tensile stresses resulting from the service loads are counteracted to a desired degree; in reinforced concrete the prestress is commonly introduced by tensioning the tendons.

concrete, pumped—concrete which is transported through a hose or pipe by means of a pump.

concrete, ready-mixed—concrete manufactured for delivery to a purchaser in a fresh state. (See also concrete, central-mixed; concrete, shrink-mixed; and concrete, transit-mixed.)

concrete, recycled—hardened concrete that has been processed for reuse, usually as aggregate.

concrete, refractory—hardened hydraulic-cement concrete that has refractory properties and that is suitable for use at temperatures between 600 and 2400 F (315 to 1315 C).

concrete, refractory-insulating—refractory concrete having low thermal conductivity.

concrete, reinforced—structural concrete reinforced with no less than the minimum amount of prestressing tendons or nonprestressed reinforcement as specified by ACI 318.

concrete, resin—see concrete, polymer (preferred term).

concrete, rich—concrete of high cement content. (See also concrete, lean.)

concrete, roller-compacted—concrete compacted by roller compaction; concrete that, in its unhardened state, will support a roller while being compacted.

concrete, rubble—(1) concrete similar to cyclopean concrete except that small stones (such that one person can handle them) are used; (2) concrete made with rubble from demolished structures. (See also concrete, cyclopean.)

concrete, sand-lightweight—concrete made with a combination of expanded clay,
shale, slag, or slate or sintered fly ash and natural sand; its density is generally between 105 and 120 lb/ft³ (1680 and 1920 kg/m³).

concrete, sawdust—concrete in which the aggregate consists mainly of sawdust from wood.

concrete (mortar or grout), self-stressing—expansive-cement concrete (mortar or grout) in which expansion, if restrained, induces persistent compressive stresses in the concrete (mortar or grout); also known as chemically prestressed concrete.

concrete, shielding—concrete, employed as a biological shield to attenuate or absorb nuclear radiation, usually characterized by high density or high hydrogen (water) content or boron content, having specific radiation attenuation effects. (See also biological shielding.)

concrete, shrink-mixed—ready-mixed concrete mixed partially in a stationary mixer and then mixed in a truck mixer. (See also concrete, preshrunk.)

concrete, shrinkage-compensating—concrete containing expansive components usually based on the formation of calcium sulfoaluminate (ettringite) in a mixture of calcium aluminate and gypsum. (See also cement, expansive.)

concrete, siliceous-aggregate—concrete made with normal-density aggregates having constituents composed mainly of silica or silicates.

concrete, sprayed—see shotcrete (preferred term).

concrete, spun—see concrete, centrifugally cast (preferred term).

concrete, structural—concrete used to carry structural load or to form an integral part of a structure; concrete of a quality specified for structural use.

concrete, structural lightweight—structural concrete made with low-density aggregate; having an air-dry density of not more than 115 lb/ft³ (1850 kg/m³) and a 28-day compressive strength of more than 2500 psi (17.2 MPa).

concrete, subaqueous—see concrete, underwater.

concrete, terrazzo—marble-aggregate concrete that is cast-in-place or precast and ground smooth for decorative surfacing purposes on floors and walls.
concrete, transit-mixed—concrete, the mixing of which is wholly or principally accomplished in a truck mixer.

concrete, translucent—a combination of glass and concrete used together in precast and prestressed panels.

concrete, tremie—concrete placed underwater with a tremie pipe or hose.

concrete, truck-mixed—see concrete, transit-mixed.

concrete, underwater—concrete placed underwater by tremie or other means.

concrete, unhardened—see concrete, fresh (preferred term).

concrete, unreinforced—see concrete, plain.

concrete, vacuum—concrete from which excess water and entrapped air are extracted by a vacuum process before hardening occurs.

concrete, vermiculite—concrete in which the aggregate consists of exfoliated vermiculite.

concrete, vibrated—concrete consolidated by vibration during and after placing.

concrete, visual—see concrete, exposed and concrete, architectural.

