A VISUAL DICTIONARY OF
ARCHITECTURE

ARCH.
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Just as a single image can be worth a thousand words, a single word can conjure up in the mind's eye a thousand images. Regardless of the power of a solitary word or image, however, each communicates meaning more effectively when brought together into a single presentation. The symbiotic relationship between graphic and verbal communication is the basis for this visual dictionary of architecture.

Instead of an alphabetical listing of entries as found in most dictionaries, the information is clustered around basic aspects of architecture as outlined in the table of contents. Within each section, words are placed in a visual context, which further explains, clarifies, and completes their meaning.

The reader may use this dictionary in a number of ways. If one knows the exact term and wants to find out its meaning, then one can look it up in the index. Looking up one term will always present related terms arranged around one or more illustrations.

If one does not know the precise term, then one can look up the general subject either in the table of contents or the index. One can then refer to the appropriate section, browse the illustrations, and scan for the terms. While browsing, if one encounters an entry or a word used in a definition that is unfamiliar, one can look it up in the index.

Included are fundamental terms relating to architectural design, history, and technology. Since architecture is a visual art, most of the entries naturally lend themselves to graphic representation. Some are more abstract but are included to help clarify related terms or to complete the treatment of a subject. Others are inserted simply because they are of historical interest.

This is a book for the curious to browse as well as a desktop reference for the student of architecture. The compilation of words and definitions is not intended to be exhaustive. Rather, the selection is designed to be comprehensive enough to reflect the rich, complex, and multidimensional nature of architecture.
Architecture is an art for all to learn because all are concerned with it. -John Ruskin • Architecture depends on Order, Arrangement, Eurythmy, Symmetry, Propriety, and Economy. All of these must be built with due reference to durability, convenience, and beauty. Durability will be assured when foundations are carried down to the solid ground and materials wisely and liberally selected; convenience, when the arrangement of the apartment is faultless and presents no hindrance to use, and when each class of building is assigned to its suitable and appropriate exposure; and beauty, when the appearance of the work is pleasing and in good taste, and when its members are in due proportion according to correct principles of symmetry. -Vitruvius • Architecture is the masterly, correct and magnificent play of masses brought together in light. -Le Corbusier • Anyone entering on the study of architecture must understand that even though a plan may have abstract beauty on paper, the four facades may seem well-balanced and the total volume well proportioned, the building itself may turn out to be poor architecture. Internal space, that space which cannot be completely represented in any form, which can be grasped and felt only through direct experience, is the protagonist of architecture. To grasp space, to know how to see it, is the key to the understanding of building. -Bruno Zevi • Architecture, painting, and sculpture are called the fine arts. They appeal to the eye as music does to the ear. But architecture is not judged by visual appeal alone. Buildings affect all of the human senses - sound, smell, touch, taste, and vision. -Forrest Wilson • It became apparent to us that architecture is generally assumed to be a highly specialized system with a set of prescribed technical goals rather than a sensual social art responsive to real human desires and feelings. This limitation is most frighteningly manifested in the reliance on two-dimensional diagrams that lay more stress on the quantifiable features of building organization than on the polychromatic and three-dimensional qualities of the whole architectural experience. -Kent Bloomer & Charles Moore • The only way you can build, the only way you can get the building into being, is through the measurable. You must follow the laws of nature and use quantities of brick, methods of construction, and engineering. But in the end, when the building becomes part of living, it evokes unmeasurable qualities, and the spirit of its existence takes over. -Louis Kahn • Built environments have various purposes: to shelter people and their activities and possessions from the elements, from human and animal enemies, and from supernatural powers; to establish place; to create a humanized, safe area in a profane and potentially dangerous world; to stress social identity and indicate status; and soon. Thus the origins of architecture are best understood if one takes a wider view and considers sociocultural factors, in the broadest sense, to be more important than climate, technology, materials, and economy. In any situation, it is the interplay of all these factors that best explains the form of buildings. No single explanation will suffice, because buildings - even apparently humble dwellings - are more than mere objects or structures. They are institutions, basic cultural phenomena. People think environments before they build them. Thought orders space, time, activity, status, roles, and behavior. But giving physical expression to ideas is valuable. Encoding ideas makes them useful mnemonics; ideas help behavior by reminding people of how to act, how to behave, and what is expected of them. It is important to stress that all built environments - buildings, settlements, and landscapes - are one way of ordering the world by making ordering systems visible. The essential step, therefore, is the ordering or organizing of the environment. -Amos Rapaport • Ruskin said: 'Great nations write their autobiographies in three manuscripts, the book of their deeds, the book of their words and the book of their art. Not one of these books can be understood unless we read the two others, but of the three the only trustworthy one is the last.' On the whole I think this is true. If I had to say which was telling the truth about society, a speech by a minister of housing or the actual buildings put up in his time, I should believe the buildings. -Kenneth Clark

• We require of any building, that it act well, and do the things it was intended to do in the best way; that it speak well, and say the things it was intended to say in the best words; that it look well, and please us by its presence, whatever it has to do or say. -John Ruskin • Architecture also exists without necessary assistance from an architect; and architects sometimes create buildings which are not architecture. -Norval White • Architecture is produced by ordinary people, for ordinary people; therefore it should be easily comprehensible to all. -Steen Eiler Rasmussen
ARCHITECTURE

The ART

architecture - The product or result of architectural work: buildings, collectively.

and SCIENCE

architecture - A style or method of building characteristic of a people, place, or time.

of DESIGNING

architecture - The profession of designing buildings and other habitable environments.

and CONSTRUCTING

architecture - The conscious act of forming things resulting in a unifying or coherent structure.

BUILDINGS
Art
The conscience use of skill, craft, and creative imagination in the production of what is beautiful, appealing, or of more than ordinary significance.

Aesthetics
The branch of philosophy that deals with the nature of art, beauty, and taste, with a view to establishing the meaning and validity of critical judgments concerning works of art. Also, aesthetics.

Beauty
The aggregate of qualities in a person or thing that gives intense pleasure to the senses or deep satisfaction to the mind or spirit, whether arising from harmony of form or color, excellence of craft, truthfulness, originality, or other, often unspecified property.

Taste
Critical judgment, discernment, or appreciation of what is fitting, harmonious, or beautiful prevailing in a culture or personal to an individual.

Environmental Design
The ordering of the physical environment by means of architecture, engineering, construction, landscape architecture, urban design, and city planning.

Urban Design
The aspects of architecture and city planning that deals with the design of urban structures and spaces.

City Planning
The activity or profession of determining the future physical arrangement and condition of a community, involving an appraisal of the current conditions, a forecast of future requirements, a plan for the fulfillment of these requirements, and proposals for legal, financial, and constructional programs to implement the plan. Also called town planning, urban planning.

Interior Design
The art, business, or profession of planning, designing, and supervising the execution of architectural interiors, including their color schemes, furnishings, fittings, finishes, and sometimes architectural features.

Space Planning
The aspects of architecture and interior design that deals with the planning, layout, design, and furnishing of spaces within a proposed or existing building.
Technology
Applied science: the branch of knowledge that deals with the creation and use of technical methods and materials, and their interrelation with life, society, and the environment.

Technics
The science of an art or of the arts in general.

Tectonics
The science or art of shaping, ornamenting, or assembling materials in construction.

Architectonics
The unifying structure or concept of an artistic work.

Engineering
The art and science of applying scientific principles to practical ends in the design and construction of structures, equipment, and systems.

Behavioral Science
Any of the sciences, as sociology and anthropology, that seek to discover general truths from the observation of human behavior in society.

Sociology
The science of human social institutions and relationships; specifically, the study of the origin, development, structure, functioning, and collective behavior of organized groups of human beings.

Anthropology
The science of human beings; specifically, the study of the origins, physical and cultural development, and environmental and social relations of humankind.

Landscape Architecture
The art, business, or profession of designing, arranging, or modifying the features of a landscape for aesthetic or practical reasons.
A curved structure for spanning an opening, designed to support a vertical load primarily by axial compression.

**Masonry Arch**
An arch constructed of individual stone or brick voussoirs.

**Vousoir**
Any of the wedge-shaped units in a masonry arch or vault, having side cuts converging at one of the arch centers.

**Springer**
The first voussoir resting on the impost of an arch.

**Crown**
The highest part or point of a convex construction, as an arch, vault, or roadway.

**Spring**
The point at which an arch, vault, or dome rises from its support. Also called a springing.

**Extrados**
The exterior curve, surface, or boundary of the visible face of an arch. Also called back extrados.

**Archivolt**
A decorative molding or band on the face of an arch following the curve of the intrados.

**Intrados**
The inner curve or surface of an arch forming the concave underside.

**Keystone**
The wedge-shaped, often embellished voussoir at the crown of an arch, serving to lock the other voussoirs in place.

**Order**
Any of several concentric rings of masonry forming an arch, esp. when each projects beyond the one below.

**Skew Arch**
An archway having sides or jamb not at right angles with the face of its abutments.

**Lag**
A crosspiece connecting the ribs in a centering. Also called a bolster.

**Camber Piece**
A board used as centering for a flat arch, slightly crowned to allow for settling of the arch. Also called a camber slip.
Arch action
The manner in which an arch transforms the vertical forces of a supported load into inclined components and transmits them to abutments on either side of the archway.

Arch axis
The median line of an arched structure.

Line of thrust
The set of resultants of thrust and weight each part of an arch imposes on the next lower one. For bending to be eliminated throughout an arch, the line of thrust must coincide with the arch axis.

Funicular arch
An arch shaped to develop only axial compression under a given loading. This shape may be found by inverting the funicular shape for a cable carrying a similar loading pattern. As with any funicular structure, a funicular arch is subject to bending if the loading pattern changes.

An inverted catenary is the funicular shape for an arch carrying a vertical load uniformly distributed along the length of the arch axis. The parabola is the funicular shape for an arch carrying a vertical load uniformly distributed over its horizontal projection.

Rigid arch
An arched structure of timber, steel, or reinforced concrete, constructed as a rigid body capable of carrying bending stresses.

Fixed arch
A fixed frame structure having an arched form.

Two-hinged arch
A two-hinged frame structure having an arched form.

Three-hinged arch
A three-hinged frame structure having an arched form.

* See frame structure

Thrust
The outward force or pressure exerted by one part of a structure against another.

Drift
The thrust of an arched structure on its abutments, proportional to the total load and span, and inversely proportional to the rise.

Abutment
The part of a structure receiving and supporting the thrust of an arch, vault, or shed.

Tie rod
An iron or steel rod serving as a structural tie, esp. one keeping the lower ends of an arch or frame from spreading.
An arch having a horizontal intrados with voussours radiating from a center below, often built with a slight camber to allow for setting. Also called jack arch.

French arch
A flat arch having voussours inclined to the same angle on each side of the center.

flat arch
A false arch constructed by corbeling courses from each side of an opening until they meet at a midpoint where a capstone is laid to complete the work. The stepped reveals may be smoothed, but no arch action is effected.

round arch
An arch having a continuously curved intrados, esp. a semicircular one.

French arch
A flat arch having voussours inclined to the same angle on each side of the center.

Roman arch
An arch having a semicircular intrados.

triangular arch
A primitive form of arch consisting of two stories laid diagonally to support each other over an opening.

corbel arch
An arch having one impost higher than the other.

skewback
A stone or course of masonry having a sloping face against which the end of a segmental arch rests.

France arch
A flat arch having voussours inclined to the same angle on each side of the center.

basket-handle arch
A three-centered arch having a crown with a radius much greater than that of the outer pair of curves. Also called anse de panier.

pointed arch
An arch having a pointed crown.

equilateral arch
A pointed arch having two centers and radii equal to the span.

Gothic arch
A pointed arch, esp. one having two centers and equal radii.

tudor arch
A four-centered arch having an inner pair of curves with a radius much greater than that of the outer pair.

lancet arch
A pointed arch having two centers and radii greater than the span.

drop arch
A pointed arch having two centers and radii less than the span.

surbase arch
An arch having a rise of less than half the span.

sage arch
A pointed arch, each branch of which is a double curve with the concave side uppermost.
BEAM

A rigid structural member designed to carry and transfer transverse loads across space to supporting elements.

Span
The extent of space between two supports of a structure. Also, the structure so supported.

Clear span
The distance between the inner faces of the supports of a span.

Effective span
The center-to-center distance between the supports of a span.

Bending moment
An external moment tending to cause part of a structure to rotate or bend, equal to the algebraic sum of the moments about the neutral axis of the section under consideration.

Resisting moment
An internal moment equal and opposite to a bending moment, generated by a force couple to maintain equilibrium of the section being considered.

Deflection
The perpendicular distance a spanned member deviates from a true course under transverse loading, increasing with load and span, and decreasing with an increase in the moment of inertia of the section or the modulus of elasticity of the material.

Lambert
A slight convex curvature intentionally built into a beam, girder, or truss to compensate for an anticipated deflection.

Transverse shear
An external shear force at a cross section of a beam or other member subject to bending, equal to the algebraic sum of transverse forces on one side of the section.

Neutral axis
An imaginary line passing through the centroid of the cross section of a beam or other member subject to bending, along which no bending stresses occur.

Bending stress
A combination of compressive and tension stresses developed at a cross section of a structural member to resist a transverse force, having a maximum value at the surface furthest from the neutral axis.

Vertical shearing stress
The shearing stress developed along a cross section of a beam to resist transverse shear, having a maximum value at the neutral axis and decreasing nonlinearly toward the outer faces.

Horizontal shearing stress
The shearing stress developed to prevent slippage along longitudinal planes of a beam under transverse loading, equal at any point to the vertical shearing stress at that point. Also called longitudinal shearing stress.
A beam is a structural member designed to carry loads in one direction, typically horizontal. The cross-sectional properties of a beam determine its strength and rigidity. The moment of inertia, defined as the sum of the products of each element of an area and the square of its distance from a coplanar axis of rotation, indicates how the cross-sectional area of a structural member is distributed and does not reflect the intrinsic physical properties of a material.

\[ f_b = \frac{M}{I} \]

Where:
- \( f_b \) = extreme fiber stress in bending
- \( M \) = bending moment
- \( I \) = moment of inertia

The efficiency of a beam is increased by configuring the cross section to provide the required moment of inertia or section modulus with the smallest possible area, usually by making the section deep with most of the material at the extremities where the maximum bending stresses occur.

The tensile and compressive forces resulting from the interaction of bending and shear stresses at a cross-section of a beam are as follows:

- At the extreme surfaces of a beam, only bending stresses exist and the principal stresses are equivalent to the tensile and compressive stresses resulting from bending.
- At the neutral axis of the section, only shear stresses exist and these can be resolved into tensile and compressive stresses acting at 45° angles to the neutral axis.

For an intermediate element subject to both bending and shear stresses, the principal stresses have an inclination determined by the relative magnitudes of these stresses.
shear diagram
A graphic representation of the variation in magnitude of the external shears present in a structure for a given set of transverse loads and support conditions.

moment diagram
A graphic representation of the variation in magnitude of the bending moments present in a structure for a given set of transverse loads and support conditions. The overall deflected shape of a structure subject to bending can often be inferred from the shape of its moment diagram.

cantilever beam
A beam or other rigid structural member extending beyond a support and supported by a balancing member or a downward force behind the beam.

positive shear
A net resultant of shear forces that acts vertically upward on the left part of the structure being considered.

negative shear
A net resultant of shear forces that acts vertically downward on the left part of the structure being considered.

positive moment
A bending moment that produces a concave curvature at a section of a structure.

negative moment
A bending moment that produces a convex curvature at a section of a structure.

inflexion point
A point at which a structure changes curvature from convex to concave or vice versa as it deflects under a transverse load, theoretically an internal hinge and therefore a point of zero moment.

suspended-span
A simple beam supported by the cantilevers of two adjacent spans with pinned construction joints at points of zero moment. Also called hung-span.

simple beam
A beam resting on simple supports at both ends, which are free to rotate and have no moment resistance. As with any statically determinate structure, the values of all reactions, shears, and moments for a simple beam are independent of its cross-sectional shape and material.

cantilever beam
A projecting beam supported at only one end.

overhanging beam
A simple beam extending beyond one of its supports. The overhang reduces the positive moment at midspan while developing a negative moment at the base of the cantilever over the support.

Assuming a uniformly distributed load, the projection for which the moments over the supports equal and opposite to the moment at midspan is approximately 1/2 of the span.

double overhanging beam
A simple beam extending beyond both of its supports.

Assuming a uniformly distributed load, the projection for which the moments over the supports equal and opposite to the moment at midspan are approximately 1/3 of the span.

fixed-end beam
A beam having both ends restrained against translation and rotation. The fixed ends transfer bending stresses, increase the rigidity of the beam, and reduce its maximum deflection.

continuous beam
A beam extending over more than two supports (both ends or simple supports) in order to develop greater rigidity and smaller moments than a single span structural system. Both fixed-end and continuous beams are determinate structures for which the values of all reactions, shears, and moments are dependent not only on span and loading, but also on cross-sectional shape and material.
common brick
Brick made for general building purposes and not specially treated for color and texture. Also called building brick.

Facing brick
Brick made of special clays for facing a wall, often treated to produce the desired color and surface texture. Also called face brick.

Brick type
A designation indicating the permissible variation in size, color, chipage, and distortion allowed in a facing brick unit.

FBX
Facing brick suitable for use where a minimum variation in size, narrow color range, and high degree of mechanical perfection are required.

FFB
Facing brick suitable for use where a wider color range and greater variation in size are permitted than for type FBX.

FBA
Facing brick suitable for use where particular effects are desired resulting from nonuniformity in size, color, and texture of the individual units.

Brick grade
A designation indicating the durability of a brick unit when exposed to weathering. The U.S. is divided into three weathering regions—severe, moderate, and negligible—according to annual winter rainfall and the annual number of freezing-cycle days. Brick is graded for use in each region according to compressive strength, maximum water absorption, and maximum saturation coefficient.

SW
A brick grade suitable for exposure to severe weathering, as when in contact with the ground or exposed on surfaces likely to be permeated with water in subfreezing temperatures.

MW
A brick grade suitable for exposure to moderate weathering, as when used above grade on surfaces unlikely to be permeated with water in subfreezing temperatures.

NW
A brick grade suitable for exposure to negligible weathering, as when used as a backup or in interior masonry.

absorption
The weight of water absorbed by a clay masonry unit when immersed in either cold or boiling water for a stated length of time, expressed as a percentage of the weight of the dry unit.

saturation coefficient
The ratio of the weight of water absorbed by a clay masonry unit when immersed in cold water to the weight absorbed when immersed in boiling water, indicating the probable resistance of the brick to the action of freezing and thawing.

suction
The weight of water absorbed by a clay masonry unit when partially immersed for one minute, expressed in grams or ounces per minute. Also called initial rate of absorption.

efflorescence
A white, powdery deposit that forms on an exposed masonry or concrete surface, caused by the leaching and crystallization of soluble salts from within the material.
nominal dimension
A brick dimension larger than the actual dimension to account for the thickness of a mortar joint.

3 courses = 8 in. (203 mm)

5 courses = 16 in. (406 mm)

4 courses = 8 in. (203 mm)

2 courses = 8 in. (203 mm)

jumbo brick
Any of various oversized bricks having nominal dimensions established by the manufacturer.

modular brick
A brick having nominal dimensions of 4 x 2 1/2 x 8 in. (102 x 81 x 203 mm).

