Glossary of Terms and Acronyms

Below is a list of terms and acronyms that you'll likely come across when working with concrete paving.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Glossary

- AASHTO—American Association of State Highway and Transportation Officials.
- Abrasion Resistance—The ability of a surface to resist being worn away by a rubbing or friction process.
- Abrasive Cleaning—A system of cutting or abrading a surface such as concrete by a stream of sand or other abrasive products ejected from a nozzle at high speed by compressed air; often used for clean-up of horizontal construction joints or for exposure of aggregate in architectural concrete.
- Absolute Specific Gravity—The ratio of the weight referred to a vacuum of a given volume of material at a stated temperature to the weight referred to a vacuum of an equal volume of gas-free distilled water at the same temperature.
- Absolute Volume (of ingredients of concrete or mortar)—The displacement volume of an ingredient of concrete or mortar; in the case of solids, the volume of the particles themselves, including their permeable or impermeable voids but excluding space between particles; in the case of fluids, the volume which they occupy.
Absorbed Moisture—The moisture held in a material and having physical properties not substantially different from those of ordinary water at the same temperature and pressure.

Absorbed Water—Water held on surfaces of a material by physical and chemical forces and having physical properties substantially different from those of absorbed water or chemically combined water at the same temperature and pressure.

Absorption—The amount of water absorbed under specific conditions, usually expressed as a percentage of the dry weight of the material; the process by which the water is absorbed.

Acceleration—Increase in rate of hardening or strength development of concrete.

Accelerator—An admixture which, when added to concrete, mortar, or grout, increases the rate of hydration of hydraulic cement, shortens the time of set, or increases the rate of hardening or strength development.

ACI—American Concrete Institute.

ACPA—American Concrete Pavement Association.

Adhesion Loss—The loss of bond between a joint sealant material and the concrete joint face noted by physical separation of the sealant from either or both joint faces.

Adhesives—The group of materials used to join or bond similar or dissimilar materials; for example, the epoxy resins in concrete work.

Admixture—A material other than water, aggregates, and Portland cement (including air-entraining Portland cement, and Portland blast furnace slag cement) that is used as an ingredient of concrete and is added to the bath before and during the mixing operation.
- Adsorption—Development at the surface of a solid of a higher concentration of a substance than exists in the bulk of the medium; especially in concrete and cement technology, formation of a layer of water at the surface of a solid, such as cement, or aggregate, or of air-entraining agents at the air-water boundaries; the process by which a substance is adsorbed.

- Aggregate Blending—The process of mixing two or more aggregates to produce a different set of properties, generally, but not exclusively, to improve grading.

- Aggregate Gradation—See Grading.

- Aggregate Interlock—The projection of aggregate particles or portion of aggregate particles from one side of a joint or crack in concrete into recesses in the other side of the joint or crack so as to affect load transfer in compression and shear, and maintain mutual alignment.

- Aggregate, Coarse—The largest sized particles in the concrete mix. These particles provide the greatest variable of wear in the sawing system, whether abrasive or diamond.

- Aggregate, Dense Graded—Aggregates graded to produce low void content and maximum weight when compacted.

- Aggregate, Fine—Aggregate passing the 3/8 in. (9.5 mm) sieve and almost entirely passing the No. 4 (4.75 mm) sieve and predominantly retained on the No. 200 (75 mm) sieve.

- Aggregate, Gap Graded—Aggregate so graded that certain intermediate sizes are substantially absent.

- Aggregate, Heavyweight—Aggregate of high density, such as barite, magnetite, hematite, limonite, ilmenite, iron, or steel, used to produce heavyweight concrete.

- Aggregate, Lightweight—Aggregate of low density, such as (a) expanded or sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, or slag; (b) natural pumice, scoria, volcanic cinders, tuff, and diatomite; or (c) sintered fly ash or industrial cinders, used to produce lightweight concrete.
- Aggregate, Maximum Size—See Maximum Size of Aggregate.
- Aggregate, Nominal Maximum Size—In specifications for and descriptions of aggregate, the smallest sieve opening through which the entire amount of the aggregate is permitted to pass; sometimes referred to as “maximum size (of aggregate).”
- Aggregate, Open Graded—Concrete aggregate in which the voids are relatively large when the aggregate is compacted.
- Aggregate-Cement Ratio—See Cement-Aggregate Ratio.
- Aggregate—Essentially inert material (material that is chemically nonreactive) which, when bound together into a conglomerated mass by a matrix, forms concrete or mortar.
- Agitating Speed—The rate of rotation of the drum or blades of a truck mixer when used for agitation of mixed concrete.
- Agitating Truck—A vehicle in which freshly mixed concrete can be conveyed from the point of mixing to that of placing; while being agitated, the truck body can either be stationary and contain an agitator or it can be a drum rotated continuously so as to agitate the contents.
- Agitation—The process of providing gentle motion in mixed concrete just sufficient enough to prevent segregation or loss of plasticity.
- Agitator—A device for maintaining plasticity and preventing segregation of mixed concrete by agitation.
- Air Content—The amount of air in mortar or concrete, exclusive of pore space in the aggregate particles, usually expressed as a percentage of total volume of mortar or concrete.
- Air Void—A space in cement paste, mortar, or concrete filled with air; an entrapped air void is characteristically 1 mm or more in size and irregular in shape; an entrained air void is typically between 10 m and 1 mm in diameter and spherical (or nearly so).
Air-Entrained Agent—An addition for hydraulic cement or an admixture for concrete or mortar which causes air, usually in small quantity, to be incorporated in the form of small bubbles in the concrete or mortar during mixing, usually to increase its workability and frost resistance.

Air-Entrained Cement—A cement that has an air-entraining agenda added during the grinding phase of manufacturing.

Air-Entraining—The capability of a material or process to develop a system of small bubbles of air in cement paste, mortar, or concrete during mixing.

Air-Entrainment—The inclusion of air in the form of small bubbles during the mixing of concrete or mortar.

Air-Meter—A device for measuring the air content of concrete and mortar.

Air-Water Jet—A high-velocity jet of air and water mixed at the nozzle, used in the clean-up of surfaces of rock or concrete, such as horizontal construction joints.

Alkali-Aggregate Reaction—Chemical reaction in mortar or concrete between alkalis (sodium and potassium) released from Portland cement or from other sources, and certain compounds present in the aggregates; under certain conditions, harmful expansion of the concrete or mortar may be produced.

Alternate Lane Construction—A method of constructing concrete roads, runways, or other paved areas, in which alternate lanes are placed and allowed to harden before the remaining immediate lanes are placed.

Amount of Mixing—The duration of mixer action used in combining the ingredients of concrete or mortar; in the case of stationary mixers, the number of revolutions of the drum or blades at mixing speed after the cement comes in contact with water or aggregates.

Amplitude—The maximum displacement from the mean position in connection with vibration.

Angle of Repose—The angle between the horizontal and the natural slope of loose material below which the material will not slide.
Angular Aggregate—Aggregate particles that possess well-defined edges formed at the intersection of roughly planar faces.

Architectural Concrete—Concrete that will be permanently exposed to view and which therefore requires special care in selection of the concrete materials, forming, placing, and finishing to obtain the desired architectural appearance.

Area of Steel—The cross-sectional area of the reinforcing bars in or for a given concrete cross-section.


Automatic Batcher—A batcher equipped with gates or valves which, when actuated by a single starter switch, will open automatically at the start of the weighing operation of each material and close automatically when a designated weight of each material has been reached, interlocked in such a manner that (1) the charging mechanism cannot be opened until the scale has returned to zero, (2) the charging mechanism cannot be opened if the discharge mechanism is opened, (3) the discharge mechanism cannot be opened if the charging mechanism is opened, (4) the discharge mechanism cannot be opened until the designated weight has been reached within the allowable tolerance, and (5) if different kinds of aggregates or different kinds of cements are weighed cumulatively in a single batcher, interlocked sequential controls are provided.

Axle Load—The portion of the gross weight of a vehicle transmitted to a structure or a roadway through wheels supporting a given axle.

Backer Rod—Foam cord that inserts into a joint sealant reservoir and is used to shape a liquid joint sealant and prevent sealant from adhering to or flowing out of the bottom of the reservoir.

Bag (of cement)—A quantity of cement; 42.6 kg in the United States, 39.7 kg in Canada; Portland or air-entraining Portland cement, or as indicated on the bag for other kinds of cement.
- Ball Test—A test to determine the consistency of fresh concrete by measuring the depth of penetration of a steel ball. The apparatus is usually called a Kelly ball.
- Bar Chair—An individual supporting device used to support or hold reinforcing bars in proper position to prevent displacement before or during concreting.
- Bar Spacing—The distance between parallel reinforcing bars, measured center to center of the bars perpendicular to their longitudinal axes.
- Bar Support—A rigid device used to support or hold reinforcing bars in proper position to prevent displacement before or during concreting.
- Bar, deformed—See Deformed Bar.
- Bar—A member used to reinforce concrete.
- Barrel (of cement)—A unit of weight for cement: (170.6 kg) net, equivalent to 4 US bags for Portland or air-entraining Portland cements, or as indicated by the manufacturer for other kinds of cement. (In Canada, 158.8 kg. net per barrel.)
- 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—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.
- Basket—See Load-Transfer Assembly.
- Batch Box—Container of known volume used for measuring constituents of a batch of either concrete or mortar in proper proportions.
- Batch Mixer—A machine that mixes batches of concrete or mortar.
- Batch Plant—Equipment used for batching concrete materials.
Batch Weights—The weights of the various materials (cement, water, the several sizes of aggregate, and admixtures, if used) that compose a batch of concrete.

Batch—Quantity of concrete or mortar mixed at one time.

Batched Water—The mixing water added by a batcher to a concrete or mortar mixture before or during the initial stages of mixing.

Batcher—A device for measuring ingredients for a batch of concrete.

Batching—Weighing or volumetrically measuring and introducing into the mixer the ingredients for a batch of concrete or mortar.

