

Glossary

Here's everything you wanted to know . . .

. . . from *Autoclaved Aerated Concrete* to *Yield*. This glossary covers virtually all aspects of building with Litecrete that you're likely to encounter. You'll find quick, concise, easy-to-understand definitions at the click of your mouse.

AAC - Autoclaved Aerated Concrete:

Exceptionally lightweight precast concrete with high thermal qualities and fire resistance. Suitable for cutting with ordinary hand tools. Mix design is composed of Portland cement, sand or siliceous material, lime, gypsum, finely powdered aluminium, and water. Initial mix is a combination of Portland cement, sand, lime and gypsum to produce a slurry. Finely powdered aluminium mixed into a paste is added prior to placement into large, rail-like forms. The finely powdered aluminium reacts with the alkaline components of the cement and lime to produce hydrogen gas, which increases the volume approximately five times producing a uniformly, dispersed cellular structure. Units are cut to required shape, placed in an autoclave - an enclosed pressurised chamber - and steam cured at 200°C for 16 hours. Approximately 80% of the ultimate volume consists of air voids.

Abrasion Resistance:

Resistance of a surface of being worn away by friction or rubbing process.

Accelerator:

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

Access:

Refers to site access for delivery vehicles and craneage, including on-site access to work faces. May also include scaffolding and platforms to facilitate access for erections to fixing position.

Acid-etched:

A surface finish on top-quality reconstructed stone type materials. The surface laitance is removed by treating with dilute hydrochloric acid and washing with water. The finish produced is a fine, stone-like surface.

Acoustic Insulation:

Dense concrete has excellent sound insulation properties. Precast cladding and walling provides effective sound attenuation for traffic and aircraft noise and in applications such as dividing walls in cinemas.

Admixture:

A material other than water, aggregates, and Portland cement that is used as an ingredient of concrete and is added to the batch immediately before or during the mixing operation.

Aggregate:

The filler used in a concrete mix, usually manufactured from stone, which is crushed and graded on a sieve to a specific dimension (say 16mm) and includes the smaller particles below the required specified dimension.

Air Entraining Agent:

An addition for hydraulic cement, or an admixture for concrete or mortar, which entrains air in the form of minute bubbles in the concrete or mortar during mixing.

Aluminium Powder:

and other gas-forming materials are sometimes added to concrete and grout in very small quantities to cause a slight expansion prior to hardening. This may be of benefit where the complete grouting of a confined area is essential, such as under machine bases or in post-tensioning ducts of prestressed concrete. These materials are also used in larger quantities to produce lightweight cellular concretes. Gas-forming agents will not overcome shrinkage after hardening caused by drying or carbonation.

Autoclave:

A chamber in which an environment of steam and high pressure is produced. Used in curing of concrete products, particularly aerated products and in the testing of hydraulic cement for soundness.

Axial Loads:

A tension or compression force that acts concentrically through a member.

Compression Load:

A force which shortens a member; the opposite of tension.

Tension Load:

A force which elongates or stretches a member; the opposite of compression.

Bar Joists:

A manufactured truss type joist consisting of diagonal webs which are welded to parallel top and bottom chords. The chords are typically manufactured from cold or hot rolled structural angles. Open web bar joists have an inherently longer span and load-carrying characteristics when compared to C-joists.

Beam:

A structural member designed to resist external forces or loads, which cause it to bend. Examples: A joist supporting floor loads; a stud wall resisting wind load can also be described as a beam. A C-joist used to support floor loads is a classic beam application. A stud wall, resisting wind loads which cause it to bend, is also considered a beam.

Beam Types:

Simple Beam - A beam with only two supports and thus one span. Example: An infill curtain wall stud spanning floor to floor; a joist clear spanning between adjacent party walls.

Support Beam - A beam that supports another member. A support beam is below the plane of the floor/roof. Example: A beam supporting floor joists.

Cantilevered Beam - A beam which is unsupported at one end. Example: A balcony joist extending beyond an exterior wall; an exterior wall system extending beyond a roof to form a parapet; a stub wall section.

Continuous Beam - A beam which has a minimum of two spans and three or more supports.