Norman brick
A brick having nominal dimensions of 4 x 2 1/2 x 12 in. (102 x 81 x 305 mm).

SCR brick
Brick having nominal dimensions of 6 x 2 1/2 x 12 in. (152 x 81 x 305 mm).

economy brick
A modular brick having nominal dimensions of 4 x 4 x 8 in. (102 x 102 x 203 mm).

soap
A brick or tile having normal face dimensions but a nominal thickness of 2 in. (51 mm).

dart
A brick cut transversely so as to leave one end whole.

gauge
To chip or cut stones or bricks to a certain size or shape.

stretcher
A brick or other masonry unit laid horizontally in a wall with the longer edge exposed or parallel to the surface.

header
A brick or other masonry unit laid horizontally in a wall with the shorter end exposed or parallel to the surface.

footlock
A brick laid horizontally on the longer edge with the shorter end exposed. Also, gothick.

golder
A brick laid vertically with the longer face edge exposed.

galler
A brick laid vertically with the broader face exposed.

shiner
A brick laid horizontally on the longer edge with the broader face exposed. Also called bull stretcher.
### Brickwork

**Brick**

Brick construction, esp. the art of bonding bricks effectively.

**Bond**

Any of various arrangements of masonry units having a regular, recognizable, usually overlapping pattern to increase the strength and enhance the appearance of the construction.

**Running bond**

A brickwork or masonry bond composed of overlapping stretchers. Also called stretcher bond.

**Common bond**

A brickwork bond having a course of headers between every five or six courses of stretchers. Also called American bond.

**Corner stretcher**

A masonry unit specially formed or cut to finish a course or complete the bond at the corner of a wall. Also, closure.

**English bond**

A brickwork bond having alternate courses of headers and stretchers in which the headers are centered on stretchers and the joints between stretchers line up vertically in all courses.

**Queen closer**

A brick of half the normal width, used for completing a course or for spacing regular bricks. Also, queen closure.

**Flemish bond**

A brickwork bond having alternating headers and stretchers in each course, each header being centered above and below a stretcher.

**King closer**

A three-quarter brick for finishing a course or for spacing regular bricks. Also, king closure.

**Flemish diagonal bond**

A form of Flemish bond in which the courses are offset to form a diamond pattern.

**English cross bond**

A modified English bond in which the head joints in the stretching courses are offset by half the length of a stretcher. Also called Dutch bond.

**Flemish cross bond**

A modified Flemish bond having courses of alternate headers and stretchers alternating with stretching courses.

**Flare header**

A brick having a darker end exposed as a header in patterned brickwork.

**Harden-wall bond**

A brickwork bond for lightly loaded boundary walls, having a sequence of a header and three stretchers in each course, with each header being centered over a header in alternate courses.
A building is a shelter from rain, sun, and wind. This implies a roof and walls to support it. If the walls entirely enclose the space within, there are Doorways for access, and Windows for light. Roofs and walls, doors, and windows are the essential features of buildings.

Roofs may be flat, sloping, or curved. A roof with one slope is called a gable roof. When two sloping roofs rest upon parallel walls and lean against one another, they meet in a horizontal ridge at the top, and form a gable at each end. If two walls make a projecting angle, their roofs intersect in an incline called a hip. If a roof goes in a nonvertical angle, the inclined line of intersection is called a Valley. Circular roofs carry conical or domical roofs.

If there is more than one story, the flat roof of the lower story becomes the floor of the story above. If the roof extends beyond the wall that supports it, the projection is called the Eaves. If the wall also projects to support the extension of the roof, the projection is called a Corinse. The principal member of a corinse, which projects like a shelf and crowns the wall, is called a Corinse.

Walls are generally made wider just at the bottom so as to get a better bearing on the ground. The projection is the Stile. A similar projection at the top is called a Cap; or, if it projects much, a Corinse, as has been said. A low wall is called a Parapet. A short piece of wall above as long as it is thick is called a Post, and if it supports something, a Pedestal; the part between its cap and base is then the Pier. A Tall Pier is called a Pillar, if it is square, and a Column if it is round. Caps of pier and columns are called Capitals, and the part between the cap and the base, the Shaft. The flat upper member of a capital is called the Abacus.

A beam that spans the space between two piers or columns or between a pier and column and a wall is called an Architrave, or Epistyle. Above it, between the architrave and the corinse, there is generally a long strip of wood called the Frieze. Architrave, frieze, and corinse constitute the Entablature. A series of columns is called a Colonnade. The spaces between piers or columns are sometimes spanned by Arches, a series of which is called an Arcade.

The space between two parallel walls is sometimes covered by a series of continuous arch called a Vault, instead of by a floor or roof.

The Wall, the Pier, and the Column, with or without the pedestal, constitute the chief supporting members; the Frieze and Cornice, with the roof that rests upon them, constitute the chief part of the load they carry. The Architrave, the Frieze, and the Soffits are part of the load relative to what is below them, but are supporting members relative to what is above them.

Besides being valuable as a shelter, a building may be in itself a noble and delightful object, and architects are builders who, by giving a building good proportions and fine details, and by employing beautiful materials, make it valuable on its own account, independently of its uses.

-William Robert Ware
The American Architect
**skyscraper**
A building of exceptional height and many stories, supported by a steel or concrete framework from which the walls are suspended.

**high-rise**
Describing a building having a comparatively large number of stories and equipped with elevators.

**story**
A complete horizontal division of a building, having a continuous or nearly continuous floor and comprising the space between two adjacent levels.

**edifice**
A building, esp. one of large size, massive structure, or imposing appearance.

**mid-rise**
Describing a building having a moderately large number of stories, usually 5 to 10, and equipped with elevators.

**lofts**
One of the upper floors of a warehouse or factory, typically unpartitioned and sometimes converted or adapted to other uses, as living quarters, artists' studios, or exhibition galleries.

**loft building**
A building having several floors with large areas of unobstructed space, originally rented out for light industrial purposes and now frequently converted to residential occupancy.
crawl space
An area in a building having a clearance less than human height, but accessible by crawling, esp. such a space below the first floor that is enclosed by foundation walls.

cellar
A room or set of rooms, for the storage of food, fuel, or the like, wholly or partly underground and usually beneath a building.

cyclone cellar
A cellar or other underground place for shelter during violent storms, as cyclones, tornados, or hurricanes. Also called storm cellar.

bulkhead
A horizontal or inclined door over a stairway giving access to a cellar.

attic
A room or space directly under the roof of a building, esp. a house.

half story
A usable living space within a sloping roof, usually having dormer windows for lighting.

mezzanine
A low or partial story between two main stories of a building, esp. one that projects as a balcony and forms a composition with the story beneath it.

first floor
The ground floor of a building. In Britain and elsewhere, the first floor is the floor immediately above the ground floor.

ground floor
The floor of a building at or nearest to ground level.

basement
A story of a building that is wholly or partly below ground level.

subbasement
Any story or floor below the main basement of a building.
facade
The front of a building or any of its sides facing a public way or space, esp. one distinguished by its architectural treatment.

frontispiece
A principal facade, or a part or feature of a facade, often treated as a separate element of the design and highlighted by ornamentation.

false front
A facade falsifying the size or importance of a building.

pavilion
A central or flanking projecting subdivision of a facade, usually accented by more elaborate decoration or greater heights and distinction of skyline.

story
A major horizontal architectural division, as of a facade or the wall of a nave.

bay
Any of a number of principal divisions of a wall, roof, or other part of a building marked off by vertical or transverse supports.

blindstory
A major horizontal division of a wall having no exterior windows.

blind
Describing a recess in a wall having the appearance of a window (blind window) or door (blind door), inserted to complete a series of windows or to provide symmetry of design.

balcony
An elevated platform projecting from the wall of a building and enclosed by a railing or parapet.

fenestration
The design, proportioning, and disposition of windows and other exterior openings of a building.
stop; A raised platform, approached by steps and sometimes having a roof, at the entrance of a house.

porch: An exterior appendage to a building, forming a covered approach or vestibule to a doorway.

portico: A porch having a roof supported by columns, often leading to the entrance of a building.

forecourt: A courtyard before the entrance to a building or a group of buildings.

veranda: A large, open porch, usually roofed and partly enclosed, as by a railing, often extending across the front and sides of a house. Also verandah.

lanai: A veranda, esp. a fully furnished one used as a living room.

colonade: A series of regularly spaced columns supporting an entablature and usually one side of a roof structure.

portal: A doorway, gate, or entrance, esp. an imposing one emphasized by size and stately architectural treatment.

terrace: An elevated, often paved area connected to a house or building and serving as an outdoor living area.

deck: An open, unroofed porch or platform extending from a house or other building.
**merge**
To combine, blend, or unite gradually by stages so as to blur identity or distinctions.

**plaza**
A public square or open space in a city or town.

**plazza**
An open square or public place in a city or town, esp. in Italy.

**quadrangle**
A square or quadrangular space or court surrounded by a building or buildings, as on a college campus. Also called quad.

**galleria**
A spacious promenade, court, or indoor mall, usually having a vaulted roof and lined with commercial establishments.

**promenade**
An area used for a stroll or walk, esp. in a public place, as for pleasure or display.

**alde**
French term for a broad walk planted with trees.

**arbor**
A shelter of shrubs and branches of latticework intertwined with climbing vines and flowers.

**trellis**
A frame supporting open latticework, used as a screen or a support for growing vines or plants.

**lattice**
A structure of crossed strips arranged to form a regular pattern of open spaces.

**parterre**
An ornamental arrangement of flower beds of different shapes and sizes.

**belvedere**
A building, or architectural feature of a building, designed and situated to look out upon a pleasing scene.

**topiary**
Clipped or trimmed into ornamental and fantastic shapes, or the work or art of such clipping.

**folly**
A whimsical or extravagant structure built to serve as a conversation piece, lend interest to a view, or commemorate a person or event.

**pavilion**
A small, often ornamental building in a garden.

**gazebo**
A freestanding roofed structure, usually open on the sides, affording shade and rest in a garden or park.

**orientation**
The position of a building on a site in relation to true north, to points on the compass, to a specific place or feature, or to local conditions of sunlight, wind, and drainage.
suspension structure
A structure of cables suspended and prestressed between compression members to directly support applied loads.

suspension bridge
A bridge having a deck suspended from cables raised on towers and securely anchored to abutments at the ends.

guy cable
A cable for absorbing the horizontal component of thrust in a suspension or cable-stayed structure and transferring the force to a ground foundation.

mast
A vertical or inclined compression member in a suspension or cable-stayed structure, supporting the sum of the vertical force components in the primary and guy cables. Inclining the mast enables it to pick up some of the horizontal cable thrust and reduces the force in the guy cables.

double-cable structure
A suspension structure having upper and lower sets of cables of different curvatures, pretensioned by ties or compression struts to make the system more rigid and resistant to flutter.

primary cable
One of the pretensioned cables directly supporting the load on a suspension structure.

secondary cable
One of the pretensioned cables used for stabilizing a suspension structure against flutter, usually having a curvature opposite to that of the primary cables.

transverse guy cable
A cable for anchoring a set of secondary cables in a suspension structure.

cable-stayed structure
A structure having vertical or inclined masts from which cables extend to support horizontally spanning members arranged in a parallel or radial pattern.

single-curvature structure
A suspension structure utilizing a parallel series of cables to support surface-forming beams or plates. A single-curvature structure is susceptible to flutter induced by the aerodynamic effects of wind. This liability can be reduced by increasing the dead load on the structure or anchoring the primary cables to the ground with transverse guy cables.

double-curvature structure
A suspension structure composed of a field of crossed cables of different and often reverse curvatures. Each set of cables has a different natural period of vibration, thus forming a self-dampering system that is more resistant to flutter.
CEILING
The overhead interior surface or lining of a room, often concealing the underside of the floor or roof above.

beam ceiling
The underside of a floor showing the supporting beams and finished to form a ceiling.

cove ceiling
A ceiling having a cove. Also, coved ceiling.

cove
A concave surface forming part of a ceiling at its edge so as to eliminate the usual interior angle between the wall and the ceiling.

coffer
One of a number of recessed, usually square or octagonal panels in a ceiling, soffit, or vault. Also called caisson, lacunar.

lacunar
A ceiling, soffit, or vault adorned with a pattern of recessed panels.

plafond
A flat or vaulted ceiling of decorative character.
CABLE STRUCTURE

A structural system utilizing the cable as the principal means of support.

cable
A flexible structural member, as wire rope or metal chain, having high tensile strength but offering no resistance to compression or bending.

funicular shape
The shape assumed by a freely deforming cable in direct response to the magnitude and location of external forces. A cable always adapts its shape so that it is in pure tension under the action of an applied load.

funicular polygon
The shape assumed by a freely deforming cable in direct response to a set of concentrated loads.

funicular curve
The shape assumed by a freely deforming cable in direct response to a uniformly distributed load.

catenary
The curve assumed by a perfectly flexible, uniform cable suspended freely from two points not in the same vertical line. For a load that is uniformly distributed in a horizontal projection, the curve approaches that of a parabola.

sag
The vertical distance from the supports to the lowest point of a cable structure.

As the sag of a cable increases, the internal forces developed in the cable increase.

funicular structure
A structure shaped to carry or support a given loading by either axial tension or compression. For any given loading condition, there is only one general funicular shape. If the loading pattern changes, bending is induced in the structure.

battresses
Compressive struts, or similar elements are required to contain and absorb the horizontal components of the cable thrusts.

lenticular structure
A lens-shaped structure having the outward thrusts of an arch balanced by the inward pull of a cable, resulting in no net lateral forces at the supports.
**drop ceiling**
A secondary ceiling formed to provide space for piping or ductwork, or to alter the proportions of a room. Also, dropped ceiling.

**suspended ceiling**
A ceiling suspended from an overhead floor or roof structure to provide space for pipes, ductwork, lighting fixtures, or other service equipment.

**plenum**
The space between a suspended ceiling and the floor structure above, esp. one that serves as a receiving chamber for conditioned air to be distributed to inhabited spaces or for return air to be conveyed back to a central plant for processing.

**acoustical ceiling**
A ceiling of acoustical tile or other sound-absorbing material.

**exposed grid**
A metal grid of inverted tees supporting the acoustical tiles of a suspended ceiling.

**recessed grid**
A metal grid for supporting a suspended ceiling of acoustical tiles having rabited joints.

**concealed grid**
A metal grid supporting the acoustical tiles of a suspended ceiling, hidden within kerfs cut into the edges of the tiles.

**linear metal ceiling**
A suspended ceiling system of narrow metal strips, usually incorporating modular lighting and air-handling components.

**luminous ceiling**
A suspended ceiling of translucent panels for diffusing the light from luminaires mounted above it.

**louvered ceiling**
A suspended ceiling of multicolored louvers for shielding the light sources mounted above it.
CERAMIC

Any of various hard, brittle, noncorrosive, and nonconductive materials formed by the ionic bonding of a metal and a nonmetal, as brick, concrete, and natural stone.

ceramic ware
Any of various products made by firing clay or similar materials in a kiln, as brick, tile, and pottery.

earthware
Low-fired, opaque, nonvitreous ceramic ware.

stoneware
High-fired, opaque, vitrified ceramic ware.

porcelain
A hard, vitreous, translucent ceramic material consisting essentially of kaolin, feldspar, and quartz, fired at a very high temperature.

china
A translucent ceramic material, bisque-fired at a high temperature and glaze-fired at a lower temperature.

kaolin
A fine white clay used in the manufacture of porcelain and white Portland cement. Also called china clay.

firing
The process of hardening or glazing ceramic ware by heating in a kiln to a specified temperature.

vitrify
To make a clay body vitreous by firing at a specified temperature.

vitreous
Resembling glass, as in transparency, hardness, brittleness, luster, or having low or no porosity.

semi-vitreous
Having a moderate water absorption of slightly under 6%.

nonvitreous
Having a water absorption greater than 7%.

enamel
A vitreous, usually opaque, decorative or protective coating applied by fusion to the surface of metal, glass, or pottery.

porcelain enamel
An opaque, glassy-coating bonded to metal by fusion at a high temperature. Also called vitreous enamel.

ceramic bond
A thermochemical bond between materials resulting from exposure to temperatures approaching the fusion point of the mixture.

body
The structural portion of a ceramic article or the clay material or mixture from which it is made.

bisque-fired
Fired to harden a clay body.

blaque
Earthenware or porcelain that has been fired once but not glazed. Also called bisque.

glaze-fired
Fired to fuse a glaze to a clay body.

glaze
A vitreous layer or coating fused to a clay body to color, decorate, waterproof, or strengthen its surface.

frit
A fused or partially fused material that is ground to introduce a soluble or unstable ingredients into glazes or enamels.
CERAMIC

/ ceramic tile
Any of various fired clay tiles used for surfacing walls, floors, and countertops.

/ glazed wall tile
Ceramic tile having a nonferrous body and a bright, matte, or crystalline glaze, used for surfacing interior walls and light-duty floors.

/ ceramic mosaic tile
Small ceramic tile having a porcelain or natural clay body, glazed for use on both floors and walls, and usually face- or back-mounted on sheets to facilitate handling and speed installation.

/ quarry tile
Unglazed ceramic floor tile having a natural clay body. Also called promenade tile.

/ paver tile
Unglazed ceramic floor tile similar in composition to ceramic mosaic tile but thicker and larger in surface area.

/ sanitary base
A coved tile or set at the meeting of a floor and wall to prevent accumulation of dirt and to facilitate cleaning.

/ tile accessory
Any of the ceramic or nonceramic articles designed to be affixed to or inserted in tilework, such as corner, shelf, soap holders, and the like.

/ trimmer
Any of various specially shaped ceramic tiles for finishing an edge or angle.

/ thick-bed process
A tile-setting process in which ceramic tile is bonded to a continuous, stable backing with a thin coat of dry-set mortar, epoxy mortar, or an organic adhesive, 1/8 to 1/4 in. (0.8 to 3.2 mm) thick.

/ tile grout
A cementitious or resinous mix for filling joints in ceramic tilework.

/ thin-bed process
A tile-setting process in which ceramic tile is applied over a portland cement mortar bed 1/8 to 1/4 in. (0.8 to 3.2 mm) thick, which allows for accurate slopes and planes in the finished work.

/ portland cement mortar
A field mix of portland cement, sand, water, and sometimes hydrated lime, used for leveling or setting ceramic tile in the thick-bed process.

/ bond coat
A thin coat of mortar for bonding ceramic tile to a backing.
structural clay tile
A hollow tile of fired clay having parallel cells or cores, used in building walls and partitions.

LS
Sound-bearing structural clay tile suitable for masonry walls not exposed to frost action, or in exposed masonry where protected by a facing of 3 in. (76.2 mm) or more of stone, brick, terra cotta, or other masonry.

LSX
Sound-bearing structural clay tile suitable for masonry walls exposed to weathering or frost action.

terra cotta
A natural, fired clay, reddish-brown in color, when unglazed, used for architectural facings and ornaments, tile units, and pottery.

architectural terra cotta
Hard-burned, glazed or unglazed terra cotta, hand-molded or machine-extruded to order as a ceramic veneer for walls or for ornamentation.

hollow tile
Any of various cellular building units of fired clay, concrete, or gypsum, used for building walls, floors, and roofs, or for fireproofing Steinwork.

structural facing tile
Structural clay tile having a glazed surface, used for facing walls and partitions, esp. in areas subject to heavy wear, moisture problems, and strict sanitation requirements.