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

Benkelman Beam—Static deflection measuring tool equipped with dial gauges able to detect slab deflection to 0.025 millimeter.

Bent Bar—A reinforcing bar bent to a prescribed shape such as a truss bar, straight bar with hook, stirrup, or column tie.

Blast Furnace Slag—The non-metallic byproduct, consisting essentially of silicates and aluminosilicates of lime and other bases, which is produced in a molten condition simultaneously with iron in a blast furnace.

Bleeding Capacity—The volume of water released from a given volume of paste or mortar by bleeding, usually expressed as a fraction of a cubic centimeter of water per cubic centimeter of paste or mortar. See AASHTO T 158 - expressed as volume of water per unit area of surface or as a percentage of the net mixing water.

Bleeding Rate—The rate at which water is released from a paste or mortar by bleeding, usually expressed as cubic centimeters of water released each second from each square centimeter of surface.

Bleeding—The self-generated flow of mixing water within, or its emergence from, freshly placed concrete or mortar.
Blemish—Any superficial defect that causes visible variation from a consistently smooth and uniformly colored surface of hardened concrete. (See also Bug Holes, Efflorescence, Honeycomb, Laitance, Pop out, Rock Pocket, Sand Streak.)

Blended Cement—See Cement, Blended.

Blistering—The irregular rising of a thin layer of placed mortar or concrete at the surface during or soon after completion of the finished operation.

Blow Hole—Depressed area in an asphalt shoulder near a transverse joint that is pumping.

Bond Area—The interface area between two elements across which adhesion develops or may develop, as between concrete and reinforcing steel.

Bond Breaker—A material used to prevent adhesion of newly-placed concrete and reinforcing steel.

Bond Hardness—The support (bond strength) that the metal matrix in a diamond saw blade segment provides to each diamond that is embedded within the matrix.

Bond Strength—Resistance to separation of mortar and concrete from reinforcing steel and other materials with which it is in contact; a collective expression for all forces such as adhesion, friction due to shrinkage, and longitudinal shear in the concrete engaged by the bar deformations that resist separation.

Bond Stress—The force of adhesion per unit area of contact between two surfaces such as concrete and reinforcing steel or any other material such as foundation rock.

Bond—The adhesion of concrete or mortar to reinforcement or other surfaces against which it is placed; the adhesion of cement paste to aggregate.
Bounding Agent—A substance applied to an existing surface to create a bond between it and a succeeding layer, as between a subsurface and a terrazzo topping.

Bounding Layer—A layer of mortar, usually 3 to 13 mm thick, spread on a moist and prepared hardened concrete surface prior to placing fresh concrete.

Box Out—To form an opening or pocket in concrete by a box-like form.

Broom Finish—The surface texture obtained by stroking a broom over freshly placed concrete. See also Brushed Surface.

Brushed Surface—A sandy texture obtained by brushing the surface of freshly placed or slightly hardened concrete with a stiff brush for architectural effect or, in pavements, to increase skid resistance.

Bug Holes—Small regular or irregular cavities, usually not exceeding 15 mm in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and compaction.

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

Bulk Density—The mass of a material (including solid particles and any contained water) per unit volume, including voids.

Bulk Specific Gravity—The ratio of the weight in air of a given volume of a permeable material (including both permeable and impermeable voids normal to the material) at a stated temperature to the weight in air of an equal volume of distilled water at the same temperature.

Bulking Factor—Ratio of the volume of moist sand to the volume of the sand when dry.

Bulking—Increase in the bulk volume of a quantity of sand in a moist condition over the volume of the same quantity dry or completely inundated.
Bull Float—A tool comprising a large, flat, rectangular piece of wood, aluminum, or magnesium usually 20 cm wide and 100 to 150 cm long, and a handle 1 to 5 m in length used to smooth unformed surfaces of freshly placed concrete.

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.

Butt Joint—A plain square joint between two members.

Calcareous—Containing calcium carbonate, or less generally, containing the element calcium.

Calcium Chloride—A crystalline solid, CaCl$_2$; in various technical grades, used as a drying agent, as an accelerator of concrete, a deicing chemical, and for other purposes.

Calcium Lignosulphonate—An admixture, refined from paper-making wastes, employed in concrete to retard the set of cement, reduce the water requirement, and increase strength.

Caliche—Gravel, sand, or desert debris cement by porous calcium carbonate or other salts.

California Bearing Ratio—The ratio of the force per unit area required to penetrate a soil mass with a 19.4 sq. cm circular piston at the rate of 1.27 mm per minute to the force required for corresponding penetration of a standard crushed-rock base material; the ratio is usually determined at 2.5 mm penetration.

CAP—Communications and preparation.

Cap—1) A suitable material bonded to the surfaces of test specimens to produce plane areas so as to ensure uniform distribution of bearing during compression strength testing; 2) The cap on an expansion joint.
- Capacity—The volume of concrete permitted to be mixed or carried in a particular mixer or agitator, usually limited by manufacturer’s standards or 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 ability or limit of structure.

- Capillary—In cement paste, any space not occupied by unhydrated cement or cement gel (air bubbles, whether entrained or entrapped, are not considered to be part of the cement paste).

- Capillarity—Uptake of water or other liquids as a result of a surface tension phenomenon.

- Capillary Absorption—The action of surface tension forces which draws water into capillaries (i.e., in concrete) without appreciable external pressures.

- Capillary Flow—Flow of moisture through a capillary pore system, such as concrete.

- Capillary Space—In cement paste, any space not occupied by anhydrous cement or cement gel. (Air bubbles, whether entrained or entrapped, are not considered to be part of the cement paste.)

- Capillary Transmission—Passage of water or other fluid through capillaries, either by capillarity or under hydraulic pressure; capillary flow.

- Carbide-Milling—Surface removal or sawing done with carbide milling machine; machine uses blade or arbor equipped with carbide-tipped teeth that impact and chip concrete or asphalt.

- Carbonation—Reaction between carbon dioxide and the products of Portland cement hydration to produce calcium carbonate.

- Cast-in-Place—Concrete placed and finished in its final location.

- Cement Content—Quantity of cement contained in a unit volume of concrete or mortar, ordinarily expressed as pounds, barrels, or bags per cubic yard.

- Cement Factor—See Cement Content.
- **Cement Gel**—The colloidal material that makes up the major portion of the porous mass of which mature hydrated cement paste is composed.

- **Cement Paste**—Constituent of concrete consisting of cement and water.

- **Cement, Blended**—A hydraulic cement consisting essentially of an intimate and uniform blend of granulated blast-furnace slag and hydrated lime; or an intimate and uniform blend of Portland cement and granulated blast-furnace slag cement and pozzolan, produced by intergrinding Portland cement clinker with the other materials or by blending Portland cement with the other materials, or a combination of intergrinding and blending.

- **Cement, Expansive**—A special cement which, when mixed with water, forms a paste that tends to increase in volume at an early age; used to compensate for volume decrease due to drying shrinkage.

- **Cement, High Early Strength**—Cement characterized by producing earlier strength in mortar or concrete than regular cement, referred to in the United States as Type III.

- **Cement, Hydraulic**—A cement that is capable of setting and hardening under water, such as normal Portland cement.

- **Cement, Normal**—General purpose Portland cement, referred to in the United States as Type I.

- **Cement, Portland Pozzolan**—A hydraulic cement consisting essentially 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-Aggregate Ratio**—The ratio, by weight or volume, of cement to aggregate.

- **Cement**—See Portland Cement.

- **Cementitious**—Having cementing properties.
Central Mixer—A stationary concrete mixer from which the fresh concrete is transported to the work.

Central-Mixed Concrete—Concrete that is completely mixed in a stationary mixer from which it is transported to the delivery point.

Chair—See Bar Support.

Chalking—A phenomenon of coatings, such as cement paint, manifested by the formation of a loose powder by deterioration of the paint at or just beneath the surface.

Charging—Introducing, feeding, or loading materials into a concrete or mortar mixer, furnace, or other container or receptacle.

Checking—Development of shallow cracks at closely spaced but irregular intervals on the surface of mortar or concrete.

Chipping—Treatment of a hardened concrete surface by chiseling away a portion of material.

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

Coefficient of Thermal Expansion—Change in linear dimension per unit length or change in volume per unit volume per degree of temperature change.

Cohesion Loss—The loss of internal bond within a joint sealant material; noted by a noticeable tear along the surface and through the depth of the sealant.

Cohesiveness—The property of a concrete mix which enables the aggregate particles and cement paste matrix therein to remain in contact with each other during mixing, handling, and placing operations; the “stick-togetherness” of the concrete at a given slump.

Cold Joint—A discontinuity produced when the concrete surface hardens before the next bath is placed against it.
Colloidal Mixer—Grout mixing device that uses a high velocity blade to shear or separate cementitious particles in order to break surface tension and enable complete contact between the particles and mixing water.

Combined Aggregate Grading—Particle size distribution of a mixture of fine and coarse aggregate.

Compacting Factor—The ratio obtained by dividing the observed weight of concrete which fills a container of standard size and shape when allowed to fall into it under standard conditions of test, by the weight of fully compacted concrete which fills the same container.

Compaction—The process whereby the volume of freshly placed mortar or concrete is reduced to the minimum practical space, usually by vibration, centrifugation, tamping, or some combination of these; to mold it within forms or molds and around embedded parts and reinforcement, and to eliminate voids other than entrained air. See also Consolidation.

Compound, Curing—See Curing Compound, Membrane Curing.

Compound, Joint Sealing—An impervious material applied as a coating or to fill joints in pavements or structures.

Compound, Sealing—An impervious material applied as a coating or to fill joints or cracks in concrete or mortar. See also Joint Sealant.

Compressible Insert—Board used to separate a partial-depth patch from an adjacent slab, usually consisting of a 12-mm thick Styrofoam or compressed fiber material that is impregnated with asphalt.

Compression Seal—See Preformed Compression Seal.

