Glossary of Terms

ACI — American Concrete Institute

ACRYLIC — Polymer based on resins prepared from a combination of acrylic and methacrylic esters.

ADHESIVE ANCHOR — Typically, a threaded rod or rebar that is installed in a predrilled hole in a base material with a two-part chemical compound.

ADMIXTURE — A material other than water, aggregate or hydraulic cement used as an ingredient of concrete and added to concrete before or during its mixing to modify its properties.

AERATED CONCRETE — Concrete that has been mixed with air-entraining additives to protect against freeze-thaw damage and provide additional workability.

AGGREGATE — A granular material, such as sand, gravel, crushed stone and iron blast-furnace slag, used with a cementing medium to form a hydraulic cement concrete or mortar.

AISC — American Institute of Steel Construction

ALLOWABLE LOAD — The maximum design load that can be applied to an anchor. Allowable loads for mechanical and adhesive anchors are based on applying a factor of safety to the average ultimate load.

AMINE CURING AGENT — Reactive ingredient used as a setting agent for epoxy resins to form highly crosslinked polymers.

ANCHOR CATEGORY — The classification for an anchor that is established by the performance of the anchor in reliability tests such as sensitivity to reduced installation effort for mechanical anchors or sensitivity to hole cleaning for adhesive anchors.

ANSI — American National Standards Institute

AS — Australian Standards.

ASTM — American Society for Testing and Materials

BASE MATERIAL — The substrate (concrete, CMU, etc.) into which adhesive or mechanical anchors are to be installed.

BOND STRENGTH — The mechanical interlock or chemical bonding capacity of an adhesive to both the insert and the base material.

BRICK — A solid masonry unit of clay or shale formed into a rectangular prism while plastic and burned or fired in a kiln that may have cores or cells comprising less than 25% of the cross sectional area.

CAMA — Concrete Anchor Manufacturer's Association

CAST-IN-PLACE ANCHOR — A headed bolt, stud or hooked bolt installed into formwork prior to placing concrete.

CHARACTERISTIC DESIGN VALUE — The nominal strength for which there is 90% confidence that there is a 95% probability of the actual strength exceeding the nominal strength.

CONCRETE — A mixture of Portland cement or any other hydraulic cement, fine aggregate, coarse aggregate and water, with or without admixtures. Approximate weight is 150 pcf.

CONCRETE BRICK — A solid concrete masonry unit (CMU) made from Portland cement, water, and aggregates.

CONCRETE COMPRESSIVE STRENGTH (f'_c) — The specified compressive load carrying capacity of concrete used in design, expressed in pounds per square inch (psi) or megapascals (MPa).

CONCRETE MASONRY UNIT (CMU) — A hollow or solid masonry unit made from cementitious materials, water and aggregates.

CORE DRILL — A method of drilling a smooth wall hole in a base material using a special drill attachment.

CREEP — Displacement under a sustained load over time.

CURE TIME — The elapsed time required for an adhesive anchor to develop its ultimate carrying capacity.

DESIGN LOAD — The calculated maximum load that is to be applied to the anchor for the life of the structure.

DESIGN STRENGTH — The nominal strength of an anchor calculated per ACI 318, ICC-ES AC193 or ICC-ES AC308 and then multiplied by a strength reduction factor (ϕ).

DROP-IN ANCHOR — A post-installed mechanical anchor consisting of an internally-threaded steel shell and a tapered expander plug. The bottom end of the steel shell is slotted longitudinally into equal segments. The anchor is installed in a pre-drilled hole using a hammer and a hand-setting tool. The anchor is set when the tapered expander plug is driven toward the bottom end of the anchor such that the shoulder of the hand-setting tool makes contact with the top end of the anchor. A drop-in anchor may also be referred to as a displacement controlled expansion anchor.

DYNAMIC LOAD — A load whose magnitude varies with time.

EDGE DISTANCE:

EDGE DISTANCE (C) — The measure between the anchor centreline and the free edge of the concrete or masonry member.

CRITICAL EDGE DISTANCE (C_{cr} or C_{ac}) — The least edge distance at which the allowable load capacity of an anchor is applicable without reductions.