FTS
Structural facing tile suitable for exposed exterior and interior masonry walls and partitions where moderate absorption, slight variation in face dimensions, minor defects in surface finish, and medium color range are acceptable.

FTX
Smooth structural facing tile suitable for exposed exterior and interior masonry walls and partitions where low absorption and stain resistance are required, and where a high degree of mechanical perfection, minimum variation in face dimensions, and narrow color range are desired.

adobe
Sun-dried mud or clay, commonly used in countries with little rainfall.

rammed earth
A stiff mixture of clay, sand or other aggregate, and water compressed and dried within forms as a wall construction. Also called piéd, pisay, piéd de terre.
Christianity
The religion, founded on the teachings of Jesus Christ, including the Catholic, Protestant, and Eastern Orthodox churches.

basilica
An early Christian church, characterized by a long, rectangular plan, a high colonnaded nave lit by a clerestory and covered by a timbered gable roof, two or four lower side aisles, a semicircular apse at the end, a narthex, and often other features, as an atrium, a bema, and small semicircular apses terminating the aisles.

atrium
The forecourt of an early Christian church, flanked or surrounded by atria.

embattled
The covered wall of an atrium or cloister.

catharact
A basin for a ritual cleansing with water in the atrium of an early Christian basilica.

baptistery
A part of a church or a separate building in which baptism is administered. Also, baptismal.

dip
A sacrament of initiation into Christianity, symbolic of spiritual regeneration, marked by a ceremonial immersion or application of water.

font
A basin, usually of stone, holding the water used in baptism.

narthex
The porche before the nave of an early Christian or Byzantine church, appropriated to penitents.

exonarthex
An inner narthex when two are present.

exonarthex
A covered walk or outer narthex situated before an inner narthex.

nave
The principal or central part of a church, extending from the narthex to the choir or chancel and usually flanked by aisles.

aisle
Any of the longitudinal divisions of a church, separated from the nave by a row of columns or piers.

ambulatory
Either of two raised stands from which the Gospels or Epistles were read or chanted in an early Christian church. Also, ambulatory.

cancell
A low screen in an early Christian basilica, separating the clergy and sometimes the choir from the congregation.

sarcophagus
A stone coffin, esp. one bearing sculpture or inscriptions and displayed as a monument.

bema
The sanctuary space surrounding the altar of an Eastern church.

diakonikon
A sacristy in an early Christian or Eastern church, usually on the south side of the bema.

sacristy
A room in a church where the sacred vessels and vestments are kept. Also called vestry.

prothesis
A chapel in an Eastern Church where the Eucharistic elements are prepared, usually on the north side of the bema.

iconostasis
A screen or partition on which icons are placed, separating the bema from the nave of an Eastern church. Also, iconostasis.
** arcade **
A series of arches supported on piers or columns.

** arcuate **
Curved or arched like a bow; a term used in describing the arched or vaulted structure of a Romanesque church or Gothic cathedral, as distinguished from the truebased architecture of an Egyptian hypostyle hall or Greek Doric temple. Also, arcuated.

** respond **
A pier or pilaster projecting from a wall as a support for an arch or lintel, esp. at the termination of an arcade or colonade.

** fascia **
A thickened abacus or supplementary capital set above a column capital to resolve the thrust of an arch. Also called impost block.

** transverse **
The major transverse part of a cruciform church, crossing the main axis at a right angle between the nave and choir.

** crossing **
The intersection of the nave and transepts in a cruciform church.

** spire **
A tall, acutely tapering pyramidal structure surmounting a steeple or tower.

** onion dome **
A bulbous, domelike roof terminating in a sharp point, used esp. in Russian Orthodox church architecture to cap a spire or tower.

** spandrel **
The space between an arch and the horizontal head of a door or window below, often decorated with sculpture.

** trave **
A column supporting the tympanum of a doorway at its center.

** stalactite **
A series of arches superimposed on a wall for decoration. Also called arcature.
cathedral
The principal church of a diocese, containing the bishop's throne called the cathedra.

finial
A relatively small, usually foliated ornament terminating the peak of a spire or pinnacle.

crocket
A projecting ornament, usually in the form of curved foliage, used esp. in Gothic architecture to decorate the outer angles of pinnacles, spires, and gables.

garage
A gargoyle is a grotesquely carved figure of a human or animal, esp. one with an open mouth that serves as a spout and projects from a gutter to throw rainwater clear of a building.

chancel
The space above the altar of a church for the clergy and choir, often devoted above the nave and separated from it by a railing or screen.

chantry
A chapel endowed for the saying of Masses and prayers for the souls of the founders or of persons named by them.

labyrinth
A maze-like pattern laid in the pavement of a medieval church.

choir
The part of a church occupied by the singers of a choir; usually, part of the chancel.

retrochoir
A separate division behind the choir or high altar of a large church.

lady chapel
A chapel dedicated to the Virgin Mary, usually located behind the high altar of a cathedral at the extremity of the apse.

high altar
The main altar of a church.

presbytery
The part of a church reserved for the officiating clergy.

cloister
An enclosed place, esp. the land surrounding or beside a cathedral.

skylight
A covered passage, esp. one between the transept and chapter house of a cathedral. Also, skyl.

chapter house
The place where the chapter of a cathedral or monastery meets, usually a building attached to or a hall forming part of the cathedral or monastery.

chapter
An assembly of the monks in a monastery, or the members of a religious house or order.

paradise
An atrium or cloister beside a church.

cloister
A covered walk having an arcade or colonade on one side opening onto a courtyard.

alure
A walk or passage, as along a cloister or behind the parapets of a castle. Also, allure.
COLOR

A phenomenon of light and visual perception that may be described in terms of an individual's perception of hue, saturation, and lightness for objects, and hue, saturation, and brightness for light sources.

spectrum
The distribution of energy emitted by a radiant source, arranged in order of wavelengths, e.g., the band of colors produced when sunlight is refracted and dispersed by a prism, comprising red, orange, yellow, green, blue, indigo, and violet.

reflected color
The perceived color of an object, determined by the wavelengths of the light reflected from its surface after selective absorption of other wavelengths of the incident light.

selective absorption
The absorption of certain wavelengths of the light incident on a colored surface, the remaining portion being reflected or transmitted.

subtractive color
A color produced by mixing cyan, yellow, and magenta pigments, each of which absorbs certain wavelengths. A balanced mixture of these colorant or subtractive primaries theoretically yields black since it absorbs all wavelengths of visible light.

additive color
A color produced by combining lights of red, green, and blue wavelengths. These lights or additive primaries contain all the wavelengths necessary to produce a colorless or white light.

pale
Designating a color having high lightness and low saturation.

brilliant
Designating a color having high lightness and strong saturation.

dark
Designating a color having low lightness and low saturation, and reflecting only a small fraction of incident light.

deep
Designating a color having low lightness and strong saturation.

gray scale
A scale of achromatic colors having several usually ten, equal gradations ranging from white to black.

Munsell System
A system for specifying colors arranged in three orderly scales of uniform visual steps according to hue, chroma, and value, developed in 1902 by Albert H. Munsell. Hue extends in a rotary direction about a central axis through a spectrum of five major and five secondary hues. Value extends vertically direction from black at the bottom through a series of grays to white at the top. Chroma extends radially from the central axis at which saturation is zero, out to the strongest saturation attainable for each color's hue and value.

hue
One of the three dimensions of color: the property of light by which the color of an object is classified as being red, yellow, green, or blue, or an intermediate between any contiguous pair of these colors.

saturation
One of the three dimensions of color: the purity or vividness of a hue. Also called intensity.

chroma
The degree by which a color differs from a gray of the same lightness or brightness, corresponding to saturation of the perceived color.

lightness
The dimension of color by which an object appears to reflect more or less of the incident light, varying from black to white for surface colors and from black to colorless for transparent volume colors.

value
The degree by which a color appears to reflect more or less of the incident light, corresponding to lightness of the perceived color.

brightness
The dimension of a color which is correlated with luminance and by which visual stimuli are ordered continuously from very dim to very bright. Pure white has the maximum brightness, and pure black the minimum brightness.

optical mixing
The merging of juxtaposed dots or strokes of pure colors when seen from a distance to produce a hue often more luminous than that available from a premixed pigment.
**COlOR**

- **color wheel**
  A circular scale of the colors of the spectrum, showing complementary colors opposite each other. Also called color circle.

- **primary color**
  Any of a set of colors, e.g. red, yellow, and blue, regarded as generating all other colors.

- **secondary color**
  A color, e.g. orange, green, or violet, produced by mixing two primary colors.

- **tertiary color**
  A color, e.g. brown, produced by mixing two secondary colors, or a secondary color with one of its constituent primaries.

- **advancing color**
  A warm color that appears to move toward an observer, giving an illusion of space.

- **receding color**
  A cool color that appears to move away from an observer, giving an illusion of space.

- **cool**
  Designating a color inclined toward or dominated by green, blue, or violet.

- **warm**
  Designating a color inclined toward or dominated by red, orange, or yellow.

- **complementary color**
  One of a pair of opposing colors on a color wheel, perceived as completing or enhancing each other.

- **analogous color**
  One of two or three closely related colors on a color wheel.

- **split complementary**
  A combination of one color and the pair of colors adjacent to its complementary color on a color wheel.

- **double complementary**
  A combination of two analogous colors and their complementary colors on a color wheel.

- **monochromatic**
  Having only one color or exhibiting varying intensities and values of a single hue.

- **polychromatic**
  Having or exhibiting a variety of colors.

- **tint**
  A relatively light value of a color, produced by adding white to it.

- **shade**
  A relatively dark value of a color, produced by adding black to it.

- **tone**
  An intermediate value of a color between a tint and a shade.

- **gray**
  An achromatic color between white and black.

- **hue**
  A color that is not achromatic.

- **achromatic**
  Having no saturation and therefore no hue, as white, black, or gray.

- **color scheme**
  An arrangement or pattern of colors conceived of as forming an integrated whole.

- **color triangle**
  A triangular diagram developed by Faber Birren to describe the relationship between a pure hue, white, and black, which combine to yield secondary tints, tones, shades, and grays. All colors may be subjectively conceived as a mixture of the psychological primaries - red, yellow, green, and blue - plus the achromatic pair of white and black.
COLUMN

A rigid, relatively slender structural member designed primarily to support axial, compressive loads applied at the member ends.

pillar
An upright, relatively slender shaft or structure, usually of brick or stone, used as a building support or standing alone as a monument.

post
A stiff vertical support, esp. a wooden column in timber framing.

buckling
The sudden lateral or torsional instability of a slender structural member induced by the action of a compressive load. Buckling can occur well before the yield stress of the material is reached.

buckling load
The axial load at which a column begins to deflect laterally and becomes unstable.

Under a buckling load, a column cannot generate the internal forces necessary to restore its original shape, and additional loading would cause the column to deflect further until collapse occurs in bending. Most columns in practice are subject to both compression and bending due to variation in material properties, initial crookedness in fabrication, or some eccentricity in load application. The bending often causes the actual buckling load to be slightly lower than the critical buckling load.

critical buckling load
The maximum axial load that can theoretically be applied to a column without causing it to buckle. The critical buckling load for a column is inversely proportional to the square of its effective length, and directly proportional to the modulus of elasticity of the material and to the moment of inertia of the cross section. Also called Euler buckling load.

short column
A thick column subject to failure by crushing rather than by buckling. Failure occurs when the direct stress from an axial load exceeds the compressive strength of the material available in the cross section. An eccentric load, however, can produce bending and result in an uneven stress distribution in the section.

intermediate column
A column having a mode of failure between that of a short column and a long column, often partly inelastic by crushing and partly elastic by buckling.

long column
A slender column subject to failure by buckling rather than by crushing.

slenderness ratio
The ratio of the effective length of a column to its least radius of gyration. The higher the slenderness ratio, the lower is the critical stress that will cause buckling. A primary objective in the design of a column is to reduce its slenderness ratio by minimizing its effective length or maximizing the radius of gyration of its cross section.

radius of gyration
The radial distance from any axis to a point at which the mass of a body could be concentrated without altering the moment of inertia of the body about that axis. For a structural section, the radius of gyration is equal to the square root of the quotient of the moment of inertia and the area.

The higher the radius of gyration of a structural section, the more resistant the section is to buckling. In determining the cross-sectional shape of a column, the objective is to provide the necessary radius of gyration about the different axes. For an asymmetrical cross section, buckling will tend to occur about the weaker axis or in the direction of the least dimension.
**COLUMN**

- **Eccentricity**
  The amount by which an axis deviates from another parallel axis.

- **P-delta effect**
  An additional moment developed in a structural member as its longitudinal axis deviates from the line of action of a compressive force, equal to the product of the load and the member deflection at any point.

- **Middle-third rule**
  The proposition that a compressive load should be located within the middle third of a horizontal section of a column or wall to prevent tensile stresses from developing in the section.

- **Effective length**
  The distance between inflection points in a column subject to buckling. The effective length of a column determines its critical buckling load. When this portion of a column buckles, the entire column fails.

- **Combined stresses**
  A set of tensile and compressive stresses resulting from the superposition of axial and bending stresses at a cross section of a structural member, acting in the same direction and equal at any point to their algebraic sum.

- **Kern**
  The central area of any horizontal section of a column or wall within which the resultant of all compressive loads must pass if only compressive stresses are to be present in the section. A compressive load applied beyond this area will cause tensile stresses to develop in the section. Also called kern area.

- **Kern point**
  A point on either side of the centroidal axis of a horizontal column or wall section defining the limits of the kern area.

- **Effective length factor**
  A coefficient for modifying the actual length of a column according to its end conditions in order to determine its effective length. Fixing both ends of a long column reduces its effective length by half and increases its load-carrying capacity by a factor of 4.

- **Lateral bracing**
  The bracing of a column or other compression member to reduce its effective length. Lateral bracing is most effective when the bracing pattern occurs in more than one plane.
CONCRETE

An artificial, stone-like building material made by mixing cement and various mineral aggregates with sufficient water to cause the cement to set and bind the entire mass.

<table>
<thead>
<tr>
<th>Type I: normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A portland cement used for general construction, having none of the distinguishing qualities of the other types.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type II: moderate</th>
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</thead>
<tbody>
<tr>
<td>A portland cement having a reduced content of tricalcium aluminate, making it more resistant to sulfates and causing it to generate less heat of hydration; used in general construction where resistance to moderate sulfate action is required or where heat buildup can be damaging, as in the construction of large piers and heavy retaining walls.</td>
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<thead>
<tr>
<th>Type III: high early strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>A very finely ground portland cement having an increased content of tricalcium silicate, causing it to cure faster and gain strength earlier than normal portland cement; used when the early removal of formwork is desired, or in cold-weather construction to reduce the time required for protection from low temperatures.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type IV: low heat</th>
</tr>
</thead>
<tbody>
<tr>
<td>A portland cement having a reduced content of tricalcium silicate and an increased content of dicalcium silicate, causing it to generate less heat of hydration than normal portland cement; used in the construction of massive concrete structures, as gravity dams, where a large buildup in heat can be damaging.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type V: sulfate resisting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A portland cement having a reduced content of tricalcium aluminate, lessening the need for gypsum, a sulfate normally added to cement to retard its setting time; used where resistance to severe sulfate action is required.</td>
</tr>
</tbody>
</table>

- **Portland cement**
  - A hydraulic cement made by burning a mixture of clay and limestone in a rotary kiln and pulverizing the resulting clinker into a very fine powder, named for its resemblance to a limestone quarried on the Isle of Portland, England.

- **Hydraulic cement**
  - Cement capable of setting and hardening by a reaction with water.

- **Clinker**
  - A fused mass of incombustible matter resulting from heating in a kiln or the burning of coal.

- **Gypsum**
  - Added to clinker to retard setting.

- **Cement**
  - A calcined mixture of clay and limestone, finely pulverized and used as an ingredient in concrete and mortar. The term is frequently used incorrectly for concrete.

- **Tricalcium silicate**
  - A compound constituting about half the volume of portland cement and responsible for the hardening or early gain in strength of the cement.

- **Dicalcium silicate**
  - A compound constituting about one-quarter of the volume of portland cement and responsible for the aging or long-term gain in strength of the cement.

- **Tricalcium aluminate**
  - A compound constituting about one-tenth of the volume of portland cement and responsible for the initial setting of the cement.

- **Raw materials**
  - Consist of combinations of lime, clay, sand, and iron ore.

- **Calcium oxide**
  - Used to make portland cement.

- **Clinker**
  - A fused mass of incombustible matter resulting from heating in a kiln or the burning of coal.

- **Hydroxy
tonic cement**
  - A naturally occurring clayey limestone which, when calcined and finely pulverized, produces a hydraulic cement.

- **Pozzolan**
  - A siliceous material, as fly ash, that reacts chemically with slaked lime in the presence of moisture to form a slow-hardening cement, named after a natural cement from Pozzuoli, an ancient Roman town near Vesuvius. Also, pozzolana, pozzolana.

- **Siliceous**
  - Containing silica or a silicate.

- **Fly ash**
  - Fine particles of ash recovered from the waste gases of a solid-fuel furnace.
mixing water
The water used in a concrete or mortar mix, exclusive of any absorbed by the aggregate and free of such harmful substances as organic material, clay, and salts. Water fit for drinking is generally acceptable.

cement paste
A mixture of cement and water for coating, setting, and binding the aggregate particles together in a concrete or mortar mix.

lightweight concrete
Concrete made with aggregate of low specific gravity and weighing less than normal concrete which has a unit weight of about 150 lb/cu ft (2,400 kg/m³).

insulating concrete
Lightweight concrete having a unit weight of less than 60 lb/cu ft (960 kg/m³) and low thermal conductivity, made with lightweight aggregate, as perlite, or with a foaming agent or gas-forming chemical that infuses the mix with a homogeneous cellular structure.

aggregate
Any of various hard, inert, mineral materials, as sand and gravel, added to a cement paste to make concrete or mortar. Since aggregate represents from 65% to 85% of the concrete volume, its properties are important to the strength, weight, and fire-resistance of the hardened concrete. Aggregate should be hard, dimensionally stable, and free of clay, silt, and organic matter which can prevent the cementing matrix from binding the particles together.

graded aggregate
Aggregates having a particle-size distribution characterized by uniform grading. Graded aggregate requires the least amount of cement paste to fill the voids and surround the particles.

uniform grading
A particle-size distribution in which aggregate particles vary uniformly from fine to coarse without a predominance of any one size or group of sizes.

expanded shale
A strong lightweight aggregate obtained by the exfoliation of clay or shale. Also called expanded clay.

expanded slate
A strong lightweight aggregate obtained by the exfoliation of slate.

exfoliation
The splitting or swelling of certain minerals into a scaly material when heated.

perlite
A volcanic glass expanded by heat to form lightweight, spherical particles, used as nonstructural lightweight aggregate and as loose-fill thermal insulation. Also, perlite.

vermiculite
Mica expanded by heat into very light, needle-like threads, used as nonstructural lightweight aggregate and as loose-fill thermal insulation.

admixtures
Any substance other than cement, water, or aggregate, added to a concrete or mortar mix to alter its properties or those of the hardened product. Also called additive.

- air-entraining agent
An admixture that disperses entrained air in a concrete or mortar mix to increase workability, improve resistance of the cured product to the cracking induced by free-thaw cycles or the scaling caused by deicing chemicals, and in larger amounts, to produce lightweight insulating concrete.