Continuous Cantilever - A beam with multiple spans and an unsupported overhang.

Beam/Column - A structural member designed to resist axial loads in combination with bending loads.

Examples: An exterior stud supporting a floor or roof joist (axial) which is simultaneously subjected to a lateral wind force (bending). The top chord of a roof truss that is subjected to bending forces (resulting from the introduction of snow loads) and axial forces due to the nature of a truss.

Bearing Width:

Actual length that a beam rests or bears on its support.

Blocking:

Solid block or piece of material placed between structural members to provide lateral bracing as in bridging and/or edge support for sheathing.

Brick Tie:

Accessory product used to attach the brick to the framing system. A metal anchor that connects a masonry unit to a stud back-up. The ties act to transfer lateral forces out of the masonry into the back-up.

Brick Veneer:

A single wythe (thickness) of brick that is laterally, and sometimes vertically, supported by an engineered back-up wall system. Components exclusive of the steel framing system include: Brick, mortar, water repellent exterior sheathing, masonry wall ties, weep holes, shelf angles, joints and joint sealants, flashing, insulation and air spaces, vapour barriers. A complete brick veneer wall system cannot be prefabricated however some applications, particularly spandrel walls, can be delivered pre-assembled incorporating the stud framing, sheathing and ties.

Bridging:

A continuous element used to prevent rotation and/or buckling of a C-shaped framing member when it is subjected to lateral and/or axial forces. Cold rolled channel, flat strap and solid blocking products are used as bridging.

Buckling:

A kink, wrinkle, bulge, or other loss in the original shape of a member due to compression, bending, bearing, or shear loads.

C-Section:

Basic cold-formed steel shape used for structural framing members (such as joists). The name comes from the member's "C" shaped cross-sectional configuration consisting of a web, flange and lip.

Caulking:

The blocking of a joint in a curtain wall assembly (prefabricated panels, brick veneer, etc.) to make it air and water-tight.

Cellular Concrete:

A lightweight product consisting of Portland cement, cement-pozzolan, cement sand, lime-pozzolan, or lime-sand pastes, or pastes containing blends of these ingredients and having a homogenous void or cell structure, attained with gas forming chemicals or foaming agents. For cellular concretes containing binder ingredients, other than or in addition to Portland cement, autoclave curing is usually employed.

Cement, Portland:

A powdery substance made by burning, at a high temperature, a mixture of clay and limestone producing lumps called "clinkers" which are ground into a fine powder consisting of hydraulic calcium silicates.

Centroid:

The theoretical point of balance of a section.

Cold-forming:

A process where light-gauge steel members are manufactured by (1) press-braking blanks sheared from sheets or cut length of coils or plates, or by (2) continuous roll forming of cold- or hot-rolled coils of sheet steel; both forming operations are performed at ambient room temperature, that is, without any addition of heat such as would be required for hot forming.

Cold Rolling:

Gradual shaping between rolls to reduce cross sectional area or impart desired shape; generally accompanied by increase in strength and hardness. Decrease in ductility.

Column:

A structural member designed to resist axial loads (loads which act in compression (pushing) or tension (pulling)).

Examples: An internal web component of a roof truss which is subjected to either an axial compression or tension load depending on its position and location; a diagonal kicker laterally bracing a curtain wall assembly which is subjected to either an axial compression or tension depending upon the direction of the wind; and interior post (or column) of a structure supporting a beam.

Combined Stresses:

Bending stresses in combination with direct tension or compression stresses. C-studs supporting a floor joist are subjected to combined stresses (i.e. a bending stress due to lateral wind loads and axial stress due to the reaction of the joist).

Combustible Construction:

A building containing elements made of combustible materials (i.e. conventional wood framing systems).

Concentrated Load (or Point Load):

A load applied at a specific point.

Concrete:

A composite material made of Portland cement, water and aggregates and, perhaps, special admixtures.

Construction Joint:

The contact between the placed concrete and concrete surfaces, against or upon which concrete is to be placed and to which new concrete is to adhere, that has become so rigid that the new concrete cannot be incorporated integrally by vibration with that previously placed. Unformed construction joints are horizontally placed or nearly so.

