

- BEAM POCKET:** Opening in a vertical member in which a beam is to rest. (PCI)
- BLEED HOLE:** A hole in a plate or angle which is provided solely to release entrapped air or water during concrete placing operation. (PCI)
- BLOCKOUT:** To form a hole, or reduce the height or width of a panel by affixing material to the form (space within a form in which concrete is not to be placed). (PCI)
- DECENTER:** To lower or remove centering or shoring. (ACI)
- DECK:** The form on which concrete for a slab is placed, also the floor or roof slab itself. (ACI)
- DECKING:** Sheathing material for a deck or slab form. (ACI)
- END RAIL:** That portion of a form which dictates the top and bottom of a panel. (PCI)
- FORM HANGER:** Device used to support formwork from a structural framework; the dead load of forms, weight of concrete, and construction and impact loads must be supported. (ACI)
- FORM INSULATION:** Insulating material applied to outside of forms between studs and over the top in sufficient thickness and air tightness to conserve heat of hydration to maintain concrete at required temperatures in cold weather. (ACI)
- JACK SHORE:** Telescoping, or otherwise adjustable, single-post metal shore. (ACI)
- PRETENSIONING BED (or BENCH):** The casting bed on which pretensioned members are manufactured and which resists the pretensioning force prior to release. (ACI)
- RESHORING:** See "Reposting". (ACI)
- REPOSTING:** The construction operation in which the original shoring or posting is removed and replaced in such a manner as to avoid damage to the partially cured concrete; also known as "Reshoring". (ACI)
- SLIP FORM:** System of formwork for concrete which permits continuous casting. Vertical slip forms are used in buildings, tanks, etc., horizontal slip forms in paving. (CRSI)
- WRECKING STRIP:** Small piece or panel fitted into a formwork assembly in such a way that it can be easily removed ahead of main panels or forms, making it easier to strip those major form components. (ACI)

- BATTERY MOLD:** A series of reusable casting slots used to manufacture panels in a vertical position, thus reducing reinforcing requirements and imparting a smooth form finish to both faces. (PCI)
- BOND BREAKER:** A substance placed on a material to prevent it from bonding to the concrete, or between a face material such as natural stone and the concrete backup. (PCI)
- CHAMFER STRIP:** Triangular or curved insert placed in an inside form corner to produce a rounded or flat chamfer; also called fillet, cant strip, skew back. (ACI)
- CLEANOUT:** An opening in the forms for removal of refuse, to be closed before the concrete is placed; a port in tanks, bins or other receptacles for inspection and cleaning. (ACI)
- COLUMN CLAMP:** Any of various types of tying or fastening units used to hold column form sides together. (ACI)
- COLUMN SIDE:** One of the vertical panel components of a column form. (ACI)
- CONE BOLT:** A form of tie rod for wall forms with cones at each end inside the forms so that a bolt can act as a spreader as well as a tie. (ACI)
- DOVE:** Square prefabricated pan form used in two-way (waffle) concrete joist floor construction. (ACI)
- ENVELOPE MOLD:** A box mold where all sides remain in place during the entire casting and stripping cycle. (PCI)
- FORM:** A temporary receptacle which receives concrete and dictates a unit's shape. It can be made of wood or steel, but requires no pattern or positive. (PCI)
- FORM LINER:** Molded sheet which when affixed to a form gives the panel a special finish treatment; liners are made of rubber, plastic, wood, etc. (PCI)
- FORM LINING:** Selected materials used to line the concreting face of formwork in order to impart a smooth or patterned finish to the concrete surface, to absorb moisture from the concrete, or to apply a set-retarding chemical to the formed surface. (ACI)
- FORM RELEASE AGENT:** A substance applied to the forms for the purpose of preventing bond between the form and the concrete cast in it. (PCI)
- FORM TIE:** A tensile unit adapted to prevent concrete forms from spreading due to the fluid pressure of freshly placed, unhardened concrete. (ACI)
- GANGED FORMS:** Prefabricated panels joined to make a much larger unit (up to 30 x 50 ft.) (9 x 15 m.) for convenience in erecting, stripping and reusing; usually braced with walers, strongbacks or special lifting hardware. (ACI)
- GRADE STRIP:** Usually a thin strip of wood tacked to inside of forms at the line to which the top of the concrete lift is to come, either at a construction joint or the top of the structure. (ACI)
- LINING:** Any sheet, plate or layer of material attached directly to the inside face of formwork to improve or alter the surface texture and quality of the finished concrete. (See also "Form lining"). (ACI)
- MASTER MOLD:** A mold which allows a maximum number of casts per project; units cast in such molds need not be identical, provided the changes in the units can be accomplished simply as pre-engineered mold modifications. (PCI)
- MOLD:** The cavity or surface against which fresh concrete is cast to give it a desired shape; sometimes used interchangeably with form but made of fiberglass or concrete; a pattern or positive is built first and the mold is overlaid. (PCI)
- MOVING FORMS:** Large prefabricated units of formwork incorporating supports, and designed to be moved horizontally on rollers or similar devices, with a minimum amount of dismantling between successive uses. (ACI)
- PANS:** Metal forms for one-way concrete joists (one-way pans) and for two-way (waffle slab) concrete joists (dome pans). (CRSI)
- PATTERN OR POSITIVE:** A replica of all or part of the precast element sometimes used for forming the molds in concrete or plastic. (PCI)
- PERMANENT FORM:** Any form that remains in place after the concrete has developed its design strength; it may or may not become an integral part of the structure. (ACI)
- RELEASE AGENT:** Material used to prevent bonding of concrete to a surface. (ACI)
- (See "form release agent"). (PCI)
- SCABBING:** A finish defect in which parts of the form face including release agent adhere to the concrete, some probable causes are an excessively rough form face, inadequate application of release agent, or delayed stripping. (PCI)
- SCALING:** A finish defect resulting in a thin layer of hardened mortar breaking free from the concrete surface and exposing mortar or stone; some probable causes are low strength concrete, rough or absorbent form face, inadequate application of release agent and curing procedure. (PCI)

SELFSTRESSING FORMS: Equipment which in addition to serving as forms for concrete also accommodates the pretensioned strands (or wires) and sustains the total prestressing force by suitable end bulkheads and sufficient cross-sectional strength. (PCI)

SIDE RAIL: The side of a form. (PCI)

SHE BOLT: A type of form tie and spreader bolt in which the end fastenings are threaded into the end of the bolt, thus eliminating cones and reducing the size of holes left in the concrete surface. (ACI)

SNAP TIE. A proprietary concrete wall-form tie, the end of which can be twisted or snapped off after the forms have been removed. (ACI)

REINFORCEMENT, MESH: An arrangement of bars or wire normally in two directions at right angles, tied or welded at the intersections or interwoven. (See also "Reinforcement, expanded metal fabric".) (ACI)

WELDED DEFORMED WIRE FABRIC: Welded wire fabric produced with deformed wires. Wires have deformations which develop bond through both the deformations and the welded intersections (ASTM A-497). (WRI)

WELDED SMOOTH WIRE FABRIC: Welded wire fabric produced with smooth wires. Bond is developed at the welded intersections. (ASTM A-185). (WRI)

WELDED WIRE FABRIC: Wire mesh fabricated by means of welding the crossing joints, usually in rolls (sometimes flat sheets) and often used for temperature reinforcement in joist slabs, slabs on ground and in highway pavements.

A prefabricated concrete reinforcement consisting of a series of high-strength, cold-drawn wires welded together in square or rectangular grids. Produced in flat sheets and rolls. Also called mesh, welded mesh and welded wire mesh. (WRI)

A reinforcing material composed of cold-drawn steel wires fabricated into a sheet consisting of longitudinal and transverse wires arranged at right angles and welded together at all points of intersections. (PCI)

WOVEN WIRE FABRIC: A prefabricated steel reinforcement composed of cold-drawn steel wires mechanically twisted together to form hexagonally shaped openings. (ACI)

- ANCHORAGE:** The securing of bars in cast-in-place concrete either by hooks, bends or embedment length. (CRSI)
- AREA OF STEEL:** Cross-sectional area of bars required for a given concrete section. (CRSI)
- AUXILIARY REINFORCEMENT:** In a prestressed member, any reinforcement in addition to that participating in the prestressing function. (ACI)
- AXLE STEEL REINFORCING BARS:** Deformed reinforcing bars rolled from carbon-steel axles for railroad cars. (CRSI)
- BAGTIE:** Thin gauge wire ties (generally No. 16, 15 or 14 gauge) used to fasten reinforcing bars together at intersections. (PCI)
- BAND:** Small bars or wire encircling the main reinforcement in a member to form a peripheral tie. (ACI)
- Group of bars distributed in a slab or wall or footing. See "Strips". (CRSI)
- BAR:** A metal member used to reinforce concrete. (ACI)
- Steel member used to reinforce concrete. See also "Reinforcement". (CRSI)
- BAR CHAIR:** A noncorrosive, rigid device used to support and/or hold reinforcing bars at a given distance from the form face before and during concreting. (PCI)
- BAR FABRICATOR:** A bar company that is capable of storing, preparing placing drawings and bar lists, shearing, bending, bundling, tagging, loading and delivering reinforcing bars. (CRSI)
- BAR LIST:** Bill of materials, where all quantities, sizes, lengths and bending dimensions are shown. (CRSI)
- BAR MAT:** An assembly of steel reinforcement composed of two or more layers of bars placed at angles to each other and secured together by welding or ties. (ACI)
- BAR NUMBER:** A number (approximately the bar diameter in eighths of inches) used to designate the bar size. For example: A #5 bar is approximately 5/8 inch in diameter; a #9 bar is approximately 1-1/8 inch (9/8"). Bar numbers are rolled onto the bar for easy identification. (CRSI)
- A number (approximately the reinforcing bar diameter in eighths of inches) used to designate reinforcing bar size; bar numbers are rolled onto the bar for easy identification. (PCI)
- BAR SPACING:** Distance between parallel reinforcing bars measured from center-to-center of the bars perpendicular to their longitudinal axes. (CRSI)
- BAR STOOL:** (See bar chair). (PCI)
- BAR SUPPORT** (also "Bar chair"): A rigid device used to support and/or hold reinforcing bars in proper position to prevent displacement before or during concreting. (ACI)
- Devices of formed wire, plastic or concrete to support, hold and space reinforcing bars. (CRSI)
- BASKET:** Wire assembly to support and space dowel bars and expansion joints in concrete slabs on ground. (CRSI)
- BEAM BOLSTER:** Continuous wire bar support used to support the bars in the bottom of beams. (CRSI)
- BEAM BOLSTER UPPER:** Welded wire support for the upper layer of bottom bars in beams and top bars in bridge deck slabs. (CRSI)
- BEAM SCHEDULE:** Table giving the quantity, size and mark number of beams; the quantity, size and mark numbers of bars and stirrups (including stirrup spacing), and, where specified, the stirrup support bars and beam bolsters. (CRSI)
- BENDING SCHEDULE:** A list of reinforcement prepared by the designer or detailer of a reinforced concrete structure, showing the shapes and dimensions of every bar and the number of bars required. (ACI)
- BENT BAR:** Longitudinal reinforcement bent to pass from one face to the other of a member, to use steel efficiently for resistance of moment and diagonal tension, or for anchorage of the bar. (ACI)
- A reinforcing bar bent to a prescribed shape such as a truss bar, straight bar with hook, stirrup or column tie. (CRSI)
- BILLET STEEL REINFORCING BARS:** Reinforcing bars rolled from steel billets in contrast to rail or axle steel. (CRSI)
- BOND:** Holding or gripping force between reinforcing steel and concrete. (CRSI)
- Adhesion of concrete to reinforcement or to other surfaces against which it is placed. (PCI)
- BREAK (A SPIRAL):** Opening a spiral to the round shape and forcing it completely in the opposite direction so that it will remain circular for placing. (CRSI)

- BUNDLE OF BARS:** A bundle consists of one size, length or mark (bent) of bar with the following exceptions; (1) very small quantities may be bundled together for convenience, and (2) groups of varying bar lengths or marks (bent) that will be placed adjacent may be bundled together. In standard practice, weights of bundles are not less than 3,000 pounds. See also "Lift". (CRSI)
- BUNDLED BARS:** A group of not-to-exceed four parallel reinforcing bars in contact with each other and enclosed in stirrups or ties and used as a reinforcing element. (ACI)
- A group of not more than four parallel reinforcing bars in contact with each other, usually tied together. (CRSI)
- BUNDLING:** Placing several parallel elements of reinforcement in contact with each other. (PCI)
- BUTT-WELDED SPLICE:** A reinforcing bar splice made by welding the butted ends. (CRSI)
- CAGE:** A rigid assembly of reinforcement ready for placing in position. (ACI)
- Reinforcing bar assembly comprised of rebar and/or welded wire fabric. (PCI)
- COLD DRAWN WIRE:** Steel wire, hot rolled from billet rods and cold-drawn through a die. (CRSI)
- COLUMN HORSE:** Wood or metal supports, used in groups of two or more, to hold main reinforcing in a convenient position for placing ties while prefabricating column, beam or pile cages. (CRSI)
- COLUMN SCHEDULE:** Table giving the mark number and size for the column, number of pieces and size of verticals, ties or spirals and any bar mark numbers required. (CRSI)
- COLUMN TIES:** Bars bent into square, rectangular, U-shaped, circular or other shapes for the purpose of holding column vertical bars laterally in place. (CRSI)
- COMPRESSION BARS:** Steel used to resist compression forces. (CRSI)
- CONCRETE BLOCK BAR SUPPORTS:** Precast concrete blocks, with or without tie wires, used to support bars above the subgrade or to space bars off vertical forms and above horizontal forms. (CRSI)
- CONCRETE COVER:** The distance from the face of the concrete to the reinforcing steel, also referred to as "Fireproofing", "Clearance" or "Concrete Protection". (CRSI)
- The clear distance from the face of the concrete to the reinforcing steel. (PCI)
- CONTACT SPLICE:** A means of connecting reinforcing bars in which the bars are lapped and in direct contact. (ACI)
- A means of connecting reinforcing bars by lapping in direct contact. See also "Lap Splice". (CRSI)
- CONTINUOUS HIGH CHAIRS:** Welded wire bar supports consisting of a top longitudinal supporting wire with evenly spaced legs welded thereto and used to support bars near the top of slabs. See also "Support Bars" and "Individual High Chairs". (CRSI)
- COUPLER:** (1) A device for connecting reinforcing bars or prestressing tendons end to end. (2) device for locking together the component parts of a tubular metal scaffold. (Also known as a "clamp"). (ACI)
- CURTAIN:** A single layer of vertical and horizontal bars in a wall. If a wall had a layer of reinforcement at each face, it would be a "double curtain" wall. (CRSI)
- DEFORMED BAR:** A reinforcing bar manufactured with deformations (bumps, lugs or ridges) to provide a locking anchorage with the surrounding concrete. (CRSI)
- Reinforcing bar manufactured with deformations (bumps, lugs or ridges) to provide a locking anchorage (bond) with the surrounding concrete. (PCI)
- DEFORMED TIE BAR:** Deformed bar used to hold two slab elements in close contact. (ACI)
- DOBIES:** See "Concrete Block Bar Supports". (CRSI)
- DOWEL:** A bar connecting two separately cast sections of concrete. A bar extending from one concrete section into another is said to be doweled into the adjoining section. Examples: Footing dowels into a column or horizontal wall bars doweled into an adjacent wall section. (CRSI)
- A metal pin used to fasten panel bases to cast-in-place concrete or other precast, by fitting into corresponding holes in the respective units; dowel type connections are a carry-over from stone construction and should not be used indiscriminately. (PCI)
- DOWEL SLEEVE:** Cap of light metal or cardboard on one end of a dowel bar to allow free movement of an expansion joint. (CRSI)
- DOWEL TEMPLATE (TEMPLET):** Frame which outlines the dimensions for setting dowel bars, on footings and columns. (CRSI)
- ENDO:** The dimension from the end of a bar to a point of reference along its longitudinal axis; i.e., any bar is positioned in the forms transversely by "cover" or "spacing" and longitudinally by "cover" or "endo". (CRSI)