- accelerator
An admixture that hastens the setting and strength development of a concrete, mortar, or plaster mix.

- retarder
An admixture that slows the setting of a concrete, mortar, or plaster mix in order to allow more time for placing and working the mix.

- surface-active agent
An admixture for reducing the surface tension of the mixing water in a concrete mix, thereby facilitating the wetting and penetrating action of the water on the admixing and dispersion of other admixtures in the mix. Also called surfactant.

- water-reducing agent
An admixture for reducing the amount of mixing water required for the desired workability of a concrete or mortar mix. Lowering the water-cement ratio in this manner generally results in increased strength. Also called superplasticizer.

- coloring agent
A pigment or dye added to a concrete mix to alter or control its color.
mix design
The most economical selection and proportioning of cement, water, and aggregate to produce concrete or mortar having the required properties of workability, strength, durability, and water tightness.

Abram's law
A law postulating that, with given concrete materials, curing, and testing conditions, the compressive strength of concrete is inversely proportional to the ratio of water to cement, developed by D.A. Abrams in 1919, from experiments at Lewis Institute in Chicago.

water-cement ratio
The ratio of mixing water to cement in a unit volume of concrete or mortar mix, preferably expressed by weight as a decimal fraction but often stated in gallons of water per sack of cement. The water-cement ratio controls the strength, durability, and water tightness of hardened concrete.

slump test
A method for determining the consistency and workability of freshly mixed concrete by measuring the slump of a test specimen.

slump cone
An open-ended truncated cone of sheet metal (12 in. (302 mm) high, with a base diameter of 6 in. (152 mm) and a top diameter of 4 in. (102 mm), used to mold a specimen of freshly mixed concrete for the slump test.

compression test
A test for determining the compressive strength of a concrete batch, using a hydraulic press to measure the maximum load a test cylinder can support in axial compression before fracturing.

test cylinder
A cylinder of concrete 6 in. (152 mm) in diameter and 12 in. (302 mm) high, cast from a representative batch and cured in a laboratory or in the field under controlled conditions.

consistency
The relative ability of freshly mixed concrete or mortar to flow, usually measured by the slump test for concrete and by the flow test for mortar. Consistency depends largely on the proportion of cement paste to aggregate in a mix.

workability
The relative ease with which freshly mixed concrete or mortar can be handled, placed in formwork, compacted, and finished. Workability depends partly on the water-cement ratio and partly on the grading of the aggregate in a mix.

plastic mix
A concrete or mortar mix that flows sluggishly without segregating and is readily molded.

dry mix
A concrete or mortar mix containing little water or too much aggregate in relation to the other components and having little or no slump. Also called stiff mix.

wet mix
A concrete or mortar mix having a relatively high water content and runny consistency, yielding a product that is low in strength, durability, and watertightness.

core test
A compression test of a cylinder cut from a hardened concrete structure, usually by means of a core drill.
form liner
Material for lining the inside face of a form, specially selected to impart a smooth or patterned finish to the concrete surface.

release agent
Any of various materials, as oil or silicone, for preventing the bonding of concrete to a surface. Also called parting compound.

bulkhead
A partition closing the end of a form or preventing the passage of newly place concrete at a construction joint.

keyway
A longitudinal groove or channel formed in a concrete footing or other member that has set, providing a shear-resisting key for newly placed concrete.

yoke
A clamping device for keeping column forms or the tops of wall forms from spreading under the fluid pressure of newly placed concrete.

Sonotube
Trademark for a brand of cylindrical column form made of compressed, resin-impregnated paper.

chair
A device for supporting and holding steel reinforcement in proper position before and during the placing of concrete.

high chair
A tall chair for supporting top bars in a concrete beam or slab.

bolster
A wide chair for supporting and spacing bottom bars in a concrete beam or slab.

climbing form
A form that can be raised vertically for succeeding lifts of concrete during the construction of a multistory building.

lift
de height of a quantity of concrete placed in a form at one time.

slip form
A form that can be moved slowly and continuously as concrete is being placed during the construction of a concrete pavement or building.

spreaders
A brace, usually of wood, for spacing and keeping wall or footing forms apart. Also called spacers.

wale
A horizontal timber or steel beam for reinforcing various vertical members, as in formwork or sheet piling, or for retaining earth at the edge of an embankment. Also called header, timber, ranger, waler.

strutback
A vertical support for aligning and reinforcing wales. Also called straitback.

chamfer strip
A strip of wood or other material attached to a form to produce a smooth, rounded or beveled edge on the outside corner of a concrete member.

rustication strip
A strip of wood or other material attached to the inside face of a form to produce a groove in the surface of a concrete member.

groove strip
A wood strip fixed to the inside face of a form to indicate the top of a concrete lift.

wedge
Any of a variety of slotted devices for tightening formwork and transferring the force to a form tie to the wales.

form tie
A metal tie for keeping wall forms from spreading under the fluid pressure of newly placed concrete.

snap tie
A form tie having notches or crimps which allow its ends to be snapped off below the concrete surface after stripping of the forms.

cone bolt
A form tie having cones at each end inside the forms which allow it to also serve as a spreader.

cone
A small, truncated cone of wood, steel, or plastic attached to a form tie to space and spread wall forms, leaving a nicely finished depression in the concrete surface to be filled or left exposed.

she bolt
A form tie consisting of water rods which are inserted through the form and threaded onto the ends of an inner rod. After stripping, the water rods are removed while the inner rod remains in the concrete.

concrete
The temporary structure required to support newly placed concrete, including the forms and all necessary supporting members, bracing, and hardware.

form
Boarding or sheathing of wood, metal, plastic, or fiber glass for containing and giving a desired shape to newly placed concrete until it sets and gains sufficient strength to be self-supporting.

formwork
A metal tie for keeping wall forms from spreading under the fluid pressure of newly placed concrete.

CONCRETE
**CONCRETE**

**cast-in-place concrete**
Concrete deposited, formed, cured, and finished in its final position as part of a structure. Also called cast-in-situ concrete.

**Consolidation**
The process of depositing and consolidating freshly mixed concrete in a form or in the final position where it is to be hardened.

**casting**
The process of depositing and consolidating freshly mixed concrete in a form or in the final position where it is to be hardened.

**drop chute**
A chute for containing and directing a falling stream of freshly mixed concrete so as not to cause segregation.

**concrete mixer**
A machine having a revolving drum, often motor-driven, for mixing cement, aggregate, and water to produce concrete.

**buggy**
A cart, often motor-driven, for transporting heavy materials, as freshly mixed concrete, for short distances at a construction site.

**agitation truck**
A truck equipped with a revolving drum to prevent segregation or loss of plasticity of the ready-mixed concrete being delivered to a construction site.

**truck mixer**
A truck equipped with a revolving drum and a separate water tank for mixing concrete en route to a construction site.

**concrete mixer**
A machine having a revolving drum, often motor-driven, for mixing cement, aggregate, and water to produce concrete.

**vibration**
Consolidation of newly placed concrete by the moderately high-frequency oscillations of a vibrator.

**vibrator**
An electric or pneumatic oscillating tool for agitating and consolidating newly placed concrete.

**time of haul**
The period from first contact between mixing water and cement to completion of discharge of the freshly mixed concrete from a truck mixer.

**ready-mixed concrete**
Concrete mixed at a batching plant for delivery by an agitator truck to a construction site.

**shrink-mixed concrete**
Concrete partially mixed at a batching plant and then mixed more completely in a truck mixer en route to a construction site.

**transit-mixed concrete**
Concrete dry-batched at a batching plant and mixed in a truck mixer en route to a construction site.

**pneumatic placement**
The delivery of concrete, slurry, or plaster by a pipeline or hose to the point of placement on a construction site, either in a plastic state for depositing in place or for spraying, or in a dry state with water added at the nozzle from which it is sprayed.

**Gunite**
A lightweight concrete construction consisting of a mixture of cement, sand, or crushed slag, and water, pumped through a hose and sprayed at high velocity over reinforcement until the desired thickness is reached. Also called shotcrete.

**segregation**
The separation of coarse aggregate from the mortar or of water from the other ingredients of freshly mixed concrete, resulting from excessive horizontal movement or free fall of the mix, or from overvibration after placement.

**stratification**
The separation of an excessively wet or overvibrated concrete mix into horizontal layers with increasingly lighter material moving toward the top.

**bleeding**
The emergence of excess mixing water on the surface of freshly placed concrete, caused by settlement of solids within the mass. Also called water gain.

**balance**
A milky deposit containing cement and aggregate fines on the surface of new concrete, caused by the bleeding of excess mixing water, overworking of the mix, or improper finishing.
finishing
The process of leveling, smoothing, compacting, and treating a newly placed concrete surface to produce the desired texture and appearance.

screed
A wooden or metal straightedge drawn across the surface of a newly placed concrete slab to bring it to proper level.

saw
A firm established grade strip or edge form serving as a guide for making a true level and flat surface on a newly placed concrete slab.

float
A flat tool for spreading and smoothing a fresh concrete, stucco, or plaster surface.

bull float
A float having a large, flat blade attached to a long handle.

trowel
Any of various flat-bladed hand tools for applying, spreading, working, or smoothing plastic material, as concrete, mortar, and plaster.

trowel finish
A fine-textured finish obtained by smoothening a fresh concrete, plaster, or stucco surface with a wood float.

broom finish
A striated finish obtained by stroking a broom or stiff brush over a freshly troweled concrete surface.

swirl finish
A textured finish given to a fresh plaster or concrete surface by troweling with a circular overlapping motion.

dry-shake finish
A colored finish produced by sprinkling a dry mixture of cement, sand, and a pigment on a fresh concrete surface, following sweeping and after any free water has evaporated, and then working the mixture into the surface with a float.

architectural concrete
Exposed concrete work requiring special care in the selection of materials, forming, placing, and finishing to acquire the desired appearance.

béton brut
Concrete left in its natural state after formwork is removed, esp. when the concrete surface reflects the texture, joints, and fasteners of a board form.

exposed aggregate finish
A decorative finish produced by sandblasting, etching with an acid, or scratching a concrete surface after the initial set in order to remove the outer layer of cement paste and expose the aggregate.

bushhammered finish
A coarse-textured finish obtained by fracturing a concrete or stone surface with a power-driven hammer having a rectangular head with a corrugated, serrated, or toothed face.

honeycomb
Voids on a formed concrete surface, caused by segregation during placement or by insufficient consolidation.

spalling
The chipping or scaling of a hardened concrete or masonry surface caused by freeze-thaw cycles or the application of deicing salts. Also called scaling.

crazing
Numerous hairline cracks occurring in the surface of a newly hardened concrete slab as a result of rapid drying shrinkage.

drying shrinkage
A reduction in volume of concrete, mortar, or plaster caused by a loss of moisture.

setting shrinkage
A reduction in volume of concrete prior to its final set, caused by hydration of the cement paste.
CONSTRUCTION

The art, science, or business of building.

owner
A person or organization having the legal right or title to a piece of property, usually the architect's client and party to the owner-architect agreement.

developer
A person or organization that invests in and develops the potentialities of real estate, esp. by initiating and implementing building projects for ownership, management, or resale.

lending institution
The institution, usually a commercial bank, providing the long-term financing for a construction project.

Architect
A person who engages in the profession of architecture, usually trained and experienced in the design and construction of buildings.

engineer
A person trained, skilled, or professionally engaged in any of various branches of engineering, as structural, mechanical, or electrical engineering.

consultant
A person or organization hired to give professional or expert advice regarding a specific aspect of a project, as acoustics or lighting.

contractor
A person or organization that contracts to provide the materials and perform the work for a construction project at a specified time and rate.

general contractor
A person or organization that contracts directly with an owner to manage and supervise a construction project, including the work performed by subcontractors.

subcontractor
A person or organization that contracts with a general contractor to provide a portion of the work on a construction project.

construction manager
A person or organization that contracts with an owner to advise on and coordinate all phases of a building project, from evaluating the construction cost and feasibility of design decisions to managing the building, award, and construction phases of the project.

owner

speculative builder
A person or organization that develops and constructs buildings for subsequent sale or lease.

design-build
Or pertaining to an arrangement under which a person or organization contracts directly with an owner to design and construct a building or project.

turn-key
Or pertaining to an arrangement under which a person or organization designs and constructs a building for sale or lease when ready for occupancy.

Architect

Engineers

Subcontractor

Subcontractor

Subcontractor
CONSTRUCTION

The process of building, from site preparation through erection, assembly, and finishing operations.

falsework
The temporary framework for supporting a structure under construction that is not yet capable of supporting itself.

scaffold
A temporary structure or platform for supporting workers and materials at a height above the floor or ground during the construction or repair of a building. Also called staging.

feasibility study
A detailed investigation and analysis conducted to determine the financial, technical, or other advisability of a proposed construction project.

Design Process

bidding
The competitive process of offering to perform the work described in a contract for a specified sum.

award
A formal acceptance of a bid or a negotiated proposal.

contract
A legally enforceable agreement, usually in written form, between two or more parties to do or not to do something specified.

notice to proceed
A written communication issued by an owner authorizing a contractor to proceed with the work and establishing the date of commencement of the work.

building permit
A written authorization to proceed with construction of a building project in accordance with approved drawings and specifications, issued by the local governmental agency having jurisdiction after plans have been filed and reviewed.

building official
A person designated by a governmental authority to administer and enforce the provisions of a building code.

eject
To construct by the raising, positioning, fitting together, and fastening of materials or parts.

certificate of occupancy
A document issued by a building official certifying that all or a designated portion of a building complies with the provisions of the building code, and permitting occupancy for its designated use.

postoccupancy evaluation
The process of diagnosing the technical, functional, and behavioral aspects of a completed building in order to accumulate information for future programming and design activities.

fast-track
Of or pertaining to project scheduling in which the design and construction phases of a building project overlap to compress the total time required for completion.

CFM
Critical Path Method. A method for planning, scheduling, and managing a project, combining all relevant information into a flow chart, including the optimum sequence and duration of activities, the relative significance of each event, and the coordination required for timely completion of the project.
CONSTRUCTION

The manner in which materials are ordered, assembled, and united into a whole, as frame construction.

systems building
A construction process using a high degree of prefabrication in the manufacture of standardized units or components to speed assembly and erection of a building. Also called industrialized building.

panel
A prefabricated section of a floor, wall, ceiling, or roof, handled as a single unit in the assembly and erection of a building.

sandwich panel
A structural panel consisting of a core of relatively light material enclosed between two sheets of a high-strength material, generally resulting in a high stiffness-to-weight ratio.

stressed-skin panel
A structural panel consisting of plywood facings glued to lumber stringers, used as floor, roof, or wall member subject to bending. The plywood facings and stringers act as a series of I-beams with the plywood resisting nearly all of the bending stresses. Cross bracing may be placed to support the edges of the skin to help distribute concentrated loads.

prefabricate
To fabricate or manufacture beforehand, esp. in standardized units or components for quick assembly and erection.

fabricate
To construct by assembling diverse and usually standardized parts.

modular design
Planning and design utilizing prefabricated modules or modular coordination for ease of erection, flexible arrangement, or variety of use.

module
Any in a series of standardized, frequently interchangeable components used in assembling units of differing size, complexity, or function.

modular coordination
Correlating the dimensions of a structure and the unit sizes of its components, usually with the aid of a planning grid based on a 4-inch or 100-mm critical module.

performance specification
A specification that stipulates how a particular component or system must perform without giving the means to be employed to achieve the results.

descriptive specification
A specification that stipulates the exact quantities and qualities of materials to be furnished and how they are to be assembled in a construction.

reference specification
A specification that refers to a standard specification to indicate the properties desired in a material or component and the methods of testing required to substantiate the performance of products.

proprietary specification
A specification that stipulates the use of specific products, systems, or processes without provision for substitution.
CONSTRUCTION

building code
A code regulating the design, construction, alteration, and repair of buildings, adopted and enforced by a local government agency to protect the public safety, health, and welfare.

A building code generally establishes minimum standards for materials and methods of construction, specifications for structural and fire safety, and other requirements based on the type of construction and the occupancy of a building, often using standards established by the American Society for Testing and Materials (ASTM), the American National Standards Institute (ANSI), and various technical societies and trade associations.

model code
A building code developed by an organization of states, professional societies, and trade associations for adoption by local communities.

BOCA National Building Code
A building code developed and published by the Building Officials and Code Administrators International, Inc. (BOCA), and used primarily in the northeastern U.S.

Uniform Building Code
A building code developed and published by the International Conference of Building Officials (ICBO), and used primarily in the central and western U.S.

Standard Building Code
A building code developed and published by the Southern Building Code Conference (SBCC), and used primarily in the southeastern U.S.

energy code
A building code that sets minimum standards for energy conservation and the energy-efficient design of buildings.

Americans with Disabilities Act
An act of Congress that became law in 1992, establishing design standards and requirements for all buildings except single-family residences to ensure their accessibility by the physically disabled.

zoning ordinance
An ordinance regulating the division of land into zones, as to restrict the height, bulk, density, and use of buildings, and the protection of any ancillary facilities, as parking a principal instrument in the implementation of a master plan. Also called zoning code.

restrictive covenant
A contract with a clause that restricts the action of any party to it, as an agreement among property owners specifying the use to which a property can be put; racial and religious restrictions are legally unenforceable.

nonconforming
Of or pertaining to a material, type of construction, or occupancy or use not complying with the requirements set forth in a building code.

variance
An official permit to do something normally forbidden by regulations, e.g. by building in a way or for a purpose normally forbidden by a building code or zoning ordinance.

noncombustible construction
Construction having a structure of steel, concrete or masonry, and walls, floors and a roof of noncombustible materials.

protected noncombustible construction
Noncombustible construction having a structure and major components with fire-resistance ratings at least equal to those specified by the appropriate authorities.

unprotected noncombustible construction
Noncombustible construction having no fire-resistance requirements except for fire walls and enclosures of fire exits and vertical shafts.

combustible construction
Any construction that does not fulfill the requirements for noncombustible construction.

ordinary construction
A construction type having noncombustible exterior walls and an interior structure wholly or partly of light wood framing.

protected ordinary construction
Ordinary construction having a structure and major components with fire-resistance ratings at least equal to those specified by the appropriate authorities.

unprotected ordinary construction
Ordinary construction having no fire-resistance requirements for the interior structure except for fire walls and enclosures of fire exits and vertical shafts.

heavy-timber construction
A construction type having noncombustible exterior walls and an interior structure of timbers and decking of specified minimum sizes. Also called mill construction.

light wood frame construction
A construction type having a framework of wood members not meeting the requirements for heavy-timber construction.

protected light wood frame construction
Light wood frame construction having a structure and major components with fire-resistance ratings at least equal to those specified by the appropriate authorities.

unprotected light wood frame construction
Light wood frame construction having no fire-resistance requirements except for fire walls and enclosures of fire exits and vertical shafts.
DESIGN

The creation and organization of formal elements in a work of art.

form

The shape and structure of something as distinguished from its substance or material.

shape

The outline or surface configuration of a particular form or figure. While form usually refers to the principle that gives unity to a whole, and often includes a sense of mass or volume, shape suggests an outline with some emphasis on the enclosed area or mass.

texture

The visual and esp. tactile quality of a surface, apart from its color or form.

visual texture

The apparent texture of a surface resulting from the combination and interrelation of colors and tonal values.

tactile texture

The physical, dimensional structure of a surface, apart from its color or form.

organic

Of or pertaining to shapes and forms having irregular contours which appear to resemble those of living plants or animals.

nonobjective

Of or pertaining to shapes and forms not representing natural or actual objects. Also, nonrepresentational.

geometric

Of or pertaining to shapes and forms which resemble or employ the simple rectilinear or curvilinear elements of geometry.

abstract

Of or pertaining to shapes and forms having an intellectual and affective content dependent solely on their intrinsic lines, colors, and relationship to one another.

symbol

Something that stands for or represents something else by association, resemblance, or convention, deriving its meaning chiefly from the structure in which it appears.

sign

A mark or figure having a conventional meaning and used in place of a word or phrase to express a complex notion.

articulation

A method or manner of jointing that makes the united parts clear, distinct, and precise in relation to each other.

additive

Characterized or produced by addition, accumulation, or uniting, often resulting in a new identity.

subtractive

Characterized or produced by removal of a part or portion without destroying a sense of the whole.
content: The significance or meaning of an artistic work, as distinguished from its form.
form: The manner of arranging and coordinating the parts of a composition so as to produce a coherent image.
organization: The systematic arranging of interdependent or coordinated parts into a coherent unity or functioning whole.
structure: The characteristic structure given to a surface or substance by the size, shape, arrangement, and proportions of the parts.
fabric: An underlying framework or structure of connected parts.
pattern: An artistic or decorative design, especially having a characteristic arrangement and considered as a unit, of which an idea can be given by a fragment.
detail: An individual, minute, or subordinate part of a whole.
texture: The characteristic structure given to a surface or substance by the size, shape, arrangement, and proportions of the parts.