Construction Loads:

During the course of construction the frame is subjected to considerable loads due to the **placement of construction materials**. A **pallet of plasterboard or plywood, for example, will** subject a floor system to loads well in excess of any loading it may support in its life span. Care must be taken not to overload the assemblies during the construction sequence.

Dead Load - Loads of constant magnitude that remain in one position (are a fixed part of the building), such as walls, floor, roofs and fixed service equipment.

Live Load - Loads that do not remain in one position and may change in magnitude, not including the wind or earthquake loads.

Lateral Load - The forces developed by wind or seismic thrusts acting on a structure or components thereof.

Control Joint:

A joint placed in a construction assembly to form a plane of weakness to prevent random cracking, etc.

Corrosion:

The gradual removal or weakening of metal surfaces due to weathering, galvanic action, or direct chemical attack.

Creep:

Gradual deformation or movement of a material under stress. This phenomenon often results in the incorporation of slip connection (i.e. slide tracks and clips) in the attachment of a stud curtain wall assembly to a concrete primary frame.

Cripple Stud (or Jack Stud):

A framing component (stud) used as infill above a door or window opening or below the sill of a window.

Cross Section:

The shape of a component cut transversely to its length.

Cross Sectional Area:

The area of a cross section (the shape of a component cut transversely to its length). The cross sectional area of a stud taken through a punch-out (referred to as net section) would obviously be less than the area not at a punch-out (or gross section). Length x thickness. The cross-sectional area is critical to determining a column's axial load capacity. It is also used to determine a member's weight per lineal metre.

Deflection:

A displacement or movement perpendicular to the plane of a member, measured in millimetres, resulting from external loads applied to the member.

Deflection Limits:

The maximum allowable displacement or movement of a framing member when subjected to external forces. The limits are normally defined in the written specifications developed by an architect or engineer. Deflection limits are defined in terms of the length or span of a component, divided by a value generally ranging between 180 and 900.

Design Loads:

(kg/m³) - The weight or other forces for which a structure is designed.

Design Professional:

An architect or engineer, registered or licensed to practice professional architecture or engineering, as defined by the statutory requirements.

Diagonal Brace:

(or Kicker) - A structural brace, normally sloping, used to laterally support a curtain wall assembly.

Diaphragm:

A vertical or horizontal system designed to transmit wind or seismic forces.

Distributed Load:

(or Uniform Load) (kg/lm) - A design load uniformly distributed along the length of a beam. It is the product of a design load, described in kilograms per square metre (kg/m²), spacing, in feet, of the member.

Drywall Stud:

A C-shaped stud, normally formed from 0.9 mm thick steel thickness, or a 100 mm x 50 mm timber stud, typically used to support plasterboard (drywall) products, as part of interior non-load bearing walls, bulkheads, etc.

Ductility:

The ability of a metal to undergo cold deformation without fracturing.

Eccentric Load:

A load, generally applied to a column, which acts at a point away from the column centre and therefore induces a bending moment on the column.

Elasticity:

That property of a material that enables it to return to its original size and shape when the load to which it has been subjected to is removed.

Expansion Joint:

A joint placed strategically in structure, to accommodate expansion or contraction of the surrounding materials.

(EIFS) Exterior Insulation and Finish System:

A system of insulation that is applied to the exterior of the timber framing with reinforcing mesh, adhesive and synthetic plaster. A lightweight, energy efficient exterior wall product, which gives the appearance of stucco or precast concrete. Components exclusive of the steel framing system include: polymer modified base and finish coats, with a metal lath or fibreglass reinforcement, expanded polystyrene or styrofoam insulation, water repellent exterior sheathing, joints and joint sealants, cavity insulation (optional), vapour barriers. A complete EIFS system can be prefabricated. Often referred to as a synthetic plaster wall.

Embed:

A hot-rolled steel plate or angle, reinforced with Nelson studs or steel re-bar, which is cast into a concrete floor or beam. It allows for attachment of continuous support angles used in curtain wall construction or for anchorage of shear wall uplift forces developed by shear walls.