concrete, zero-slump—concrete of stiff or extremely dry consistency showing no measurable slump after removal of the slump cone. (See also slump; concrete, no-slump; and concrete, negative-slump.)

concrete block—see block, concrete.

concrete breakers—hand-held or machine mounted equipment commonly used for removal of concrete by repeated striking of the surface to spall and fracture the concrete. (See also scabbler.)

concrete breakers, boom-mounted—mechanically operated equipment for removal of concrete by repeated, high energy and low-frequency striking of the surface to spall and fracture the concrete.
concrete breakers, hand-held—equipment commonly used for removal of concrete by repeated, low-energy and high-frequency striking of the surface to spall and fracture the concrete.

concrete breakers, impact—equipment for removal of concrete by repeated striking of the surface to spall and fracture the concrete; may produce microcracking in the concrete substrate.

concrete brick—see brick, concrete.

concrete cart—see buggy.

concrete containment structure—a composite concrete and steel assembly that is designed as an integral part of a pressure retaining barrier, which in an emergency prevents the release of radioactive or hazardous effluents from nuclear power plant equipment enclosed therein.

concrete finishing machine—a machine mounted on flanged wheels that ride on the forms or on specially set tracks, used to finish surfaces such as those of pavements; or a portable power-driven machine for floating and finishing of floors and other slabs.

concrete flatwork—see flatwork, concrete.

concrete masonry unit—see masonry unit, concrete.

concrete paver—see paver, concrete.

concrete pile—see pile, cast-in-place and pile, precast.

concrete pump—see pump, concrete.

concrete reactor vessel—a composite concrete and steel assembly that functions as a component of the principal pressure-containing barrier for the nuclear fuel’s primary heat extraction fluid (primary coolant).

concrete spreader—see spreader, concrete.

concrete strength—see strength, compressive; strength, fatigue; strength, flexural; strength, shear; strength, splitting; strength, tensile; and strength, ultimate.
concrete vibrating machine—a machine that consolidates a layer of freshly mixed concrete by vibration.

condensed silica fume—see silica fume (preferred term).

condition—to equalize the moisture in a material with that of a specified atmosphere.

condition assessment—investigation and appraisal of the condition of a structure; conclusions based on engineering judgment about the condition of a structure. (See also condition survey, evaluation, and visual inspection).

condition survey—quantitatively defining the physical condition of a structure, principally by visual inspection and nondestructive tests supplemented by sampling and laboratory testing.

conductance, thermal—time rate of heat flow through a unit area of body induced by a unit temperature difference between the body surfaces; the thermal conductance is the reciprocal of the thermal resistance.

conductivity, thermal—the property (of a homogeneous body) measured by the ratio of the steady-state heat flux (time-rate of heat flow per unit area) to the temperature.

cone—

cone, flow—a device for measurement of grout consistency in which a predetermined volume of grout is permitted to escape through a precisely sized orifice, the time of efflux (flow factor) being used as the indication of consistency; also the mold used to prepare a specimen for the flow test.

cone, pyrometric—a small, slender, three-sided oblique pyramid made of ceramic or refractory material for use in determining the time-temperature effect of heating and in obtaining the pyrometric cone equivalent (PCE) of refractory material.

cone, slump—a mold in the form of the lateral surface of the frustum of a cone with a base diameter of 8 in. (203 mm), top diameter of 4 in. (102 mm), and height of 12 in. (305 mm), used to fabricate a specimen of freshly mixed concrete for the slump test; a cone 6 in. (152 mm) high is used for tests of freshly mixed mortar and stucco.

cone bolt—a type of tie rod for wall forms with cones at each end inside the forms so that a bolt can act as a spreader as well as a tie.
confined concrete—see concrete, confined.

confined region—region with transverse reinforcement within beam-column joints.

connection, scarf—a connection made by precasting, beveling, halving, or notching two pieces to fit together; after overlapping, the pieces are secured by bolts or other means.