Compression Test—Test made on a specimen of mortar or concrete to determine the compressive strength; in the United States, unless otherwise specified, compression tests of mortars are made on 50 mm cubes, and compression tests of concrete are made on cylinders 152 mm in diameter and 305 mm high.
Compressive Strength Average—The term used to describe 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 Strength—The measured resistance of a concrete or mortar specimen to axial loading; expressed as pounds per square inch (psi) of cross-sectional area.

Concrete Finishing Machine—A machine mounted on flanged wheels which rides 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 Spreader—A machine designed to spread concrete from heaps already dumped in front of it, or to receive and spread concrete in a uniform layer.

Concrete Vibrating Machine—A machine that compacts a layer of freshly mixed concrete by vibration.

Concrete, Fibrous—Concrete containing dispersed, randomly oriented fibers.

Concrete, Gap-Graded—See Gap-Graded Concrete.

Concrete, Green—Concrete that has set but not appreciably hardened.

Concrete, Normal Weight—Concrete having a unit weight of approximately 2400 kg/m³ made with aggregates of normal weight.

Concrete, Ready-Mixed—See Ready-mixed Concrete

Concrete, Reinforced—Concrete construction that contains mesh or steel bars embedded in it.

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 used solely for protective cover, fill, or insulation is not considered structural concrete.

Concrete, Transit-Mixed—See Transit-Mixed Concrete.
Concrete, Truck-Mixed—Concrete, the mixing of which is accomplished in a truck mixer.

Concrete, Vibrated—See Vibrated Concrete.

Concrete—A composite material that consists essentially of a binding medium in which are embedded particles or fragments of a relatively inert material filler. In Portland cement concrete, the binder is a mixture of Portland cement and water; the filler may be any of a wide variety of natural or artificial aggregates.

Cone, Slump—See Slump Cone and Slump.

Consistency—The relative mobility or ability of fresh concrete or mortar to flow. The usual measures of consistency are slump or ball penetration for concrete and flow for mortar.

Consolidate—Compaction usually accomplished by vibration of newly placed concrete to minimum practical volume, to mold it within form shapes or around embedded parts and reinforcement, and to reduce void content to a practical minimum.

Consolidation—The process of inducing a closer arrangement of the solid particles in freshly mixed concrete or mortar during placement by the reduction of voids, usually by vibration, centrifugation, tamping, or some combination of these actions; also applicable to similar manipulation of other cementitious mixtures, soils, aggregates, or the like. See also Compaction.

Construction Joint—The surface where two successive placements of concrete meet, occasionally with a keyway or reinforcement across the joint.

Construction Loads—The loads to which a permanent or temporary structure is subjected during construction.

Continuously Reinforced Pavement—A pavement with continuous longitudinal steel reinforcement and no intermediate transverse expansion or contraction joints.
- **Contraction Joint**—A plane, usually vertical, separating concrete in a structure of pavement, at a designated location such as to prevent formation of objectionable shrinkage cracks elsewhere in the concrete. Reinforcing steel is discontinuous.

- **Contraction**—Decrease in length or volume. (See also Expansion, Shrinkage, Swelling, and Volume Change.)

- **Control Joint**—See Contraction Joint.

- **Conveyor**—A device for moving materials in concrete construction, usually a continuous belt, an articulated system of buckets, a confined screw, or a pipe through which material is forced by air or water.

- **Core Test**—Compression test on a concrete sample cut from hardened concrete by means of a core drill.

- **Core**—A cylindrical specimen of standard diameter drilled from a structure or rock foundation to be bested in compression or examined petrographically.

- **Coring**—The act of obtaining cores by drilling of structure or rock foundations.

- **Corner Break**—A portion of the slab separated by a crack that intersects the adjacent transverse or longitudinal joints, describing about a 45-degree angle with the direction of traffic. The length of the sides is usually from 0.3 meters to one-half of the slab width on each side of the crack.

- **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**—In reinforced concrete, the least distance between the surface of the reinforcement and the outer surface of the concrete.

- **CPR**—Concrete pavement restoration; the combination of available concrete repair techniques in one project.
- Crack Saw—Small three-wheeled specialty saw useful for tracing the wandering nature of a transverse or longitudinal crack; usually contains a pivot wheel and requires a small diameter crack sawing blade.

- Cracking—The process of contraction or the reflection of stress in the pavement.

- Crazing—Small surface pattern cracks in mortar or concrete due to unequal shrinkage or contraction on drying or cooling.

- CRC—Continuously reinforced concrete pavement; see Continuously Reinforced Pavement.

- Cross-Section—The section of a body perpendicular to a given axis of the body; a drawing showing such a section.

- Crushed Gravel—The product resulting from the artificial crushing of gravel with a specified minimum percentage of fragments having one or more faces resulting from fracture. See also Coarse Aggregate.

- Crushed Stone—The product resulting from the artificial crushing of rocks, boulders, or large cobblestones, substantially all faces of which possess well-defined edges and have resulted from the crushing operation.

- Crusher-Run Aggregate—Aggregate that has been broken in a mechanical crusher and has not been subjected to any subsequent screening process.

- Cubic Yard—Normal commercial units of measure of concrete volume, equal to 27 cubic feet.

- Cumulative Batching—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.

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

- Cure—Maintenance of temperature and humidity for freshly placed concrete during some definite period following placing and finishing to ensure proper hydration of the cement and proper hardening of the concrete.
- **Curing Blanket**—A built-up covering of sacks, matting, hessian, straw, waterproof paper, or other suitable material placed over freshly finished concrete. See also Burlap.

- **Curing Compound**—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, 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.

- **Curing**—The maintenance of a satisfactory moisture content and temperature in concrete during its early stages so that desired properties may develop.

- **Damp**—Either moderate absorption or moderate covering of moisture; implies less wetness than that connoted by “wet,” and slightly wetter than that connoted by “moist.” See also Moist and Wet.

- **Darby**—A hand-manipulated straightedge about one meter long used during the early stage leveling operations of concrete finishing as a supplement to floating (not a float).

- **DBI**—Dowel bar inserter that places the load transfer bar into plastic concrete as part of the paving operation.

- **Dead Load**—A constant load that in structures is due to the mass of the members, the supported structure, and permanent attachments or accessories.

- **De-foaming Agent**—An admixture used for reducing or limiting the air content of fresh concrete.

- **Deformed Bar**—A reinforcing bar with a manufactured pattern of surface ridges that provide a locking anchorage with surrounding concrete.

- **Deformed Reinforcement**—Metal bars, wire, or fabric with a manufactured pattern of surface ridges that provide a locking anchorage with surrounding concrete.
Dehydration—Removal of water from a material, frequently but not always by heat; the water may have been held by either chemical or physical forces.

Density (dry)—The mass per unit volume of a dry substance at a stated temperature. See also Specific Gravity.

Density Control—Control of density of concrete in field construction to ensure that specified values as determined by standard tests are obtained.

Density—Mass per unit volume; by common usage in relation to concrete, weight per unit volume, also referred to as unit weight.

Design Strength—Load capacity of a member computed on the basis of allowable stresses assumed in design.

Deterioration—1) Physical manifestation of failure (e.g., cracking delamination, flaking, pitting, scaling, spalling, staining) caused by environmental or internal autogenous influences on rock and hardened concrete as well as other materials; 2) Decomposition of material during either testing or exposure to service. See also Disintegration and Weathering.

Diamond Grinding—The process used to remove the upper surface of a concrete pavement to remove bumps and restore pavement rideability; also, equipment using many diamond saw blades on a shaft or arbor to shave the surface of concrete slabs.

Disintegration—Reduction into small fragments and subsequently into particles. See also Deterioration, Mechanical Weathering, and Weathering.

Dispersing Agent—An admixture capable of increasing the fluidity of pastes, mortar or concretes by reduction of inter-particle attraction.

Distress—Physical manifestation of deterioration and distortion in a concrete structure as the result of stress, chemical action, and/or physical action.

Dog Tail—Area of unground concrete resulting when a diamond grinding operator does not adequately steer the machine and does not overlap a previous pass.
- Dolomite—A mineral having a specific crystal structure and consisting of calcium carbonate and magnesium carbonate in equivalent chemical amounts (54.27 and 45.73 percent by weight, respectively); a rock containing dolomite as the principal constituent.

- Dowel Lubricant—A material applied to part of the surface of a dowel to reduce bond with the concrete and permit axial movement.

- Dowel—1) A steel pin, commonly a plain round steel bar, which extends into two adjoining portions of a concrete construction, as at a joint in a pavement slab, so as to transfer shear loads; 2) A deformed reinforcing bar intended to transmit tension, compression, or shear through a construction joint.

- Down-Pressure—The force that keeps the grinding head on a diamond grinding machine cutting through bumps in the concrete surface and prevents the grinding head from riding up and merely tracing the bump profile.

- Drainage—The interception and removal of water from, on, or under an area or roadway; the process of removing surplus ground or surface water artificially; a general term for gravity flow of liquids in conduits.

- Drive Packer—For slab stabilization or slab jacking, tapering metal nozzle that seats into an injection hole by tapping or standing on a foot plate. Usually most appropriate for small-diameter holes.

- Drop Chute—A device used to confine or to direct the flow of a falling stream of fresh concrete.

- Drop Chute (articulated)—A vertical succession of tapered metal cylinders, the lower end of each fitting into the upper end of the one below, used to confine a falling stream of concrete where necessary to avoid its striking embedded parts or scattering excessively, or to prevent separation when concrete leaves a chute or a conveyor belt.

- Drop Chute (flexible)—A rubberized, heavy canvas tube extending down between curtains of steel in forms, from the bottom of a hopper or crane bucket, to confine a falling stream of concrete where this is necessary. Will
enter spaces and will withdraw without catching on steel much better than the articulated metal drop chute.