Engineering:

The science of safe predictions.

Façade:

Facade generally describes the face or front of a building but it can also be used to describe any exterior side of a building (e.g. The east facade or the northern facade). It is sometimes used to describe the total exterior cladding of a building.

Factor of Safety:

A non-dimensional ratio of the stress at which failure is expected to occur divided by the maximum permissible stress. Designers do not allow structural members to be loaded to a point where material used to form the section will fail. Factors of safety vary with the predictability of the designed element. The design of a framing connection, for example, may include as much as a 10:1 safety factor while floor joists are typically designed at 1.67:1.

Fastener:

A device or method used to attach components firmly and securely in place.

Anchor Bolts - A bolt with its threaded part projecting out of a masonry or concrete foundation. The embedded portion of the bolt is set into wet concrete during that stage of construction. Common applications include the attachment of pre-drilled bottom tracks in curtain wall and load bearing wall assemblies or clip angles resisting shear and uplift forces of a load bearing shear wall frame. Bolt diameters generally range from 9 mm to 18 mm.

Expansion Bolts - An anchoring device having expandable wedges that exert a compressive force on the surrounding concrete, creating resistance against pullout. Expansion bolts are installed after the concrete has cured. Expansion bolts are used for the attachment of pre-drilled tracks to concrete slabs or foundations to resist wind forces; or the attachment of clip angles, which are subjected to combination of shear and uplift, etc. Bolt diameters generally range from 9 mm to 25 mm. The bolt's embedment length into the concrete and the compressive strength of the concrete dramatically affect its load carrying capacity.

Chemical Anchor - An anchoring device that uses a chemical adhesive to drastically increase the resistance to pullout.

Powder Actuated or Powder Driven Fasteners - Concrete nail type fasteners of diameters ranging from 3 mm to 6 mm diameter. The fasteners are driven into the concrete by a tool which discharges an explosive charge. Powder actuated fasteners are generally used for attachment of framing components subjected to shear forces only, i.e. tracks at infill wall applications. These fasteners are not advised for applications involving tension forces. Fasteners with a knurled shank can be used for the attachment of framing to hot rolled steel. Knurling improves its holding capacity. Powder actuated fasteners cannot be used in light gauge to light gauge attachments.

TEK Screws - A fastener used for field attachments of cold formed framing products and the installation of collateral materials. The screw is characterized by its milled point, which drills its own hole through the two pieces to be joined, then taps a thread in both pieces in fastening them together.

Welding Processes (3 times strong as screws).

Shielding Welding - Processes using gases or fusible granular materials to shield the weld from the damaging effects of oxygen and nitrogen in the air.

Inert Gas-Shielded Arc Welding - Arc welding in which shielding is provided by an inert gas envelope (such as argon, helium, a combination of both or carbon dioxide) from an external supply. 'Gasless' filler material is supplied by either a consumable metal electrode, as in inert gas-shielded metal arc welding (MIG), or by a separate filler rod used with non-consumable tungsten electrode, as in inert gas-shielded tungsten arc welding (TIG).

Shielded Metal Arc Welding (Stick Electrode Welding) - Arc welding in which a flux coated metal electrode is consumed to form a pool of filler metal and a gas shield around the weld area.

Weld Types:

Butt Weld - A weld between two pieces without overlap.

Fillet Weld - A weld of roughly triangular cross-section between two pieces of steel at right angles

Lap Weld - A type of fillet weld between steel plates, of which the end of one overlaps the end of the other.

Flare V & Flare Bevel Groove Welds - A weld between two radiussed members and a flat and radiussed member, respectively.

Spot Weld - Resistance welding electrodes of small end area, which cause fusion where they touch the parts to be welded.

Tack Weld - A temporary weld that holds steel parts together during fabrication.

Fatigue:

The lowering of the load carrying capacity of a member by repeated reversals of stress

Fire Resistance:

The property of materials or assemblies to withstand fire or give protection from it. As applied to elements of a building, it is characterised by the ability to confine a fire or to continue to perform a given structural function, or both.