consistency—the relative mobility or ability of freshly mixed concrete or mortar to flow; the usual measurements are slump for concrete, flow for mortar or grout, and penetration resistance for neat cement paste.

consistency, flowable—the consistency at which a grout will form a nearly level surface when lightly rodded; the consistency of a grout with at least 125% at five drops on the ASTM C 230 flow table and an efflux time through the ASTM C 939 flow cone of more than 30 s.

consistency, fluid—the consistency at which a grout will form a nearly level surface without vibration or rodding; the consistency of a grout that has an efflux time of less than 30 s from the ASTM C 939 flow cone.

consistency, normal—(1) the degree of wetness exhibited by a freshly mixed concrete, mortar, or neat cement grout when the workability of the mixture is considered acceptable for the purpose at hand; or (2) the physical condition of neat cement paste as determined with the Vicat apparatus in accordance with a standard method test (for example, ASTM C 187).

consistency, plastic—(1) condition of freshly mixed cement paste, mortar, or concrete such that deformation when a stress is applied will be sustained continuously in any direction without rupture; or (2) the consistency at which a grout will form a nearly level surface only when rodded or vibrated with a vibrator, the consistency of a grout with a flow between 100 to 125% at five drops on the ASTM C 230 flow table.

consistency, wettest stable—the condition of maximum water content at which cement grout and mortar will adhere to a vertical surface without sloughing.

consistency factor—a measure of grout fluidity, roughly analogous to viscosity, which describes the ease with which grout may be pumped into voids or fissures; usually a laboratory measurement in which consistency is reported in degrees of rotation of a torque viscosimeter in a specimen of grout.
consistometer—an apparatus for measuring the consistency of cement pastes, mortars, grouts, or concretes.

consolidation—the process whereby the volume of freshly placed mortar or concrete is reduced to the minimum practical space, usually by vibration, rodding, tamping, or some combination of these actions; to mold mortar or concrete within a form or repair cavity and around embedded items and reinforcement and eliminate voids other than entrained air. (See also rodding and tamping.)

consolidation grouting— injection of a fluid grout, usually sand, portland cement, and water, into a compressible soil mass in order to displace it and form a lenticular grout structure for support.

constructibility—the extent to which the design of a repair and material properties facilitates ease of construction, achieving a quality repair at an economic cost.

construction—

construction, alternate-lane—a method of constructing soil-supported concrete roads, runways, building floors, or other paved areas, in which alternate lanes are placed and allowed to harden before the remaining intermediate lanes are placed.

construction, cellular—a method of constructing concrete elements in which part of the interior concrete is replaced by voids.

construction, composite—a type of construction using members produced by combining different materials (for example, concrete and structural steel); members produced by combining cast-in-place and precast concrete, or cast-in-place concrete elements constructed in separate placements but so interconnected that the combined components act together as a single member and respond to loads as a unit.

construction, shell—construction using thin curved slabs.

construction, structural sandwich—a laminar construction comprising a combination of alternating dissimilar simple or composite materials assembled and intimately fixed in relation to each other so as to use the properties of each to attain specific structural and thermal advantages for the whole assembly.

construction joint—see joint, construction.
construction loads— the loads to which a permanent or temporary structure is subjected during construction.

contact ceiling—a ceiling that is secured in direct contact with the construction above without use of furring.

contact grouting—see grouting, backpack.

contact pressure—pressure acting at and perpendicular to the contact area between soil and a concrete element.

contact splice—see splice, contact and lap splice.

containment grouting—see grouting, perimeter.

contamination—any extraneous material on or within a concrete substrate that can cause deterioration, inhibit bond, or adversely impact performance of any applied repair or protection system.

continuity, reinforcement—a condition in reinforced concrete in which the reinforcing steel is sufficiently interconnected to provide a path for electrical current.

continuous beam—see continuous slab or beam.

continuous footing—see footing, continuous.

continuous grading—see grading, continuous.

continuous mixer—see mixer, continuous.

continuous sampling—see sampling, continuous.