The basic scheme or concept for an architectural design, represented by a diagram.
A drawing, not necessarily representational, that outlines, explains, or clarifies the arrangement and relations of the parts of a whole.

The arranging of parts or elements into proper proportion or relation so as to form a unified whole.
**Design**

**design principle:**
A fundamental and comprehensive concept of visual perception for structuring an aesthetic composition.

**unity**
The state or quality of being combined into one, as the ordering of elements in an artistic work that constitutes a harmonious whole or promotes a singleness of effect.

**uniformity**
The state or quality of being identical, homogeneous, or regular.

**homogeneous**
Uniform in structure throughout or composed of parts that are all of the same nature or kind.

**regular**
Uniformly or evenly formed or arranged.

**monotony**
The state or quality of lacking variety.

**variety**
The state or quality of having varied or diverse forms, types, or characteristics.

**emphasis**
Stress or prominence given to an element of a composition by means of contrast, anomaly, or counterpoint.

**contrast**
Opposition or juxtaposition of dissimilar elements in a work of art to intensify each element's properties and produce a more dynamic expressiveness.

**anomaly**
A deviation from the normal or expected form, order, or arrangement.

**point**
The major idea, essential part, or salient feature of a narrative or concept.

**salient**
Prominent or conspicuous.

**complexity**
The state or quality of being a whole composed of complicated, intricate, or interconnected parts.

**collage**
An artistic composition of often diverse elements in unlikely or unexpected juxtaposition.

**hierarchy**
A system of elements ranked, classified, and organized one above another, according to importance or significance.

**opposition**
The state or position of being placed opposite another, or of lying in corresponding positions from an intervening space or object.

**juxtaposition**
The state or position of being placed close together or side by side, so as to permit comparison or contrast.

**tension**
A tenuous balance maintained in an artistic work between opposing forces or elements, often causing anxiety or excitement.

**contradiction**
The state or condition of being opposed, inconsistent, or logically incongruous.
equilibrium
A state of rest or balance between contrasting elements or opposing forces.

equipoise
An equal distribution of weight or force.

counterpoise
A counterbalancing weight or force.

balance
The pleasing or harmonious arrangement or proportion of parts or elements in a design or composition.

symmetry
The exact correspondence in size, form, and arrangement of parts on opposite sides of a dividing line or plane, or about a center or axis.

local symmetry
A symmetrical condition occurring in one part of a design, often serving to center an irregular pattern.

bilateral symmetry
Symmetry resulting from the arrangement of similar parts on opposite sides of a median axis.

radial symmetry
Symmetry resulting from the arrangement of similar radiating parts about a center point or central axis.

axis of symmetry
An imaginary line about which a figure, body, or composition is symmetrical.

movement
The rhythmic quality or character of a composition suggested by the relationship of structural elements.

directional
The line along which something is moving, pointing, or facing, with reference to the point toward which it is directed.

rhythm
Movement characterized by a pattern or alternation of formal elements or motifs in the same or a modified form.

repetition
The act or process of repeating formal elements or motifs in a design.

interval
A space between two objects, points, or states.

gradation
A process or change taking place by degrees or through a series of gradual, successive stages.

concatenation
A series of linked or interconnected things or events.
proportion
The comparative, proper, or harmonious relation of one part to another or to the whole with respect to magnitude, quantity, or degree.

\[ \frac{A}{B} = \frac{B}{A+B} \]

golden section
A proportion between two dimensions of a plane figure or the two divisions of a line, in which the ratio of the smaller to the larger is the same as the ratio of the larger to the whole, a ratio of approximately 0.618 to 1.000. Also called golden mean.

eurhythm
Harmony of proportion or movement.

\[ \frac{A}{B} = \frac{B}{A+B} \]

scale
A certain proportionate size, extent, or degree, usually judged in relation to some standard or point of reference.

human scale
The size or proportion of a building element or space, or an article of furniture, relative to the structural or functional dimensions of the human body.

mechanical scale
The size or proportion of something relative to an accepted standard of measurement.

visual scale
The size or proportion a building element appears to have relative to other elements or components of known or assumed size.

Fibonacci series
The unending sequence of numbers where the first two terms are 1 and 1, and each succeeding term is the sum of the two immediately preceding. Also called Fibonacci sequence.

harmonic series
A series in which the terms are in harmonic progression.

harmonic progression
A sequence of numbers, the reciprocals of which form an arithmetic progression.
structural dimension
Any of the dimensions of the human body and its parts.

functional dimension
Any of the dimensions determined by bodily position and movement, as reach, stride, or clearance.

static fit
The correspondence between the size and posture of a human body and a building element or a piece of furniture.

dynamic fit
The correspondence between the sensory experience of bodily presence and movement and the size, shape, and proportion of a space.

access
The ability, freedom, or permission to approach, enter, or use.

barrier-free
Of or pertaining to spaces, buildings, and facilities fully accessible and usable by all people, including the physically handicapped.

territoriality
The pattern of behavior associated with defining and defending a territory or domain.

personal space
The variable and subjective distance at which one person feels comfortable talking to another. Also called personal distance.

anthropometry
The measurement and study of the size and proportions of the human body.

anthropomorphism
To ascribe human form or characteristics to nonhuman things or beings.

kinesthesia
The sensory experience of bodily position, presence, or movement derived chiefly from stimulation of nerve endings in muscles, tendons, and joints. Also, kinesthesis.

kinesthesis
The study of the symbolic and communicative role of the spatial separation individuals maintain in various social and interpersonal situations, and how the nature and degree of this spatial arrangement relates to environmental and cultural factors.

haptic
Relating to or based on the sense of touch.

olfactory
Relating to or based on the sense of smell.

proxemic
The study of the symbolic and communicative role of the spatial separation individuals maintain in various social and interpersonal situations, and how the nature and degree of this spatial arrangement relates to environmental and cultural factors.

ergonomics
An applied science concerned with the characteristics of people that need to be considered in the design of devices and systems in order that people and things will interact effectively and safely. Also called human engineering.
design
To conceive, contrive, or devise the form and structure of a building or other construction.

process
A systematic series of actions or operations leading or directed to a particular end.

phase
A particular stage in a process of change or development.

program
A procedure for solving a problem, as a statement setting forth the context, conditions, requirements, and objectives for a design project.

realization
Assessing how well an implemented solution in use satisfies the specified goals and criteria.

implement
To ensure the fulfillment of by means of a definite plan or procedure.

feedback
Evaluative information about an action or process prompting a return to a preceding phase for alteration or correction.

evaluation
Simulating, testing, and modifying acceptable alternatives according to specified goals and criteria.

draft
A preliminary version of a plan or design.

select
To choose from a number of alternatives by fitness or preference.

function
The literal or proper action for which something is designed, used, or exists.

purpos
The reason for which something exists or is done, made, or used.

amenity
Any feature that provides or increases comfort, convenience, or pleasure.

economy
Careful, shrewd, and efficient use and management of resources.

conceive
To form an idea or conception in the mind.

contrive
To form in an artistic or ingenious manner.

device
To form in the mind by new combinations or applications of existing ideas or principles.

initiation
Identifying a problem and its social, economic, and physical context.

preparation
Collecting and analyzing relevant information and establishing goals and criteria for an acceptable solution.

synthesis
Formulating a tentative assumption in order to draw out and test its logical or empirical consequences.

hypothesis
One of the propositions or courses of action to be chosen from a set of two or more mutually exclusive possibilities.

analysis
Separating of a whole into its constituent parts or elements, esp. as a method of studying the nature of the whole and determining its essential features and their relations.

synthesis
Combining of separate, often diverse parts or elements so as to form a single or coherent whole.

modify
To change the form, character, or qualities of in order to give a new orientation to or to serve a new end.

refine
To improve or elaborate in order to make more fine or precise.

inflection
A bend, angle, or similar change in the shape of a configuration, by means of which a change of relationship to some context or condition is indicated.

transformation
The process of changing in form or structure through a series of discrete permutations and manipulations in response to a specific context or set of conditions without a loss of identity or concept.

simulate
To imitate the likeness or model of something anticipated for testing and evaluation.

model
A representative representation, usually built to scale, to show the appearance or construction of something.

mock-up
A full-sized model of a building or structure, built accurately to scale for study, testing, or teaching.

test
To subject a system or process to such conditions or operations as will lead to a critical evaluation of abilities or performance and subsequent acceptance or rejection.
DOME

A vaulted structure having a circular plan and usually the form of a portion of a sphere, so constructed as to exert an equal thrust in all directions.

- **Saucer dome**: A dome having the form of a segment of a sphere, with its center well below the springing line. A saucer dome is particularly sensitive to bursting under an external load.

- **Radial dome**: A dome built with steel or timber trusses arranged in a radial manner and connected by polygonal rings at various heights.

- **Schweidler dome**: A steel dome having members which follow the lines of latitude and longitude, and a third set of diagonals completing the triangulation.

- **Lattice dome**: A steel dome structure having members which follow the circles of latitude, and two sets of diagonals replacing the lines of longitude and forming a series of isosceles triangles.

- **Geodesic dome**: A steel dome having members which follow three principal sets of great circles intersecting at 60°, subdividing the dome surface into a series of equilateral spherical triangles.

**Definitions**

- **Meridional line**: A curved line describing a vertical section cut through the axis of a rotational surface.

- **Hoop line**: A circular line describing a horizontal section cut perpendicular to the axis of a rotational surface.

- **Semicircular dome**: A dome having the form of a hemisphere.

- **Transition from meridional to hoop forces**: Occurs at an angle of from 45° to 60° from the vertical axis for most load conditions.

- **Hoop force**: A force acting along a hoop line of a dome structure, perpendicular to meridional forces. Hoop forces, which restrain the out-of-plane movement of the meridional strips in the shell of a dome, are compressive in the upper zone and tensile in the lower zone.

- **Meridional force**: A force acting along a meridional line of a dome structure, always compressive under full vertical loading.

- **Tension ring**: A ring enclosing the base of a dome to contain the outward components of the meridional forces. In a concrete dome, this ring is thickened and reinforced to handle the bending stresses caused by the differing elastic deformations of the ring and shell.

- **Great circle**: The circle of greatest diameter that can be drawn on a sphere.
DOME

- **oculus**: A circular opening, esp. one at the crown of a dome.

- **semidome**: Half a dome formed by a vertical section, as over a semicircular apse.

- **cul-de-four**: A semidome or quarter-sphere vault, as over an apse or niche.

- **pendentive**: A spherical triangle forming the transition from the circular plan of a dome to the polygonal plan of its supporting structure.

- **lunette**: An area in the plane of a wall framed by an arch or vault, containing a window, painting, or sculpture.

- **pendentive dome**: A spherical dome formed by removing four segments so that it merges with its pendentives and sits on a square plan.

- **squinch**: An arch or corbeling built across the upper inside corner of a square tower to support the side of a superimposed octagonal structure.

- **drum**: A cylindrical or faceted construction, often placed with windows, supporting a dome.

- **cholobate**: The substructure supporting a dome or cupola.

- **bandage**: A strap, ring, or chain placed around a structure to secure and hold its parts together, as around the springing of a dome.
DOOR
A hinged, sliding, or folding barrier of wood, metal, or glass for opening and closing an entrance to a building, room, or cabinet.

swinging door
A door that turns on hinges or pivots about a vertical edge when pushed or pulled.

balanced door
A pivoted door that is partially counterbalanced for easier opening and closing.

automatic door
A door that opens automatically at the approach of a person or automobile.

door closer
A mechanism that automatically opens a door when activated by a radio transmitter, electric eye, or other device.

folding door
A door with hinged sections that can be folded flat against one another when opened.

bifold door
A folding door that divides into two parts, the inner leaf of each part being hung from an overhead track and the outer leaf pivoted at the jamb.

accordion door
A multifold door that is hung from an overhead track and opens by folding back in the manner of an accordion.

pocket door
A door that slides into and out of a recess in a doorway wall.

overhead door
A large door constructed of one or several leaves, opening by swinging or rolling up to a horizontal position above the door opening.

single-acting door
A door hung on hinges that permit it to swing in one direction only.

double-acting door
A door hung on hinges that permit it to swing in either direction from a closed position.

double doors
A pair of doors hung in the same doorframe.

leaf
A hinged or sliding section of a door or shutter.

active leaf
The leaf of a pair of double doors to which the latching or locking mechanism is attached. Also called opening leaf.

inactive leaf
The leaf of a pair of double doors to which the strike plate is fastened to receive the latch or bolts of the active leaf, usually fixed in a closed position by bolts at the top and bottom of the door. Also called standing leaf.

astragal
A molding attached to one or both meeting stiles of a pair of double doors to prevent drafts or the passage of light, noise, or smoke.

mullion
A slender vertical member dividing the opening for a pair of double doors, sometimes removable to permit the passage of large objects.

revolving door
An entrance door for excluding drafts from the interior of a building, consisting of four leaves set in the form of a cross and rotating about a central vertical pivot within a cylindrically shaped vestibule. Some revolving doors automatically fold back in the direction of egress when pressure is applied, providing a legal passageway on both sides of the door pivot.

wing
One of the leaves of a double or revolving door.

sweep
The flexible weatherstripping along the edges of a revolving door.

air curtain
A stream of compressed air directed downward across a doorway so as to form a shield to exclude drafts.
door opening
An opening in a wall into which a doorframe or window frame is fitted.

jamb
Either of the vertical sides of an opening, esp. the portion parallel to the surrounding surface and at right angles to the jamb.

cased opening
A doorless opening finished with trimwork.

casing
The finished, often decorative framework around a door or window opening, esp. the portion parallel to the surrounding surface and at right angles to the jamb.

subcasing
A rough casing for a doorway or window opening.

buck
A subframe of wood or metal set in a partition to support the finish frame of a door or window. Also called door buck, rough buck.

door clearance
The clearance required to prevent binding between a door and its doorframe or the finished floor.

door bevel
The slope of the lock edge in relation to the face of the lock stile, usually an inclination of 3/8 in. (9.2 mm) for each 2 in. (51 mm) of door thickness, allowing the door to swing free of the door frame.

overdoor
An ornamental painting, carving, or section of woodwork directly above a doorway.

transom
A crosspiece separating a doorway from a window or fanlight above it.

transom window
A window above the transom of a doorway. Also called transom, transom light.

reveal
The part of a jamb of a window or door opening that is visible between the outer wall surface and the window or door frame.

sconce
The reveal of a window or door opening from the frame to the inner face of the wall. Also, escutcheon, sconce.

doorframe
The frame of a doorway, consisting of two jams and a head or lintel.

head
The uppermost member of a doorframe or window frame.

doorjamb
Either of the two sidepieces of a doorframe.

stop
The projecting part of a doorframe against which a door closes. Also called doorknob stop.

planted stop
A stop formed by attaching a molding to a doorframe or window frame.

rabbeted stop
A stop formed integrally by a rabbet in a doorframe or window frame.

blank jamb
A doorjamb having no stops, nor prepared to receive hardware.

tall
The horizontal member beneath a door or window opening.

threshold
The sill of a doorway, covering the joint between two flooring materials or providing weather protection at an exterior door.

saddle
A raised piece of flooring between the jamb of a doorway, to which a door fits closely so as to prevent its binding when opened.

fanlight
A semicircular or semilenticular window over a doorway or another window.

sidelight
A window at the side of a door or another window. Also called winglight.

apex
A surface that makes an obtuse angle with another, as where a window or dooropening widens from the frame toward the face of the wall.

Venetian door
A doorway having a form similar to that of a Palladian window.
paneled door
A door having a framework of stiles, rails, and sometimes muntins, filled with panels of a thinner material.

rail
Any of various horizontal members framing panels, as in a system of paneling, a paneled door, window sash, or chest of drawers.

top rail
The uppermost rail connecting the stiles of a paneled door or window sash.

lock rail
The rail of a door that meets the shutting stile at the level of the lockset.

bottom rail
The lowest rail connecting the stiles of a paneled door or window sash.

French door
A door having rectangular glass panels extending throughout its length, and often hung in pairs. Also called casement door.

louvered door
A door having a louvered opening for the passage or circulation of air. Also called blind door.