Firestop:

A solid, tight barrier in a concealed space, placed to prevent the spread of fire and smoke through such spaces.

Fire Wall:

A fire resistance rated wall, having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof.

Flange:

The part of a C-shaped member perpendicular to the web.

Flat Strap:

Sheet steel cut to a specified width without any bends. Typically used for bracing and transferring loads by tension.

Force:

An influence on a body producing or tending to produce a change in movement or in shape. The term is used interchangeably with load.

Frame:

Two or more structural members joined together so as to be stable.

Primary Frame: An assembly of major structural components designed to resist external forces (wind, seismic, snow loads, etc) and internal forces (dead, live, impact loads, etc).

Secondary Frame: Components generally designed to resist lateral wind forces (i.e. a curtain wall frame) and transfer them to the primary frame.

Framed (or Rough) Opening:

A door, window, louvre, etc opening in a wall. A rough opening consists of jamb, head and sill components to form the opening.

Gauge:

Decimal numbers used to describe sheet steel thickness.

Galvalume:

This type of coating contains a high percentage of aluminium and silicone is added. It provides a superior corrosion resistance compared to galvanized coatings. The degree of corrosion protection is measured by the thickness (microns) of the coating.

Galvanic Action:

Corrosion produced by electrolytic action between two dissimilar metals in the presence of an electrolyte.

Galvanizing:

This is the standard process of continuous coating with pure zinc. The finished coating provides good corrosion resistance and excellent sacrificial protection.

Girder:

A structural member that supports another member in the same plane. Example: A girder supporting floor joists at a stair opening.

Girt:

A secondary structural wall component used for the attachment and support of cladding materials (ie corrugated metal siding as in the case of pre-engineered steel buildings). In spandrel curtain wall construction, a continuous hot rolled steel section is often designed to clear span between adjacent structural columns to serve as a support for wind forces acting on the stud wall.

GFRC (or GRC) Glass Fibre Reinforced Concrete:

A composite product manufactured using cement/aggregate slurry reinforced throughout with alkali resistant glass fibres. Methods of manufacture vary but spraying either by hand equipment into a form of the desired shape and size, or mechanically on a production line are, most common. The panels have high impact load resistance, are non-combustible, light weight and offer a wide range of surface treatments. Because it is formed, a GFRC panel permits free architectural expression. A complete GFRC system can be prefabricated. Clip angles and dowels are used to make the transition between the stud frames and the GFRC panel.

Gypsum Board (plasterboard):

Interior wall panels, consisting of a gypsum core with a paper surface suitable for paint finishing, etc, after appropriate fastener and joint treatment (Gib® board).

Hard Side of Joist:

Plane of joist along the outside of the web.

Header:

A structural component that is used to redistribute loads over an opening.

In-Line Framing:

Framing method where all vertical and horizontal load-carrying members are aligned when required to properly transfer loads.

Jack Stud (Jack Post):

The inside member of a framed opening that a header typically rests on. Example: The inside short member of a window jamb.

Jamb:

The built-up vertical section of a framed opening.

Joist:

One of a series of parallel beams used to support floor and ceiling loads, supported in turn by larger beams, girders or bearing walls.

Joist Orientation:

Process of making sure that joist holes line up across a given area of the foundation. Aligning the leading edge of all joists with the same beginning point, or reference wall on a structure.

Kerf:

Material extruded or sacrificed due to cutting.

King Stud (King Post):

The outside vertical member of a framed opening. The king stud extends from the floor to the top plate.

Knee Wall (or Stub Wall):

A short wall built from the floor up to the sill of continuous ribbon window or a short wall under the slope of a roof.

Lateral Support:

The addition of horizontal bracing to a member, which enables it to resist greater axial loads.

Lightweight Aggregates:

Lightweight aggregates are processed natural materials (for example expanded clay or expanded shale), processed by-products (for example foamed slag or sintered pulverized fuel ash) or unprocessed materials, such as pumice or perlite.

Lintel:

Commonly used to describe a steel-reinforced concrete beam supporting the weight of masonry over a wall opening and is in turn supported by the masonry/wall beyond the jambs of the opening.