GRADE MARKS: A marking rolled onto the bar to identify the grade of steel. (CRSI)

Marking rolled onto a reinforcing bar to identify the grade of steel used in manufacturing. (PCI)

GRADE OF STEEL: The means by which a design engineer specifies the strength properties of the steel he requires in each part of a structure, generally using ASTM designations to distinguish them. (CRSI)

The means by which a design engineer specifies the strength properties of the steel he requires in each part of a structure, generally using ASTM (American Society for Testing and Materials) designations to distinguish them. (PCI)

HAIRPIN BARS: Bars, usually small sizes, bent to a hair pin shape and used for such purposes as short hooked spacer bars in columns and walls and for special dowels. (CRSI)

HAIRPIN: A rebar, usually small in size, bent into the shape of an elongated "U". (PCI)

HEAVY BENDING: Bar sizes #4 through #18, which are bent at not more than six points in one plane (unless classified as "Light Bending" or "Special Bending") and single radius bending. (CRSI)

HIGH CHAIR: See "Individual High Chairs" and "Continuous High Chairs". (CRSI)

HOOK: A semi-circular (180 degree) or a 90 degree turn at the free end of a bar to provide anchorage in concrete. For stirrups and column ties only, turns of either 90 degree or 135 degree are used. (CRSI)

HORIZONTALS: Bars running horizontally. (CRSI)

INDENTED WIRE: Wire having machine-made surface indentations intended to improve bond; depending on type of wire, may be used for either concrete reinforcement or pretensioning tendons. (ACI)

INDIVIDUAL HIGH CHAIRS: A welded wire bar support used under a support bar, to provide support for top bars in slabs, joists or beams; also used to support upper mats of bars in slabs without support bars. (CRSI)

IRON WORKERS: Workmen who handle and place steel and ornamental iron, including all types of reinforcing steel and bar supports. Also, in the Metropolitan Area of New York City, depending upon local union jurisdiction, these workmen are called "Lathers". Colloquial terms frequently used include "rod-setter", "bar-setter", "bar placer", etc. (CRSI)

JACK ROD: Plain rod, usually 7/8 or 1 in. in diameter, with square-cut or threaded ends to support sliding forms in connection with a jack. In some cases, these jack rods are also used as a portion of the vertical reinforcement required. (CRSI)

JACK ROD SLEEVE: Piece of pipe which joins two jack rods for end-to-end butt splicing. (CRSI)

JOIST CHAIRS: Bent or welded wire supports which hold and space the two bars in the bottom of a joist. (CRSI)

JOIST SCHEDULE: Table on the placing drawing giving the quantity and mark of the joists; the quantity, size, length, bending details of bars and usually the quantity of joist chairs in each joist. (CRSI)

LAP: The length by which one bar or sheet of fabric reinforcement overlaps another. (ACI)

Joining of two reinforcing bars by lapping them side by side; similarly the side and end overlap of sheets or rolls of welded wire fabric. Also, the length of overlap of two bars. Also referred to as lap splice. (CRSI)

LAP SPLICE: A connection of reinforcing steel made by lapping the ends of the bars. (ACI)

LAPPING (reinforcing steel): The overlapping of reinforcing steel bars, welded wire fabric, or expanded metal so that there may be continuity of tensile stress in the reinforcing when the concrete member is subjected to flexural or tensile loading. (ACI)

LIGHT BENDING: All #3 bars, all stirrups and ties, and all bars #4 through #18, which are bent at more than six points in one plane, or bars which are bent in more than one plane (unless "Special Bending"), all one plane radius bending with more than one radius in any bar (three maximum), or a combination of radius and other type bending in one plane (radius bending being defined as all bends having a radius of 12 inches or more to inside of bar). (CRSI)

LONGITUDINAL BAR: Any bar placed in the long direction of the member. (CRSI)

LONGITUDINAL REINFORCEMENT: Reinforcement essentially parallel to the long axis of a concrete member or pavement. (ACI)

MARK OUT: Indicating with keel marks on the forms, the exact location of each bar; usually done by foreman from information derived from the detail sheets, prior to starting actual placing operations in an area. (CRSI)

MARKS: A series of letters, numbers or a combination of both used to designate (a) the parts of a structure or (b) the identity of a bent bar. (CRSI)

- MAT:** A large footing or foundation slab used to support an entire structure. Also a grid of reinforcing bars. (CRSI)
- A grid of straight reinforcing bars tied together at each intersection. (PCI)
- MUCKING:** Adjusting the steel during the concreting operation. (CRSI)
- NEGATIVE REINFORCEMENT:** Steel reinforcement for negative moment. (ACI)
- NOMINAL DIAMETER:** The diameter of a plain round bar of the same weight per lineal foot as a deformed bar. (CRSI)
- PACHOMETER:** An electronic device used to locate and size reinforcement in hardened concrete. (PCI)
- PITCH:** Center-to-center spacing between turns of a spiral. (CRSI)
- PLACING DRAWINGS:** Detailed drawings which give the size of the bars, location, spacing and all other information required by the ironworker. (CRSI)
- PLAIN BAR:** A reinforcing bar without surface deformations, or one having deformations that do not conform to the applicable requirements. (ACI)
- RACKS:** Metal or wooden supports for that portion of a bar that extends beyond a construction joint and is not already supported by existing form work or normal tying to adjacent bars. (CRSI)
- RADIUS BENT:** Reinforcing bars bent to a radius larger than that specified for standard hooks; a bar curved to fit into circular walls, as the horizontal bars in a silo. (CRSI)
- RAIL STEEL REINFORCING BARS:** Deformed reinforcing bars rolled from selected used railroad rails. (CRSI)
- RE-BAR:** Abbreviated term for reinforcing bars. (CRSI)
- REINFORCEMENT:** Metal bars, wires, or other slender members which are embedded in concrete in such a manner that the metal and the concrete act together in resisting forces. (ACI)
- Steel bars or wires embedded in concrete and located in such a manner that the metal and the concrete act together in resisting loads. (CRSI)
- REINFORCEMENT, COLD-DRAWN WIRE:** Steel wire made from rods that have been hot-rolled from billets, cold-drawn through a die; for concrete reinforcement of small diameter such as in gauges not less than 0.080 in. (2 mm) nor greater than 0.625 in. (16 mm). (ACI)
- REINFORCEMENT, COLD-WORKED STEEL:** Steel bars or wires which have been rolled, twisted or drawn at normal ambient temperatures. (ACI)
- REINFORCEMENT, DISTRIBUTION-BAR:** Small diameter bars, usually at right angles to the main reinforcement, intended to spread a concentrated load on a slab and to prevent cracking. (ACI)
- REINFORCEMENT, DOWEL-BAR:** Short bars, extending approximately equally into two abutting pieces of concrete, to increase the strength of the joint. (ACI)
- REINFORCEMENT, EXPANDED METAL FABRIC:** A form of reinforcement made by slitting a rolled steel sheet and then stretching it to form a diamond-shaped mesh. (See also "Expanded metal"). (ACI)
- REINFORCEMENT, HELICAL:** Steel reinforcement forming a helix. (ACI)
- REINFORCEMENT, HOOP:** Binders in the form of rings (other than helical) round the main reinforcement in columns and piles. (ACI)
- REINFORCEMENT, LATERAL:** Usually applied to the transverse hoops, links or helical reinforcement in columns. (ACI)
- REINFORCEMENT, SECONDARY:** Reinforcement other than main reinforcement. (ACI)
- REINFORCEMENT, TRANSVERSE:** (a) Links or helical reinforcement for columns. (b) Reinforcement at right angles to the main reinforcement. (ACI)
- REINFORCEMENT, TWIN-TWISTED BAR:** Two bars of the same nominal diameter twisted together. (ACI)
- SAND PLATE:** A flat steel plate or strip welded to the legs of bar supports for use on compacted soil. (CRSI)
- SCHEDULE:** Table on placing drawings (or elsewhere) to give size, shape and arrangement of similar items. See "Beam Schedule", "Column Schedule", "Joist Schedule", "Slab Schedule". (CRSI)
- SHEAR REINFORCEMENT:** Reinforcement designed to resist shear or diagonal tension stresses. (ACI)
- Reinforcement designed to resist shearing forces; usually consisting of "stirrups" bent and located as required. (CRSI)
- SHRINKAGE REINFORCEMENT:** Reinforcement designed to resist shrinkage stresses in concrete. (ACI)

- SLAB BOLSTER:** Bar support with corrugated longitudinal wire and supporting legs, used to support bottom slab bars. (CRSI)
- SLAB SCHEDULE:** Table on the placing drawings giving the quantity and mark of the slabs; the number of pieces; size, length and bending details of the reinforcement in each slab. (CRSI)
- SLAB SPACER:** Bar support with straight longitudinal top wire and with supporting legs spaced to match the spacing of slab bars which they support. (CRSI)
- SLEEVE:** A tube which encloses a bar, dowel, anchor bolt, etc. (CRSI)
- SPECIAL BENDING:** All bending to special tolerances, all radius bending in more than one plane, all multiple plane bending containing one or more radius bends, and all bending for precast units. (CRSI)
- SPIRAL:** A continuously coiled bar or wire. (CRSI)
- SPIRAL COLUMN:** A column in which the vertical bars are enclosed within a spiral. (See "Spiral"). (CRSI)
- SPIRAL REINFORCEMENT:** Reinforcing rod or wire supplied in coils and used in place of ties for columns. (PCI)
- SPIRAL SPACERS:** Usually made of channels or angles, punched to form hooks, which are bent over the coiled spiral to maintain it to a definite pitch. (CRSI)
- SPLICE:** Connection of one reinforcing bar to another by lapping, welding, mechanical couplings or other means; the lap between sheets or rolls of welded wire fabric. (CRSI) (PCI)
- STAGGERED SPLICES:** Splices in bars which are not made at the same point. (CRSI)
- STANDEE:** A term used in some localities to designate a special bar bent to a U-shape with 90° bent legs extending in opposite directions at right angles to the U-bend. It is used as a high chair resting upon a lower mat of bars and supporting an upper mat. (CRSI)
- STEM BARS:** Bars used in the wall section of a cantilevered retaining wall or in the webs of a box girder. When a cantilever retaining wall and its footing are considered as an integral unit, the wall is often referred to as the stem of the unit. (CRSI)
- STIRRUPS:** Reinforcing bars used in beams for shear reinforcement; typically bent into a U-shape or box-shape and placed perpendicular to the longitudinal steel. (CRSI)
- A rebar bent into the form of a closed tie or U-shape and surrounding the main reinforcement in panels and beams for control of cracking caused by diagonal tension; the term "stirrups" is usually applied to lateral reinforcement in horizontal members, and the term ties to those in vertical members. (PCI)
- STORY POLE:** Piece of wood or bar marked with the story height and vertical distances for spacing horizontal bars. (CRSI)
- STRIPS:** Bands of reinforcing bars in flat slab or flat plate construction. The column strip is a quarter-panel wide each side of the column centerline and runs either way of the building, from column to column. The middle strip is half a panel in width, filling in between column strips and runs parallel to the column strips to fill in the center part of a panel. (CRSI)
- SUPPORT BARS:** Rest upon individual high chairs or bar chairs to support top bars in slabs or joists, respectively. They are usually #4 bars and may replace a like number of temperature bars in slabs when properly lap spliced; also used longitudinally in beams to provide support for the tops of stirrups. Also called "Raiser Bars". (CRSI)
- TEMPERATURE BARS:** Bars distributed throughout the concrete to minimize cracks due to temperature changes and concrete shrinkage. (CRSI)
- TEMPERATURE REINFORCEMENT:** Reinforcement distributed throughout the concrete to minimize cracks due to temperature changes and concrete shrinkage. (PCI)
- TEMPLATE:** A device to locate and hold dowels, to lay out bolt holes, inserts, etc. See "Dowel Template". (CRSI)
- THERMIT WELD:** A proprietary system employing a crucible containing metallic powder which, when ignited, melts and flows between two bar ends and fuses them to form a butt-welded splice. (CRSI)
- TIE:** A closed loop of small size reinforcing bars that encircle longitudinal bars in columns and beams. (See "stirrup"). (PCI)
- Reinforcing bars bent to a box-shape and used to hold longitudinal bars together in columns and beams (called "stirrup-ties"). (CRSI)
- TIE BARS:** Bars at right angles and tied to main reinforcement to keep it in place; bars extending across a construction joint. (CRSI)
- TIE WIRE:** Wire (generally No. 16, 15 or 14 gauge) used to secure intersections of reinforcing bars for the purpose of holding them in place until concreting is completed. (CRSI)
- TRUSSED BARS:** Bars bent up to act as both top and bottom reinforcement. (CRSI)

VERTICAL BAR: Any bar used in an upright or vertical position. (CRSI)

WALL SPREADER: An accessory, usually fabricated from reinforcing bar to a "Z" or "U" shape, used to separate and hold apart two faces or curtains of reinforcement in a wall. (CRSI)

WRAPPING: Reinforcing bars or mesh surrounding a structural steel column or beam to reinforce concrete or plaster fireproofing. (CRSI)