MINIMUM EDGE DISTANCE (C_{min}) — The least edge distance at which the anchors are tested for recognition.

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EFFECTIVE EMBEDMENT DEPTH — The dimension measured from the concrete surface to the deepest point at which the anchor tension load is transferred to the concrete.

EMBEDMENT DEPTH — The distance from the top surface of the base material to the installed end of the anchor. In the case of a post-installed mechanical anchor, the embedment depth is measured prior to application of the installation torque.

EPOXY RESIN — A viscous liquid containing epoxide groups that can be crosslinked into final form by means of a chemical reaction with a variety of setting agents.

ETA — European Technical Assessment.

EXPANSION ANCHOR — A mechanical fastener placed in hardened concrete or assembled masonry, designed to expand in a self-drilled or predrilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

FATIGUE LOAD TEST — A test in which the anchor is subjected to a specified load magnitude for 2 x 10^6 cycles in order to establish the endurance limit of the anchor.

GEL TIME — The elapsed time at which an adhesive begins to increase in viscosity and becomes resistant to flow.

GROUT — A mixture of cementitious material and aggregate to which sufficient water is added to produce pouring consistency without segregation of the constituents.

GROUTED MASONRY (or GROUT-FILLED MASONRY) — Hollow-unit masonry in which the cells are filled solidly with grout. Also, double or triple-wythe wall construction in which the cavity(s) or collar joint(s) is filled solidly with grout.

HOT-DIP GALVANISED — A part coated with a relatively thick layer of zinc by means of dipping the part in molten zinc.

IAPMO UES — IAPMO Uniform Evaluation Service. An ISO 17065 ANSI-accredited company that issues evaluation reports expressing a professional opinion as to a product's building code compliance.

ICC-ES — ICC Evaluation Service. An ISO 17065 ANSI-accredited company that issues evaluation reports expressing a professional opinion as to a product's building code compliance.

LEGACY ACCEPTANCE CRITERIA — A past version of an ICC-ES anchor qualification criteria. These are no longer current standards, but are the basis for legacy allowable load data for anchors in concrete. These standards have been replaced by modern standards such as ICC-ES AC193 and AC308.

LIGHTWEIGHT CONCRETE — Concrete containing lightweight aggregate. The unit weight of lightweight concrete is not to exceed 115 pcf.

MASONRY — Brick, structural clay tile, stone, concrete masonry units or a combination thereof bonded together with mortar.

MECHANICALLY GALVANISED — A part coated with a layer of zinc by means of mechanical impact. The thickest levels of mechanical galvanising (ASTM B695, Class 55 or greater) are considered to be alternatives to hot-dip galvanising and provide a medium level of corrosion resistance.

MORTAR — A mixture of cementitious materials, fine aggregate and water used to bond masonry units together.

NOMINAL STRENGTH — The strength of an element as calculated per ACI 318, ICC-ES AC193 or ICC-ES AC308.

NORMAL WEIGHT CONCRETE — Concrete containing normal weight aggregate. The unit weight of normal weight concrete is approximately 150 pcf.

NZS — New Zealand Standards.

OBLIQUE LOAD — A load that is applied to an anchor, which can be resolved into tension and shear components.

PLAIN CONCRETE — Structural concrete with no reinforcement or with less reinforcement than the minimum specified for reinforced concrete.

PORTLAND CEMENT — Hydraulic cement consisting of finely pulverised compounds of silica, lime and alumina.

POST-INSTALLED ANCHOR — Either a mechanical or adhesive anchor installed in a pre-drilled hole in the base material.

POST-TENSION — A method of prestressing in which tendons are tensioned after concrete has hardened.

POT LIFE — The length of time a mixed adhesive remains workable (flowable) before hardening.

PRECAST CONCRETE — A concrete structural element cast elsewhere than its final position in the structure.

PRESTRESSED CONCRETE — Structural concrete in which internal stresses have been introduced to reduce potential tensile stresses in concrete resulting from loads.

PRETENSIONING — A method of prestressing in which tendons are tensioned before concrete is placed.

REBAR — Deformed reinforcing steel which comply with ASTM A615.

REINFORCED CONCRETE — Structural concrete reinforced with no less than the minimum amount of prestressed tendons or nonprestressed reinforcement specified in ACI 318.