Lip:

The part of a C-Shape that extends from the flange at the open end. The lip increases the strength characteristics of the member and acts as a stiffener to the flange.

Load Distribution:

In the structural analysis of a framing component the design loads are distributed to the member based on their application, spacing and position.

Material Properties (steel):

The chemical, mechanical, and physical properties of steel before or after the cold-forming process.

Material Thickness (steel):

The base metal thickness excluding any protective coatings. Thickness is expressed in microns.

Metal Deck:

Any of a series of cold formed steel corrugated panels used in the construction of roof and floor assemblies.

Metallic Coated Steel:

Steel that has a metallic coating for protection against corrosion. The level of protection provided is measured by the weight of the metallic coating applied to the surface area of the steel. Typical metallic coatings are galvanizing, galvalume, or galfan which are zinc based.

Mid-Span:

The point half-way between the supports of a beam.

Modulus of Elasticity:

The ratio of the unit stress to the unit deformation. More simply stated it an indication of the stiffness of the material. The modulus of elasticity of steel is 29,500,000 PSI. This value is critical in determining a component's resistance to deflection.

Moment:

A magnitude of force multiplied by a distance (moment arm) causing rotation about a given point.

Moment of Inertia:

A structural property used to determine the deflection resistance or stiffness of a beam. Larger moments of inertia indicate greater resistance to deflection.

Mortar:

A mixture of Portland cement, sand and water.

Multiple Span:

The span made by a continuous member having intermediate supports.

Non-combustible:

The property of a material to withstand high temperature without ignition. Steel cannot be ignited and thus will not contribute fuel to a fire. The use of steel framing components, protected to have some degree of fire resistance, results in a non-combustible construction classification. The model building codes make allowances for increased building heights or floor areas when comparing non-combustible construction against structures composed of combustible products (ie a conventional wood-framed building).

Over-vibration:

Excessive vibration of freshly mixed concrete during placement, causing segregation.

Parapet:

A wall extending above the adjacent roof.

Particleboard:

A composition board consisting of particles or chips of wood bonded together with a synthetic resin or other binder.

Party Wall (or common wall):

A wall that separates adjacent dwelling units within a residential building (inter-tenancy wall). Acoustical performance of these walls is critical.

Plasterboard (gypsum board):

Interior wall panels, consisting of a gypsum core with a paper surface suitable for paint finishing, etc, after appropriate fastener and joint treatment (Gib® board).

Plywood:

Layers of wood veneer (a thin sheet of wood, generally 1/8 inch thick per layer) all joined with an adhesive.

Portland Cement:

The product obtained by pulverizing clinker consisting essentially of hydraulic calcium silicates.

Prefabrication:

Assembling steel framing (or other) components into dimensional panels or frames at a workplace away from the job site. This is often accompanied by the pre-attachment of the finish materials such as synthetic plaster, tile, etc.

Pressure:

A force per unit area.

Punch-out:

A hole or opening in the web of a steel framing member allowing for the installation of plumbing, electrical, and other utility installation. A punch-out may be made during the manufacturing process or in the field with a hand punch, hole saw, or other suitable tool.

Pumice Lightweight Aggregate (LWA):

Lightweight pumice aggregate can reduce the weight of precast concrete by up to one-half. Where an "R" value is required, pumice provides significantly greater thermal resistance when compared to regular weight concrete. Pumice structural lightweight concrete has been used extensively overseas in high-rise buildings, commercial buildings, hospitals, schools, government housing and major shopping centres. It is a high-quality, lightweight aggregate that is inert, durable, tough, stable, highly insulative and ready to meet stringent specifications for most structural and non-structural lightweight concrete applications.

Purlin:

A secondary structural component usually incorporated in the construction of a roof used for the attachment and support of cladding materials (ie a standing seam metal roofing).

Radius of gyration:

A structural property used in calculating the slenderness ratio of a column.

Rafters:

Similar to the construction of a C-joist floor with the following exceptions: The members are pitched to accommodate the required roof slope; the attachment of the rafters require clip angles or short sections of studs which lap to the rafter's web and are subsequently anchored to the structural supports; where the rafter extends beyond the supports at a building's perimeter to form a plumb fascia, a custom brake formed track is installed in lieu of a conventional track section.