continuous slab or beam—a slab or beam that extends as a unit over three or more supports in a given direction.

continuously reinforced pavement—a pavement with uninterrupted longitudinal steel reinforcement and no intermediate transverse expansion or contraction joints.

contract—a set of documents designed to define all aspects of the construction process. These documents typically consist of contract forms, contract conditions, specifications,
drawings, addenda, and contract changes.

contract, change order—contract document to be signed by Owner, Design Professional and Contractor which confirms mutual agreement by all parties of modification to any contract terms (most typically changes to project work scope, cost and/or schedule).

contract, lump sum—agreement between an Owner and a Contractor which stipulates either a defined specific scope of services/work to be performed for a fixed payment amount or an open-ended scope with an intended end result to be performed for a fixed payment amount.

contract, time and materials—type of contract frequently used for evaluation investigations, or projects with potential hidden conditions and undefined scopes.

contract, unit price—agreement between an Owner and a Contractor for a defined set of work tasks where the total quantity of work is variable. The quantity of work for each category is estimated and work is paid for on a unit price basis such as $/ft2.

contract documents—see documents, contract.

contraction—decrease in either length or volume. (See also expansion; shrinkage; swelling; volume change; and volume change, autogenous.)

contraction, thermal—see thermal contraction.

contraction joint—see joint, contraction.

contraction-joint grouting—see grouting, contraction joint.

contractor—the person, firm, or corporation with whom the owner enters into an agreement for construction of the work.

control factor—the ratio of the minimum compressive strength to the average compressive strength.

control joint—see joint, contraction (preferred term).

control-joint grouting—see grouting, contraction-joint.
controlled low-strength material—a self-compacted, cementitious material used primarily as a backfill in lieu of compacted fill.

conventional design—design procedure using moments or stresses determined by widely accepted methods.

conveying hose—see delivery hose.

conveyor—a device for moving materials; usually a continuous belt, an articulated system of buckets, a confined screw, or a pipe through which material is moved by air or water.

coping—the top layer or a covering on a wall or pier exposed to the weather, usually sloped to carry off water.

copolymerization—see polymerization.

copper-copper sulfate half cell—a commonly used standard reference electrode used to measure the electrical potential between it and the reinforcing steel.

coquina—a type of limestone formed of sea shells in loose or weakly cemented condition, found along present or former shorelines; used as a calcareous raw material in cement manufacture and other industrial operations.

corbel—a projection from the face of a beam, girder, column, or wall used as a beam seat or a decoration.

core (n.)—(1) the soil material enclosed within a tubular pile after driving (it may be replaced with concrete); (2) the mandrel used for driving casings for cast-in-place piles; (3) a structural shape used to internally reinforce a drilled-in-caisson; (4) a cylindrical sample of hardened concrete or rock obtained by means of a core drill; (5) the molded open space in a concrete masonry unit or precast concrete unit (see also blockout); or (6) the area enclosed by ties or spiral reinforcement in a concrete column.

core (v.)—the act of obtaining cores from concrete structures, rock foundations, or soils.

core recovery—ratio of the length of core recovered to the length of hole drilled, usually expressed as a percentage.

core test—compression test on a concrete sample cut from hardened concrete by means of a core drill.
cored beam—a beam whose cross section is partially hollow or a beam from which cored samples of concrete have been taken.

coring—the process of drilling and extracting cores from hardened concrete or masonry structures, rock, or soil.

corner reinforcement—see reinforcement, corner.

corrosion—destruction of metal by chemical, electrochemical, and electrolytic reaction within its environment.

corrosion, bacterial—destruction of a material by bacterial processes brought about by the activity of certain bacteria that consume the material and produce substances, such as hydrogen sulfide, ammonia, and sulfuric acid.

corrosion inhibitor—a chemical compound, either liquid or powder, usually intermixed in concrete and sometimes applied to concrete, and that effectively decreases corrosion of steel reinforcement.