- **Drop Hammer**—Impact-type pavement breaking equipment.
- **Drum Speed (RPM)**—The various rates of rotation of the drum of a mixer when used for charging, mixing, agitating, or discharging. These various drum speeds are usually outlined on the mixer rating plate.
- **Dry Mix**—A concrete, mortar, or plaster mixture, commonly sold in bags, containing all components except water; also a concrete of near zero slump.
- **Dry Mixing**—Blending of the solid materials for mortar or concrete prior to adding the mixing water.
- **Dry Process**—In the manufacture of cement, the process in which the raw materials are ground, conveyed, blended, and stored in a dry condition. See also Wet Process.
- **Dry Rodded Weight (DRW)**—Weight per unit volume of an aggregate compacted dry by rodding under standardized conditions.
- **Dry-Batch Weights**—Weights of materials, excluding water, to make a batch of concrete.
- **Dry-Rodded Volume**—The volume that would be occupied by an aggregate if it were compacted dry under the standardized conditions used in measuring unit weight of aggregate.
- **Dry-Rodding**—Tamping of dry coarse aggregate in a calibrated container to measure its unit weight.
- **Drying Shrinkage**—Contraction caused by drying.
- **Durability**—The ability of concrete to remain unchanged while in service; resistance to weathering action, chemical attack, and abrasion.
- **Dynamic Load**—A variable load; i.e., not static, such as a moving live load, earthquake, or wind.
- Dynamic Loading—Loading from units (particularly machinery) which, by virtue of their movement or vibration, impose stresses in excess of those imposed by their dead load.

- Early Strength—Strength of concrete developed soon after placement, usually during the first 72 hours.

- Edge Form—Formwork used to limit the horizontal spread of fresh concrete on flat surfaces, such as pavements or floors.

- Edger—A finishing tool used on the edges of fresh concrete to provide a rounded edge.

- Efflorescence—Deposit of salts, usually white in color, appearing upon the surface or found within the near-surface pores of concrete or masonry.

- Engineer-Architect—The architect, engineer, architectural firm, engineering firm, or architectural and engineering firm, issuing project drawings and specifications, or administering the work under contract specifications and drawings, or both.

- Entrained Air—Round, uniformly distributed, microscopic, non-coalescing air bubbles entrained by the use of air-entraining agents; usually less than 1 mm in size.

- Entrapped Air—Air in concrete which is not purposely entrained. Entrapped air is generally considered to be large voids (larger than 1 mm).

- Evaporable Water—Water set in cement paste present in capillaries or held by surface forces; measured as that removable by drying under specified conditions. See also Nonevaporable Water.

- Expanding Rubber—Packer For slab stabilization or slab jacking, nozzle containing an expandable rubber sleeve that expands from injection pressure to fill the injection hole during injection of stabilizing material.

- Expansion Joint—Pavement joint that allows large closure movement to prevent development of lateral compression between adjacent concrete slabs; usually used to isolate an on-line structure, such as a bridge.
Expansion Sleeve—A tubular metal covering for a dowel bar to allow its free longitudinal movement at a joint.

Expansion—Increase in length or volume. See also Autogenous Volume Change, Contraction, Moisture Movement, Shrinkage, and Volume Change.

Exposed Concrete—Concrete surfaces formed so as to yield an acceptable texture and finish for permanent exposure to view. See also Architectural Concrete.

External Vibrator—See Vibration.

False Set—The rapid development of rigidity in a freshly mixed Portland cement paste, mortar, or concrete without the evolution of much heat, which rigidity can be dispelled, and plasticity regained by further mixing without addition of water; premature stiffening, hesitation set, early stiffening, and rubber set are terms referring to the same phenomenon, but false set is the preferred designation.

Faulting—Differential vertical displacement of a slab or other member adjacent to a joint or crack.

FHWA—Federal Highway Administration.

Field-Cured Cylinders—Test cylinders cured 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.

Final Set—A degree of stiffening of a mixture of cement and water greater than initial set, generally stated as an empirical value indicating the time in hours and minutes required for a cement paste to stiffen sufficiently to resist to an established degree, the penetration of a weighted test needle; also applicable to concrete and mortar mixtures with use of suitable test procedures. See also Initial Set.

Final Setting Time—The time required for a freshly mixed cement paste, mortar, or concrete to achieve final set. See also Initial Setting Time.
Finish—The texture of a surface after compacting and finishing operations have been performed.

Finishing Machine—A power-operated machine used to give the desired surface texture to a concrete slab.

Finishing—Leveling, smoothing, compacting, and otherwise treating surfaces of fresh or recently placed concrete or mortar to produce desired appearance and service. See also Float and Trowel.

Fixed Form Paving—A type of concrete paving process that involves the use of fixed forms to uniformly control the edge and alignment of the pavement.

Flash Set—The rapid development of rigidity in a freshly mixed Portland cement paste, mortar, or concrete, usually with the evolution of considerable heat, which rigidity cannot be dispelled nor, can the plasticity be regained by further mixing without addition of water; also referred to as quick set or grab set.

Flexible Pavement—A pavement structure that maintains intimate contact with and distributes loads to the subgrade and depends on aggregate interlock, particle friction, and cohesion for stability; cementing agents, where used, are generally bituminous materials as contrasted to Portland cement in the case of rigid pavement. See also Rigid Pavement.

Flexural Strength—A property of a material or structural member that indicates its ability to resist failure in bending. See also Modulus of Rupture.

Float Finish—A rather rough concrete surface texture obtained by finishing with a float.

Float—A tool (not a darby) usually of wood, aluminum, or magnesium, used in finishing operations to impart a relatively even but still open texture to an unformed fresh concrete surface.

Floating—The operation of finishing a fresh concrete or mortar surface by use of a float, preceding troweling when that is to be the final finish.

Flow Cone Test—Test that measures the time necessary for a known quantity of grout to completely flow out of and empty a standard sized cone; usually
used in slab stabilization to determine the water quantity necessary for stabilization grout.

- **Flow**—1) Time dependent irrecoverable deformation. See Rheology. 2) A measure of the consistency of freshly mixed concrete, mortar, or cement paste in terms of the increase in diameter of a molded truncated cone specimen after jigging a specified number of times.

- **Fly Ash**—A concrete mix additive that is used as a replacement for cement in the concrete mix. Fly ash addition is important information in determining when to saw.

- **Form Oil**—Oil applied to interior surface of formwork to promote easy release from the concrete when forms are removed.

- **Form**—A temporary structure or mold for the support of concrete while it is setting and gaining sufficient strength to be self-supporting.

- **Free Moisture**—Moisture having essentially the properties of pure water in bulk; moisture not absorbed by aggregate. See also Surface Moisture.

- **Free Water**—See Free Moisture and Surface Moisture

- **Full-depth Patching**—Removing and replacing at least a portion of a concrete slab to the bottom of the concrete, in order to restore areas of deterioration.

- **Gap-Graded Concrete**—Concrete containing a gap-graded aggregate.

- **Gradation**—See Grading.

- **Grading**—The distribution of particles of granular material among various sizes, usually expressed in terms of cumulative percentages larger or smaller than each of a series of sizes (sieve openings) or the percentages between certain ranges of sizes (sieve openings).

- **Gravel**—Granular material predominantly retained on the 4.75 mm (No. 4) sieve and resulting from natural disintegration and abrasion of rock or processing of weakly bound conglomerate.

- **Green Concrete**—See Concrete, Green.
Green Sawing—The process of controlling random cracking by sawing uniform joint spacing in early age concrete without tearing or dislocating the aggregate in the mix.

Grinding Head—Arbor or shaft containing many diamond blades on diamond grinding equipment.

Gross Vehicle Load—The weight of a vehicle plus the weight of any load thereon.

Gross Volume (of concrete mixers)—In the case of a revolving-drum mixer, the total interior volume of the revolving portion of the mixer drum; in the case of an open-top mixer, the total volume of the trough or pan calculated on the basis that no vertical dimension of the container exceeds twice the radius of the circular section below the axis of the central shaft.

Grout-Retention Disk—Small plastic disk that provides a barrier to prevent grout or epoxy from escaping from a dowel hole.

Grout—A mixture of cementitious material and water, with or without aggregate, proportioned to produce a pourable consistency without segregation of the constituents; also, a mixture of other composition but of similar consistency. See also Neat Cement Grout and Sand Grout.

Hairline Cracking—Barely visible cracks in random pattern in an exposed concrete surface which do not extend to the full depth or thickness of the concrete, and which are due primarily to drying shrinkage.

Hardener—A chemical applied to concrete floors to reduce wearing and dusting.

Hardening—When Portland cement is mixed with enough water to form a paste, the compounds of the cement react with water to form cementitious products that adhere to each other and to the intermixed sand and stone particles and become very hard. As long as moisture is present, the reaction may continue for years, adding continually to the strength of the mixture.

Harsh Mixture—A concrete mixture which lacks desired workability and consistency due to a deficiency of mortar.
Harshness—Deficient workability and cohesiveness caused by insufficient sand or cement, or by improperly graded aggregate.

Header—A transverse construction joint installed at the end of a day's paving operation or other placement interruptions. To a contractor, a header is the location at which paving will resume on the next day.

Heat of Hydration—Heat evolved by chemical reactions of a substance with water, such as that evolved during the setting and hardening of Portland cement.

Heavy-Weight Aggregate—An aggregate of very high unit weight, such as barium, boron, or iron ore, steel shot or punchings, which forms a high-density mortar of concrete when bound together with hardened cement paste.

Heavy-Weight Concrete—Concrete in which heavy aggregates are used to increase the density of the concrete; unit weights in the range of 165 to 330 pounds per cubic foot are attained.

High Range Water-Reducing Admixture—See Water-Reducing Admixture (high range).

High-Early-Strength Cement—See Cement, High-Early-Strength.

High-Early-Strength Concrete—Concrete which, through the use of high-early-strength cement or admixtures, is capable of attaining specified strength at an earlier age than normal concrete.