Reaction:

The resistance of a support, such as a stud wall or column, against the downward force of a loaded member such as a joist, truss or beam.

Resisting Moment:

A calculated value used to determine a beam's resistance to bending (or strength). A member's resistance moment must be equal to or exceed the applied bending moment.

Retrofit:

The reconstruction of an existing structure to enhance its appearance and/or its functionality. Common applications include renovations to exterior walls; the construction of office spaces inside existing structures, etc. Lightweight concrete may be suitable for retrofit applications because its light weight may not impose undesirable loads on the existing structure.

Return Lip:

The part of a C-shaped member perpendicular to the flange, paralleling the web. The return lip acts to stiffen the flange. The length of the return lip is predicated by the width to thickness ratio of the flange.

Section Modulus:

A structural property used to determine the allowable bending stress or resistance moment of a beam.

Seismic Design:

The design of a structure in an earthquake region, so that it can safely resist the lateral forces resulting from the ground's movement.

Seismic Zone:

Seismic Zones are designate areas with varying degrees of seismic risk and associated seismic design parameters, ie, effective peak ground acceleration. Seismic Zones 1, 2, 3, and 4 correspond to effective peak ground acceleration of 0.1g, 0.2g, 0.3g, and 0.4g, respectively (1g is the acceleration of the earth's gravity at sea level).

Shear Centre:

A point such that, when the plane of applied load passes through it, the member will deflect in the direction of the applied load without twisting.

Shear Load:

The result of two parallel forces acting in opposite directions, tending to cause one part of a member to slide past (or cut) an adjacent part. Describes the action of a load acting on a beam near its support.

Shear Wall:

A structural element designed to resist the lateral forces imposed on a primary frame and transfer them to the foundation. A shear wall is typically composed of flat tension strapping placed at diagonals. Additionally, vertical force elements, (i.e. multiple C-studs, hot rolled tubes, etc) are designed to transfer the loads developed by the strapping and transfer them to the foundation. The anchorage of the shear walls between levels and to the foundation are critical aspects of the wall's design.

Sheathing:

See Structural Sheathing.

Shim:

A thin plate inserted between two surfaces to fill a gap or void. Can be steel, plastic or other materials.

Single Span:

The span made by one continuous structural member without any intermediate supports.

Slenderness Ratio:

The effective height of a column divided by its radius of gyration. (200 max.)

Soft Side of Joist:

Plane of joist along the flange of the open side of the "C". Span: The clear horizontal distance between bearing supports.

Sound Transmission Class (STC):

A single number rating for evaluating the efficiency of construction assemblies in isolating airborne sound transmissions. The higher the ratings the more efficient the construction.

Span Direction:

The direction the joist lays across the foundation

Steel:

An iron-carbon alloy, containing residual and sometimes alloying elements. Distinguished from iron by its ability to be shaped by hot and/or cold working.

Sacrificial Protection:

The properties possessed by coatings of zinc to protect a steel surface.

Stucco:

Portland cement, water, sand and a small quantity of lime (Portland cement plaster) used on exterior surfaces.

Stud:

One of a series of vertical elements which act as supporting elements in a wall.

Structural Sheathing:

The covering (eg plywood) used directly over structural members (eg joists) to distribute loads, provide lateral stability to the framing members, and generally strengthen the assembly.

Structural Stud:

A C-stud, formed from steel in, used to transfer lateral forces in curtainwall applications; lateral and axial forces in load bearing walls; axial forces in truss assemblies, etc

Tensile Strength:

The resistance of a material to a force tending to tear it apart, measured as the maximum tension the material can withstand without tearing.

Throat:

The least thickness of a weld. The capacity of the weld is calculated on the throat thickness.

Tolerance:

A permissible range of variation in a specified size or dimension.

Truss (joist):

A steel frame, generally used in roof and floor construction, comprised of members acting in compression or tension. Trusses are composed of perimeter chords, internal webs, gusset plates and bridging components.