corrosion threshold—the chloride ion concentration, in the vicinity of the reinforcing steel, sufficient to initiate active corrosion. There is conflicting data on threshold values; however, an acid-soluble chloride threshold value of 1.0 to 1.5 lb/yd3 of concrete is typically used in the United States.

cotton mats—see mats, cotton.

coupler—(1) a device for connecting reinforcing bars or pre-stressing tendons end to end; (2) a device for locking together the component parts of a tubular metal scaffold (also known as a clamp); or (3) internal threaded device for joining reinforcing bars with matching threaded ends for the purpose of providing transfer of either axial compression or axial tension or both from one bar to the other. (See also coupling sleeve, end-bearing sleeve, mechanical connection.)

coupling—the means for transmittal of prestressing force from one partial-length tendon to another.

coupling agent—a substance used between the transducer and test surface to permit or improve transmission of ultrasonic energy.

coupling pin—an insert device used to connect lifts or tiers or formwork scaffolding vertically.
coupling sleeve—device fitting over the ends of two reinforcing bars for the eventual purpose of providing transfer of either axial compression or axial tension or both from one bar to the other. (See also coupler, end-bearing sleeve, mechanical connection.)

course—in concrete construction, a horizontal layer of concrete, usually one of several making up a lift; in masonry construction, a horizontal layer of block or brick. (See also lift.)

cover—(1) in reinforced concrete, the least distance between the surface of the reinforcement and the outer surface of the concrete. (2) in grouting, the thickness of rock and soil material overlying the stage of the hole being grouted.

coverage—the area that a specified volume of coating will cover to a specified dry thickness.

covermeter—a nondestructive testing instrument for locating embedded steel reinforcement, measuring depth of cover, and estimating the diameter of reinforcement by measuring the change in a low frequency alternating magnetic field applied on the surface of a member.

crack—a complete or incomplete separation of concrete or masonry, into two or more parts produced by breaking or fracturing. (see also fracture.)

  crack, active—any crack for which the mechanism causing the cracking is still at work; any crack that is still moving.

  crack, diagonal—in a flexural member, an inclined crack caused by shear stress, usually at approximately 45 degrees to the axis; or a crack in a slab, not parallel to either the lateral or longitudinal directions.

  crack, dormant—any crack not likely to become active in the future or whose movement is of such magnitude that a repair will not be affected.

  crack, hairline—concrete surface crack with a width similar to the diameter of human hair (about 0.10 mm (0.004 in.)). Such cracks are difficult to observe unless the concrete surface is wetted and allowed to dry.

  crack, longitudinal—crack that generally parallels the length of a member.

  crack, nonstructural—crack that is not the result of external forces and has no effect on structural resistance or integrity; usually the result of shrinkage (plastic, settlement and drying), thermal changes, or internal chemical reaction.
crack, shrinkage—crack caused by restrained shrinkage.

crack, structural—crack that is caused by dead loads, applied forces or other external forces.

crack, thermal—crack caused by internally or externally restrained thermal expansion or contraction.

crack, transverse—crack generally perpendicular to the length of a member.

crack bridging—the ability of repair or protective surface treatment to remain continuous when installed on a cracked concrete surface.

crack injection—a method for sealing or repairing cracks by injecting a polymer or other material.

crack monitor—a device that measures the movement of cracks.

cracking—

cracking, D-cracking—a series of cracks in concrete near and roughly parallel to joints, edges, and structural cracks.

cracking, diagonal—development of diagonal cracks. (See also tension, diagonal.)

cracking, map—(1) intersecting cracks that extend below the surface of hardened concrete; caused by shrinkage of the drying surface concrete that is restrained by concrete at greater depths where either little or no shrinkage occurs; vary in width from fine and barely visible to open and well-defined; or (2) the chief symptom of chemical reaction between alkalis in cement and mineral constituents in aggregate within hardened concrete; due to differential rate of volume change in different portions of the concrete; cracking is usually random and on a fairly large scale, and in severe instances the cracks may reach a width of 0.50 in. (12.7 mm); also known as pattern cracking. (See also checking and crazing.; also known as pattern cracking)

cracking, pattern—see cracks and cracking, map.