Holiday—An unground area in a diamond ground surface resulting when the head on the diamond grinding equipment does not cut deep enough to touch a low spot in the surface.

Honeycomb—Concrete which, due to lack of the proper amount of fines or vibration, contains abundant interconnected large voids or cavities; concrete which has honeycomb is improperly consolidated.

Hooked Bar—A reinforcing bar with the end bent into a hook to provide anchorage.
- **Horizontal-Axis Mixer**—A concrete mixer of the revolving drum type in which the drum rotates about a horizontal axis.

- **Hot-pour Sealant**—Joint sealing materials that require heating for installation, usually consisting of a base of asphalt or coal tar.

- **Hydrated Lime**—A dry powder obtained by treating quicklime with sufficient water to convert it to calcium hydroxide.

- **Hydration**—The chemical reaction between cement and water which causes concrete to harden.

- **Hydraulic Cement**—A cement that is capable of setting and hardening under water due to the chemical interaction of the water and the constituents of the cement.

- **Hydraulic Ram**—Impact-type pavement breaking equipment.

- **Inclined-Axis Mixer**—A truck with a revolving drum that rotates about an axis inclined to the bed of the truck chassis.

- **Incompressibles**—Small concrete fragments, stones, sand or other hard materials that enter a joint sealant, joint reservoir, or other concrete pavement discontinuity.

- **Initial Set**—A degree of stiffening of a mixture of cement and water less than final set, generally stated as an empirical value indicating the time in hours and minutes required for cement paste to stiffen sufficiently to resist to an established degree the penetration of a weighted test needle; also applicable to concrete or mortar with use of suitable test procedures. See also Final Set.

- **Initial Setting Time**—The time required for a freshly mixed cement paste to acquire an arbitrary degree of stiffness as determined by specific test.

- **Injection Hole**—Hole drilled vertically through a concrete slab that is used to inject stabilizing grout underneath the slab or subbase layers.

- **Isolation Joint**—A separation between adjoining parts of a concrete structure, usually a vertical plane, at a designed location such as to interfere least with performance of the structure, yet such as to allow relative
movement in three directions and avoid formation of cracks elsewhere in the concrete and through which all or part of the bonded reinforcement is interrupted. See also Contraction Joint and Expansion Joint.

- Jitterbug—a grate tamper for pushing coarse aggregate slightly below the surface of a slab to facilitate finishing. See also Tamper.

- Joint—a plane of weakness to control contraction cracking in concrete pavements. A joint can be initiated in plastic concrete or green concrete and shaped with later process.

- Joint Depth—the measurement of a saw cut from the top of the slab to the bottom of the cut.

- Joint Deterioration—See Spalling, Compression.

- Joint Filler—Compressible material used to fill a joint to prevent the infiltration of debris and to provide support for sealant.

- Joint Sealant—Compressible material used to exclude water and solid foreign materials from joints.

- Joint Shape—the vertical dimension of a saw cut. Many times, this refers to the final cut prior to sealing. Many times, this is widening of the original saw cut.

- Joint, Construction—See Construction Joint.

- Joint, Contraction—See Contraction Joint.

- Joint, Expansion—See Expansion Joint.

- Keyway—a recess or groove in one lift or placement of concrete which is filled with concrete of the next lift, giving shear strength to the joint. See also Tongue and Groove.

- Laitance—a layer of weak and nondurable material containing cement and fines from aggregates, brought to the top of over wet concrete, the amount of which is generally increased by overworking and overmanipulating concrete at the surface by improper finishing.
Layer—See Course.

Lean Concrete—Concrete of low cement content.

Lift—The concrete placed between two consecutive horizontal construction joints, usually consisting of several layers or courses.

Liquid Sealant—Sealant materials that install in liquid form and cool or cure to their final properties; rely on long-term adhesion to the joint reservoir faces.

Load Transfer—The ability of a joint or crack to transfer a portion of a load applied on one side of the joint or crack to the other side of the joint or crack.

Load Transfer Assembly—Most commonly, the unit (basket or plate) designed to support or link dowel bars during concreting operations so as to hold them in place, in the desired alignment.

Longitudinal Cut Line—The vertical edge remaining in the surface of a concrete slab after a pass by diamond grinding equipment.

Longitudinal Joint—A joint parallel to the long dimension of a structure or pavement.

Longitudinal Reinforcement—Reinforcement essentially parallel to the long axis of a concrete member or pavement.

Lot—A defined quantity.

Low Modulus—Does not readily tear.

Manual Batcher—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.

Map Cracking—1) Intersecting cracks that extend below the surface of hardened concrete; caused by shrinkage of the drying surface concrete which 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. 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. See also Checking, Crazing, and Pattern Cracking.

- **Mass Concrete**—Concrete placed in large volumes and containing large maximum size aggregate.
- **Mass**—The physical property of matter that causes it to have weight in a gravitational field.
- **Maximum Size Aggregate (or top size)**—The largest size aggregate particles present in sufficient quantity to affect properties of a concrete mixture.
- **Mechanical Analysis**—The process of determining particle-size distribution or grading.
- **Membrane Curing**—A process that involves either liquid sealing compound (e.g., bituminous and paraffinic emulsions, coal tar cut-backs, pigmented and nonpigmented resin suspensions, or suspensions of wax and drying oil) or nonliquid protective coating (e.g., sheet plastics or “waterproof” paper), both of which types function as films to restrict evaporation of mixing water from the fresh concrete surface.
- **Mesh Reinforcement**—See Welded-Wire Fabric Reinforcement.
- **Mesh**—The number of openings (including fractions thereof) per unit of length in either a screen or sieve in which the openings are 6 mm or less.
- **Mix**—The act or process of mixing; also, mixture of materials, such as mortar or concrete.
- **Mix Design**—See Proportioning.
- **Mixer**—A machine used for blending the constituents of concrete, grout, mortar, cement paste, or other mixture.
- **Mixer Capacity**—The volume of concrete permitted to be mixed or carried in a particular mixer or agitator.
Mixer Efficiency—The adequacy of a mixer in rendering a homogeneous product within a stated period; homogeneity is determinable by testing for relative differences in physical properties of samples extracted from different portions of a freshly mixed batch.

Mixer, Batch—See Batch Mixer.

Mixer, Horizontal Shaft—A mixer having a stationary cylindrical mixing compartment, with the axis of the cylinder horizontal, and one or more rotating shafts to which mixing blades or paddles are attached; also called Pugmill.

Mixer, Non-Tilting—A horizontally rotating drum mixer that charges, mixes, and discharges without tilting.

Mixer, Open-Top—A truck-mounted mixer consisting of a trough or a segment of a cylindrical mixing compartment within which paddles or blades rotate about the horizontal axis of the trough. See also Mixer, Horizontal Shaft.

Mixer, Tilting—A rotating drum mixer that discharges by tilting the drum about a fixed or movable horizontal axis at right angles to the drum axis. The drum axis may be horizontal or inclined while charging and mixing.

Mixer, Transit—See Truck Mixer.

Mixing Cycle—The time taken for a complete cycle in a batch mixer; i.e., the time elapsing between successive repetitions of the same operation (e.g., successive discharges of the mixer).

Mixing Plant—See Batch Plant.

Mixing Speed—Rotation rate of a mixer drum or of the paddles in an open-top, pan, or trough mixer, when mixing a batch; expressed in revolutions per minute (rpm), or in peripheral feet per minute of a point on the circumference at maximum diameter.

Mixing Time—The period during which the ingredients for a batch of concrete are being combined by the mixer. For stationary mixers, the time is measured from the completion of batching cement and aggregate until the
beginning of discharge. For truck mixers, mixing is given in term of the number of revolutions of the drum at mixing speed.

- **Mixing Water**—The water in freshly mixed sand-cement grout, mortar, or concrete, exclusive of any previously absorbed by the aggregate (e.g., water considered in the computation of the net water-cement ratio). See also Batched Water and Surface Moisture.

- **Mixture**—The assembled, blended, commingled ingredients of mortar, concrete, or the like, or the proportions for their assembly.

- **Modified Portland Cement**—A Portland cement having moderate heat of hydration. This term was replaced by Type II cement beginning in 1960.

- **Modulus of Rupture**—A measure of the ultimate load-carrying capacity of a beam, sometimes referred to as “rupture modulus” or “rupture strength.” It is calculated for apparent tensile stress in the extreme fiber of a transverse test specimen under the load which produces rupture. See also Flexural Strength.

- **Moist**—Slightly damp but not quite dry to the touch; the term “wet” implies visible free water, “damp” implies less wetness than “wet,” and “moist” implies not quite dry. See also Damp and Wet.

- **Moisture Barrier**—A vapor barrier.

- **Moisture Content of Aggregate**—The ratio, expressed as a percentage, of the weight of water in a given granular mass to the dry weight of the mass.

- **Moisture-Free**—The condition of a material that has been dried in air until there is no further significant change in its mass. See also Mass and Over Dry.

- **Mortar**—Concrete with essentially no aggregate larger than about 3/16 inch.

- **Mud Balls**—Balls of clay or silt (“mud”).

- **Natural Sand**—Sand resulting from natural disintegration and abrasion of rock. See also Sand and Aggregate, Fine.