- CHUCK:** A device which locks strands into their elongated position during the prestressing operation. (PCI)
- CONCENTRIC TENDONS:** Tendons following a line coincident with the gravity axis of the prestressed concrete member. (ACI)
- CONCORDANT TENDONS:** Tendons in statically indeterminate structures which are coincident with the pressure line produced by the tendons; such tendons do not produce secondary moments. (ACI)
- CURVATURE FRICTION:** Friction resulting from bends or curves in the specified prestressing cable profile. (ACI)
- DEAD END:** In the stressing of a tendon from one end only, the end opposite that to which stress is applied. (ACI)
- DEAD-END ANCHORAGE:** The anchorage at that end of a tendon which is opposite the jacking end. (ACI)
- DEFLECTED TENDONS:** Tendons which have a trajectory that is curved or bent with respect to the gravity axis of the concrete member. (ACI)
- ELONGATION:** In prestressed work, the difference between a strand's initial length and its length after stressing. (PCI)
- END BLOCK:** An enlarged end section of a member designed to reduce anchorage stresses to allowable values. (ACI)
- FINAL STRESS:** In prestressed concrete, the stress which exists after substantially all losses have occurred. (ACI)
- HARPED TENDONS:** See "Deflected tendons". (ACI)
- HOYER EFFECT:** In prestressed concrete, frictional forces which result from the tendency of the tendons to regain the diameter which they had before they were stressed. (ACI)
- INITIAL PRESTRESS:** The prestressing stress (or force) applied to the concrete at the time of stressing. (ACI)
- INITIAL STRESSES:** The stresses occurring in prestressed concrete members before any losses occur. (ACI)
- JACKING DEVICE:** The device used to stress the tendons for prestressed concrete; also, a device for raising a vertical slipform. (ACI)
- JACKING FORCE:** Temporary force exerted by the device which introduces tension into prestressing tendons. (ACI)
- In prestress, the temporary force exerted by the device which introduces the tension into the tendons. (PCI)
- JACKING STRESS:** The maximum stress occurring in a prestressed tendon during stressing. (ACI)
- LINEAR PRESTRESSING:** Prestressing as applied to linear members, such as beams, columns, etc. (ACI)
- MULTIELEMENT PRESTRESSING:** Prestressing accomplished by stressing an assembly of several individual structural elements as a means of producing one integrated structural member. (ACI)
- MULTISTAGE STRESSING:** Prestressing performed in stages as the construction progresses. (ACI)
- NONCONCORDANT TENDONS:** In statically indeterminate structures, tendons that are not coincident with the pressure line caused by the tendons. (See also "Cap cables"). (ACI)
- NONSIMULTANEOUS PRESTRESSING:** The post-tensioning of tendons individually rather than simultaneously. (ACI)
- OVERSTRETCHING:** Stressing of tendons to a value higher than designed for the initial stress to (1) overcome frictional losses, (2) temporarily overstress the steel to reduce steel creep that occurs after anchorage, and (3) counteract loss of prestressing force that is caused by subsequent prestressing of other tendons. (ACI)
- PARALLEL-WIRE UNIT:** A post-tensioning tendon composed of a number of wires or strands which are approximately parallel. (ACI)
- PARTIAL PRESTRESSING:** Prestressing to a stress level such that, under design loads, tensile stresses exist in the precompressed tensile zone of the prestressed member. (ACI)
- PARTIAL RELEASE:** Release into a prestressed concrete member of a portion of the total prestress initially held wholly in the prestressed reinforcement. (ACI)
- PRECOMPRESSED ZONE:** The area of a flexural member which is compressed by the prestressing tendons. (ACI)
- PRE-POST-TENSIONING:** A method of fabricating prestressed concrete in which some of the tendons are pretensioned and a portion of the tendons are post-tensioned. (ACI)
- PRESTRESSING BED:** The platform and abutments needed to support the forms and maintain the tendons in a stressed condition during placing and curing of the concrete. (PCI)
- PRESTRESSED CONCRETE:** Concrete in which there have been introduced internal stresses of such magnitude and distribution that the stresses resulting from loads are counteracted to a desired degree. (PCI)

- PRETENSIONING:** A method of prestressing concrete whereby the tendons are elongated, anchored while the concrete in the member is cast, and released when the concrete is strong enough to receive the stresses from the tendon through bond. (PCI)
- PROOF STRESS:** Stress applied to materials sufficient to produce a specified permanent strain; a specific stress to which some types of tendons are subjected in the manufacturing process as a means of reducing the deformation of anchorage, reducing the creep of steel, or insuring that the tendon is sufficiently strong. (ACI)
- RELAXATION (OF STEEL):** Decrease in stress in steel as a result of creep within the steel under prolonged strain; decrease in stress in steel as a result of decreased strain of the steel, such as results from shrinkage and creep of the concrete in a prestressed concrete unit. (ACI)
- RELEASE:** (1) The time at which the prestressed strands are severed prior to removing the prestressed units from the forms; (2) submittal of drawings; (3) stripping of precast panel. (PCI)
- SEQUENCE-STRESSING LOSS:** In post-tensioning, the elastic loss in a stressed tendon resulting from the shortening of the member when additional tendons are stressed. (ACI)
- SHEATH:** An enclosure in which post-tensioning tendons are encased to prevent bonding during concrete placement. (ACI)
- SLIP:** Movement occurring between steel reinforcement and concrete in stressed reinforced concrete indicating anchorage breakdown. (ACI)
- STRAND:** A prestressing tendon composed of a number of wires twisted about a center wire or core. (ACI)
- Tendon usually composed of three- or seven-wire assemblies used as reinforcement in prestressed concrete. (PCI)
- STRAND CHUCK OR VICE:** A device for holding a strand under tension. (PCI)
- STRAND GRIP:** A device used to anchor strands (ACI)
- STRESSING END:** In prestressed concrete, the end of the tendon from which the load is applied when tendons are stressed from one end only. (ACI)
- SWIFT:** A reel or turntable on which prestressing tendons are placed to facilitate handling and placing. (ACI)
- TENDON:** Tensioned element, generally high-strength steel wires, strands, or bars, used to impart prestress to the concrete; in post-tensioned concrete, the complete assembly of prestressing steel, anchorages and sheathing, when required, is also called a tendon. (PCI)
- Steel element such as a wire, cable, bar, rod, or strand used to impart prestress to concrete when the element is tensioned. (ACI)
- TENDON (BONDED):** Tendon which is bonded to the concrete through grouting or other approved means, and therefore is not free to move relative to the concrete. (PCI)
- TENDON (UNBONDED):** Tendon in which the prestressing steel is permanently free to move relative to the concrete to which it is applying the prestressing forces. (PCI)
- TENDON PROFILE:** The path or trajectory of the prestressing tendon. (ACI)
- THREADED ANCHORAGE:** An anchorage device which is provided with threads to facilitate attaching the jacking device and to effect the anchorage. (ACI)
- TRAJECTORY OF PRESTRESSING FORCE:** The path along which the prestress is effective in a structure or member; it is coincident with the center of gravity of the tendons for simple flexural members and statically indeterminate members which are prestressed with concordant tendons, but is not coincident with the center of gravity of the tendons of a statically indeterminate structure which is prestressed with nonconcordant tendons. (ACI)
- TRANSFER:** The act of transferring the stress in prestressing tendons from the jacks or pretensioning bed to the concrete member. (ACI)
- TRANSFER BOND:** In pretensioning, the bond stress resulting from the transfer of stress from the tendon to the concrete. (ACI)
- TRANSFER STRENGTH:** The concrete strength required before stress is transferred from the stressing mechanism to the concrete. (ACI)
- TRANSMISSION LENGTH:** The distance at the end of a pretensioned tendon necessary for the bond stress to develop the maximum tendon stress; sometimes called "Transfer length". (ACI)
- UNBONDED MEMBER:** Post-tensioned, prestressed concrete element in which tensioning force is applied against end anchorages only, tendons being free to move within the element. (ACI)
- UNBONDED POST-TENSIONING:** Post-tensioning in which the tendons are not grouted after stressing. (ACI)
- UNBONDED TENDON:** A tendon which is not bonded to the concrete section. (ACI)

WIRE WINDING: Application of high tensile wire, wound under tension by machines, around circular concrete or shotcrete walls, domes or other tension-resisting structural components. (ACI)

WOBBLE COEFFICIENT: A coefficient used in determining the friction loss occurring in post-tensioning, which is assumed to account for the secondary curvature of the tendons. (ACI)

Friction caused by the unintended variation of the prestressing steel sheath or duct from its specified profile. (ACI)

- BEARING PAD:** A pad, usually neoprene, which is placed between a member and its support. (PCI)
- BEARING PLATE:** A steel- or teflon-coated plate placed between a member and its support. (PCI)
- CAST-IN:** Cast integrally with a concrete unit; not stabbed in after casting. (PCI)
- CAP PLATE:** A steel plate anchored into the top of a precast unit used to distribute bearing stresses. (PCI)
- COIL THREAD:** A helical-shaped thread which fits the contour and diameter of the wire from which a coil insert is formed. This thread is fast, nonclogging, self-cleaning and damage-resistant. (PCI)
- CONTROL JOINT:** Formed, sawed or tooled groove in a concrete structure to regulate the location and amount of cracking and separation resulting from the dimensional change of different parts of a structure so as to avoid the development of high stresses. (ACI)
- DEFORMED STUD:** A steel rod having an irregular surface texture and used for anchoring an angle or plate in concrete; stud is fastened to angle or plate with a special gun (stud welder) by passing a current through the stud. (PCI)
- EXPANSION JOINT:** A separation between adjoining parts of a concrete structure which is provided to allow small relative movements such as those caused by thermal changes to occur independently. (ACI)
- EXPANSION BOLT OR ANCHOR:** An expandable device made of metal inserted into a drilled hole in hardened concrete that grips concrete by wedging action when the nut or head is rotated. (PCI)
- FERRULE:** The nut-like portion of an insert which receives a machine bolt; it is machined from bar stock. (PCI)
- GROOVE JOINT:** A construction joint created by forming a groove in the surface of a pavement, floor slab, or wall to control random cracking. (ACI)
- HARDWARE:** A collective term applied to items used in connecting precast units or attaching or accommodating adjacent materials or equipment. Hardware is normally divided into three categories:
- Contractor's hardware:** Items to be placed on or in the structure in order to receive the precast concrete units; e.g., anchor bolts, angles, or plates with suitable anchors.
- Plant hardware:** Items to be embedded in the concrete units themselves, either for connections and precast erector's work, or for other trades, such as mechanical, plumbing, glazing, miscellaneous iron, masonry or roofing trades.
- Erection hardware:** All loose hardware necessary for the installation of the precast concrete units. (PCI)
- HEADED STUD:** Resembling a threadless bolt; its use and installation are the same as a deformed stud. (PCI)
- INSERT:** A connecting or handling device cast into precast units. Inserts are machine- or coil-threaded to receive a bolt or slotted to receive a bolt head. (PCI)
- LONGITUDINAL JOINT:** A joint parallel to the long dimension of a structure or pavement. (ACI)
- REGLET:** A long, narrow formed slot in concrete to receive flashing or to serve as anchorage. (CRSI)
- SCREED:** A template to guide finishers in leveling off the top of fresh concrete. Screeding is the operation of rough leveling. (CRSI)
- SCREED CHAIRS:** Supports to fix the depth of slab and to hold guides for leveling off concrete. (CRSI)
- SHEARHEAD:** Assembled unit in the top of columns of flat slab or flat plate construction to transmit loads from slab to column. (CRSI)
- WELD PLATE:** A plate with attached anchors cast into concrete for the purpose of making a welded connection. (PCI)
- WATERSTOP:** A thin sheet of metal, rubber, plastic or other material inserted across a joint to obstruct the seeping of water through the joint. (ACI)

- AGGREGATE TRANSFER:** A method of obtaining an exposed aggregate surface; aggregates are held in an adhesive on form liners, the liners are installed in the forms, concrete is placed and cured, and forms and liners are removed; aggregates become embedded in and bonded to the concrete to such an extent that they are transferred from the liners to the concrete. (PCI)
- BUSH-HAMMER:** To break the smooth surface finish of a panel with a pneumatic tool having a serrated face. (PCI)
- A hammer having a serrated face, as rows of pyramidal points used to roughen or dress a surface; to finish a concrete surface by application of a bush-hammer. (ACI)
- BUSH-HAMMER FINISH:** A finish on concrete obtained by means of a bush-hammer. (ACI)
- CARBON BLACK:** A finely divided amorphous carbon used to color concrete; produced by burning natural gas in supply of air insufficient for complete combustion; characterized by a high oil absorption and a low specific gravity. (ACI)
- EXPOSED AGGREGATE CONCRETE:** Concrete with the aggregates exposed by surface treatment. Different degrees of exposure are defined as follows:
- Light exposure: Where only the surface skin of cement and sand is removed, just sufficient to expose the edges of the closest coarse aggregate.
- Medium exposure: Where a further removal of cement and sand has caused the coarse aggregate to visually appear approximately equal in area to the matrix.
- Deep exposure: Where cement and fine aggregates have been removed from the surface so that the coarse aggregates become the major surface feature. (PCI)
- EXPOSED AGGREGATE FINISH:** A decorative finish for concrete work achieved by removing, generally before the concrete has fully hardened, the outer skin of mortar and exposing the coarse aggregate. (ACI)
- FACE MIX:** The concrete at the exposed face of a concrete unit; used for specific appearance reasons. (PCI)
- GAP-GRADED CONCRETE:** A mix with one or a range of normal aggregate sizes eliminated and/or with a heavier concentration of certain aggregate sizes over and above standard gradation limits; it is used to obtain a specific exposed aggregate finish. (PCI)
- HARDSPOT:** An area of an exposed aggregate finish which contains no coarse aggregate. (PCI)
- MATTE FINISH:** A finish free from gloss or highlights. (PCI)
- MOSAIC:** Small colored tile, glass, stone or similar material arranged to produce a decorative surface. (PCI)
- PIGMENT:** A coloring matter, usually in the form of an insoluble fine powder. (ACI)
- RETARDER, SURFACE:** A material used to retard or prevent the hardening of the cement paste on a concrete surface within a time period and to a depth to facilitate removal of this paste after the concrete element is otherwise cured (a method of producing exposed aggregate finish). (PCI)
- RUBBED FINISH:** A finish obtained by using an abrasive to remove surface irregularities from concrete. (See also "Sack rub") (ACI)
- RUSTICATION:** A groove in a panel face for architectural appearance; also reveal. (PCI)
- RUSTICATION STRIP:** A strip of wood or other material attached to a form surface to produce a groove or rustication in the concrete. (PCI)
- REVEAL:** (1) Groove in a panel face generally used to create a desired architectural effect; (2) The projection of the coarse aggregate from the matrix after exposure. (PCI)
- SACKING:** A common remedy for pits and air bubble holes in concrete--a slurry (the consistency of thick cream) consisting of a mixture of sand and cement is thoroughly rubbed over the moistened area with clean burlap pads or sponge rubber floats. (PCI)
- SACK RUB:** A finish for formed concrete surfaces, designed to produce even texture and fill all pits and air holes; after dampening the surface, mortar is rubbed over surface; then, before it dries, a mixture of dry cement and sand is rubbed over it with a wad of burlap or a sponge-rubbed float to remove surplus mortar and fill voids. (ACI)
- SAND BLAST:** A system of cutting or abrading a surface such as concrete by a stream of sand ejected from a nozzle at high speed by compressed air; often used for cleanup of horizontal construction joints or for exposure of aggregate in architectural concrete. (ACI)
- A system of abrading a surface such as concrete by a stream of sand, or other abrasive, ejected from a nozzle at high speed, by water and/or compressed air. (PCI)