Chords - The top, bottom or sloping perimeter components of a truss.

Webs - the internal components of a truss assembly, which span between the perimeter chord components.

Gusset Plates - Flat metal plate used as a means of joining structural members (ie web to chord connections of a truss). Gusset plates can often be eliminated in truss construction comprised of C-shaped sections by lapping the adjoining members web to web.

Bridging - Installed continuously at the intersection of the chord and web components for the purpose of stabilizing the frames. It may also be required at locations within the span of a chord or web members to reduce its unbraced length.

Panel Point - The intersection of a chord and a web member.

Ultimate Strength:

The 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.

Unitised Precast Cladding Panels:

Precast units, typically one-storey high, made-up in a factory complete with windows and prefinished exteriors, ready for delivery and stacking up on a building.

Unit Water Content:

The quantity of water per unit volume of freshly mixed concrete, often expressed as litres or kilograms per cubic metre. This is the quantity of water on which the water cement ratio is based, and does not include water absorbed by the aggregate.

Vapour:

When a liquid changes to a gaseous form. The ability of the gas to hold moisture will reduce as temperatures reduce; more moisture can be contained in the gas as the temperatures increase.

Vapour-permeable:

Relating to membranes or coating/paint systems, which provide free movement of driven water vapour from inside the building through the wall, where it is dispersed to atmosphere, but prevent water penetrating from the exterior.

Vapour Pressure:

The pressure exerted by a vapour that is calculated based upon relative humidity and temperature. The higher the humidity and higher temperature, in degrees celcius, the greater the vapour pressure exerted.

Vapour-proof:

A material that is totally immune to the passage of a gas under pressure. Any material that is truly vapour-proof will inherently be waterproof.

Vibration:

Energetic agitation of concrete to assist in its consolidation, produced by mechanical oscillating devices at moderately high frequencies.

(1) External vibration employs a device attached to the forms and is particularly applicable to the manufacture of precast items and for the vibration of tunnel lining forms.

(2) Internal vibration employs an element which can be inserted into the concrete; and is more generally used for cast-in-place construction.

Walls:

Bearing Wall - A wall supporting axial loads (and sometimes lateral loads) in addition to its own weight.

Curtain Wall - A non-axial load bearing exterior wall supported by the primary structural frame of the building, designed to resist lateral loads and its own weight. In general, the following types of curtainwall applications exist:

Spandrel Wall - Describes walls that are suspended from the primary structural frame and support continuous ribbon windows situated above and below it.

In-fill Wall - Describes walls that span from top of floor below to the underside of the floor or primary frame above. The top of the wall may or may not incorporate a slip track to accommodate potential movements of the primary frame. The wall can be interrupted with framed openings to accommodate windows, doors, louvers, air handling units, etc.

Full Height Wall, Single or Multiple Spans (Balloon or by-pass) - Describes walls which span from floor to floor (multiple floors when feasible) that bypass and attach to the primary structural frame.

Fire Wall - A fire rated wall, having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof.

Non-Bearing Wall - A wall that supports no vertical load other than its own weight.

Party Wall (or inter-tenancy wall) - A wall that separates adjacent dwelling units within a residential building.

Web:

That part of a C-shaped member perpendicular to the flange. The length of the web describes the depth of the member.

Web Stiffener:

A structural component attached to the web of a member to prevent web crippling.

Wind Exposure:

Wind exposure is determined by site conditions that affect the actual wind speeds experienced at a given site. For the purpose of this document, Exposures A/B represents urban, suburban, or wooded terrain. Exposure C represents open terrain with scattered obstructions.

Wind Speed:

Wind speed is the design wind speed related to winds that are expected to be exceeded once every 50 years on average at a given site (ie 50-year-return period). Wind speeds in this document are given in units of kilometres per hour (kph).

Yield:

The amount of concrete produced by a given combination of materials; the total weight of ingredients divided by the unit weight of the freshly mixed concrete; also, the cubic test of concrete produced per cubic metre of cement; also, the number of product units, such as blocks, produced per batch of concrete or cubic metre of cement.