REINFORCED MASONRY — Masonry units and reinforcing steel bonded with mortar and/or grout in such a manner that the components act together in resisting forces.

REQUIRED STRENGTH — The factored loads and factored load combinations that must be resisted by an anchor.

SCREEN TUBE — Typically a wire or plastic mesh tube used with adhesives for anchoring into hollow base materials to prevent the adhesive from flowing uncontrolled into voids.

SCREW ANCHOR — A post-installed anchor that is a threaded mechanical fastener placed in a predrilled hole. The anchor derives its tensile holding strength from the mechanical interlock of the fastener threads with the grooves cut into the concrete during the anchor installation.

SHEAR LOAD — A load applied perpendicular to the axis of an anchor.

SHOTCRETE — Concrete that is pneumatically projected onto a surface at high velocity. Also known as gunite.

SLEEVE ANCHOR — A post-installed mechanical anchor consisting of a steel stud with nut and washer, threaded on the top end and a formed uniform tapered mandrel on the opposite end around which a full length expansion sleeve formed from sheet steel is positioned. The anchor is installed in a predrilled hole and set by tightening the nut by torquing thereby causing the expansion sleeve to expand over the tapered mandrel to engage the base material.

SPACING:

SPACING (S) — The measure between anchors, centreline-to-centreline distance.

CRITICAL SPACING (S_{cr}) — The least anchor spacing distance at which the allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighbouring anchors.

MINIMUM SPACING (S_{min}) — The least anchor spacing at which the anchors are tested for recognition.

STAINLESS STEEL — A family of iron alloys containing a minimum of 12% chromium. Type-316 stainless steel provides greater corrosion resistance than Types 303 or 304.

STANDARD DEVIATION — As it pertains to this catalogue, a statistical measure of how widely dispersed the individual test results were from the published average ultimate loads.

STATIC LOAD — A load whose magnitude does not vary appreciably over time.

STRENGTH DESIGN (SD) — A design method in which an anchor is selected such that the anchor's design strength is equal to or greater than the anchor's required strength.

STRENGTH REDUCTION FACTOR (ϕ) — A factor applied to the nominal strength to allow for variations in material strengths and dimensions, inaccuracies in design equations, required ductility and reliability, and the importance of the anchor in the structure.

TENDON — In pretensioned applications, the tendon is the prestressing steel. In post-tensioned applications, the tendon is a complete assembly consisting of anchorages, prestressing steel, and sheathing with coating for unbonded applications or ducts with grout for bonded applications.

TENSION LOAD — A load applied parallel to the axis of an anchor.

THIXOTROPIC — The ability of a fluid to become less viscous (resistant to flow) under shear, then thicken when the shear force is removed.

TMR — Transport and Main Roads.

TORQUE — The measure of the force applied to produce rotational motion usually measured in foot-pounds. Torque is determined by multiplying the applied force by the distance from the pivot point to the point where the force is applied.

ULTIMATE LOAD — The average value of the maximum loads that were achieved when five or more samples of a given product were installed and statically load tested to failure under similar conditions. The ultimate load is used to derive the allowable load by applying a factor of safety.

UNDERCUT ANCHOR — A post-installed anchor that develops its tensile strength from the mechanical interlock provided by undercutting of the concrete at the embedded end of the anchor.

UNREINFORCED MASONRY (URM) — A form of clay brick masonry bearing wall construction consisting of multiple wythes periodically interconnected with header courses. In addition, this type of wall construction contains less than the minimum amounts of reinforcement as defined for reinforced masonry walls.

WEDGE ANCHOR — A post-installed mechanical anchor consisting of a steel stud with nut and washer, threaded on the top end and a formed uniform tapered mandrel on the opposite end around which an expansion clip formed from sheet steel is positioned. The anchor is installed in a predrilled hole and set by tightening the nut by torquing, thereby causing the expansion clip to expand over the tapered mandrel to engage the base material. A wedge anchor may also be referred to as a torque controlled expansion anchor.

WYTHE — A continuous vertical section of masonry one unit in thickness.

ZINC PLATED — A part coated with a relatively thin layer of zinc by means of electroplating.