- AIR BLOW PIPE:** Air jet used in shotcrete gunning to remove rebound or other loose material from the work area. (ACI)
- CONCRETE, PREPLACED-AGGREGATE:** Concrete produced by placing coarse aggregate in a form and later injecting a portland cement-sand grout, usually with admixtures, to fill the voids. (ACI)
- CUTTING SCREED:** Sharp-edged tool used to trim shotcrete to finished outline. (See also "Rod"). (ACI)
- DRY-MIX SHOTCRETE:** Pneumatically conveyed shotcrete in which most of the mixing water is added at the nozzle. (See also "Pneumatic feed"). (ACI)
- FINISH COAT:** Final thin coat of shotcrete preparatory to hand finishing; also exposed coat of plaster and stucco. (ACI)
- FLASH COAT:** A light coat of shotcrete used to cover minor blemishes on a concrete surface. (ACI)
- GO-DEVIL:** A ball of rolled-up burlap, paper, or specially fabricated device put into the pump end of a pipeline and forced through the pipe by water pressure to clean the pipeline. (ACI)
- GROUTED-AGGREGATE CONCRETE:** Concrete which is formed by injecting grout into previously placed coarse aggregate. (See also "Concrete; Preplaced-aggregate"). (ACI)
- GROUT SLOPE:** The natural slope of fluid grout injected into preplaced-aggregate concrete. (ACI)
- GROUND WIRE:** Small-gauge, high-strength steel wire used to establish line and grade as in shotcrete work; also called alignment wire or screed wire. (ACI)
- GUN:** (1) Shotcrete material delivery equipment, usually consisting of double chambers under pressure; equipment with a single pressure chamber is used to some extent. (2) Pressure cylinder used to propel freshly mixed concrete pneumatically. (ACI)
- GUN FINISH:** Undisturbed final layer of shotcrete as applied from nozzle, without hand finishing. (ACI)
- HAMM TIP:** Flared shotcrete nozzle having a larger diameter at midpoint than either inlet or outlet; also designated premixing tip. (ACI)
- IMPENDING SLOUGH:** The consistency obtained with shotcrete containing the maximum amount of water that can be used without flow or sag after placement. (ACI)
- PASS:** Layer of shotcrete placed in one movement over the field of operation. (ACI)
- PNEUMATICALLY APPLIED MORTAR:** See "Shotcrete" (ACI)
- PNEUMATIC FEED:** Shotcrete delivery equipment in which material is conveyed by a pressurized air stream. (ACI)
- POSITIVE DISPLACEMENT:** Wet-mix shotcrete delivery equipment in which the material is pushed through the material hose in a solid mass by a piston or auger. (ACI)
- PUMPED CONCRETE:** Concrete which is transported through hose or pipe by means of a pump. (ACI)
- REBOUND:** Sand and cement or wet shotcrete which bounces away from a surface against which shotcrete is being projected. (ACI)
- SAGGING:** Subsidence of shotcrete material from a sloping, vertical, or overhead placement; also, the condition of a horizontal structural member bending downward under load. (See also "Sloughing"). (ACI)
- SHOOTING:** Placing of shotcrete. (See also "Gunning"). (ACI)
- SHOTCRETE:** Mortar or concrete conveyed through a hose and projected at high velocity onto a surface; also known as air-blown mortar; also pneumatically applied mortar or concrete, sprayed mortar and gunned concrete. (ACI)
- SLICK LINE:** End section of a pipe line used in placing concrete by pump which is immersed in the placed concrete and moved as the work progresses. (ACI)
- SLUGGING:** Pulsating and intermittent flow of shotcrete material due to improper use of delivery equipment and materials. (ACI)
- TREMIE:** A pipe or tube, having an internal diameter of at least 10 in. (250 mm), through which concrete is deposited, having at its upper end a hopper for filling and a bail by means of which the assembly can be moved by a crane. (ACI)
- WATER RING:** Perforated manifold in nozzle of dry-mix shotcrete equipment through which water is added to the materials. (ACI)

- ADIABATIC CURING:** The maintenance of adiabatic conditions in concrete or mortar during the curing period. (ACI)
- ATMOSPHERIC STEAM CURING:** Steam curing of concrete products or cement at atmospheric pressure, usually at maximum ambient temperature between 100-200F (40-95C). (ACI)
- AUTOCLAVE:** A pressure vessel in which an environment of steam at high pressure may be produced; used in the curing of concrete products and in the testing of hydraulic cement. (ACI)
- AUTOCLAVE CURING:** Steam curing of concrete products, sandlime brick, asbestos-cement products, hydrous calcium silicate insulation products, or cement in an autoclave at maximum ambient temperatures generally between 340 and 420 F (170 and 215 C). (ACI)
- AUTOCLAVE CYCLE:** The time interval between the start of the temperature-rise period and the end of the blowdown period; also, a schedule of the time and temperature-pressure conditions of periods which make up the cycle. (ACI)
- BLOWDOWN PERIOD:** Time taken to reduce pressure in an autoclave from maximum to atmospheric. (ACI)
- COTTON MATS:** Cotton-filled quilts fabricated for use as a water-retaining covering in curing concrete surfaces. (ACI)
- CURING:** Maintenance of humidity and temperature of freshly placed concrete during some definite period following placing, casting or finishing to assure satisfactory hydration of the cementitious materials and proper hardening of the concrete. (ACI)
- CURING DELAY:** In steam curing of concrete products, the period between the completion of placement of concrete in molds and forms or forming of masonry units by machine and the application of steam. (ACI)
- MAXIMUM-TEMPERATURE PERIOD:** A time interval throughout which the maximum temperature is held constant in an autoclave or steam-curing room. (ACI)
- MEMBRANE CURING:** A process that involves either liquid sealing compound (e.g., bituminous and paraffinic emulsions, coal tar cut-backs, pigmented and non-pigmented 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. (ACI)
- POLYETHYLENE:** A thermoplastic high-molecular weight organic compound used in formulating protective coatings or, in sheet form, as a protective cover for concrete surfaces during the curing period, or to provide a temporary enclosure for construction operations. (ACI)
- PRESTEAMING PERIOD:** In the manufacture of concrete products, the time between molding of a concrete product and start of the temperature-rise period. (ACI)
- SINGLE-STAGE CURING:** Autoclave curing process in which precast concrete products are put on metal pallets for autoclaving and remain there until stacked for delivery or yard storage. (ACI)
- SOAKING PERIOD:** In high-pressure and low-pressure steam curing, the time during which the live steam supply to the kiln or autoclave is shut off and the concrete products are exposed to the residual heat and moisture. (ACI)
- STEAM CURING:** Curing of concrete or mortar in water vapor at atmospheric or higher pressures and at temperatures between about 100 and 420 F (30 and 215 C). (See also "Atmospheric-pressure steam curing; Autoclave curing; Single-stage curing; and Two-stage curing"). (ACI)
- STEAM-CURING CYCLE:** The time interval between the start of the temperature-rise period and the end of the soaking period or the cooling-off period; also a schedule of the time and temperature of periods which make up the cycle. (ACI)
- TEMPERATURE RISE PERIOD:** The time interval during which the temperature of a concrete product rises at a controlled rate to the desired maximum in autoclave or atmospheric-pressure steam curing. (ACI)

- ABRASIVE NOSING:** A nonskid metal unit which is cast into the nose of a precast stair panel. (PCI)
- ABSORPTION:** The process by which water is absorbed; the amount of water absorbed under specific conditions, usually expressed as a percentage of dry weight of the material. (PCI)
- ABSORPTION TEST FOR CONCRETE:** A test for early indication of predictable weather staining (rather than durability). (PCI)
- ADMIXTURE:** A material other than water, aggregates and cement used as an ingredient of concrete or grout to impart special characteristics. (PCI)
- ADMIXTURE, AIR ENTRAINING:** A material added to the concrete for the purpose of entraining minute bubbles of air in the concrete during mixing and thus improving the durability of concrete exposed to cyclical freezing and thawing in the presence of moisture. (PCI)
- A FRAME:** An A-shaped frame used to support panels on flat bed trucks during shipping. (PCI)
- AGGREGATE:** Naturally occurring, processed or manufactured, inorganic particles which are mixed with portland cement and water to produce concrete; normally comprises 60 to 80 percent of the total volume of concrete. (PCI)
- AGGREGATE, COARSE:** Aggregates with particle sizes greater than about 1/4 inch. (PCI)
- AGGREGATE, FINE:** Natural or manufactured sand with particle sizes smaller than about 1/4 inch. (PCI)
- AGGREGATE, STRUCTURAL LIGHTWEIGHT:** Aggregate having a dry, loose weight of 70 PCF (pounds per cubic foot) or less. (PCI)
- AGGREGATE TRANSFER:** A method of obtaining an exposed aggregate surface; aggregates are held in an adhesive on form liners, the liners are installed in the forms, concrete is placed and cured and forms and liners are removed; aggregates become embedded in and bonded to the concrete to such an extent that they are transferred from the liners to the concrete. (PCI)
- AIRCRAFT CABLE:** Multistrand steel cable, in loop form, cast in precast panels for handling purposes; cable is more flexible than prestressing strand. (PCI)
- AIR ENTRAINMENT:** An increase in the amount of air in a concrete mix through the use of an air-entraining admixture (see admixture, air entraining); air entrained concrete displays increased workability and cohesiveness. (PCI)
- AIR POCKET:** Pits (entrapped air or water bubbles) in the form faces of a panel caused by improper consolidation or inadequate draft. (PCI)
- ALIGNMENT FACE:** Face of a wall panel which is to be set in alignment with the face of adjacent panels. (PCI)
- ALTERNATE:** A method or material to be used in place of that originally shown. (PCI)
- AMBIENT TEMPERATURE:** Temperature of the surrounding air and of the forms into which concrete is to be cast. (PCI)
- ANCHOR:** (1) Headed studs, deformed studs, straps, rebar, etc., welded to steel angles or plates and embedded in concrete for use as part of a connection. (2) Any item cast into or pre-affixed to the structure for the purpose of receiving a connection. (PCI)
- In prestressed concrete, to lock the stressed tendon in position so that it will retain its stressed condition; in precast concrete construction, to attach the precast units to the building frame; in slabs on grade or walls, to fasten to rock or adjacent structures to prevent movement of the slab or wall with respect to the foundation, adjacent structure, or rock. (ACI)
- ANCHORAGE:** In post-tensioning, a device used to anchor the tendon to the concrete member; in pretensioning, a device used to anchor the tendon during hardening of the concrete; in precast concrete construction, the devices for attaching precast units to the building frame; in slab or wall construction, the device used to anchor the slab or wall to the foundation, rock or adjacent structure. (ACI)
- ANCHORAGE DEFORMATION OR SLIP:** The loss of elongation or stress in the tendons of prestressed concrete due to the deformation of the anchorage or slippage of the tendons in the anchorage device when the prestressing force is transferred from the jack to the anchorage device. (ACI)
- ANCHORAGE ZONE:** In post-tensioning, the region adjacent the anchorage subjected to secondary stresses resulting from the distribution of the prestressing force; in pretensioning, the region in which the transfer bond stresses are developed. (ACI)
- ANGLE IRON:** A steel section consisting of two legs at an angle (which is almost invariably a right angle). (PCI)
- APPROVAL:** Acceptance of the Precaster's drawings by the Architect, Engineer of Record and General Contractor indicating that all building conditions and dimensions shown are correct and final. (PCI)

- ARCHITECTURAL PRECAST CONCRETE:** Any precast concrete unit of special or occasionally standard shape that through application or finish, shape, color or texture contributes to the architectural form and finished effect of the structure; units may be structural or decorative, and may be conventionally reinforced or prestressed. (PCI)
- ARC WELDING:** A process by which two pieces of steel to be joined are heated by an arc formed between an electrode and the steel; as the electrode melts, it supplies weld material which fuses the pieces of steel together. (PCI)
- AREA OF STEEL:** Cross-sectional area of reinforcing bars required for a given concrete section. (PCI)
- ARRIS:** Shape edge or ridge formed by two surfaces meeting at an angle. (PCI)
- ASSEMBLY:** A set of parts arranged into one unit. (PCI)
- AXIAL LOAD:** A load applied on the axial center of an element. (PCI)
- BACK SPAN:** The distance between the supports of a cantilevered member. (PCI)
- BACKUP MATERIAL:** Material used to limit the depth of the sealant in panel joints. (PCI)
- BACKUP MIX:** The concrete cast into the mold as a filler behind a thin layer of the more expensive face mix. (PCI)
- BAGTIE:** Thin gauge wire ties (generally No. 16, 15 or 14 gauge) used to fasten reinforcing bars together at intersections. (PCI)
- BALANCE POINT:** (See center of gravity). (PCI)
- BAR CHAIR:** A noncorrosive, rigid device used to support and/or hold reinforcing bars at a given distance from the form face before and during concreting. (PCI)
- BAR JOIST:** A lightweight steel truss for supporting floors and roofs. (PCI)
- BAR NUMBER:** A number (approximately the reinforcing bar diameter in eighths of inches) used to designate reinforcing bar size; bar numbers are rolled onto the bar for easy identification. (PCI)
- BAR STOOL:** (See bar chair). (PCI)
- BASE LINE:** The bottom reference point of a building which serves as a basis for measurement and/or dimensions. (PCI)
- BASE PLATE:** A steel plate anchored to the bottom of a precast unit for the purpose of fastening it to the foundation. (PCI)
- BATTER:** (See draft). (PCI)
- BATTERY MOLD:** A series of reusable casting slots used to manufacture panels in a vertical position, thus reducing reinforcing requirements and imparting a smooth form finish to both faces. (PCI)
- BAY:** Square or rectangular areas, usually in a uniform grouping which are contained between adjacent columns, beams and/or walls. (PCI)
- BEAM:** A horizontal structural member carrying loads from a floor or roof system (which induce bending) and usually spanning between columns, girders, piers or walls. (PCI)
- BEAM POCKET:** Opening in a vertical member in which a beam is to rest. (PCI)
- BEAR:** To transfer vertical load to another member. (PCI)
- BEARING AREA:** The surface in square inches, which comes in contact with a vertical load transferring member. (PCI)
- BEARING PAD:** The surface in square inches, which is placed between a member and its support. (PCI)
- BEARING PLATE:** A steel-or teflon-coated plate placed between a member and its support. (PCI)
- BELT COURSE:** A flat, horizontal panel which bands the perimeter of a building marking a division in the wall plane. (PCI)
- BENCH MARK:** A datum point, the elevation of which is known, from which differences in elevation are determined. (PCI)
- BENT:** For analysis purposes, the structural cross-section through a bay of a building. (PCI)
- BILL OF MATERIALS:** Material list for individual project. (PCI)
- BITUMINOUS PAINT:** Paint made from bituminous coal by-products used to prevent corrosion of steel; applied after all welding is completed. (PCI)
- BLEED HOLE:** A hole in a plate or angle which is provided solely to release entrapped air or water during concrete placing operations. (PCI)
- BLEEDING:** A form of segregation in which some of the water in a mix rises to the surface of freshly placed concrete; also known as water gain. (PCI)
- BLOCKING:** The shims required to level and/or plumb a unit in its proper position. (PCI)
- BLOCKING POINTS:** Two predetermined locations at which a panel is to be supported during storage and/or shipping to minimize bending moments. (PCI)