- **NCHRP**—National Cooperative Highway Research Program.
- Neat Cement Grout—Grout consisting of Portland cement and water.
- NHI—National Highway Institute.
- No-Slump Concrete—Concrete with a slump of 6 mm or less. See also Zero-slump Concrete.
- Nominal Maximum Size (of aggregate)—In specifications for and descriptions of aggregate, the smallest sieve opening through which the entire amount of the aggregate is permitted to pass; sometimes referred to as “maximum size (of aggregate).”
- Nominal Mix—The proportions of the constituents of a proposed concrete mixture.
- Nominal Size—See Maximum Size of Coarse Aggregate.
- Non-Air-Entrained Concrete—Concrete in which neither an air-entraining admixture nor air-entraining cement has been used.
- Nonagitating Unit—A truck-mounted container for transporting central-mixed concrete that is not equipped to provide agitation (slow mixing) during delivery (dump truck).
- Nonevaporable Water—The water that is chemically combined during cement hydration; not removable by specified drying. See also Evaporable Water.
- Non-Tilting Mixer—See Mixer, Non-Tilting.
- NRMCA—National Ready Mixed Concrete Association.
- Oven Dry—The condition resulting from having been dried to essentially constant weight, in an oven, at a temperature that has been fixed, usually between 221 and 239°F (105 and 115°C).
- Over Sanded—Containing more sand than would be required for adequate workability and satisfactory finishing characteristics.
- Over Vibration—Vibration of concrete more than is necessary for good consolidation and elimination of entrapped air.
- Over Wet—The consistency of concrete when it contains more mixing water and hence is of greater slump than is necessary for ready consolidation.

- Partial-Depth Patching—Patches for restoring localized areas of surface deterioration; Usually for compression spalling problems, severe scaling, or other surface problems that are within the upper one-third of the slab depth.

- Particle-Size Distribution—The division of particles of a graded material among various sizes; for concrete materials, usually expressed in terms of cumulative percentages larger or smaller than each of a series of diameters or the percentages within certain ranges of diameter, as determined by sieving.

- Pattern Cracking—Fine openings on concrete surfaces in the form of a pattern; resulting from a decrease in volume of the material near the surface, an increase in volume of the material below the surface, or both.

- Pavement (concrete)—A layer of concrete over such areas as roads, sidewalks, canals, airfields, and those used for storage or parking. See also Rigid Pavement.

- Paving Train—An assemblage of equipment designed to place and finish a concrete pavement.


- PCC—Portland Cement Concrete.

- Pea Gravel—Screened gravel the particle sizes of which range between 3/16 and 3/8 inch in diameter.

- Peeling—A deterioration process in which thin flakes of mortar break away from a concrete surface.

- Percent Fines—Amount, expressed as a percentage, of material in aggregate finer than a given sieve, usually the No. 200 (75 μm) sieve; also, the amount of fine aggregate in a concrete mixture expressed as a percent by absolute volume of the total amount of aggregate.
Pie Tape—Tape used to measure the circumference of the grinding head blades on diamond grinding equipment.

Pitting—A localized disintegration taking the form of cavities at the surface of concrete.

Placement—The process of placing and consolidating concrete; a quantity of concrete placed and finished during a continuous operation; also, inappropriately referred to as pouring.

Placing—The deposition, distribution, and consolidation of freshly mixed concrete in the place where it is to harden; also, inappropriately referred to as pouring.

Plain Bar—A reinforcing bar without surface deformations, or one having deformations that do not conform to the applicable requirements.

Plain Concrete—Concrete without reinforcement.

Plane of Weakness—The plane along which a body under stress will tend to fracture; may exist by design, by accident, or because of the nature of the structure and its loading.

Plastic Consistency—Condition of freshly mixed cement paste, mortar, or concrete such that deformation will be sustained continuously in any direction without rupture; in common usage, concrete with slump of 80 to 100 mm.

Plastic Cracking—Cracking that occurs in the surface of fresh concrete soon after it is placed and while it is still plastic.

Plastic Deformation—Deformation that does not disappear when the force causing the deformation is removed.

Plastic Shrinkage Cracking—The result of rapid moisture loss in the surface or mass of the concrete pavement.

Plastic—a condition of freshly mixed concrete such that it is readily remoldable and workable, cohesive, and has an ample content of cement and fines, but is not over-wet.
Plasticity—That property of fresh concrete or mortar which determines its resistance to deformation or its ease of molding.

Plasticizer—A material that increases the plasticity of a fresh cement paste, mortar, or concrete.

Pneumatic—Moved or worked by air pressure.

Point Bearing—Occurs when a partial-depth patch is made without the compressible insert; also, slab expansion in hot weather forces an adjacent slab to bear directly against a small partial-depth patch and causes the patch to fail by pop out or delamination.

Pop Outs—Pits or craters in the surface of concrete resulting from localized expansive forces associated with particles of unsound aggregate or contaminating materials, such as wood or glass.

Porosity—The ratio, usually expressed as a percentage, of the volume of voids in a material to the total volume of the material, including voids.

Portland Cement—A commercial product which when mixed with water alone or in combination with sand, stone, or similar materials, has the property of combining with water, slowly, to form a hard solid mass. Physically, Portland cement is a finely pulverized clinker produced by burning at high temperatures mixtures containing lime, iron, alumina, and silica in definite proportions and then interground with gypsum to give the properties desired.

Portland-Pozzolan Cement—See Cement, Portland-Pozzolan.

Pozzolan-Cement Grout—Common slab stabilization grout consisting of water, Portland cement and pozzolan; usually fly ash.

Pozzolan—A siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.
- Preformed Compression Seal—Joint sealant that is manufactured ready for installation and is held in a joint by lateral pressure exerted against the reservoir by the seal after being compressed during installation.

- Preservation—The process of maintaining a structure in its present condition and arresting further deterioration. See also Rehabilitation, Repair, and Restoration.

- Pressure-Relief—Cut made in a concrete pavement to relieve compressive forces of thermal expansion during hot weather.

- Proportioning—Selection of proportions of ingredients for mortar or concrete to make the most economical use of available materials to produce mortar or concrete of the required properties.

- PSI—1) Pounds per square inch; a measure of the compressive, tensile or flexural strength of concrete as determined by appropriate test. 2) In pavements, the Performance Serviceability Index.

- Pugmill—A stationary mechanical mixer for blending cement and aggregate.

- Punch Out—In continuously reinforced concrete pavement, the area enclosed by two closely spaced transverse cracks, a short longitudinal crack, and the edge of the pavement or longitudinal joint, when exhibiting spalling, shattering, or faulting. Also, area between Y cracks exhibiting this same deterioration.


- Quality Assurance—Actions taken by an owner or his representative to provide assurance that what is being done and what is being provided are in accordance with the applicable standards of good practice for the work.

- Quality Control—Actions taken by a producer or contractor to provide control over what is being done and what is being provided so that the applicable standards of good practice for the work are followed.

- Random Cracking—A non-controlled crack outside of the uniform sawed joints.
Raveling—The displacement of aggregate or surface concrete from sawing; normally indicates that concrete strength is too low for sawing.

Reactive-Aggregate—Aggregate containing certain silicic or carbonate compounds that are capable of reacting with alkalis in Portland cement, in some cases producing damaging expansion of concrete.

Ready-Mixed Concrete—Concrete manufactured for delivery to a purchaser in a plastic and unhardened state. See Central-mixed Concrete, Shrink-mixed Concrete, and Transit-mixed Concrete.

Rebar—Abbreviation for “reinforcing bar.” See Reinforcement.

Rebound Hammer—An apparatus that provides a rapid indication of the mechanical properties of concrete based on the distance of rebound of a spring-driven missile.

Recycled Concrete—Concrete that has been processed for use, usually as aggregate.

Rehabilitation—The process of repairing or modifying a structure to a desired useful condition. See also Preservation, Repair, and Restoration.

Reinforced Concrete—Concrete containing adequate reinforcement (prestressed or not prestressed) and designed on the assumption that the two materials act together in resisting forces. See also Plain Concrete.

Reinforcement—Bars, wires, strands, and other slender members embedded in concrete in such a manner that the reinforcement and the concrete act together in resisting forces.

Reinforcement, Dowel Bar—See Dowel.

Reinforcement, Transverse—Reinforcement at right angles to the longitudinal reinforcement; may be main or secondary reinforcement.

Relative Humidity—The ratio of the quantity of water vapor actually present to the amount present in a saturated atmosphere at a given temperature; expressed as a percentage.
Release Agent—Material used to prevent bonding of concrete to a surface. See also Bond Breaker.

Remoldability—The readiness with which freshly mixed concrete responds to a remolding effort, such as jigging or vibration, causing it to reshape its mass around reinforcement and to conform to the shape of the form. See also Flow.

Repair—To replace or correct deteriorated, damaged, or faulty materials, components, or elements of a structure. See also Preservation, Rehabilitation, and Restoration.

Reservoir—The part of a concrete joint that normally holds a sealant material. Usually a widening saw cut above the initial saw cut.

Restoration—The process of reestablishing the materials, form, and appearance of a structure to those of a particular era of the structure. See also Preservation, Rehabilitation, and Repair.

Retardation—Reduction in the rate of hardening or strength development of fresh concrete, mortar, or grout; i.e., an increase in the time required to reach initial and final set.

Retarder—An admixture that delays the setting of cement and hence of mixtures such as mortar or concrete containing cement.

Retempering—Addition of water and remixing of concrete or mortar which has lost enough workability to become unplaceable or unusable. See also Tempering.

Retrofit Dowel Bars—Dowels that install into slots cut into the surface of an existing concrete pavement.

Revibration—A second vibration applied to fresh concrete, preferably as long after the first vibration as the concrete will still respond properly.

Rheology—The science of dealing with flow of materials, including studies of deformation of hardened concrete, the handling and placing of freshly mixed concrete, and the behavior of slurries, pastes, and the like.
✓ Ribbon Loading—Method of batching concrete in which the solid ingredients, and sometimes the water, enter the mixer simultaneously.

✓ Rich Mixture—A concrete mixture containing a large amount of cement.

✓ Rigid Pavement—Pavement that will provide high bending resistance and distribute loads to the foundation over a comparatively large area.

✓ Rock Pocket—A portion of hardened concrete consisting of a concentration of coarse aggregate that is deficient in mortar; caused by separation during placement or insufficient consolidation, or both; see honeycomb.

✓ Rod—A specified length of metal, circular in cross section with one end rounded, for compacting concrete or mortar test specimens.

✓ Rod, Tamping—A straight steel rod of circular cross section having one or both ends rounded to a hemispherical tip.

✓ Rodability—The susceptibility of fresh concrete or mortar to compaction by means of a tamping rod.