Dutch door
A door divided horizontally so that the upper or lower part can be opened or closed separately.

panel
A distinct section or division of a wall, ceiling, or door, recessed below or raised above the general level or enclosed by a frame.

stile
Any of various upright members framing panels, as in a system of paneling, a paneled door, window sash, or chest of drawers.

hinge stile
The stile of a door by which it is hung. Also called hanging stile.

lock stile
The stile of a door that closes against the frame of the opening. Also called shutting stile.

vision light
A small light in the upper portion of a door glazed with clear glass for viewing.

mustin
A stile within the frame of a door.

meeting stile
One of the shutting stiles in a pair of double doors.

screen door
An exterior door having wood or aluminum stiles and rails that hold a wire or plastic mesh to admit air but exclude insects.

storm door
An outer or supplementary door, usually glazed, for protecting an entrance door from drafts, driving rain, or severe weather.

glass door
A door of heat-strengthened or tempered glass, with or without rails or stiles, used primarily as an entrance door.

combination door
An exterior door having a frame into which different types of panels can be inserted, as a screen for summer or storm sash for winter.
adjustable doorframe
A doorframe having a split head and jamb for installation in various wall thicknesses.

prehung door
A door hung in a doorframe before installation in a wall, sometimes prefinished and prefit with all necessary hardware and casing trim.

solid-core door
A wood flush door having a solid core of staved lumber, particle board, or a mineral composition.

hollow-core door
A wood flush door having a framework of stiles and rails encasing an expanded honeycomb core of corrugated fiberboard or a grid of interlocking horizontal and vertical wood strips.

flush door
A door having smooth-surfaced faces.

core
A wooden construction, as in a door, forming a backing for face veneers.

crossbanding
The plywood or hardboard veneer immediately beneath the face veneer of a flush door. Also, crossband.

doorskin
A surface veneer of plywood, hardboard, plastic laminate, or medium density overlay, bonded to the crossbanding or core of a flush door.

acoustical door
A door having a sound-deadening core, gasketed stops along the top and sides, and an automatic drop seal along the bottom. Also called sound-insulating door.

kalamein door
A door having a structural wood core clad with galvanized sheet metal.

hollow metal door
A door having face sheets of light-gauge steel bonded to a steel channel frame, reinforced with channels, a kraft honeycomb structure, or a rigid plastic-foam core.

hollow metal frame
A doorframe having a head and jamb formed from a single piece of metal.

knockdown frame
A metal doorframe composed of three or more parts for assembly in the field.

welded frame
A metal doorframe that is completely set up and welded at the factory.

cutoff stop
A stop having a closed end that terminates above the floor line at a 45° or 90° angle. Also called a hospital stop, sanitary stop.

jamb anchor
Any of various metal devices for securing the jamb of a doorframe to a masonry, steel stud, or wood stud wall.

base anchor
A metal clip or device for securing the base of a doorframe to the floor.

epoxy
A protective lining, usually of stainless steel, at the base of a doorframe.

flush frame
A metal doorframe designed to be installed during the construction of a masonry or stud wall.

drywall frame
A knockdown frame having a double-return backband for installation after a drywall partition is finished.

grouted frame
A metal doorframe completely filled with plaster or mortar for structural rigidity and increased fire resistance.

double agreese frame
A metal doorframe prepared to receive a pair of single-acting doors that swing in opposite directions.
DRAWING

The art, process, or technique of representing an object, scene, or idea by means of lines on a surface.

technique
A method or procedure for accomplishing a desired aim or task, as that employed by an artist showing a high degree of skill or command of fundamentals.

contour drawing
The technique of drawing lines to represent the contours of a subject, without shading or modeling of form.

contour
The outline of a two-dimensional shape or bounding edges of a three-dimensional form.

freehand drawing
The art, process, or technique of drawing by hand without the aid of drafting instruments or mechanical devices, esp. for the representation of perceptions or the visualization of ideas.

analytical drawing
The drawing of lines to represent the three-dimensional structure and geometry of a form, proceeding generally from the whole to the constituent parts.

modeling
The technique of rendering the illusion of volume, depth, or solidity on a two-dimensional surface by shading.

grisaille
Monochromatic painting in shades of gray to produce a three-dimensional effect.

high-key
Having chiefly light tones with little contrast.

low-key
Having chiefly dark tones with little contrast.

line
A thin, continuous mark made on a surface with a pencil, pen, or brush, distinguished from shading or color.

outline
A line describing the outer boundary of a figure or object.

profile
An outline of a form or structure seen or represented from the side.

cross-contour drawing
The technique of drawing lines to represent a series of cuts across the surface of a form rather than its edges.

regulating line
A line drawn to measure or express alignment, scale, or proportion.

trace
A line lightly drawn to record alignment or measurement.

shading
The rendering of light and dark values in a drawing to create the illusion of three-dimensionality, represents light and shadow, or give the effect of color.

hatching
Shading composed of the lines drawn in close proximity.

crosshatching
Shading composed of two or more series of intersecting parallel lines.

scribbling
Shading by means of a network of random, multidirectional lines.

stippling
Shading by means of dots, small spots, or short strokes.

key
The dominant tonal value of a drawing or painting.

high-key
Having chiefly light tones with little contrast.

low-key
Having chiefly dark tones with little contrast.
sketch
A simply or hastily executed drawing or painting representing the essential features of an object or scene without the details, often made as a preliminary study.

study
A drawing executed as an educational exercise, produced as a preliminary to a final work, or made to record observations. Sometimes referred to as a referential drawing.

conception
A drawing of something that does not yet exist.

draft
A preliminary sketch of a design or plan, esp. one subject to revision.

esquisse
A sketch showing the general features of a design or plan.

dépouil
A full-scale, detailed drawing done on a wall, floor, or other large surface, from which are traced the patterns for various building elements.

casson
A full-scale drawing of a motif or design, to be transferred in preparation for a fresco, mosaic, or tapestry.

rendering
A drawing, esp. a perspective, of a building or interior space, artistically delineating materials, shades, and shadows, usually done for the purposes of presentation and persuasion.

mass
A unified area of light, shade, or color that defines shape or form in general outline rather than in detail.

passage
An area, section, or detail of a work, esp. with respect to its qualities of execution.

trompe l’œil
A drawing or painting in which objects are rendered in extremely fine detail to emphasize the illusion of tactile and spatial qualities.

analytique
An elevation drawing of a facade, surrounded by a decorative arrangement of drawings of important details and sometimes a plan or section of the facade.

design drawing
Any of the drawings made to aid in the visualization, exploration, and evaluation of a concept in the design process.

presentation drawing
Any of a set of design drawings made to articulate and communicate a design concept or proposal, as for exhibition, review, or publication.

vignette
A drawing that is shaded off gradually into the surrounding paper so as to leave no definite line at the border.
DRAWING

drafting
Drawing done with the aid of such instruments as T-squares, triangles, compasses, and scales, etc., for the systematic representation and dimensional specification of architectural and engineering structures. Also called mechanical drawing.

object line
A solid line representing a contour of an object.

dashed line
A broken line consisting of short, closely spaced strokes, used esp. to represent object lines that are hidden or removed from view.

dotted line
A broken line consisting of a series of closely spaced dots, sometimes used in place of a dashed line.

centerline
A broken line consisting of relatively long segments separated by single dashes or dots, used to represent the axis of a symmetrical element or composition.

construction drawings
The portion of the contract documents showing in accurate graphic or pictorial form the design, location, dimensions, and relationships of the elements of a project. Also called contract drawings, working drawings.

seal
An embossing stamp used by a licensed architect, engineer, or other design professional on contract drawings and specifications to show evidence of registration in the state where the work is to be performed.

extension line
A line extending from an edge or feature of an object, to which a dimension line is drawn.

dimension line
A line terminated by arrows, short slashes, or dots, indicating the extent or magnitude of a part or the whole, and along which measurements are scaled and indicated.
Descriptive geometry
The theory of making projections of three-dimensional objects on a plane surface in order to deduce their geometric properties and relationships.

Drawing
The process or technique of representing a three-dimensional object by projecting all its points by straight lines, either parallel or converging, to a picture plane.

Orthographic projection
A method of projection in which a three-dimensional object is represented by projecting lines perpendicular to a picture plane. Also called orthogon projection.

Plan
An orthographic projection of the top or section of an object or structure on a horizontal plane, usually drawn to scale. Also called plan view.

Floor plan
A plan of a room, suite, or entire floor of a building as seen from above after a horizontal section is cut and the upper portion removed, typically showing the form and arrangement of interior spaces and their enclosing walls, windows, and doors.

Poché
The walls, columns, and other solids of a building that are cut in a floor plan or section drawing, indicated usually in black or by hatching.

Contour line
An imaginary line joining points of equal elevation on a surface, or its representation on a topographic plan or map.

Contour interval
The difference in elevation represented by each contour line on a topographic plan or map.

Grading plan
A plan showing the proposed finish contours and elevations of the ground surface of a construction site.

North arrow
A graphic symbol used on plans and maps to indicate the direction of north.

Scale
A proportion determining the relationship of a representation to that which it represents.

Graphic scale
A graduated line or bar indicating the proportion between a representation and that which it represents.

Roof plan
A plan showing the top view of a building, esp. the form of its roof.

Site plan
A plan showing the form, location, and orientation of a building or group of buildings on a site, usually including the dimensions, contours, landscaping and other significant features of the plot. Also called plot plan.

Area plan
A plan showing the principal elements of a design project in the wider context of its surrounding environment.
section
An orthographic projection of an object or structure as it would appear if cut through by an intersecting plane to show its internal configuration, usually drawn to scale.

cross section
An orthographic projection of a section made by cutting transversely, esp. at right angles to the long axis of an object. Also called transverse section.

longitudinal section
An orthographic projection of a section made by cutting through the longest axis of an object.

section line
A centerline terminating in a perpendicular segment with an arrow, used to indicate where a section is cut in a plan or elevation view and the direction in which the section is to be viewed.

oblique section
An orthographic projection of a section made by cutting with a plane that is neither parallel nor perpendicular to the long axis of an object.

elevation
An orthographic projection of an object or structure on a vertical picture plane parallel to one of its sides, usually drawn to scale.

relief
An apparent projection from a flat background due to contrast, creating the illusion of three dimensions.

local color
The natural color of a particular object as it would appear in white light.

shades and shadows
The casting and rendering of shades and shadows, esp. in orthographic views, to convey light, surface, form, and depth.

shade
The parts of a solid that receive no light because they are tangent to or turned away from a theoretical light source.

shadow
A dark figure cast upon a surface by an opaque body intercepting the rays from a theoretical light source.

highlight
A brilliantly lighted area of a modeled drawing appearing as a luminous spot.
paralline drawing
Any of various single-view drawings characterized by parallel lines remaining parallel to each other rather than converging as in linear perspective.

phantom
A part of a drawing that is made transparent to permit representation of details otherwise hidden from view.

cutaway
A drawing or model having an outer section removed to display the interior.

exploded view
A drawing that shows the individual parts of a structure or construction separately but indicates their proper relationships to each other and to the whole. Also called expanded view.

phantom line
A broken line consisting of relatively long segments separated by two short dashes or dots, used to represent a property line, an alternative position of a part of an object, or the relative position of an absent part.

axonometric projection
The orthographic projection of a three-dimensional object inclined to the picture plane in such a way that its three principal axes are foreshortened.

dimetric projection
An axonometric projection of a three-dimensional object inclined to the picture plane in such a way that two of its principal axes are equally foreshortened and the third appears longer or shorter than the other two.

trimetric projection
An axonometric projection of a three-dimensional object inclined to the picture plane in such a way that all three principal axes are foreshortened at a different rate.

isometric
An axonometric drawing of an isometric projection, having all lines parallel to the principal axes drawn to true length at the same scale.

isometric projection
An axonometric projection of a three-dimensional object having its principal faces equally inclined to the picture plane so that its three principal axes are equally foreshortened.

oblique projection
A method of projection in which a three-dimensional object, having one principal face parallel to the picture plane, is represented by projecting parallel lines at some angle other than 90° to the picture plane.

cavallier drawing
A paralline drawing of an oblique projection, having the receding lines perpendicular to the picture plane drawn to the same scale as the lines parallel to the picture plane.

cabinet drawing
A paralline drawing of an oblique projection, having all lines parallel to the picture plane drawn to exact scale, and the receding lines perpendicular to the picture plane reduced to half scale.
perspective
Any of various techniques for representing three-dimensional objects and spatial relationships on a two-dimensional surface as they might appear to the eye.  

pictorial space
The illusion of space or depth depicted on a two-dimensional surface by various graphic means, as perspectival, continuity of outline, or vertical location.  

vanishing ground
A technique for representing depth or distance by emphasizing the continuity of the contour of a shape perceived as being in front and concealing a part of another behind it.  

vertical location
A technique for representing depth or distance by placing distant objects higher in the picture plane than objects perceived as being closer.  

spatial edge
An element of an object or surface separated from its background by an interval of space, delineated by a thicker line or by a sharp contrast in value or texture.  

size perspective
A technique for representing depth or distance by reducing the size of objects perceived as receding from the picture plane.  

central axis of vision
The sightline indicating the direction in which the viewer is looking in linear perspective, perpendicular to the picture plane.  

 Drewing

linear perspective
A mathematical system for representing three-dimensional objects and spatial relationships on a two-dimensional surface by means of perspective projection.  

perspective projection
A method of projection in which a three-dimensional object is represented by projecting all its points to a picture plane by straight lines converging at an arbitrary fixed point representing the eye of the viewer.  

center of vision
A point representing the intersection of the central axis of vision and the picture plane in linear perspective.  

station point
A fixed point in space representing a single eye of the viewer in linear perspective.  

sightline
Any of the lines projecting from the eye of the viewer to various points on an object in linear perspective.  

horizon line
A line representing the intersection of the picture plane and a horizontal plane through the eye of the viewer in linear perspective.  

picture plane
An imaginary transparent plane, coincident with the drawing surface, on which the image of a three-dimensional object is projected. In linear perspective, any line or plane coincident with the picture plane can be drawn to exact scale.  

ground line
A horizontal line representing the intersection of the ground plane and the picture plane in linear perspective. Also called base line.  

ground plane
A horizontal plane of reference from which vertical measurements can be taken in linear perspective, usually the plane supporting the object depicted or on which the viewer stands.  

cone of vision
The field of vision radiating outward from the eye of the viewer in linear perspective defined by sightlines forming a 15° to 30° angle with the central axis of vision. The cone of vision serves as a guide in determining what can be drawn in linear perspective without the appearance of distortion.
convergence
The apparent movement of parallel lines toward a common vanishing point as they recede, used in linear perspective to convey an illusion of space and depth.

Parallel lines perpendicular to the picture plane will appear to converge at the center of vision.

Parallel lines parallel to the picture plane retain their orientation and will not appear to converge.

perspective
A drawing of the perspective projection of an object or scene, characterized chiefly by convergence and foreshortening.

foreshortening
The apparent contraction or distortion of a represented line or shape that is not parallel to the picture plane, conveying an illusion of extension or projection in space.

diagonal vanishing point
A vanishing point for a set of horizontal lines receding at a 45° angle to the picture plane in linear perspective. Also called diagonal point, distance point.

Parallel lines receding as they recede will appear to converge somewhere above the horizon line.

measuring point
A vanishing point for a set of parallel lines used in transferring scaled measurements in the picture plane so lines receding in linear perspective.

Parallel lines which are horizontal but not perpendicular to the picture plane will appear to converge somewhere on the horizon line.

measuring line
Any line coincident with or parallel to the picture plane, as the ground line, which can be used to take measurements in linear perspective.

vanishing trace
A line along which all sets of receding parallel lines lying in the same or parallel planes will appear to converge in linear perspective.

Parallel lines which are horizontal but not perpendicular to the picture plane will appear to converge somewhere on the horizon line.

isocephalic
Having the heads of all figures at approximately the same level. Also, isocephalous.

two-point perspective
A linear perspective of a rectangular object or volume having two principal faces oblique to the picture plane, so that vertical lines parallel to the picture plane remain vertical and two horizontal sets of parallel lines oblique to the picture plane appear to converge at two vanishing points, one to the left and the other to the right.

diagonal
A straight line connecting two nonadjacent angles of a rectangle, used in subdividing a whole into proportionate parts or multiplying a basic unit of measurement or space.

three-point perspective
A linear perspective of a rectangular object or volume having all principal faces oblique to the picture plane, so that the three principal sets of parallel lines appear to converge at three different vanishing points.

anamorphism
A distorted image that appears in natural form only when viewed at a special angle or reflected from a curved mirror.

graphic
Of or relating to pictorial representation, esp. that which depicts in a clear and effective manner.

View at a shallow angle from this point.
The science dealing with the physical phenomena arising from the existence and interaction of electric charges.

**Electric Charge**
The intrinsic property of matter giving rise to all electric phenomena, occurring in two forms arbitrarily given positive and negative algebraic signs and measured in coulombs. Opposite charges attract while like charges repel each other.

**Coulomb**
The SI unit of electric charge, equal to the quantity of electricity transferred across a conductor by a current of one ampere in one second. Abbrev: C

**Voltage**
Potential difference or electromotive force expressed in volts analogous to pressure in water flow.

**Volt**
The SI unit of potential difference and electromotive force, defined as the difference of electric potential between two points of a conductor carrying a constant current of one ampere, when the power dissipated between the points is equal to one watt. Abbrev: V

**Power**
The rate of flow of electric charge in a circuit per unit time, measured in amperes. The product of potential difference and current in a direct current circuit. In an alternating current circuit, power is equal to the product of the effective voltage, the effective current, and the cosine of the phase angle between current and voltage.

**Watt**
The SI unit of power, equal to one joule per second or to the power represented by a current of one ampere flowing across a potential difference of one volt. Abbrev: W

**Wattage**
An amount of power, esp. the power required to operate an electrical device or appliance, expressed in watts.

**Kilowatt**
A unit of power, equal to 1000 watts. Abbrev: kW

**Kilowatt-hour**
A unit of energy, equal to the energy transferred or expended by one kilowatt in one hour; a common unit of electric power consumption. Abbrev: kWh

**Electromotive Force**
The energy per unit charge available for conversion from a chemical, mechanical, or other form of energy into electrical energy, or vice versa, in a conversion device as a battery, generator, or motor. Abbrev: emf

**Potential Difference**
The voltage difference between two points that represents the work involved in the transfer of a unit charge from one point to the other.

**Potential**
The work required to move a unit charge from a reference point to a designated point.

**Watts**
The complete path of an electric current, including the source of electric energy. An arrangement of components in an electric circuit in which the same current flows through each component in turn without branching.

**Parallel**
An arrangement of components in an electric circuit in which all positive terminals are connected to one conductor and all negative terminals are connected to a second conductor, the same voltage being applied to each component.

**Ohm**
The SI unit of electrical resistance, equal to the resistance of a conductor in which a potential difference of one volt produces a current of one ampere. Symbol: Ω

**Ohm's Law**
The law that for any circuit the electric current is directly proportional to the voltage and inversely proportional to the resistance.

**Joule's Law**
The principle that the rate of production of heat by a direct current is directly proportional to the resistance of the circuit and to the square of the current.

**Battery**
A group of two or more cells connected together to produce electric current.

**Cell**
A device for converting chemical into electric energy, usually consisting of a receptacle with electrodes in an electrolyte. Also called electric cell, galvanic cell, voltaic cell.

**Electrolyte**
A nonmetallic conducting medium in which current is carried by the movement of ions.

**Electrode**
A conductor through which a current enters or leaves a nonmetallic medium.

**Anode**
The negative terminal of a primary cell or storage battery.

**Cathode**
The positive terminal of a primary cell or storage battery.

**Resistivity**
The resistance per unit length of a substance with a unit cross-sectional area. Also called specific resistivity.