BLOCKOUT: To form a hole or reduce the height or width of a panel by affixing material to the form (space within a form in which concrete is not to be placed). (PCI)

BLOCK BEAM: A flexural member composed of individual blocks which are joined together by prestressing. (ACI)

BLOWHOLE: Approximately 1/2 inch diameter cavities in the form face of a panel caused by an adhering air or water bubble not displaced during consolidation (see air pocket). (PCI)

BOND: Adhesion of concrete to reinforcement or to other surfaces against which it is placed. (PCI)

BOND BEAM: A horizontal reinforced concrete masonry member. (PCI)

BONDED MEMBER: A prestressed concrete member in which the tendons are bonded to the concrete either directly or through grouting. (ACI)

BONDED POST-TENSIONING: Post-tensioned construction in which the annular spaces around the tendons are grouted after stressing, thereby bonding the tendon to the concrete section. (ACI)

BONDED TENDON: A prestressing tendon which is bonded to the concrete either directly or through grouting. (ACI)

BOND BREAKER: A substance placed on a material to prevent it from bonding to the concrete or between a face material such as natural stone and the concrete backup. (PCI)

BONDING AGENT: A substance used to increase the bond between an existing piece of concrete and a subsequent application of concrete such as a patch. (PCI)

BOWING: The deflection of a vertical panel in a single plane. (PCI)

BREAK LINE: Lines used to increase or decrease a large item or section. (PCI)

BRIDGING: Braces between and perpendicular to steel floor and roof members which provide stress distribution. (PCI)

BUGHOLE: See blowhole. (PCI)

BUILDING CODE: Laws or regulations set up by building departments of cities, states and Federal Government for uniformity in construction, design and building practices. (PCI)

BULKHEAD: A vertical partition in the form blocking fresh concrete from a section of the form; divides a continuous casting bed into given unit lengths. (PCI)

BUNDLING: Placing several parallel elements of reinforcement in contact with each other. (PCI)

BURR: (1) To disfigure the threads of a bolt by stroking with a screwdriver or other tool. (2) Unwanted uneven projections on the edge of a precast panel. (PCI)

BUSH-HAMMER: To break the smooth surface finish of a panel with a pneumatic tool having a serrated face. (PCI)

BY OTHERS: Service or material supplied and/or installed by someone other than the precast manufacturer. (PCI)

CADMIUM PLATED: Electroplated with noncorrosive cadmium. (PCI)

CAGE: Reinforcing bar assembly comprised of rebar and/or welded wire fabric. (PCI)

CALCULATIONS: Neat, concise numerical justification for reinforcement, panel sizing, connections, etc., prepared by a structural engineer. (PCI)

CALL OUT: A note on a drawing with a leader to the feature. (PCI)

CAMBER: (1) The upward deflection which occurs in prestressed concrete elements due to the net bending resulting from stressing forces and self-weight. It specifically does not include dimensional inaccuracies due to errors in manufacture, improper bearings, or other deficiencies in construction; (2) a built-in upward curvature in some forms for precast concrete, other than prestressed, to avoid deflection under load to below a defined line of finished product. (PCI)

CANT: A triangular-shaped material used to eliminate a sharp right angle in roof membranes at a vertical parapet. (PCI)

CANTILEVER: The projection of a member beyond its support. (PCI)

CAP PLATE: A steel plate anchored into the top of a precast unit used to distribute bearing stresses. (PCI)

CAST: To place concrete (in plastic state) into a form. (PCI)

CAST-IN: Cast integrally with a concrete unit; not stabbed in after casting. (PCI)

CAST-IN-PLACE: Concrete which is placed in the field. (PCI)

CAST STONE: Precast concrete whose finish resembles that of cut or polished stone. (PCI)

Concrete or mortar cast into blocks or small slabs in special molds so as to resemble natural building stone. (ACI)

- CAULKING:** An elastomeric sealant used to fill panel joints thus sealing a building from the elements. (PCI)
- CEMENT, PORTLAND:** A dry binding substance which when combined with water and aggregate forms concrete. (PCI)
- CENTER LINES:** Broken lines indicating the distance to the center of an object from the edge. (PCI)
- CENTER OF GRAVITY:** The point from which, if suspended, a panel will hang perfectly plumb. (PCI)
- CHAMFER:** A beveled corner or edge which is formed in concrete work by placing a three-cornered piece of wood (cant strip or skew back) in the form corner. (PCI)
- CHAMFER STRIP:** Triangular or curved insert placed in inside corner of form to produce rounded or beveled corner; also called fillet, cant strip, skew back. (PCI)
- CHANNEL:** A precast unit having the shape of an open rectangle. (PCI)
- CHASE:** (1) A vertical space within a building for ducts, pipes or wires; (2) A long groove or recess formed or cut in panel. (PCI)
- CHERT:** Unsound aggregates which are subject to considerable change in volume and can result in surface pop-outs. (PCI)
- CHOCKER:** A chain or cable sling hitch used for handling or lashing down precast units; the greater the load the tighter the grip. (PCI)
- **ANCHOR:** A type of expansion bolt. (PCI)
- CLEARANCE:** The distance between two surfaces. (PCI)
- CLEAR SPAN:** The distance between the inside edges of the bearing surfaces of two supporting members. (PCI)
- CLEVIS:** A U-shaped piece of metal with holes in each end through which a pin is placed. (PCI)
- CLIP ANGLE:** A noncontinuous steel angle used for fastening precast units. (PCI)
- COIL THREAD:** A helical-shaped thread which fits the contour and diameter of the wire from which a coil insert is formed. This thread is fast, nonclogging, self-cleaning and damage-resistant. (PCI)
- COLD JOINT:** A joint necessitated by several casting stages but designed and executed to allow the separate components to appear and perform as one homogeneous unit; term only applies when the first casting is allowed to harden prior to placing the second. (PCI)
- COLUMN:** An element used primarily to support axial compressive loads and with a height at least three times its smallest lateral dimension. (PCI)
- COLUMN COVER:** A precast panel which covers one or more sides of a column which would otherwise be exposed. (PCI)
- COLUMN LINE:** A plan reference line which is usually the centerline or exterior face of a column as determined by the Architect. (PCI)
- COME ALONG:** A chain-or cable-type erection device used to bring a panel into the building once the base is set and the crane has been released. (PCI)
- COMPOSITE CONSTRUCTION:** A type of construction wherein the floor slab is fastened to the beams in such a manner that they act together as a more efficient member in carrying live loads. (PCI)
- COMPRESSION:** A force which works to compress, compact and shorten. (PCI)
- COMPRESSIVE STRENGTH:** The measured resistance of a concrete specimen to axial loading expressed as pounds per square inch (PSI) of cross-sectional area. The maximum compressive stress which concrete, or grout is capable of sustaining. (PCI)
- CONCRETE:** A mixture of portland cement, fine aggregate, coarse aggregate and water. (PCI)
- CONCRETE, STRUCTURAL LIGHTWEIGHT:** Concrete that has a 28-day compressive strength in excess of 2,500 PSI and an air-dry unit weight of less than 115 PCF: a lightweight concrete without natural sand is termed all-lightweight concrete and lightweight concrete in which all fine aggregate consists of normal weight sand is termed sand-lightweight concrete. (PCI)
- CONCRETE COVER:** The clear distance from the face of the concrete to the reinforcing steel. (PCI)
- CONNECTIONS:** Devices for the attachment of precast units to each other or to the building structure. (PCI)
- CONSISTENCY:** The degree of plasticity of fresh concrete; the normal measure of consistency is slump. (PCI)
- CONSOLIDATION:** The use of hand tools, vibrators or finishing machines during the casting process to eliminate voids, other than entrained air, and to provide a dense concrete, good bond with reinforcement, and a smooth surface. (PCI)
- CONTINUOUS GRADED MIX:** A concrete mix that contains all the sizes of aggregates (below a given maximum) in amounts which ensure an optimum density of the mix. (PCI)

- CONTRACT DOCUMENTS:** Architectural drawings, structural drawings, specifications, addenda, etc., from which projects are bid and precast drawings are prepared. (PCI)
- COPE:** To cut away a portion of one member to provide clearance for another member. (PCI)
- COPING:** A panel which forms the top of a wall and seals it from the elements. (PCI)
- CORBEL:** Steel or reinforced concrete bracket which protrudes from a column or wall panel to provide support for another member or to take support from an adjacent part of structure. (PCI)
- CORE DRILL:** To cut holes in concrete with a cylindrical bit. (PCI)
- CORNICE:** Panel which fits under a ceiling or projecting roof. (PCI)
- COURSING:** Module which coincides with the even vertical spacing of brick or block. (PCI)
- COVERMETER:** See pachometer. (PCI)
- CRAZING:** A network of fine cracks in random directions breaking the exposed face of a panel into areas of from 1/4 inch to 3 inches across. Some probable causes are rich cement mix, too early stripping, and inadequate curing. (PCI)
- CREEP** The long-term nonelastic shortening of concrete in compression under sustained load. (PCI)
- CROSS HATCH:** Lines drawn closely together, generally at an angle of 45°, to denote a sectional cut. (PCI)
- CRUST:** A thin layer of dried cement paste which forms on the top surface of a panel as a result of additional water being added during placing. (PCI)
- CULL:** A precast unit which is discarded for reasons of imperfection. (PCI)
- CURING:** The maintenance of humidity and temperature of freshly placed concrete during some definite period following placing, casting, or finishing to assure satisfactory hydration of the cementitious materials and proper hardening of the concrete; where the curing temperature remains in the normal environment range (generally between 55F and 90F) use the term normal curing; where the curing temperature is increased to a higher range (generally between 90F and 150F) use the term accelerated curing. (PCI)
- CURTAIN WALL:** Precast wall panels which when in place may form window frames and interior/exterior wall construction, but support no loads from building. (PCI)
- CUT SHEET:** Small drawings, usually 8-1/2 inches x 11 inches, showing details of individual assemblies or panel conditions. (PCI)
- DEFLECTION:** The distance a structural member moves from its normal position when subjected to a load. (PCI)
- DEFORMATION:** A change of dimension or shape in a body resulting from external loading. (PCI)
- DEFORMED BAR:** Reinforcing bar manufactured with deformations (bumps, lugs or ridges) to provide a locking anchorage (bond) with the surrounding concrete. (PCI)
- DEFORMED STUD:** A steel rod having an irregular surface texture and used for anchoring an angle or plate in concrete; stud is fastened to angle or plate with a special gun (stud welder) by passing a current through the stud. (PCI)
- DETAIL:** An enlarged drawing of an area which would be difficult to understand at its previous scale. (PCI)
- DIMENSION LINE:** Fine lines placed outside the view or object to indicate measured distance. (PCI)
- DOVETAIL ANCHOR:** A tenon consisting of a flat piece of light-gauge metal. (PCI)
- DOVETAIL SLOT:** A mortise consisting of a preformed slot. (PCI)
- DOWEL:** A metal pin used to fasten panel bases to cast-in-place concrete or other precast, by fitting into corresponding holes in the respective units; dowel type connections are a carry-over from stone construction and should not be used indiscriminately (PCI)
- DRAFT:** The slope of concrete surface in relation to the direction in which the precast element is withdrawn from the mold; it is provided to facilitate stripping with a minimum of mold breakdown. (PCI)
- DRAW:** See draft. (PCI)
- DRIP:** A projecting fin or groove at the outer edge of a sill, projecting horizontal wall element or soffit, designed to interrupt the flow of rainwater downward over the wall or inward across the soffit; drips are normally used only on units having a smooth or lightly exposed finish. (PCI)
- DRY-PACK:** Hand grouting with a very dry mix; the grout is tamped into the joint. (PCI)
- DUCTILITY:** The property of a material to stretch or "give a little" when overloaded rather than rupture. (PCI)