cracking, plastic—cracking that occurs in the surface of a fresh cementitious material soon after it is placed and while it is still plastic.
cracking, reflective—the occurrence of cracks in overlays and toppings that coincide with the location of previously existing active cracks in the substrate.

cracking, shrinkage—cracking of a structure or member due to restrained shrinkage caused by a reduction in moisture content, carbonation, or both.

cracking, stress-corrosion—a cracking process that requires the simultaneous action of a corroding agent and sustained tensile stress. (This excludes corrosion-reduced sections that fail by fast fracture; also excludes intercrystalline or transcrysalline corrosion that can disintegrate an alloy without either applied or residual stress).

cracking, temperature—cracking which occurs when strains, induced by restrained contraction because of decreases in temperature, exceed the tensile strain capacity of a material.

cracks—

cracks, alligator—surface cracking that forms a pattern similar to alligator hide.

cracks, craze—fine random cracks or fissures in a surface.

cracks, D-line—see D-cracks (preferred term.)

cracks, hairline—cracks in an exposed concrete surface having widths so small as to be barely perceptible.

cracks, pattern—see cracks and cracking, map.

cracks, plastic shrinkage—see cracking, plastic.

cracks, transverse—cracks that develop across the long dimension of the member.

craze cracks—see cracks, craze.

crazing—the development of craze cracks; the pattern of craze cracks existing in a surface. (See also checking and cracks, craze.)

creep—time-dependent deformation resulting from a sustained load.
creep, basic—creep that occurs without migration of moisture to or from the concrete. (See also creep; and creep, drying.)

creep, compressive—creep that occurs because of compressive load.

creep, drying—creep caused by drying.

creep, nonrecoverable—the residual or nonreversible deformation remaining in hardened concrete after removal of sustained load.

creep, tensile—creep that occurs because of tensile load.

crimped wire—see wire, crimped.

critical saturation—see saturation, critical.

cross bracing—crossing members usually designed to act only in tension, often used in scaffolding systems. (See also sway brace and X-brace.)

cross joint—see joint, cross.

cross section—a plane through a body perpendicular to a given axis of the body; a drawing showing such a plane.

crosshole logging—a nondestructive testing method for locating low-quality concrete with transducers positioned along the length of holes drilled into a deep foundation. (See also ultrasonic pulse velocity.)

cross-linking—the chemical bonding between linear polymer chains to form a three-dimensional network, generally by covalent bonding.

cross-tee—a light-gage metal member resembling an upside-down “tee” used to support the abutting ends of formboards in insulating concrete roof constructions.

crush plate—an expendable strip of wood attached to the edge of a form or intersection of fitted forms, to protect the form from damage during prying, pulling, or other stripping operations. (See also strip, wrecking.)
crushed gravel—see gravel, crushed.

crushed stone—see stone, crushed.

crusher—

   crusher, primary—a heavy crusher suitable for the first stage in a process of size reduction of rock, slag, or the like.

   crusher, secondary—a crusher used for the second stage in a process of size reduction of aggregate and the like. (See also crusher, primary.)

crusher-run aggregate—see aggregate, crusher-run.

C/S—the molar or mass ratio, whichever is specified, of calcium oxide (CaO) to silicon dioxide (SiO2), usually of binder materials cured in an autoclave.

crystallization—arrangement of previously disordered material segments of repeating patterns into geometric symmetry.

cube strength—see strength, cube.

cubical piece (of aggregate)—one in which length, breadth, and thickness are approximately equal.

cumulative batching—see batching, cumulative.

curb form—a retainer or mold used in conjunction with a curb tool to give the necessary shape and finish to a concrete curb.

curb tool—a tool used to give the desired finish and shape to the exposed surfaces of a concrete curb.

cure—the process by which a compound attains its intended performance properties by means of evaporation, chemical reaction, heat, radiation, or combinations thereof.

cure time—the time interval between formation or placement of a material and the materials’s reaching specified design properties; some materials require specified treatment during this interval.
curing—the maintenance of a favorable temperature and moisture environment for repair and protection materials during some definite period following placing, casting, or finishing so that the desired properties may develop.