**Conductivity**
A measure of the ability of a substance to conduct electric current, equal to the reciprocal of the resistivity of the substance. Also called specific conductivity.
lightning rod
Any of several conducting rods installed at the top of a structure and grounded to divert lightning away from the structure. Also called a terminal.

lightning arrester
A device for protecting electric equipment from damage by lightning or other high-voltage currents, using spark gaps to carry the current to the ground without passing through the device.

spark gap
A space between two terminals or electrodes, across which a discharge of electricity may pass at a prescribed voltage.

branch circuit
The portion of an electrical system extending from the final overcurrent device protecting a circuit to the outlets served by the circuit.

distribution panel
A panel for distributing power to other panels or to motors and other heavy power-consuming loads.

load
The power delivered by a generator or transformer, or the power consumed by an appliance or device.

connected load
The total load on an electrical system or circuit if all connected apparatus and equipment are energized simultaneously.

maximum demand
The greatest load delivered to an electrical system or circuit over a specified interval of time.

demand factor
The ratio of the maximum demand to the connected load of an electrical system, used in estimating the required capacity of the system to account for the probability that only a portion of the connected load may be applied at any time.

diversity factor
The ratio of the sum of the maximum demands on the various parts of an electrical system to the maximum demand on the whole.

load factor
The ratio of the average load on an electrical system over a specific period of time to the peak load occurring in that period.

general purpose circuit
A branch circuit that supplies current to a number of outlets for lighting and appliances.

appliance circuit
A branch circuit that supplies current to one or more outlets specifically intended for appliances.

individual circuit
A branch circuit that supplies current only to a single piece of electrical equipment.
cable
A single insulated conductor or a bound or sheathed combination of conductors insulated from one another.

armored cable
Electric cable consisting of two or more insulated conductors protected by a flexible, helically wound metal wrapping. Also called BX cable.

mineral-insulated cable
Electric cable consisting of a tubular copper sheath containing one or more conductors embedded in a highly compressed, insulating refractory mineral.

nonmetallic sheathed cable
Electric cable consisting of two or more insulated conductors enclosed in a nonmetallic, moisture-resistant, flame-retardant sheath. Also called Romex cable.

coaxial cable
A cable for transmitting high-frequency telephone, digital, or television signals consisting of an insulated conducting tube enclosing an insulated conducting core.

shielded cable
An electric cable enclosed within a metallic sheath in order to reduce the effects of external electric or magnetic fields.

conduit
A tube, pipe, or duct for enclosing and protecting electric wires or cable.

rigid metal conduit
Heavy-walled, tubular steel conduit joined by screwing directly into a threaded hub with locknuts and bushings.

electrical metallic tubing
Thin-walled, tubular steel conduit joined by compression or setscrew couplings. Abbrev.: EMT

flexible metal conduit
A flexible, helically wound metal conduit, used for connections to motors or other vibrating equipment. Also called Greenfield conduit.

raceway
A channel expressly designed to hold and protect electric wires and cables.

surface raceway
A raceway designed for exposed installation in dry, nonhazardous, noncorrosive locations.

multi-outlet assembly
A surface-mounted raceway designed to house the electrical wires for a circuit and a series of receptacles.

underfloor raceway
A raceway suitable for installation under a floor, often used in office buildings to allow for the flexible placement of power, signal, and telephone outlets.

cable tray
An open metal framework for supporting insulated electrical conductors.

wire
A pliable metallic strand or a twisted or woven assembly of such strands, often insulated with a dielectric material and used as a conductor of electricity.

conductor
A substance, body, or device that conducts heat, sound, or electricity.

dielectric
A material that is a poor conductor of electricity, used for separating or supporting conductors to prevent the undesired flow of current.

dielectric strength
The maximum voltage that can be applied to a given material without causing it to break down, usually expressed in volts or kilovolts per unit of thickness.

dielectric constant
The maximum voltage that can be applied to a given material without causing it to break down, usually expressed in volts or kilovolts per unit of thickness.

jumper box
An enclosure for housing and protecting electric wires or cables that are joined together in connecting or branching electric circuits.

knockout
A panel in a casing or box that can readily be removed, as by punching, hammering, or cutting, to provide an opening into the interior.

grommet
A rubber or plastic washer inserted in a hole in a metal part to prevent grounding of a wire passing through the hole.

bushing
An insulating and protective lining for one or more conductors passing through a hole.

duct
An enclosed runway for housing conductors or cables.

bus duct
A rigid metal housing for a group of buses insulated from each other and the enclosure. Also called busway.
- **air switch**: A switch in which the interruption of a circuit occurs in air.
- **knife switch**: A form of air switch in which a hinged copper blade is placed between two contact clips.
- **float switch**: A switch controlled by a conductor floating in a liquid.
- **mercury switch**: An especially quiet switch that opens and closes an electric circuit by shifting a sealed glass tube of mercury so as to uncover or cover the contacts.
- **key switch**: A switch operated only by inserting a key.
- **dimmer**: A rheostat or similar device for regulating the intensity of an electric light without appreciably affecting spatial distribution. Also called dimmer switch.
- **rheostat**: A resistor for regulating a current by means of variable resistances.

- **knob-and-tube wiring**: An obsolete wiring system consisting of single, insulated conductors secured to and supported on porcelain knobs and tubes.
- **loom**: A flexible, nonmetallic, fire-resistant tubing for conductors in knob-and-tube wiring.

- **plug**: A short, flexible conductor used in connecting a stationary terminal with a terminal having a limited range of motion.
- **terminal**: A conductive element or device for establishing an electric connection to an apparatus.

- **faceplate**: A protective plate surrounding an electric outlet or light switch.

- **cord**: A small, flexible, insulated cable fitted with a plug to connect a portable lamp or appliance to a receptacle.

- **wire nut**: A plastic connector containing a threaded metal fitting for screwing onto the interwound ends of two or more conductors.

- **connector**: Any of various devices for joining two or more conductors without a permanent splice.

- **switch**: A device for making, breaking, or directing an electric current.
- **toggle switch**: A switch in which a lever or knob, moving through a small arc, causes the contacts to open or close an electric circuit.

- **three-way switch**: A single-pole, double-throw switch used in conjunction with another three-way switch to control lights from three locations.

- **four-way switch**: A switch used in conjunction with two three-way switches to control lights from two locations.

- **outlet**: A point on a wiring system at which current is taken to supply an electric device or apparatus.

- **outlet box**: A junction box designed to facilitate connecting an electric device or receptacle to a wiring system.

- **convenience outlet**: An outlet usually mounted on a wall and housing one or more receptacles for portable lamps or appliances.

- **receptacle**: A female fitting connected to a power supply and equipped to receive a plug. Also called socket.

- **grounding outlet**: An outlet having an additional contact for a ground connection.

- **plug**: A male fitting for making an electrical connection to a circuit by insertion in a receptacle.

- **grounding plug**: A plug having a blade for a ground connection.

- **polarized**: Designed so that a plug and receptacle can fit together in only one way.
ELEVATOR

A moving platform or cage for carrying passengers or freight from one level of a building to another.

**passenger elevator**
An elevator exclusively for the use of passengers.

**freight elevator**
An elevator for carrying heavy cargo, on which the operator and the passengers necessary for unloading and loading the freight are permitted to ride.

**dumbwaiter**
A small elevator for conveying food, dishes, or other materials between the floors of a building.

**bank**
A row of elevators in a high-rise building, controlled by a common operating system and responding to a single call button.

**rise**
The vertical distance traversed by an elevator car from the lowest to the highest landings of the hoistway. Also called travel.

**electric elevator**
An elevator system consisting of a car that is mounted on guide rails, supported by hoisting cables, and driven by electric hoisting machinery. Also called traction elevator.

**penthouse**
A structure housing elevator machinery on the roof of a building.

**top car clearance**
The vertical distance from the top of an elevator car to the nearest overhead obstruction when the car platform is level with the top landing.

**holistway**
A vertical enclosed space for the travel of one or more elevators. Also called elevator shaft.

**landing**
The portion of a floor adjacent to an elevator hoistway, used for the receiving and discharge of passengers or freight.

**elevator car safety**
A mechanical device for slowing down and stopping an elevator car in the event of excessive speed or free fall, actuated by a governor and clamping the guide rails by a wedging action.

**holistway door**
A door between a hoistway and an elevator landing, normally closed except when an elevator car is stopped at the landing.

**elevator pit**
The portion of a hoistway extending from the level of the lowest landing to the floor of the hoistway.

**bottom car clearance**
The vertical distance from the floor of an elevator pit to the lowest part of an elevator car platform when the car rests on fully compressed buffers.

**bulkhead**
A bulkhead structure on a roof providing access to a stairwell or an elevator shaft.

**control panel**
A panel containing switches, buttons, and other equipment for regulating electrical devices.

**hoisting machinery**
The machinery for raising and lowering an elevator car, consisting of a motor-generator set, traction machine, speed governor, brake, drive shaft, driving sheave, and gearing, if used.

**driving sheave**
A wheel or disk with a grooved rim, used as a pulley for hoisting.

**idle sheave**
A pulley for tightening and guiding the hoisting cables of an elevator system. Also called deflector sheave.

**machine beam**
One of the heavy steel beams supporting the hoisting machinery for an elevator.

**hoisting cable**
One of the wire cables or ropes used for raising and lowering an elevator car.

**guide rail**
One of the vertical steel tracks controlling the travel of an elevator car or counterweight.

**traveling cable**
One of the electric cables connecting an elevator car to a fixed electrical outlet in the hoistway.

**counterweight**
A weight balancing an elevator car, and kept in position by the counterbalance steel cable attached to the hoisting machine by an elevator car.

**limit switch**
A switch that automatically cuts off current to an electric motor when an object moved by it, as an elevator car, has passed a given point.

**buffer**
A piston or spring device for absorbing the impact of a descending elevator car or counterweights at the extreme lower limit of travel.
Elevator car
The load-carrying unit of an elevator, consisting of a car frame, platform, lights, metal enclosure, and door or gate.

car frame
The structural steel frame of an elevator car to which are attached the platform, guide shoes, elevator car safety, hoisting cables, and control equipment.

machine room
A room housing the hoisting machinery, control equipment, and sheaves for raising and lowering an elevator car.

hydraulic elevator
An elevator system consisting of a car supported by a piston that is moved by or moves against a fluid under pressure.

escalator
A power-driven stairway consisting of steps attached to a continuously circulating belt used for moving passengers up and down between floors. Also called moving staircase, moving stairway.

moving sidewalk
A power-driven, continuously moving surface, similar to a conveyor belt, used for carrying pedestrians horizontally or along low inclines.

people mover
Any of various forms of mass transit, as moving sidewalks or automated driverless vehicles, used for shuttling people around airports or in congested urban areas.
FASTENING

Holding together or uniting two or more parts or members, as by clamping with a mechanical fastener, by bonding with an adhesive, or by welding or soldering.

Nail
A straight, slender piece of metal having one end pointed and the other enlarged and flattened for hammering into wood or other building materials as a fastener.

<table>
<thead>
<tr>
<th>Size</th>
<th>Shank Length</th>
<th>Shank Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>4d</td>
<td>1 in.</td>
<td>0.125 in.</td>
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<tr>
<td>6d</td>
<td>1 1/4 in.</td>
<td>0.188 in.</td>
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<tr>
<td>8d</td>
<td>1 1/2 in.</td>
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<td>10d</td>
<td>2 in.</td>
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<tr>
<td>12d</td>
<td>2 1/4 in.</td>
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<tr>
<td>16d</td>
<td>2 1/2 in.</td>
<td>0.438 in.</td>
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<tr>
<td>20d</td>
<td>3 in.</td>
<td>0.500 in.</td>
</tr>
</tbody>
</table>

The designated length of a nail, from its point to its shank. Symbol d.

Shank
The straight, narrow part of a nail or bolt, between the head and the point.

Eight penny nail
A nail 2 1/2 inches (64 mm) long.

Sixteen penny nail
A nail 3 1/2 inches (89 mm) long.

Spike
A heavy nail for fastening together heavy timbers, 4 to 14 in. (102 to 356 mm) long and proportionately thicker than a common nail.

Drift bolt
A spike having a round shank, driven into predrilled holes to fasten heavy timbers together. Also called drift pin.

Staple
A U-shaped piece of metal or heavy wire with pointed ends, driven into a surface to secure sheet material or to hold a hasp, pin, or bolt.

Corrugated fastener
A fastener consisting of a piece of corrugated sheet steel with one wavy edge sharpened, for uniting two pieces of wood, as in a miter joint. Also called wiggle nail.

Round point
An acute conical point on a nail or spike.

Diamond point
An acute pyramidal point on a nail or spike.

Chisel point
A point on a nail or spike formed by two flat inclined sides meeting at a sharp angle.

Face nail
To fasten by nailing perpendicular to the face of the work.

Toenail
To secure by nailing obliquely to the surfaces being joined. Alternate nails may be driven at opposite angles to provide increased holding power.

End nail
To fasten by nailing into the end of a board, parallel to the grain of the wood. End-nailing provides poor resistance to withdrawal.

Blind nail
To secure by nailing in such a way that nailheads are not visible on the face of the work.

Nailing strip
A strip of wood or other partly yielding material attached to a hard surface, so that objects may be fastened to the surface.

Set
To sink a nailhead slightly below the surface with a nail set.

Clinch
To secure a nail or screw in position by hammering down the protruding point.
thread
The helical or spiral ridge of a screw, nut, or bolt.

pitch
The distance between two corresponding points on adjacent threads of a screw, nut, or bolt.

countersink
To enlarge the upper part of a drilled hole so that the head of screw or bolt will lie flush with or below the surface.

pilot hole
A guiding hole for a tap or screw, or for drilling a larger-size hole.

tap
To cut screw threads into an opening.

strip
To tear or damage the threads on a bolt or screw by applying too much force.

flat head
A screw head having a flat upper surface and a conical bearing surface.

oval head
A screw head having a shallow, spherical shape with a conical bearing surface.

round head
A screw or bolt head having a spherical shape with a flat bearing surface. Also called buttonhead.

truss head
A screw or bolt head having a shallow, spherical shape with a flat bearing surface.

pan head
A screw or rivet head having a cylindrical shape with a rounded shoulder.

fillister head
A cylindrical screw head having a slightly domed upper surface and a flat bearing surface.

bugle head
A screw head having a flat upper surface and an underside shaped like the bel of a bugle.

screw
A metal fastener having a tapered, helically threaded shank and a slotted head, designed to be driven into wood or the like by turning, as with a screwdriver.

wood screw
A screw having a slotted head and a threaded point that permits it to form its own cutting threads when driven into wood with a screwdriver.

def-tapping screw
A coarse-threaded screw designed to tap its corresponding female thread as it is driven. Also called tapping screw.

lag screw
A heavy, coarse-threaded screw having a square or hexagonal head driven by a wrench, used in areas inaccessible to the pliers or in the inspection of exceptionally long bolt would be needed to penetrate a joint fully. Also called coach screw, lag bolt.

machine screw
A metal fastener used with a nut or driven into a tapped hole, having a straight, threaded shank and a slotted or Phillips head for turning with a screwdriver.

cap screw
A metal fastener for machine parts, having a straight, threaded shank held by threads tapped into the hole into which it is screwed.

sheet-metal screw
A coarse-threaded screw for fastening sheet metal and other thin material.

set screw
A screw, often without a head, threaded through a hole in one part tightly upon or into another part to prevent relative movement.

thumb screw
A screw having a flattened, knurled head designed to be turned by the thumb and forefinger.

screw eye
A screw having a ring-shaped head.

slotted head
A screw head having a single slot, driven by a flat-tipped screwdriver.

Phillips head
A screw head having two partial slots crossing at right angles, driven by a Phillips screwdriver.

Allen head
A screw head having an axial hexagonal recess, driven by an Allen wrench.

security head
A screw head designed to resist removal with a flat-tipped or Phillips screwdriver.
FASTENING

bolt
A threaded metal pin or rod, usually having a head at one end, designed to be inserted through holes in assembled parts and secured by a matching nut.

carriage bolt
A bolt having a rounded head, a flat bearing surface, and a square shoulder for preventing rotation, used where the head may be inaccessible during tightening.

machine bolt
A bolt having a flat bearing surface and a square or hexagonal head for turning with a wrench.

hex head
A bolt or screw head having a hexagonal shape designed to be turned with a wrench.

square head
A bolt or screw head having a square shape designed to be turned with a wrench.

neck
The part on the shank of a bolt next to the head, esp. when it has a special form.

stove bolt
A small, coarse-threaded machine screw.

J-bolt
A J-shaped metal rod threaded at one end to receive a nut.

U-bolt
A metal rod bent in the shape of a U and threaded at each end.

eye bolt
A bolt having a ring-shaped head to receive a hook or rope.

clevis
A U-shaped fastener secured by a bolt or pin through holes in the end of the two arms.

turnbuckle
A metal link or sleeve internally threaded at each end, used for coupling and tightening two parts, as the threaded ends of two rods or stays.

expansion bolt
An anchor bolt having a split casing that expands mechanically to engage the sides of a hole drilled in masonry or concrete.

Molly
Trademark for a brand of expansion bolt having a split, sleeve-like sheath threaded so that turning the bolt draws the ends of the sheath together and expands the sides to engage a hole drilled in masonry or the inner surface of a hollow wall.

expansion shield
A lead or plastic sleeve inserted into a predrilled hole and expanded by driving a bolt or screw into it. Also called expansion sleeve.

toggle bolt
An anchor bolt having two hinged wings that close against a spring when passing through a predrilled hole and open as they emerge to engage the inner surface of a hollow wall.

nut
A square or hexagonal metal block perforated with a threaded hole to fit around and secure a bolt or screw.

lock nut
A nut specially constructed to provide extra friction between itself and a bolt or screw.

castellated nut
A nut having radial slits on its outer face to allow a locking pin or wire to be inserted in both nut and a hole in its bolt. Also called castle nut.

cap nut
A nut having a hexagonal base and a domed top to cover the threaded end of a screw. Also called acorn nut.

wing nut
A nut having two flat projecting places that provide a grip for tightening with the thumb and forefinger. Also called thumb nut.

washer
A perforated disk of metal, rubber, or plastic, used under the head of a nut or bolt or at a joint to distribute pressure, prevent leakage, or relieve friction.

lock washer
A washer specially constructed to prevent a nut from shaking loose.

load-indicating washer
A washer having small projections which are progressively flattened as a bolt is tightened. The gap between the head of the washer and the nut indicates the tension in the bolt.

counterbore
To increase the diameter of a portion of the length of a drilled hole to receive the head or nut of a bolt or screw.

center-to-center distance
The distance between the end of a timber and the center of the nearest bolt hole.

end distance
The distance from the edge of a timber and the center of the nearest bolt hole.

drive bolt
An anchor bolt having a wedge-shaped end around which concrete or lead is poured to hold it.

fox bolt
An anchor bolt having a split end to receive a fosslle wedge as it is screwed into a blind hole.
hanger
Any of various L-shaped metal brackets for supporting the end of a beam, joist, purlin, or truss at a girder or wall. The supported member transfers its reaction to the hanger through bearing, but load transfer to the supporting member is through shear in the special nails securing the hanger.

beam seat
A U-shaped metal bracket for anchoring a timber beam to a concrete support.

post cap
A U-shaped metal bracket for securing a timber post to a supporting post. Also called column cap.

post base
A U-shaped metal bracket for supporting and anchoring a timber post to its base or foundation. Also called column base.

dowel
A cylindrical pin fitting snugly into holes in two adjacent pieces to prevent their slipping or to align them. Also called dowel pin.

toothed plate
A sheet-metal plate punched to produce a closely spaced grid of protruding teeth, used as a spike plate in the manufacture of light-wood braces.

spike grid
A flat or sharply curved grid of spikes for joining heavy timbers, held in place by a single bolt. The resulting joint is resistant to loosening due to vibration, impact, and reversible lateral loads.

shear plate
A timber connector consisting of a round plate of malleable iron inserted into a corresponding groove, flush with the face of a timber, and held in place by a single bolt. Shear plates are used in back-to-back pairs to develop shear resistance in demountable wood-to-wood connections, or singly in a wood-to-metal connection.

split-ring
A timber connector consisting of a metal ring inserted into corresponding grooves cut into the faces of the joining members and held in place by a single bolt. The tonguing and grooving of bolts in the ring permits it to deform slightly under loading and maintain bearing at all surfaces, while the beveled cross section eases insertion and ensures a tight-fitting joint after the ring is fully seated in the grooves.
**solder**
To unite two pieces of metal by applying any of various nonferrous solders, usually a tin-lead alloy, at a temperature below 660°C (1220°F).