- DUNNAGE:** Materials used for keeping concrete elements from touching each other or other materials during storage and transportation. (PCI)
- DURABILITY:** The ability of concrete to resist weathering action, chemical attack and abrasion. (PCI)
- DUROMETER:** The indication of hardness of a material (i.e., neoprene pads); higher numbers indicate increased hardness. (PCI)
- ECCENTRICITY:** The distance between the center of a load and the center of its support. (PCI)
- EFFECTIVE LENGTH:** The length used for design of compression members. (PCI)
- EFFLORESCENCE:** A crystalline deposit of soluble salts, usually white in color, appearing on the surface of concrete; salts are carried in solution to the surface of the concrete where carbonation and evaporation take place; incidence of efflorescence is largely regulated by permeability and texture of the concrete surface; some probable causes of efflorescence are high water cement ratio, poor release agent application and nonuniform curing; dense concrete with low absorption is less susceptible to this condition. (PCI)
- ELEVATION:** (1) The distance (above (+) positive, below (-) negative) from any point to the established datum; (2) Drawing of front, sides or rear face of a building in a vertical plane, usually made as though the observer were looking straight at it. (PCI)
- ELONGATION:** In prestressed work, the difference between a strand's initial length and its length after stressing. (PCI)
- END CLOSURE:** A precast unit which fits between the stems of a prestressed slab forming a diaphragm or wall closure. (PCI)
- END RAIL:** That portion of a form which dictates the top and bottom of a panel. (PCI)
- ENGINEER OF RECORD:** Engineer who creates original building design and is responsible for the design. (PCI)
- ENVELOPE MOLD:** A box mold where all sides remain in place during the entire casting and stripping cycle. (PCI)
- ERECTION:** The placing of precast units into their respective positions in the structure. (PCI)
- ERECTION MARK:** An identification mark or number placed on the end of each member to aid in the erection of the structure. (PCI)
- EXPANDED METAL:** A light gauge flat metal with large holes occurring in regular pattern. (PCI)
- EXPANSION BOLT OR ANCHOR:** An expandable device made of metal inserted into a drilled hole in hardened concrete that grips concrete by wedging action when the nut or head is rotated. (PCI)
- EXPOSED AGGREGATE CONCRETE:** Concrete with the aggregates exposed by surface treatment. Different degrees of exposure are defined as follows:
- Light exposure--where only the surface skin of cement and sand is removed, just sufficient to expose the edges of the closest coarse aggregate.
- Medium exposure--where a further removal of cement and sand has caused the coarse aggregate to visually appear approximately equal in area to the matrix.
- Deep exposure--where cement and fine aggregates have been removed from the surface so that the coarse aggregates become the major surface feature. (PCI)
- EXTENSION LINE:** A line used to indicate the extremities of a feature requiring a dimension. (PCI)
- FABRICATION:** Actual work on reinforcing bars or hardware such as cutting, bending and assembly. (PCI)
- FACADE:** Face or front elevation of a building. (PCI)
- FACE:** The surface of a panel. (PCI)
- FACE MIX:** The concrete at the exposed face of a concrete unit; used for specific appearance reasons. (PCI)
- FALSE JOINT:** Scoring on the face of a precast unit; used for aesthetic or weathering purposes and normally made to simulate an actual joint. (PCI)
- FASCIA:** The outside horizontal panel on the edge of a roof or overhang. (PCI)
- FATIGUE:** Weakening due to repeated cycles of stress. (PCI)
- FENESTRATION:** The design and placing of windows in a building. (PCI)
- FERRULE:** The nut-like portion of an insert which receives a machine bolt; it is machined from bar stock. (PCI)
- FIELD:** Job site. (PCI)
- FILLER BLOCK:** (See end closure). (PCI)
- FILLET:** A triangular-shaped weld along the interior corner of two steel members that are at right angles. (PCI)
- FIN:** A projecting vertical nib. (PCI)

- FINENESS MODULUS:** An index of fineness or coarseness of an aggregate sample; an empirical factor determined by adding total percentages of an aggregate sample retained on each of a specified series of sieves, and dividing the sum by 100. (PCI)
- FINES:** Small aggregates such as sand. (PCI)
- FINGER TIGHT:** Tightened until all materials make firm contact; then loosened slightly. (PCI)
- FINISH:** Treatment or texture given to concrete surfaces. (PCI)
- FINISH MARK:** A symbol used to indicate the surface to be finished as specified by the mix code or area exposed to view. (PCI)
- FIREPROOFING:** Concrete used to surround exposed structural steel members for insulation purposes, thus improving the building's fire resistance. (PCI)
- FIRE RATING:** The comparative resistance of a material to failure, as stated in hours, when subjected to standard fire test. (PCI)
- FIRE-STOP:** A tight closure of a concealed space with incombustible material to prevent the spreading of a fire. (PCI)
- FLAG:** To make note of a change or condition on a drawing. (PCI)
- FLANGE:** (1) The horizontal portion of a precast T slab. (2) The projecting edges of a steel beam. (PCI)
- FLASHING:** Material used to make an exposed intersection weathertight; materials commonly used are aluminum, sheet metal and copper. (PCI)
- FLASHING REGLET OR SLOT:** A continuous slot cast into a precast panel to receive flashing. (PCI)
- FLEXURE:** Bending. (PCI)
- FLUSH:** Surfaces in the same plane. (PCI)
- FOOTING:** The spread foundation base of a wall or column; generally somewhat wider than the foundation wall. (PCI)
- FORM:** A temporary receptacle which receives concrete and dictates a unit's shape. It can be made of wood or steel, but requires no pattern or positive. (PCI)
- FORM LINER:** Molded sheet which when affixed to a form gives the panel a special finish treatment; liners are made of rubber, plastic, wood, etc. (PCI)
- FORM RELEASE AGENT:** A substance applied to the forms for the purpose of preventing bond between the form and the concrete cast in it. (PCI)
- FOUNDATION:** Building substructure supported by earth. (PCI)
- FROST LINE:** The distance below grade at which ground will not freeze; locality dictates the exact dimension, so check local codes. (PCI)
- FURRING:** A grid of wooden slats cast into or attached to the back of a panel for the purpose of receiving nailed interior wall construction. (PCI)
- GAUGE:** A standard scale of measurement for wire diameter and metal thickness. Larger numbers indicate increased thickness. (PCI)
- GALVANIZE:** To coat with rust-resistant zinc by spraying, dipping or electrolytic disposition. (PCI)
- GAP-GRADED CONCRETE:** A mix with one or a range of normal aggregate sizes eliminated and/or with a heavier concentration of certain aggregate sizes over and above standard gradation limits; it is used to obtain a specific exposed aggregate finish. (PCI)
- GAP SPACE:** The distance between the structure and the back of the panels. (PCI)
- GIRDER:** A large, horizontal structural member used to support the ends of joists and beams or to carry walls over openings. (PCI)
- GIRT:** A horizontal member used to provide wind stability to the structure. (PCI)
- GRADATION:** The sizing of granular materials. For concrete materials, usually expressed in terms of cumulative percentages larger or smaller than each of a series of sieve openings or the percentages between certain ranges of sieve openings. (PCI)
- GRADE:** Reference elevation at top of soil. (PCI)
- GRADE BEAM:** Low foundation wall or beam usually at ground level, which provides support for the walls of a building. (PCI)
- GRADE MARKS:** Marking rolled onto a reinforcing bar to identify the grade of steel used in manufacturing. (PCI)
- GRADE OF STEEL:** The means by which a design engineer specifies the strength properties of the steel he requires in each part of a structure, generally using ASTM (American Society for Testing and Materials) designations to distinguish them. (PCI)
- GRID LINES:** Reference lines used on drawings; these lines representing the architectural design grid and often coincide with centerline and/or face of column. (PCI)

- GROUT:** A mortar type mixture which is hand-packed or applied under pressure in such a consistency as to ensure complete filling of all voids. The usual proportions of a grout mix are one (1) part of cement to three (3) parts of well-graded sand by weight with water content adjusted so that a mass of grout squeezed in the hand retains its shape. (PCI)
- GUSSET:** A triangular piece used to stiffen the angular meeting of two or more members in a framework. (PCI)
- HAIRLINE CRACK:** A crack which although visible to the eye is not measurable by ordinary means. (PCI)
- HAIRPIN:** A rebar, usually small in size, bent into the shape of an elongated U. (PCI)
- HARDROCK CONCRETE:** Normal weight concrete with an approximate weight of 150 PCF. (PCI)
- HARDSPOT:** An area of an exposed aggregate finish which contains no coarse aggregate. (PCI)
- HARDWARE:** A collective term applied to items used in connecting precast units or attaching or accommodating adjacent materials or equipment. Hardware is normally divided into three categories:
- Contractor's hardware--items to be placed on or in the structure in order to receive the precast concrete units; e.g., anchor bolts, angles or plates with suitable anchors.
- Plant hardware--items to be embedded in the concrete units themselves, either for connections and precast erector's work, or for other trades, such as mechanical, plumbing, glazing, miscellaneous iron, masonry or roofing trades.
- Erection hardware--all loose hardware necessary for the installation of the precast concrete units. (PCI)
- HAUNCH:** See corbel. (PCI)
- HEAD:** The portion of a panel which forms the top of a window or door opening. (PCI)
- HEADED STUD:** Resembling a threadless bolt; its use and installation are the same as a deformed stud. (PCI)
- HEADER:** A cross member in a series of precast units provided to support one end of the members it interrupts. (PCI)
- HIDDEN LINES:** Lines behind or beyond the drawn object not seen from the exterior surface. (PCI)
- HIGH EARLY:** A type of concrete which quickly attains a high compressive strength. This concrete is made with Type III cement. (PCI)
- HOLLOW CORE:** Extruded prestressed slabs varying in thickness from 4 to 12 inches having hollow interior cores to reduce weight. (PCI)
- HONEYCOMB:** A coarse stony concrete surface with voids lacking in fines; some probable causes are congested reinforcement, narrow section, insufficient fines, loss of mortar, and inadequate consolidation. (PCI)
- HOOK ON AND/OR HOOK OFF:** The act of placing or removing chokers or slings on or off a member and connecting or disconnecting the crane hook. (PCI)
- HOSE BIB:** A hose or faucet connection usually on the exterior of a building at sill height requiring a hole in the precast element. (PCI)
- HYDRATION:** The chemical process which takes place between cement and water resulting in hardened concrete. (PCI)
- I BEAM:** Rolled steel having a cross-section the shape of an I with a somewhat exaggerated top and bottom horizontal stroke. (PCI)
- IMPACT:** A sudden increase in gravity load exerted at stripping or handling which must be considered in handling design. (PCI)
- IMPACT TESTING:** A testing device which measures concrete strength by applying a measurable impact force on the concrete. (PCI)
- INSERT:** A connecting or handling device cast into precast units. Inserts are machine- or coil-threaded to receive a bolt or slotted to receive a bolt head. (PCI)
- INSITU:** Cast-in-place. (PCI)
- INSTRUMENT:** Transit or level. (PCI)
- INTERFACE:** The plane between two adjacent surfaces. (PCI)
- JACKING FORCE:** In prestress, the temporary force exerted by the device which introduces the tension into the tendons. (PCI)
- JAMB:** The vertical sides of a window or door opening. (PCI)
- JIG:** A template to align parts of an assembly, usually for pre-assembling reinforcing steel cages with a minimum of measurement and consistent accuracy from one cage to the next. (PCI)
- JOG:** Refers to a shift in the alignment of the edge of a panel. (PCI)
- JOINT:** The space between two adjacent erected panels. (PCI)

- JOIST:** A horizontal member in the framing of a floor or roof. These lightweight units are closely spaced and bear on beams or walls. (PCI)
- KERF:** To make a cut or notch in a member transversely along the underside in order to curve it; also a cut or notch in a member such as a rustication strip, to avoid damage from swelling of the wood and permit easier removal. (PCI)
- KEY:** A continuous or semicontinuous slot in concrete to receive grout, leveling blocks or dowels. (PCI)
- KEY PLAN:** A separate drawing showing a P/C project in plan and used as a common reference for all drawings. (PCI)
- KIP:** 1,000 pounds. (PCI)
- LAITANCE:** Residue of weak and nondurable material consisting of cement, aggregate, fines or impurities brought to the surface of overwet concrete by the bleeding water. (PCI)
- LALLY COLUMN:** The trade name for a cylindrical steel column filled with concrete and used as a vertical support. (PCI)
- LAP:** The distance two converging members overrun one another. (PCI)
- LEADER LINE:** Fine lines with an arrowhead touching the edge of the surface referring to a note or dimension. (PCI)
- LEVEL:** An instrument used for measuring heights of land or other objects above a plane of reference. (PCI)
- LIFT:** The quantity of concrete placed in one operation; or a layer of concrete. (PCI)
- LIFTING DEVICE:** An assembly used in handling or erection of precast panels. (PCI)
- LIFTING FRAME (OR BEAM):** A rigging device designed to provide two or more lifting points of a precast concrete element with predictable load distribution and pre-arranged direction of pulling force during lifting. (PCI)
- LIFT POINT:** Predetermined points from which a panel is to be lifted. (PCI)
- LINTEL:** A horizontal structural member spanning a wall opening at its head to support the wall above the opening. (PCI)
- LOAD BEARING:** Supporting the dead and live load of other members. (PCI)
- LOAD-BEARING PRECAST UNITS:** Precast units which form an integral part of the building structure and which are essential to its stability. (PCI)
- LONGITUDINAL:** Situated in the lengthwise direction. (PCI)
- LOW BOY TRAILER:** A trailer with an under-slung bed capable of transporting panels of considerable height and still conform to legal height restrictions. (PCI)
- LUG:** A continuous projection at the sill of a window panel to receive sash. (PCI)
- MACHINE THREAD:** A common national coarse thread. (PCI)
- MALLEABILITY:** The ability of a material to undergo considerable plastic deformation under compressive strength. (PCI)
- MANSARD ROOF:** A roof having slopes on all four sides with the lower slope almost vertical and an upper roof almost horizontal. (PCI)
- MANUFACTURER'S ENGINEER:** See precast engineer. (PCI)
- MARBLE:** A metamorphic rock often irregularly colored by impurities; it is sometimes used as a facing for architectural precast panels. (PCI)
- MARK NUMBER:** The individual identifying mark assigned to each precast unit predetermining its position in the building. (PCI)
- MASONRY:** That branch of construction dealing with the laying up of brick and block with mortar. (PCI)
- MASONRY OPENING:** Overall opening to be provided in the precast panel. (PCI)
- MASTER MOLD:** A mold which allows a maximum number of casts per project; units cast in such molds need not be identical, provided the changes in the units can be accomplished simply as pre-engineered mold modifications. (PCI)
- MAT:** A grid of straight reinforcing bars tied together at each intersection. (PCI)
- MATCH LINE:** An imaginary line which separates adjacent areas broken apart for drawing purposes. (PCI)
- MATERIAL LIST:** Cumulated bills of materials. (PCI)
- MATRIX:** The portion of the concrete mix containing only the cement and fine aggregates (sand). (PCI)
- MATTE FINISH:** A finish free from gloss or highlights. (PCI)
- MAXIMUM SIZE AGGREGATE:** Aggregate whose largest particle size is present in sufficient quantity to affect the physical properties of concrete; generally designated by the sieve size on which the maximum amount permitted to be retained is 5 or 10 percent by weight. (PCI)