✓ Rodding—Compaction of concrete by means of a tamping rod. See also Rod, Tamping, and Rodability.

✓ Sack—See Bag.

✓ Sample—A group of units, or portion of material, taken from a larger collection of units or quantity of material, which serves to provide information that can be used as a basis for action on the larger quantity or on the production process; the term is also used in the sense of a sample of observations.

✓ Sampling, Continuous—Sampling without interruptions throughout an operation or for a predetermined time.

✓ Sampling, Intermittent—Sampling successively for limited periods of time throughout an operation or for a predetermined period of time. The duration of sample periods and of the intervals between are not necessarily regular and are not specified.

✓ Sand Grout—Grout mixture containing water, Portland cement, and sand.
Sand Streak—A streak of exposed fine aggregate in the surface of formed concrete caused by bleeding.

Sand-Aggregate Ratio—The ratio of sand to coarse aggregate by weight or volume.

Sand-coarse Aggregate Ratio—Ratio of fine to coarse aggregate in a batch of concrete, by weight or volume.

Sand—The fine granular material (usually less than 3/16 inch in diameter) resulting from the natural disintegration of rock, or from the crushing of friable sandstone.

Saturated Surface-Dry (SSD) Particle Density—The mass of the saturated-surface-dry aggregate divided by its displaced volume in water or in concrete. (Also called Bulk Specific Gravity).

Saturated Surface-Dry—Condition of an aggregate particle or other porous solid when the permeable voids are filled with water but there is no water on the exposed surface.

Saturation—1) In general, the condition of the coexistence in stable equilibrium of either a vapor and a liquid or a vapor and solid phase of the same substance at the same temperature. 2) As applied to aggregate or concrete, the condition such that no more liquid can be held or placed within it.

Saw Blade, Abrasive—A concrete sawing medium that uses non-diamond abrasion elements. These blades do not need water to cool, but water is sometimes used.

Saw Blade, Diamond—A concrete sawing medium that uses industrial diamonds as the primary abrasion element. These blades are normally water cooled to protect the host metal from melting and prematurely dislodging the diamonds.

Saw Cut—A cut in hardened concrete utilizing diamond or silicone-carbide blades or discs.
- Sawed Joint—A joint cut in hardened concrete, generally not to the full depth of the member, by means of special equipment.

- Sawing—Cutting of joints in hardened concrete by means of special equipment utilizing diamond or silicon carbide blades or discs; cut goes only part way through the slab.

- Scaling—Flaking or peeling away of the near-surface portion of hydraulic cement concrete or mortar.

- Schmidt Hammer (trade name), Swiss Hammer, or Rebound Hammer—A device used to estimate the compressive strength of hardened concrete by measuring surface hardness.

- Screed Guide—Firmly established grade strips or side forms for unformed concrete that will guide the strike off in producing the desired plane or shape.

- Screed—1) To strike off concrete lying above the desired plane or shape. 2) A tool for striking off the concrete surface, sometimes referred to as a Strike off.

- Screeding—The operation of forming a surface by the use of screed guides and a strike off. See also Strike off.

- Screen (or sieve)—A plate or sheet of woven cloth or other device, with regularly spaced apertures of uniform size, mounted in a suitable frame or holder for use in separating material according to size.

- Sealant—See Joint Sealant and Membrane Curing.

- Sealing Compound—See Joint Sealant and Membrane Curing.

- Sealing—The process of filling the sawed joint with material to prohibit intrusion into the joint of water and incompressible materials.

- Secondary Sawing—The sawing that takes place to establish shape in the joint. Many times, this shape is the reservoir of the joint.
Segregation—The tendency, as concrete is caused to flow laterally, for coarse aggregate and drier material to remain behind and for mortar and wetter material to flow ahead. This also occurs in a vertical direction when wet concrete is over-vibrated, the mortar and wetter material rising to the top. In the vertical direction, segregation may also be called Stratification.

Semiautomatic Batcher—A batcher equipped with gates or valves that are separately opened manually to allow the material to be weighed but which are closed automatically when the designated weight of each material has been reached.

Separation—The tendency, as concrete is caused to pass from the unconfined ends of chutes or conveyor belts, for coarse aggregate to separate from the concrete and accumulate at one side; the tendency, as processed aggregate leaves the ends of conveyor belts, chutes, or similar devices with confining sides, for the larger aggregate to separate from the mass and accumulate at one side; the tendency for solids to separate from the water by gravitational settlement. See also Bleeding and Segregation.

Set—The condition reached by a cement paste, mortar, or concrete when it has lost plasticity to an arbitrary degree, usually measured in terms of resistance to penetration or deformation. Initial set refers to first stiffening. Final set refers to attainment of significant rigidity.

Set-Accelerating Admixture—See Accelerator.

Set-Retarding Admixture—See Retarder.

Setting of Cement—Development of rigidity of cement paste, mortar, or concrete as a result of hydration of the cement. The paste formed when cement is mixed with water remains plastic for a short time. During this stage it is still possible to disturb the material and remix without injury, but as the reaction between the cement and water continues, the mass loses its plasticity. This early period in the hardening is called the “setting period,” although there is not a well-defined break in the hardening process.
Setting Time—The time required for a specimen of concrete, mortar or cement paste, prepared and tested under standardized conditions, to attain a specified degree of rigidity.

Settlement—The sinking of solid particles in grout, mortar, or fresh concrete, after placement and before initial set. See also Bleeding.

Settlement Shrinkage—A reduction in volume of concrete prior to the final set of cementitious mixtures, caused by settling of the solids and by the decrease in volume due to the chemical combination of water with cement. See Plastic Shrinkage.

Shrink-Mixed Concrete—Ready-mixed concrete mixed partially in a stationary mixer and then mixed in a truck mixer.

Shrinkage Crack, Plastic—Crack resulting from rapid evaporation of moisture and resulting volume change near the surface of a concrete pavement slab; usually appear as short, parallel cracks that only extend down partially through the slab thickness.

Shrinkage Crack—Crack from restraint of shrinkage due to volume or temperature reduction.

Shrinkage Cracking—Cracking of a structure or member due to failure in tension caused by external or internal restraints as reduction in moisture content develops, or as carbonation occurs, or both.

Shrinkage—Decrease in length or volume.

Sieve Analysis—The classification of particles, particularly of aggregates, according to sizes as determined with a series of sieves of different openings.

Silicone Sealant—Liquid joint sealant consisting of silicone-based material.

Silicone—A resin, characterized by water-repellent properties, in which the main polymer chain consists of alternating silicon and oxygen atoms, with carbon-containing side groups; silicones may be used in joint sealing compounds, caulking or coating compounds, or admixtures for concrete.

Skid Resistance—A measure of the frictional characteristics of a surface.
❑ Slab Jacking—Process of injecting grout materials beneath concrete slabs in order to lift or elevate the slabs.

❑ Slab Stabilization—Process of injecting grout materials beneath concrete slabs in order to fill voids without raising the concrete slabs.

❑ Slip Form—A form that is pulled or raised as concrete is placed; may move in a generally horizontal direction to lay concrete evenly for highway paving or on slopes and inverts of canals, tunnels, and siphons; or vertically to form walls, bins, or silos.

❑ Slip Form Paving—A type of concrete paving process that involves extruding the concrete through a machine to provide a uniform dimension of concrete paving.

❑ Slump—A measure of consistency of freshly mixed concrete, mortar, or stucco equal to the subsidence measured to the nearest 6 mm of the molded specimen immediately after removal of the slump cone.

❑ Slump Cone—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 4 in (102 mm), and height 12 in (305 mm), used to fabricate a specimen of freshly mixed concrete for the slump test.

❑ Slump Loss—The amount by which the slump of freshly mixed concrete changes during a period of time after an initial slump test was made on a sample or samples thereof.

❑ Slump Test—The procedure for measuring slump.

❑ Slurry—Mixture of water and concrete particles resulting from concrete sawing or grinding.

❑ Solid Volume—See Absolute Volume.

❑ Sounding—Process of tapping concrete slab surface with metal object, listening for tone from the impact, to determine areas of delamination.
Soundness—In the case of a cement, freedom from large expansion after setting. In the case of aggregate, the ability to withstand aggressive conditions to which concrete containing it might be exposed, particularly those due to weather.

Spalling, Compression—Cracking, breaking, chipping, or fraying of slab edges within 0.6 meter of a transverse joint.

Spalling, Sliver—Chipping of concrete edge along a joint sealant; usually within 12 millimeters of the joint edge.

Spalling, Surface—Cracking, breaking, chipping, or fraying of slab surface; usually within a confined area less than 0.5 square meters.

Specific Gravity—The ratio of the weight in air of a given volume of material at a stated temperature to the weight in air of an equal volume of distilled water at the same temperature.

Specific Gravity Factor—The ratio of the weight of aggregates (including all moisture), as introduced into the mixer, to the effective volume displaced by the aggregates.

Split Batch Charging—Method of charging a mixer in which the solid ingredients do not all enter the mixer together; cement, and sometimes different sizes of aggregate, may be added separately.

Spud Vibrator—A vibrator used for consolidating concrete, having a vibrating casing or head, that is used by insertion into freshly placed concrete.

Standard Deviation—The root mean square deviation of individual values from their average.

Static Load—The weight of a single stationary body or the combined weights of all stationary bodies in a structure (such as the load of a stationary vehicle on a roadway); during construction, the combined weight of forms, stringers, joists, reinforcing bars, and the actual concrete to be placed. See also Dead Load.

Stationary Hopper—A container used to receive and temporarily store freshly mixed concrete.
Storage Hopper—See Stationary Hopper.

Stratification—The separation of over-wet or over-vibrated concrete into horizontal layers with increasingly lighter material toward the top; water, laitance, mortar, and coarse aggregate will tend to occupy successively lower positions (in that order).