- **curing, adiabatic**—the maintenance of adiabatic conditions in concrete or mortar during the curing period.
- **curing, atmospheric-pressure steam**—steam curing of concrete products or cement at atmospheric pressure, usually at maximum ambient temperature between 100 to 200 F (40-95 C).
- **curing, autoclave**—curing of concrete products in an autoclave at maximum ambient temperature generally between 340 to 420 F (170 to 215 C).
- **curing, electrical**—a system in which a favorable temperature is maintained in freshly placed concrete by supplying heat generated by electrical resistance.
- **curing, fog**—(1) storage of concrete in a moist room in which the desired high humidity is achieved by the atomization of water (see also moist room); and (2) application of atomized water to concrete, stucco, mortar, or plaster.
- **curing, high-pressure steam**—see curing, autoclave (preferred term).
- **curing, low-pressure steam**—see curing, atmospheric-pressure steam.
- **curing, mass**—adiabatic curing in sealed containers.
- **curing, membrane**—a process that involves either liquid sealing compound (for example, bituminous and paraffinic emulsions, coal tar cut-backs, pigmented and non pigmented resin suspensions, or suspension of wax and drying oil) or nonliquid protective coating (for example sheet plastics or “waterproof” paper), both of which function as films to restrict evaporation of mixing water from cementitious repair materials.
- **curing, moist**—continuous or frequent application of water through ponding, fogging, steam, or saturated cover materials, such as burlap or cotton mats, and the minimization of water loss by use of plastic sheets or other moisture-retaining materials applied over newly placed concrete to promote cement hydration.
- **curing, single-stage**—autoclave curing process in which precast concrete products are...
put on metal pallets for autoclaving and remain there until stacked for delivery or yard storage.

curing, standard—exposure of test specimens to specified conditions of moisture and temperature. (See also fog curing.)

curing, steam—curing of concrete, mortar, grout, or neat-cement paste in water vapor at atmospheric or higher pressures and at temperatures between about 100 and 420 F (40 and 215 C). (See also atmospheric-pressure steam curing, autoclave curing, single-stage curing, and two-stage curing.)

curing, two-stage—a process in which concrete products are cured in low-pressure steam, stacked, and then autoclaved.

curing agent—see catalyst and hardener.

curing blanket—see blanket, curing.

curing compound—see compound, curing.

curing cycle—see cycle, autoclave and steam-curing cycle.

curing delay—see period, prestreaming (preferred term).

curing kiln—see curing, autoclave.

curing membrane—see membrane curing and curing compound.

curling—the distortion of an originally essentially linear or planar member into a curved shape such as the warping of a slab due to creep or to differences in temperature or moisture content in the zones adjacent to its opposite faces. (See also warping.)

curtain grouting—see grouting, curtain.

curtain reinforcement—see reinforcement, curtain.

curtain wall—a building facade made of glass and metal.

curvature friction—friction resulting from bends or curves in the specified prestressing cable profile.
curve, grading—a graphical representation of the proportions of different particle sizes in a granular material; obtained by plotting the cumulative or individual percentages of the material passing through sieves in which the aperture sizes form a given series.

cutting screed—see screed, cutting.

cycle, autoclave— the time interval between the start of the temperature-rise period and the end of the blowdown period; also, a schedule of the time and temperature-pressure conditions of periods which make up the cycle.

cyclopean concrete—see concrete, cyclopean.

cylinder strength—see strength, compressive and strength, splitting tensile.

cylinders, field-cured—test cylinders that are left at the jobsite for curing as nearly as practicable in the same manner as the concrete in the structure to indicate when supporting forms may be removed, additional construction loads may be imposed, or the structure may be placed in service.