- MESH:** See welded wire fabric. (PCI)
- MEZZANINE:** A partial story occurring between two main stories of a building. (PCI)
- MITRE:** The edge of a panel that has been beveled to an angle other than 90°C. (PCI)
- MOCKUP:** A section of a wall or other assembly built full size, or to scale, for purposes of testing performance, studying construction details, or judging appearance. (PCI)
- MODULE:** A repeating or reoccurring dimension or detail. (PCI)
- MODULUS OF ELASTICITY:** A measure of the resistance of material to deformation; the ratio of normal stress to corresponding strain for tensile or compressive stresses below the proportional limit of the material; elastic modulus is denoted by the symbol E. (PCI)
- MODULUS OF RUPTURE.** Flexural strength of concrete in pounds per square inch (PSI), calculated as the apparent tensile stress in the extreme fiber of a transverse specimen under the load which produces rupture. (PCI)
- MOLD:** The cavity or surface against which fresh concrete is cast to give it a desired shape; sometimes used interchangeably with form but made of fiberglass or concrete; a pattern or positive is built first and the mold is overlaid. (PCI)
- MOMENT:** The result of a load on a member, creating a tendency of the member to rotate about a given point or axis that is within its cross section. Moments are measured in foot-kips, foot-pounds, or inch-pounds. (PCI)
- MORTAR:** A mixture of cement, sand and water; when used in masonry construction, the mixture may contain masonry cement, or portland cement with lime or other admixtures which may produce greater degrees of plasticity and/or durability. (PCI)
- MO-SAI:** Exposed aggregate architectural precast concrete produced under factory-controlled procedures by licensed manufacturers to rigid quality standards established by the Mo-Sai Institute's quality control program. (PCI)
- MOSAIC:** Small colored tile, glass, stone, or similar material arranged to produce a decorative surface. (PCI)
- MUD:** Plastic concrete (slang). (PCI)
- MULLION:** A vertical precast unit appearing between windows and/or doors. (PCI)
- MUNTIN:** Horizontal precast appearing between windows and/or doors. (PCI)
- MYLAR:** Fine quality plastic type drafting paper. Requires special pencil leads. (PCI)
- NAILER:** A beveled wooden strip cast into a precast panel for the purpose of nailing flashing or roofing to it. The use of such material in concrete is not recommended. (PCI)
- NEOPRENE:** A synthetic rubber bearing pad. (PCI)
- NEUTRAL AXIS:** Line of zero bending stress of a member when bending occurs in a plane perpendicular to that axis. (PCI)
- NOMINAL:** (1) Approximate, not specific; (2) The size of a building material after joints or manufacturing processes are considered. (PCI)
- NORMAL WEIGHT CONCRETE:** Concrete for which density is not a controlling attribute and usually having unit weights in the range of 135 to 160 lbs. per cubic foot. (PCI)
- NOSING:** A projection, such as that of the tread of a stair over the riser. (PCI)
- OBJECT LINES:** Heavy lines used to indicate the profile of the object drawn. Object lines should be approximately 2-1/2 times as thick as dimension lines. (PCI)
- OFFSET:** A displacement or abrupt change in line, or the distance between two parallel lines. (PCI)
- OPENING:** A hole through a panel. (PCI)
- OPPOSITE HAND:** Reverse, mirror image, exact opposite of that shown. (PCI)
- OPTIMUM QUALITY:** The level of quality, in terms of appearance, strength and durability, which is appropriate for the specific product, its particular application, and its expected performance requirements. Realistic cost estimates for producing it within stated tolerances are factors which must be considered in determining this level. (PCI)
- OVERHANG:** The projecting area of a roof or upper story beyond the wall of the lower part. (PCI)
- PACHOMETER:** An electronic device used to locate and size reinforcement in hardened concrete. (PCI)
- PANEL:** An individual precast unit. (PCI)
- PARAPET:** That part of a wall that extends above the roof line. (PCI)
- PASTE:** That portion of a concrete mix which comprises 30% by volume; the usual composition of which is 5% air, 15% water and 10% cement. (PCI)

- PATCH:** To repair a superficially damaged panel by filling the damaged area with concrete of matching color and texture. (PCI)
- PATTERN or POSITIVE:** A replica of all or part of the precast element sometimes used for forming the molds in concrete or plastic. (PCI)
- PEA GRAVEL:** That portion of concrete aggregate passing the 3/8 inch sieve and retained on a No. 4 sieve. (PCI)
- PIER:** A short column used as a foundation member in building construction. (PCI)
- PILASTER:** Column partially or completely embedded in a wall, or a portion of a wall enlarged to serve as a column. (PCI)
- PILE:** A concrete, steel or wood member driven to the ground to support a load. (PCI)
- PIPE COLUMN:** A steel cylinder which is used as a vertical support. (PCI)
- PLAIN CONCRETE:** Concrete that is either unreinforced or contains less reinforcement than the minimum amount specified for reinforced concrete in ACI 318. (PCI)
- PLANIMETER (COMPENSATING POLAR):** An instrument which accurately determines areas of irregular shapes by tracing the perimeter. (PCI)
- PLASTIC CONCRETE:** A condition of freshly mixed concrete indicating that it is workable, readily remoldable, cohesive and has an ample content of fines and cement, but is not over-wet. (PCI)
- PLASTIC CRACKING:** Short cracks often varying in width along their length that occur in the surface of fresh concrete soon after it is placed and while it is still plastic; some probable cause of plastic cracking is high water-cement ratio, low sand content, and poor compaction. (PCI)
- PLATE:** A sheet of metal having a thickness of 1/8 inch or greater. (PCI)
- PLATE WASHER:** A special washer prefabricated from steel plate. (PCI)
- PLUG WELD:** A weld wherein one member partially penetrates another member and the remaining distance is filled with weld. (PCI)
- PLUMB:** Vertical; or the act of making vertical. (PCI)
- POLE TRAILER:** A trailer used to ship long structural members such as giant tees. This trailer has no bed as such but employs a long pole which fastens the cab to the rear wheels. (PCI)
- POST-TENSIONING:** A method of prestressing concrete whereby the tendon is kept from bonding to the concrete, then elongated and anchored directly against the hardened concrete, imparting stresses through end bearing. (PCI)
- A method of prestressing reinforced concrete in which tendons are tensioned after the concrete has hardened. (ACI)
- POURED-IN-PLACE:** See cast-in-place. (PCI)
- PRECAST CONCRETE:** Concrete cast elsewhere than its final position in the structure. Usually precast concrete consists of individual members such as columns, wall panels, beams or joists erected and joined to form the building frame. (CRSI)
- Concrete cast elsewhere than its final position in the structure. (ACI)
- A plain reinforced or prestressed concrete element cast in other than its final position in the structure; precast concrete can be architectural or structural. (PCI)
- PRECAST ENGINEER:** The structural engineer authorized by the manufacturer to ensure the adequacy of the structural aspects of the drawings, manufacture, and installation for which the manufacturer is responsible. (PCI)
- PRECAST PILE:** A reinforced concrete pile manufactured in a casting plant or at the job site and driven into place by a pile hammer. (CRSI)
- A reinforced concrete pile manufactured in a casting plant or at the site but not in its final position. (ACI)
- PRELIMINARY:** Not completely finalized and reviewed. (PCI)
- PRESTRESSED CONCRETE:** Concrete in which internal stresses of such magnitude and distribution are introduced that the tensile stresses resulting from the service loads are counteracted to a desired degree; in reinforced concrete the prestress is commonly introduced by tensioning the tendons. (ACI)
- Concrete in which there have been introduced internal stresses of such magnitude and distribution that the stresses resulting from loads are counteracted to a desired degree. (PCI)
- PRESTRESSING BED:** The platform and abutments needed to support the forms and maintain the tendons in a stressed condition during placing and curing of the concrete. (PCI)
- PRETENSIONING:** A method of prestressing concrete whereby the tendons are elongated, anchored while the concrete in the member is cast, and released when the concrete is strong enough to receive the stresses from the tendon through bond. (PCI)

- A method of prestressing reinforced concrete in which the tendons are tensioned before the concrete has hardened. (ACI)
- PRIMARY DIMENSIONS:** (1) The basic dimensions of a piece; (2) The first in order of importance. (PCI)
- PRIME CONSULTANT:** The architect, engineer or other professional responsible for the design of the building or structure of which the precast concrete forms a part. (PCI)
- PROJECT DRAWINGS:** The drawings which accompany project specifications and complete the descriptive information for construction work required or referred to in the project specifications. (PCI)
- P/T CONDUIT:** Bright, metallic, flexible interlocking conduit used in grouted connections. (PCI)
- PURLIN:** A horizontal floor or roof structural member usually resting on joists. (PCI)
- QUIRK MTIRE:** A corner formed by two chamfered panels. (PCI)
- RABBET:** A two-sided recess frequently used at connections between adjacent units. (PCI)
- REBAR:** Abbreviated term for reinforcing bar. (PCI)
- REGLET:** A long, narrow formed slot in concrete to receive flashing or to serve as anchorage. (PCI)
- REINFORCED CONCRETE:** Concrete containing reinforcement, including prestressing steel, and designed on the assumption that the two materials act together in resisting forces. (PCI)
- REINFORCEMENT:** Rebar, mesh, strand or post-tensioning cables embedded in concrete and located in such a manner that the metal and the concrete act together in resisting loads. (PCI)
- RELEASE:** (1) The time at which the prestressed strands are severed prior to removing the prestressed units from the forms; (2) submittal of drawings; (3) stripping of precast panel. (PCI)
- RELEASE AGENT:** See form release agent. (PCI)
- RETARDER:** An admixture which delays the setting of cement paste and therefore of concrete. (PCI)
- RETARDER, SURFACE:** A material used to retard or prevent the hardening of the cement paste on a concrete surface within a time period and to a depth to facilitate removal of this paste after the concrete element is otherwise cured (a method of producing exposed aggregate finish). (PCI)
- RETEMPERING:** The addition of water and re-mixing of concrete which has started to stiffen in order to make it more workable. (PCI)
- RETURN:** A projection of like cross-section which is 90° to or splayed from main face or plane of view. (PCI)
- REVEAL:** (1) Groove in a panel face generally used to create a desired architectural effect; (2) The projection of the coarse aggregate from the matrix after exposure. (PCI)
- REVIBRATION:** Delayed vibration of concrete that has already been placed and consolidated; most effective when done at the latest time a running vibrator will sink of its own weight into the concrete and again make it plastic. (PCI)
- RIB:** (1) Continuous vertical projection on a wall panel projecting a minimum of 6 inches from the panel face; (2) Local thickening providing stiffness in concrete panels. (PCI)
- RIGGER:** Mechanic whose function is to brace, guy and arrange for hoisting materials. (PCI)
- ROD:** Term used to describe any of a number of types of round steel bars. (PCI)
- ROLLED SECTION:** Structural steel member, such as an I beam or wide-flange section, that is formed into its shape by hot rolling at the mill. (PCI)
- ROLLING BLOCK:** Pulley used during panel handling to evenly distribute loads to inserts or to facilitate rotating the panel into its final position. (PCI)
- RUSTICATION:** A groove in a panel face for architectural appearance; also reveal. (PCI)
- RUSTICATION STRIP:** A strip of wood or other material attached to a form surface to produce a groove or rustication in the concrete. (PCI)
- SACKING:** A common remedy for pits and air bubble holes in concrete--a slurry (the consistency of thick cream) consisting of a mixture of sand and cement is thoroughly rubbed over the moistened area with clean burlap pads or sponge rubber floats. (PCI)
- SAFETY FACTOR:** Number that results from dividing the ultimate strength by the allowable working stress allowing for any imperfections or additional loads; codes regulate the minimum safety factor required in many areas. (PCI)
- SAFE WORKING LOAD:** That magnitude of load which a connection can safely resist while maintaining factors of safety. (PCI)

SAND: That portion of an aggregate passing the No. 4 (4.76 mm) sieve and predominantly retained on the No. 200 (74 micron) sieve. (PCI)

SANDBLAST: A system of abrading a surface such as concrete by a stream of sand, or other abrasive, ejected from a nozzle at high speed, by water and/or compressed air. (PCI)

SANDWICH PANEL: Panel consisting of two layers (wythes) of concrete fully or partly separated by a layer of insulation; in employing this detail, metal shear connectors are usually required to tie the two layers of concrete together. (PCI)

A prefabricated panel which is a layered composite, formed by attaching two thin facings to a thicker core; such as a precast concrete panel consisting of two layers of concrete separated by a nonstructural insulating core. (ACI)

SCABBING: A finish defect in which parts of the form face including release agent adhere to the concrete, some probable causes are an excessively rough form face, inadequate application of release agent, or delayed stripping. (PCI)

SCALING: A finish defect resulting in a thin layer of hardened mortar breaking free from the concrete surface and exposing mortar or stone; some probable causes are low strength concrete, rough or absorbent form face, inadequate application of release agent and curing procedure. (PCI)

SCHOKBETON: Shocked concrete; a method of pre-casting architectural concrete in which the mold is fastened to a steel shocking table and repetitively raised a fraction of an inch and dropped at the rate of about 250 impacts a minute to consolidate the concrete. (PCI)

SCORE: To use a saw to notch hardened concrete. (PCI)

SCOURING: Irregular eroded areas or channels with exposed stone or sand particles; some probable causes of this finish defect are excessively wet concrete mix, insufficient fines, water in form when placing, poor vibration practices, and low temperature when placing. (PCI)

SCREED: A wooden or metal tool used to level off the back surface of a panel flush with the form side rails. (PCI)

SCUPPER: An opening in a wall panel through which the roof is drained. (PCI)

SEALANTS: A group of materials used to seal joints between precast concrete units and between such units and adjacent materials. (PCI)

SEALERS or PROTECTIVE COATINGS: Materials used to coat precast concrete units for the purpose of improving resistance to water penetration or for improving weathering qualities. (PCI)

SECONDARY DIMENSIONS: Related directly to the primary dimensions and of secondary rank or value. They must always total the primary dimensions. (PCI)

SECTION: Cut away view through a general plan or elevation view to explain details. (PCI)

SECTION INDICATOR: A symbol indicating the direction in which a cross-section is cut or viewed. (PCI)

SECTION MARK: A letter or number of a drawing indicating the location of a section on the drawing. (PCI)

SEGMENTAL MEMBER: Structural member made up of individual elements prestressed together to act as a monolithic unit under service loads. (PCI)

SEGREGATION: The tendency for the coarse particles to separate from the finer particles in handling; in concrete, the coarse aggregate and drier materials remains behind and the mortar and wetter material flows ahead; this also occurs in a vertical direction when wet concrete is overvibrated or dropped vertically into the forms, the mortar and wetter material rising to the top; in aggregate, the coarse particles roll to the outside edges of the stockpile. (PCI)

SELFSTRESSING FORMS: Equipment which, in addition to serving as forms for concrete also accommodates the pretensioned strands (or wires) and sustains the total prestressing force by suitable end bulkheads and sufficient cross-sectional strength. (PCI)

SEPIA: A brown on white, transparent, reproducible print. (PCI)

SET: Erect, place, install. (PCI)

SET PLATE: A steel plate which is pre-installed and grouted to the desired elevation and line for the purpose of receiving a precast column or panel. (PCI)

SET-UP: The process of preparing molds or forms for casting, including locating materials (reinforcement and hardware) prior to the actual placing of concrete (PCI)

SHACKLE: See swivel plate. (PCI)

SHEAR: The result of two parallel forces acting on a body in opposite directions tending to cause two parts of the body to slide against each other. (PCI)