Strength—A generic term for the ability of a material to resist strain or rupture induced by external forces. See also Compressive Strength, Fatigue Strength, Flexural Strength, Shear Strength, Splitting Tensile Strength, Tensile Strength, Ultimate Strength, and Yield Strength.

Stress—Intensity of internal force (i.e., force per unit area) exerted by either of two adjacent parts of a body on the other across an imagined plane of separation; when the forces are parallel to the plane, the stress is called shear stress; when the forces are normal to the plane the stress is called normal stress; when the normal stress is directed toward the part on which it acts it is called compressive stress; when it is directed away from the part on which it acts it is called tensile stress.

Strike Off—To remove concrete in excess of that required to fill the form evenly or bring the surface to grade; performed with a straight edged piece of wood or metal by means of a forward sawing movement or by a power operated tool appropriate for this purpose; also, the name applied to the tool. See also Screed and Screeding.

Subbase—A layer in a pavement system between the subgrade and base course or between the subgrade and a Portland cement concrete pavement.

Subgrade—The soil prepared and compacted to support a structure or a pavement system.

Sulfate Attack—Chemical or physical reaction between certain constituents in cement and sulfates in the soil or ground water; sufficient attack may disrupt concrete that is susceptible to it.

Sulfate Resistance—The ability of aggregate, cement paste, or mixtures thereof to withstand chemical attack by sulfate ion in solution.
- Superplasticizer—See Water-Reducing Admixture (high range).
- Surface Moisture—Water retained on surfaces of aggregates capable of mixing with Portland cement in concrete; distinguished from absorbed moisture, which is contained inside the aggregate particles.
- Surface Retarder—A retarder used by application to a form or to the surface of newly placed concrete to delay setting of the cement to facilitate construction joint cleanup or to facilitate production of exposed, aggregate finish.
- Surface Tension—That property, due to molecular forces, that exists in the surface film of all liquids and tends to prevent the liquid from spreading.
- Surface Texture—Degree of roughness or irregularity of the exterior surfaces of aggregate particles or hardened concrete.
- Surface Vibrator—A vibrator used for consolidating concrete by application to the top surface of a mass of freshly mixed concrete; four principal types exist: vibrating screeds, pan vibrators, plate or grid vibratory tampers, and vibratory roller screeds.
- Surface Voids—Cavities visible on the surface of a solid. See also Bug Holes.
- Surface Water—See Surface Moisture.
- Swelling—Increase in length or volume. See also Autogenous Volume Change, Contraction, Expansion, and Volume Change.
- Tamper—1) An implement used to consolidate concrete or mortar in molds or forms. 2) A hand-operated device for compacting floor topping or other unformed concrete by impact from the dropped device in preparation for strike off and finishing; contact surface often consists of a screen or a grid of bars to force coarse aggregates below the surface to prevent interference with floating or troweling. See also Jitterbug.
- Tamping—The operation of compacting freshly placed concrete by repeated blows or penetrations with a tamping device.
Temperature Rise—The increase of temperature caused by absorption of heat or internal generation of heat, as by hydration of cement in concrete.

Tempering—The addition of water and mixing of concrete or mortar as necessary to bring it initially to the desired consistency. See also Retempering.

Tensile Strength—Maximum stress that a material is capable of resisting under axial tensile loading based on the cross-sectional area of the specimen before loading.

Texture—The texture or configuration apparent in an exposed surface, as in concrete and mortar, including roughness, streaking, striation, or departure from flatness.

Texturing—The process of producing a special texture on either unhardened or hardened concrete.

Thermal Expansion—Expansion caused by increase in temperature.

Thermal Movement—Change of dimension of concrete or masonry resulting from change of temperatures. See also Contraction and Expansion.

Thermal Shock—The subjection of newly hardened concrete to a rapid change in temperature which may be expected to have a potentially deleterious effect.

Tie Bar—Bar at right angles to and tied to reinforcement to keep it in place; bar extending across a construction joint.

Tilting Concrete Mixer—See Mixer, Tilting.

Time of Haul—In production of ready-mixed concrete, the period from first contact between mixing water and cement until completion of discharge of the freshly mixed concrete.

Time of Set—Time required after addition of water to cement for cement paste, mortar, or concrete to attain a certain arbitrary degree of hardness or strength.

Time of Setting—See Initial Setting Time and Final Setting Time.
- TMMB—Truck Mixer Manufacturers’ Bureau; most truck mixers carry TMMB rating plates.

- Tongue and Groove—A joint in which a protruding rib on the edge of one side fits into a groove in the edge of the other side, abbreviated “T & G.” See also Keyway.

- Topping—1) A layer of high quality concrete placed to form a floor surface on a concrete base; 2) A dry-shake application of a special material to produce particular surface characteristics.

- Transit-Mixed Concrete—Concrete, the mixing of which is wholly or principally accomplished in a truck mixer. (Same as truck mixed concrete.)

- Transverse Cracks—Cracks that develop at right angles to the long direction of the member.

- Transverse Joint—A joint normal to the longitudinal dimension of a structure.

- Transverse Reinforcement—See Reinforcement, Transverse.

- TRB—Transportation Research Board.

- Trial Batch—A batch of concrete used for establishing or checking proportions.

- Trowel—a flat, broad-bladed steel hand tool used in the final stages of finishing operations to impart a relatively smooth surface to concrete floors and other unformed concrete surfaces; also, a flat triangular-bladed tool used for applying mortar to masonry.

- Truck Mixer—A concrete mixer suitable for mounting on a truck chassis and capable of mixing concrete in transit. See also Horizontal-Axis Mixer, Inclined-Axis Mixer, and Agitator.

- Under-Sanded—A concrete mixture that is deficient in sand content; a condition associated with poor workability or finishing characteristics.
- Unit Water Content—The quantity of water per unit volume of freshly mixed concrete, often expressed as pounds or gallons per cubic yard. It is the quantity of water on which the water-cement ratio is based and does not include water absorbed by the aggregate.

- Unit Weight—See Bulk Density and Specific Gravity.

- Unreinforced Concrete—See Plain Concrete.

- Unsound Aggregate—An aggregate or individual particle of an aggregate capable of causing or contributing to deterioration or disintegration of concrete under anticipated conditions of service.

- Uplift Beam—Beam-like movement detection device used to monitor slab lift during slab stabilization.

- Vibrated Concrete—Concrete compacted by vibration during and after placing.

- Vibration—Energetic agitation of concrete produced by a mechanical oscillating device at moderately high frequency to assist consolidation and compaction.

- Vibration Limit—That time at which fresh concrete has hardened sufficiently to prevent its becoming mobile when subject to vibration.

- Vibration, External—External vibration employs vibrating devices attached at strategic positions on the forms and is particularly applicable to manufacture of precast items and for vibration of tunnel-lining forms; in manufacture of concrete products, external vibration or impact may be applied to a casting table.

- Vibration, Internal—Internal vibration employs one or more vibrating elements that can be inserted into the concrete at selected locations and is more generally applicable to in-place construction.

- Vibration, Surface—Surface vibration employs a portable horizontal platform on which a vibrating element is mounted.
- **Vibrator**—An oscillating machine used to agitate fresh concrete so as to eliminate gross voids, including entrapped air but no entrained air, and produce intimate contact with form surfaces and embedded materials.

- **Vibratory Plate Compactor**—Motorized, one-man tool consisting of a vibrating square plate that transmits energy to compact granular materials.

- **Volume Batching**—The measuring of the constituent materials for mortar or concrete by volume.

- **Volume**—Change An increase or decrease in volume.

- **Wash (or Flush) Water**—Water carried on a truck mixer in a special tank for flushing the interior of the mixer after discharge of the concrete.

- **Water-Cement Ratio**—The ratio of the amount of water, exclusive only of that absorbed by the aggregates, to the amount of cement (or cementitious materials) in a concrete or mortar mixture; preferably stated as a decimal by weight.

- **Water-Gain**—See Bleeding.

- **Water-Reducing Admixture (high range)**—A water-reducing admixture capable of producing large water reduction or great flowability without causing undue set retardation or entrainment of air in mortar or concrete.

- **Water-Reducing Admixture**—A material that either increases slump of freshly mixed mortar or concrete without increasing water content or maintains a workability with a reduced amount of water, the effect being due to factors other than air entrainment; also known as water reducer.

- **Water-Reducing Agent**—A material that either increases workability of freshly mixed concrete without increasing water content or maintains slump with a reduced amount of water.

- **Weathering**—Changes in color, texture, strength, chemical composition, or other properties of a natural or artificial material due to the action of the weather.
- Weight Batching—Measuring the constituent materials for mortar or concrete by weight.

- Welded-Wire Fabric Reinforcement—Welded-wire fabric in either sheets or rolls, used to reinforce concrete.

- Well-Graded Aggregate—Aggregate having a particle size distribution which will produce maximum density; i.e., minimum void space.

- Wet Process—In the manufacture of cement, the process in which the raw materials are ground, blended, mixed, and pumped while mixed with water; the wet process is chosen where raw materials are extremely wet and sticky, which would make drying before crushing and grinding difficult.

- Wet—Covered with visible free moisture; not dry. See also Damp and Moist.

- Wiggle Bolt—Two-piece threaded bolt system used for tying lanes of concrete pavement; usually consists of a female section that is cast into a vertical slab face, and an angled male end which screws into the female coupler.

- Wire Mesh—See Welded Wire Fabric.

- Workability—That property of freshly mixed concrete or mortar which determines the ease and homogeneity with which it can be mixed, placed, compacted, and finished.

- Working Crack—A crack in a concrete pavement slab that undergoes significant deflection and thermal opening and closing movements; Typically, oriented transverse to the pavement centerline and near a non-functioning transverse contraction joint.

- Yield—The volume of fresh concrete produced from a known quantity of ingredients; the total weight of ingredients divided by the unit weight of the freshly mixed concrete.

- Zero-Slump Concrete—Concrete of stiff or extremely dry consistency showing no measurable slump after removal of the slump cone. See also Slump and No-Slump Concrete.