SHEAR KEY: A continuous slot formed expressly to receive plastic mortar or concrete to resist lateral separation. (PCI)

SHEAR WALL: Wall designed to resist forces resulting from wind, blast or earthquake. (PCI)

SHIM: Material placed between a panel or its connecting angle and the supporting structure for the purpose of controlling the panel's vertical alignment, usually steel. (PCI)

SHIM SPACE: The space between floor (or beam) levels and bearing area of precast connections. (PCI)

SHRINKAGE: The volume change in precast units normally occurring during the hardening process of concrete. (PCI)

SIDE RAIL: The side of a form. (PCI)

SILL: That portion of a precast panel which forms the bottom or base of a window or door opening. (PCI)

SLAB: Precast or prestressed floor or roof members. (PCI)

SLEEVE: Any cylinder cast into a panel for the purpose of creating a hole. (PCI)

SLING: Short lengths of wire rope, with a spliced eye at each end or a spliced eye at one end and a hook at the other, used in erection of small precast units; use of a sling eliminates the necessity of casting erection inserts into a panel. (PCI)

SLIT: A hole having a length of approximately 2-1/2 times its diameter. (PCI)

SLUG: A short length of rebar used as a filler in completing welds. (PCI)

SLUMP: Measure of the consistency of plastic concrete, equal to the number of inches of subsidence of a truncated cone of concrete released immediately after molding in a standard slump cone. (PCI)

SLUMP CONE: Metal mold in the form of a truncated cone with a top diameter of 4 inches, a base diameter of 8 inches, and a height of 12 inches, used to fabricate the specimen for the slump test. (PCI)

SLURRY: Thin mixture of water and finely divided materials, such as portland cement, in suspension. (PCI)

SOFFITT: A precast panel used to form the underside of an overhang or ceiling; also, the finished underside of a lintel beam or cantilevered floor. (PCI)

SPALLING: A finish defect, more severe than scaling, in which pieces of concrete break free from the hardened surface; some probable causes are low concrete strength, absorbent aggregates which are susceptible to damage by frost or water, inadequate drafts in form work, inadequate release agent, early stripping and corrosion of reinforcement. (PCI)

SPAN: The horizontal distance between supports of a member such as a beam, girder, slab or joist. (PCI)

SPANDREL: That part of a wall between the head of a window and the sill of the window above it. (An upturned spandrel continues above the roof or floor line). (PCI)

SPANDREL BEAM: Beam in a building frame which extends between exterior columns at a floor level. (PCI)

SPECIFICATIONS: The type or printed directions issued by architects to establish general conditions, standards and detailed instructions which are used with the contract drawings; contracted term, specs. (PCI)

SPIRAL REINFORCEMENT: Reinforcing rod or wire supplied in coils and used in place of ties for columns. (PCI)

SPLAY: A beveled or slanted surface. (See draft). (PCI)

SPLICE: Connection of one reinforcing bar to another by lapping, welding, mechanical couplings or other means; the lap between sheets or rolls of welded wire fabric. (PCI)

SPOT WELD: A quickly applied weld which is not required to perform structurally. (PCI)

SPREADER BEAM: A frame of steel channels or beams attached to the back of a panel, prior to stripping, for the purpose of evenly distributing loads to inserts and for lifting the panel about its center of gravity. (PCI)

STAINLESS STEEL: Steel alloyed with sufficient chromium to resist corrosion, oxidation or rusting. (PCI)

STEM: The vertical leg of a prestressed tee. (PCI)

STIFFENER: A steel plate welded to a steel beam or column to increase the section's stiffness at a desired point. (PCI)

STIRRUP: A rebar bent into the form of a closed tie or U-shape and surrounding the main reinforcement in panels and beams for control of cracking caused by diagonal tension; the term stirrups is usually applied to lateral reinforcement in horizontal members, and the term ties to those in vertical members. (PCI)

STONE ANCHOR: An anchor commonly used to fasten cut stone units; such anchors are seldom suitable for use in precast concrete attachment. (PCI)

STRAIN: The measure of a member's deformation. (PCI)

STRAND: Tendon usually composed of three- or seven-wire assemblies used as reinforcement in prestressed concrete. (PCI)

- STRAND CHUCK OR VICE:** A device for holding a strand under tension. (PCI)
- STRESS:** Intensity of force per unit area. (PCI)
- STRINGER:** (1) The supporting member of a stair upon which the treads are laid; (2) Horizontal structural member usually (in slab forming) supporting joists and resting on vertical supports. (PCI)
- STRIPPING:** The process of removing a precast concrete element from the form in which it was cast. (PCI)
- STRONG-BACK:** A steel or wooden plate which is attached to a panel for the purpose of adding stiffness during handling, shipping and/or erection. (PCI)
- STRUCTURAL:** A unit which carries live load or another unit's weight. (PCI)
- SUBCONTRACTOR (SUB):** A contractor who provides materials or services to the general contractor. (PCI)
- SUBMITTED:** Presented to the architect/engineer for review. (PCI)
- SUPERSTRUCTURE:** That portion of any building which extends above the foundation. (PCI)
- SWIVEL PLATE:** A clevis which can be bolted to a panel, thus providing a hook for use in handling. (PCI)
- SYMMETRY:** Exact correspondence of shape on opposite sides of a dividing line or plane. (PCI)
- SYSTEMS BUILDING:** Essentially the orderly combination of "parts" into an "entity" such as subsystems or the entire building; systems building makes full use of industrialized production, transportation and assembly. (PCI)
- TACK WELD:** (See spot weld). (PCI)
- TAG LINE:** A rope attached to a precast unit during erection for use in helping the crane operator guide the panel into place. It is manipulated by hand from ground level. (PCI)
- TAMP:** To pack concrete down tightly by a succession of blows or taps. (PCI)
- TEE:** A structural floor or roof member consisting of one or more stems and a thin flange. Tees are sometimes used as architectural wall panel. (PCI)
- TEFLON PAD:** A bearing pad made of a waxy opaque material. These pads are used when restraint of movements is not desired. (PCI)
- TEMPERATURE REINFORCEMENT:** Reinforcement distributed throughout the concrete to minimize cracks due to temperature changes and concrete shrinkage. (PCI)
- TEMPERATURE RISE:** The increase of concrete temperature caused by heat of hydration and heat from other sources. (PCI)
- TEMPLATE:** A pattern made of thin metal plate or plastic and used as a guide in accurately positioning reinforcement anchor bolts or inserts; double templates are often used to help ensure plumb. (PCI)
- TENDON:** Tensioned element, generally high-strength steel wires, strands, or bars, used to impart prestress to the concrete; in post-tensioned concrete, the complete assembly of prestressing steel, anchorages and sheathing, when required, is also called a tendon. (PCI)
- TENDON (BONDED):** Tendon which is bonded to the concrete through grouting or other approved means, and therefore is not free to move relative to the concrete. (PCI)
- TENDON (UNBONDED):** Tendon in which the prestressing steel is permanently free to move relative to the concrete to which it is applying the prestressing forces. (PCI)
- TENSION:** Stress or force in a material caused by a pulling action, which tends to create a lengthening of the material. (PCI)
- TERRAZZO:** Flooring surface of marble chips in concrete which is ground and polished after setting. (PCI)
- TEXTURE:** Any finish other than a smooth finish. (PCI)
- THERMAL MOVEMENTS:** Volume changes in precast units caused by temperature variations. (PCI)
- THREADED:** Having national coarse machine thread. (PCI)
- TIE:** A closed loop of small size reinforcing bars that encircle longitudinal bars in columns and beams. (See stirrup). (PCI)
- TIE WIRE:** See bagtie. (PCI)
- TILT-UP:** Method of concrete construction where members are cast horizontally near their eventual position, and then tilted into place after removal of forms. (PCI)
- TOLERANCE:** Specified permissible variation from stated requirements such as dimensions, strength and air-entrainment. (PCI)
- TOOL:** To slightly round a corner, in freshly cast concrete with a cement mason's edger. (PCI)

- TOOLING:** Most of the manufacturing and service processes preceding the actual set-up and casting operations. (PCI)
- TOPPING:** Concrete cast on erected prestressed units to achieve a level floor or to aid the units in uniformly carrying loads. (PCI)
- TORSION:** The stress caused when one portion of a member is twisted in one direction and the other end is held motionless or twisted in the opposite direction. (PCI)
- TRACING:** A reproducible original drawing, white background with black printing. (PCI)
- TRANSIT:** A surveying instrument used to measure horizontal and vertical angles. (PCI)
- TRANSVERSE:** At right angles to the long direction of the member (crosswise); also referred to as lateral. (PCI)
- TRUSS:** Structural members arranged and fastened in triangular units to form a rigid framework for support of loads over a long span. (PCI)
- T-SHORE:** An inverted tee-shaped concrete unit used to support precast panels during storage. (PCI)
- TURNING TABLE:** Mechanical table used in precast plants to rotate units from the horizontal casting position into the vertical handling position without the necessity of handling inserts; when employed the amount of rebar in a panel is greatly reduced. (PCI)
- UL APPROVED:** Rated and approved for performance during a fire by the Underwriters' Laboratories, Inc.--a nonprofit organization; ratings are in units of hours based on tests. (PCI)
- ULTIMATE STRENGTH:** Maximum resistance to loads that a structure or member is capable of developing before failure occurs, or, with reference to cross-sections of members, the largest axial force, shear or moment a structural concrete cross-section will support. (PCI)
- VACUUM PAD:** Hydraulic suction cups used for handling flat panels; a smooth finish is required if such a device is to be used. (PCI)
- VELLUM:** A heavy off-white translucent fine quality tracing paper. (PCI)
- VENEER:** A layer of facing material, such as natural stone, used to cover a panel. (PCI)
- VIBRATION:** Energetic agitation of concrete to assist in its consolidation, produced by mechanical oscillating devices at moderately high frequencies; external vibration employs a device attached to the forms and is particularly applicable to the manufacture of precast items; internal vibration employs an element which can be inserted into the concrete, and is more generally used for cast-in-place construction. (PCI)
- WALL (BEARING):** A wall supporting a vertical load in addition to its own weight. (PCI)
- WALL PANEL:** A component of a prefabricated wall which derives its strength and dimensional stability from a precast concrete element; the component includes any non-concrete items incorporated in the element at the time of manufacture. (PCI)
- WARPING:** The bowing of a precast unit in two planes. (PCI)
- WASH:** The sloped surface of a sill panel which permits rainwater to run off. (PCI)
- WATERPROOFING:** An application which, when sprayed onto a panel surface, tends to repel rainwater. (PCI)
- WEATHERPROOFING:** The process of protecting all joints and openings from the penetration of moisture and wind. (PCI)
- WEATHER SEALING:** The process of treating wall areas for improved weathering properties. (PCI)
- WEB:** That portion of a beam or precast unit to which the flanges are attached. (PCI)
- WEDGE INSERT:** An insert having a wedge-shaped holding face which permits vertical adjustment without slippage through the use of a special askew head bolt. (PCI)
- WEEP HOLE:** A hole provided for drainage through precast panel joints. (PCI)
- WELD:** To join metals by applying heat with a filler metal which has a high melting point. (PCI)
- WELDED WIRE FABRIC:** A reinforcing material composed of cold drawn steel wires fabricated into a sheet consisting of longitudinal and transverse wires arranged at right angles and welded together at all points of intersection. (PCI)
- WELD PLATE:** A plate with attached anchors cast into concrete for the purpose of making a welded connection. (PCI)
- WET-MIX CONCRETE:** Concrete mixtures designed for typical water-cement ratios, slumps and handling and consolidation methods. (PCI)

- WHITEPRINT:** A nonreproducible print, made from a tracing, and having white background with blue or black printing. (PCI)
- WIDE FLANGE:** An H-shaped rolled steel section. (PCI)
- WINCH:** Mechanical lifting device attached to derricks on which cable is wound up by means of a crank and locked in position by a ratchet. (PCI)
- WIRE LOOP:** A lifting loop cast into the back of a precast member for handling purposes; this loop is usually formed with discarded prestress strand or aircraft cable. (PCI)
- WORKABILITY:** The ease with which a given set of materials can be mixed into concrete and subsequently handled, transported, placed and finished with a minimum loss of homogeneity. (PCI)
- WORKING POINT:** A real point from which a dimension (panel) is measured. It must be accessible to workmen. (PCI)
- WORKING STRESS:** The maximum unit stress considered desirable in a structural member subjected to loads. (PCI)
- WORK POINT:** A real, imaginary, or inaccessible point from which a dimension on a drawing is measured. (PCI)
- WRINKLED TIN:** Slang for corrugated metal. (PCI)
- WYTHER:** A continuous vertical section of a wall tied to its adjacent vertical element (part of a composite wall). (PCI)
- ZIPPER GASKET:** A neoprene rubber window gasket used to fasten window glass to a precast panel. (PCI)

- COLLOIDAL GROUT:** A grout which has artificially induced cohesiveness or ability to retain the dispersed solid particles in suspension. (ACI)
- CURTAIN GROUTING:** Injection of grout into a subsurface formation in such a way as to create a zone of grouted material transverse to the direction of anticipated water flow. (ACI)
- DRY-PACK:** Hand grouting with a very dry mix; the grout is tamped into the joint. (PCI)
- FLOW CONE:** A device for measurement of grout consistency in which a predetermined volume of grout is permitted to escape through a precisely sized orifice, the time of efflux (flow factor) being used as the indication of consistency; also, the mold used to prepare a specimen for the flow test. (ACI)
- GROUT:** A mortar type mixture which is hand packed or applied under pressure in such a consistency as to ensure complete filling of all voids. The usual proportions of a grout mix are one (1) part of cement to three (3) parts of well-graded sand by weight with water content adjusted so that a mass of grout squeezed in the hand retains its shape. (ACI)
- NEAT CEMENT GROUT:** A fluid mixture of hydraulic cement and water, with or without admixture; also the hardened equivalent of such mixture. (ACI)
- OPEN-CIRCUIT GROUTING:** A grouting system with no provision for recirculation of grout to the pump. (ACI)
- PACKER:** A device inserted into a hole in which grout is to be injected which acts to prevent return of the grout around the injection pipe; usually an expandable device actuated mechanically, hydraulically, or pneumatically. (ACI)
- PERIMETER GROUTING:** Injection of grout, usually at relatively low pressure, around the periphery of an area which is subsequently to be grouted at greater pressure; intended to confine subsequent grout injection within the perimeter. (ACI)
- SAND GROUT:** Any grout in which only fine aggregate is incorporated into the mixture. (ACI)
- SLUSH GROUTING:** Distribution of a grout with or without fine aggregate as required over a rock or concrete surface which is subsequently to be covered with concrete, usually by brooming it into place to fill surface voids and fissures. (ACI)