**fillet weld**
A weld with a triangular cross section joining two surfaces that meet at an interior right angle.

**butt weld**
A weld between two pieces of metal butted together.

**partial-penetration weld**
A butt weld having a depth less than the thickness of the smaller of the two members being joined.

**single-bevel weld**
A groove weld in which the edge of one abutting member is beveled from one side.

**double-bevel weld**
A groove weld in which the edge of one abutting member is beveled from both sides.

**drift**
A round, tapering piece of metal for enlarging or aligning holes to receive rivets or bolts. Also called driftpin.

**dolly**
A tool for receiving and holding the head of a rivet while the other end is being headed.

**pneumatic riveter**
A pneumatic hammer used with a rivet set to form the second head of a rivet.

**rivet set**
A tool for shaping the second head of a rivet.

**rivet**
A metal pin having a head at one end, used for uniting two or more plates by passing the shank through a hole in each piece and hammering down the pin end to form a second head.
**FIREPLACE**

- **chimney**: A vertical, incombustible structure containing a flue through which the smoke and gases of a fire or furnace are carried off to the outside and by means of which a draft is created. It is part of such a structure that rises above a roof.

- **smokestack**: A pipe for the escape of the smoke or gases of combustion.

- **draft**: A current of air in any enclosed space, as in a room, chimney, or stove, caused by the difference in temperature or pressure.

- **downdraft**: A downward current of air in a chimney or flue, often carrying smoke with it.

- **smoke shelf**: The side of a fireplace opening supporting the mantel.

- **movable damper**: A device for regulating the current of air in a stove or fireplace.

- **flue}: An incombustible passage for smoke in a chimney.

- **drafts**: A device for regulating the current of air in a stove or fireplace.

- **smoke chamber**: An enlarged area between the throat of a fireplace and the flue of a chimney.

- **firebox**: The chamber containing the fire of a fireplace.

- **flue lining**: A smooth-surfaced unit of heat-resistant fire clay or lightweight concrete, having a square, rectangular, or oval section, used for lining the flue of a chimney.

- **faux chimney**: A raised cover for a chimney, usually in the form of a slab or cornece.

- **chimney pot**: A cylindrical pipe of earthenware or metal, fixed on top of a chimney to increase drafts and disperse smoke.

- **flue**: A chimney section of metal used for carrying smoke and gases of combustion.

- **pargeting**: A smooth lining of mortar or plaster for a chimney flue. Also, parget.

- **mantel**: A construction framing the opening of a fireplace and usually covering part of the chimney breast in a decorative manner. Also called mantelestone.

- **mantlestone**: A stone or wooden lintel over a fireplace opening, or a masonry arch used in place of such a lintel.

- **chimney breast**: A part of a chimney or fireplace that projects out from a wall, usually inside a building.

- **chimney arch**: An arch over a fireplace opening, supporting the breast.

- **chimney bar**: A steel lintel for carrying the masonry above the fireplace opening. Also called camber bar, turning bar.

- **chimney chase**: The sides of a fireplace opening supporting the mantel.

- **hearth**: The floor of a fireplace, usually of brick, tile, or stone, often extending a short distance into a room.

- **back hearth**: The part of the hearth that is contained within the fireplace itself. Also called inner hearth.

- **front hearth**: The part of the hearth that projects into the room. Also called outer hearth.

- **fireplace**: A framed opening made in a chimney to hold an open fire.
FIRE SAFETY

The measures taken to prevent fire or minimize the loss of life or property resulting from a fire, including limiting fire loads and hazards, confining the spread of fire with fire-resistant construction, the use of fire detection and extinguishing systems, the establishment of adequate firefighting services, and the training of building occupants in fire safety and evacuation procedures.

Fire hazard
Any condition that increases the likelihood of a fire, obstructs access to firefighting equipment, or delays the egress of occupants in the event of fire.

Fire load
The amount of combustible material in a building, measured in pounds per square foot of floor area.

Combustible
Of or pertaining to a material capable of igniting and burning.

Ignition point
The lowest temperature at which a substance will undergo spontaneous combustion and continue to burn without additional application of external heat.

Flash point
The lowest temperature at which a combustible liquid will give off sufficient vapor to ignite momentarily when exposed to flame.

Tunnel test
A test measuring the time it takes for a controlled flame to spread across the face of a test specimen, the amount of fuel the material contributes to the fire, and the density of the smoke developed by the fire. Also called Shelley tunnel test.

Flame-spread rating
A rating of how quickly a fire can spread along the surface of an interior finish material. Red oak flooring has a flame-spread rating of 100 while a cement-asbestos board has a rating of 0.

Smoke-developed rating
A rating of the amount of smoke an interior finish material can produce when it burns. Materials having a smoke-developed rating above 450 are not permitted to be used inside buildings.

Flame retardant
A compound used to raise the ignition point of a flammable material, thus making it more resistant to fire.

Fireproofing
Any of various materials, as concrete, gypsum, or mineral fiber, used in making a structural member fire-resistant to damage or destruction by fire.

Fire-resistant
Noting or pertaining to a material, assembly, or construction having a fire-resistance rating required by its use. Also, fire-resistant.

Fire-resistance rating
The time in hours a material or assembly can be expected to withstand exposure to fire without collapsing, developing any openings which permit the passage of flame or hot gases, or exceeding a specified temperature on the side away from the fire, determined by subjecting a full-size specimen to temperatures according to a standard time-temperature curve.

Fire-rated
Noting or pertaining to a material, assembly, or construction having a fire-resistance rating required by its use. Also, fire-resistant.
fire zone
A zone of a city within which certain construction types are prohibited because of fire hazards present in the zone.

firebreak
An open space established to prevent the spread of fire from a building, a group of buildings, or an area of a city to another.

draft stop
A fire-rated partition dividing an enclosed attic space of combustible construction, or the concealed space between a suspended ceiling and a wood-frame floor above.

fire assembly
The assembly of a fire door, fire window, or fire damper, including all required hardware, anchorage, frames, and sills.

self-closing fire assembly
A fire assembly that is normally kept in a closed position and is equipped with an approved device to ensure closing and latching after having been opened for use.

automatic-closing fire assembly
A fire assembly that may remain in an open position and will close automatically if subjected to an increase in temperature or actuated by a smoke detector.

fire separation
Any floor, wall, or roof-ceiling construction having the required fire-resistance rating to confine the spread of fire.

occupancy separation
A vertical or horizontal construction having the required fire-resistance rating to prevent the spread of fire from one occupancy to another in a mixed-occupancy building.

distance separation
The separation required between an exterior wall of a building and a property line, the center line of an adjacent street or public space, or the exterior wall of an adjacent building, all measured at right angles to the exterior wall.

protected opening
An opening in a wall, floor, or roof-ceiling construction that is fitted with a fire assembly having the required fire-resistance rating for its location and use.

UL label
A label affixed to a building material, component, or device with the authorization of Underwriters' Laboratories, Inc., indicating that the product (a) has a rating based on performance tests of such products, (b) is from a production lot found by examination to be made from materials and by processes essentially identical to those of representative products which have been subjected to appropriate fire, electrical hazard, or other tests for safety, and (c) is subject to the reexamination service of UL.

labeled
Of or pertaining to a building material or assembly having a fire-resistance rating certified by Underwriters' Laboratories, Inc. or other recognized testing laboratory.

fire door
A door assembly, including all required hardware, anchorage, frames and sills, having the required fire-resistance rating for its location and use.

fire window
A window assembly, including all required hardware, anchorage, frames and sills, having the required fire-resistance rating for its location and use.

smoke vent
A vent designed to open automatically in the event of fire in order to remove smoke and heat from a building.

fire damper
A damper that closes an air duct automatically in the event of fire to restrict the passage of fire and smoke, required where a duct penetrates a fire wall, fire-rated shaft, or other fire separation.

fusible link
A link made of fusible metal, when exposed to the heat of a fire, the link melts and causes a fire door, fire damper, or the like to close.
FIRE SAFETY

fire-alarm system
An electrical system installed in a building to automatically sound an alarm when actuated by a fire-detection system.

fire-detection system
A system of thermostats or other approved sensors for detecting the presence of fire and automatically signaling an alarm.

smoke detector
An electronic fire alarm that is activated by the presence of smoke.

standpipe
A water pipe extending vertically through a building to supply fire hoses at every floor.

wet standpipe
A standpipe containing water under pressure and fitted with fire hoses for emergency use by building occupants.

dry standpipe
A standpipe containing no water and used by the fire department to connect fire hoses to a fire hydrant or pumper truck.

fire hose
A heavy-duty hose for use in fighting a fire.

hydrant
An upright pipe with one or more nozzles or spouts for drawing water from a main, esp. for fighting fires. Also called fire hydrant, fireplug.

sprinkler system
Apparatus for automatically extinguishing fires in a building, consisting of a system of pipes in or below the ceilings, connected to a suitable water supply, and supplied with valves or sprinkler heads made to open automatically at a certain temperature.

sprinkler head
A nozzle in a sprinkler system for dispersing a stream or spray of water, usually controlled by a fusible link that melts at a predetermined temperature.

automatic fire-extinguishing system
A system of devices and equipment which automatically detects a fire and discharges an approved fire-extinguishing agent or fire in the area of a fire.

wet-pipe system
A sprinkler system containing water at sufficient pressure to provide an immediate, continuous discharge through sprinkler heads that open automatically in the event of fire.

dry-pipe system
A sprinkler system containing pressurized air that is released when a sprinkler head opens in the event of fire, allowing water to flow through the piping and out the opened nozzle. Dry-pipe systems are used where the piping is subject to freezing.

pneumatic system
A dry-pipe sprinkler system through which water flow is controlled by a valve operated by fire-detection devices more sensitive than those in the sprinkler heads. Pneumatic systems are used when an accidental discharge would damage valuable materials.

deluge system
A sprinkler system having sprinkler heads open at all times, through which water flow is controlled by a valve operated by a heat-, smoke-, or flame-sensing device.

class A fire
A fire involving ordinary combustible materials, as wood, paper, and cloth, on which the quenching or cooling effect of water is of primary importance.

class B fire
A fire involving flammable liquids, as gasoline, oil, and grease, which must be extinguished by excluding air and inhibiting the release of combustible vapors.

class C fire
A fire involving live electrical equipment, which requires a nonconducting extinguishing medium.

class D fire
A fire involving certain combustible metals, as magnesium or sodium, which requires a nonreactive, heat-absorbing extinguishing medium.
exit access
That portion of a means of egress that
leads to an exit. Building codes specify
the maximum distance of travel to an
exit and the minimum distance between
exits when two or more are required.

exit light
An illuminated sign identifying a
required exit.

emergency lighting
A lighting system designed to
supply the illumination required for
safe egress from a building in the
event of a power failure.

exit corridor
A passageway serving as a required
exit, enclosed by walls of fire-resistive
construction. Building codes limit the
length of dead-end corridors.

exit door
A door providing access to a means of
egress, swinging in the direction of exit
travel, and usually equipped with a panic
bar.

exit passageway
A means of egress connecting a required
exit or exit court with a public way, having
no openings other than required exits and
enclosed by fire-resistant construction as
required for the walls, floors, and ceiling of
the building served.

exit discharge
That portion of a means of egress
that leads from an exit to an exit
court or public way.

horizontal exit
A passageway through or around a wall
constructed as required for an
occupancy separation, protected by an
automatic-closing fire door, and leading
to an area of refuge in the same building
or on approximately the same level in an
adjacent building.

occupant load
The total number of persons that may
occupy a building or portion thereof at
any one time, determined by dividing
the floor area assigned to a particular
use by the square feet per occupant
permitted to that use. Building codes
use occupant load to establish the
required number and width of exits for
a building.

means of egress
A continuous path of travel from any point
in a building to the outside at ground level.

exit
An enclosed and protected path of escape
for the occupants of a building in the event
of fire, leading from an exit access to an
exit discharge.

area of refuge
An area affording safety from fire
or smoke coming from the area from
which escape is made.

smokeproof enclosure
The enclosing of an exit stairway by walls of
fire-resistant construction, accessible by a
vestibule or by an open exterior balcony, and
ventilated by natural or mechanical means
to limit the penetration of smoke and heat.
Building codes usually require one or more
of the exit stairways for a high-rise building
be protected by a smokeproof enclosure.

exit stairway
A stairway leading to an exit passageway,
an exit court, or public way, enclosed by
fire-resistant construction with self-closing
fire doors that swing in the direction of exit
travel.

exterior exit balcony
A landing or porch projecting from the wall
of a building and serving as a required
means of egress.

fire escape
An exit stairway down an outside wall of a
building, constructed to the same
standards as an interior exit stairway.

exterior exit
An exit door opening directly to an exit
court or public way.

public way
A street, alley, or similar parcel of land
open to the sky and dedicated, dedicated, or
otherwise permanently appropriated for
the free passage and use of the general
public.

FIRE SAFETY
FLOOR
The level, base surface of a room or hall upon which one stands or walks.

finish floor
The wearing surface of a floor, usually laid over a subfloor. Also, finished floor.

subfloor
A base for a finish floor, consisting of boards, plywood, or other structural sheathing laid over and fastened to the floor joists. A subfloor is often used as a working platform during construction and may also act as a structural diaphragm to transfer lateral loads to shear walls. Also called blind floor, rough floor.

floor framing
The act, process, or manner of constructing the structural frame of a floor.

joist
Any of a series of small, parallel beams for supporting floors, ceilings, or flat roofs.

header
A framing member crossing and supporting the ends of joists, studs, or rafters, so as to transfer the weight to parallel joists, studs, or rafters.

trimmer
A beam, joist, or rafter supporting one end of a header at the edge of an opening in a floor or roof frame.

tailpiece
A relatively short beam, joist, or rafter supported by a wall at one end and by a header at the other. Also called a stringer.

rim joist
A joist set on top of the sill and forming the perimeter of a wood-framed floor. Also called header.

bridging
An arrangement of braces or blocking between joists or rafters to prevent their rotation or lateral displacement, esp. when their depth-to-width ratio exceeds 6. Bridging may not be required when the ends of the members are fixed against rotation and their edges are held in line by subflooring or sheathing.

solid bridging
Bridging consisting of short boards fixed vertically between floor or roof joists.

crossbridging
Bridging composed of diagonal braces set in pairs between floor or roof joists.
beam fill
Material, as masonry or concrete, for filling the spaces between joists or beams in or on top of a masonry wall, stiffening the members, and providing increased fire resistance. Also, beam filling.

beam pocket
An opening in the vertical face of a structural member to receive a beam.

firecut
An angular cut at the end of a joist or beam where it enters a masonry wall, allowing the member to fail without damaging the wall if it burns through somewhere along its length.

form decking
Metal decking serving as permanent formwork for a reinforced concrete slab until the slab can support itself.

metal decking
Sheet steel strengthened for use as floor or roof decking by cold-rolling a series of ribs or flutes into it, and usually galvanized for corrosion resistance. The spanning capability of metal decking depends on the thickness of the steel sheet and the depth of the corrugations.

shear stud
A steel pin welded to the top flange of a steel beam or girder and embedded in a concrete slab so as to cause the beam and the concrete to act as a structural unit.

acoustic decking
Metal decking containing glass fiber between the perforated webs of ribbed decking or in the perforated cells of cellular decking, used as a sound-absorbing ceiling.

composite decking
Metal decking serving as permanent formwork and tensile reinforcement for a concrete slab bonded to it by a deformed or dovetail rib pattern.

cellular decking
Metal decking manufactured by welding a corrugated steel sheet to a flat steel sheet, forming a series of raceways for electrical wires and cables.

access flooring system
A system of removable and interchangeable floor panels supported on adjustable pedestals or stringers to allow free access to the space beneath. Also called raised flooring system.
Flooring

Finish flooring
Material used for the wearing surface of a floor, as hardwood, terrazzo, or floor tile.

Wood flooring
Finish flooring in the form of wood strips, planks, or blocks.

Strip flooring
Flooring composed of long, narrow wood strips, usually side- and end-matched.

Plank flooring
Flooring composed of boards wider than strip flooring, usually side- and end-matched.

Parquet
A floor composed of short strips or blocks of wood forming a pattern, sometimes with inlays of other woods or other materials.

Mosaic work of wood used for floors and walls.

Block flooring
Flooring composed of square units, preassembled at the mill and usually installed with mastic over a wood subfloor or concrete slab.

Unit block
A flooring block made by joining short lengths of strip flooring edgewise, usually tongued on two adjoining sides and grooved on the other two to ensure proper alignment in setting.

Laminated block
A flooring block made by bonding three or more wood veneers with a moisture-resistant adhesive, usually tongued on two opposing sides and grooved on the other two to ensure proper alignment in setting.

Slab block
A flooring block made by assembling narrow slats or fingers of hardwood into larger units.

topping
The mixture of stone chips and cementitious or resinous matrix that produces a terrazzo surface.

Bonding agent
A chemical substance applied to a substrate to create a bond between the top and a succeeding layer, or between a terrazzo topping and a subfloor.

Underbed
The mortar base on which a terrazzo topping is applied.

Resinous matrix
A latex, polyester, or epoxy binder combined with stone chips to form a terrazzo topping, especially resistant to chemicals and abrasion.

Terrazzo
A mosaic floor or paving composed of marble or other stone chips, set in a cementitious or resinous matrix and ground when dry.

Standard terrazzo
A ground and polished terrazzo finish consisting mainly of relatively small stone chips.

Venetian terrazzo
A ground and polished terrazzo finish consisting mainly of large stone chips, with smaller chips filling the spaces between.

Rustic terrazzo
A uniformly textured terrazzo finish produced by washing the mixture prior to setting so as to expose the chips, which are not ground.

Palladiana
A mosaic terrazzo finish consisting of cut or fractured marble slabs set by hand in the desired pattern, with smaller chips filling the spaces between.
linoleum
A resilient floor covering formed by coating burlap or canvas with heated linseed oil, powdered cork, and rosin, and adding pigments to achieve the desired colors and patterns. Linoleum should be used only on a subfloor suspended above grade.

vinyl sheet
A resilient floor covering composed principally of polyvinyl chloride in combination with mineral fillers, pigments, and a fiber, felt, or foam backing.

vinyl tile
A resilient floor tile composed principally of polyvinyl chloride in combination with mineral fillers and pigments.

cork tile
A resilient floor tile composed of granulated cork and synthetic resin binders, finished with a protective coat of wax or a film of clear polyvinyl chloride. Cork tile should be used only on a subfloor suspended above grade.

rubber tile
A resilient floor tile composed of natural or synthetic rubber with mineral fillers.

pile weight
The average weight of pile yarn in a carpet, stated in ounces per square yard.

pile density
The weight of pile yarn per unit volume of carpet, stated in ounces per cubic yard.

pitch
The crosswise number of tuft-forming pile yarns in a 27-inch (686 mm) width of woven carpet.

gauge
The spacing of tufts across the width of a tufted or knitted carpet, expressed in fractions of an inch.

woven carpet
Carpet made by simultaneously interweaving the backing and pile yarns on a loom.

tufted carpet
Carpet made by mechanically stitching pile yarn through a primary fabric backing and bonded with latex to a secondary backing.

knitted carpet
Carpet made by chiefly using pile yarn for texture, with pile yarns short.

flocking carpet
Carpet made by entwining short strands of pile fiber electrostatically against an adhesive-coated backing.

needlepunched carpet
Carpet made by punching carpet fibers back and forth through a woven polypropylene sheet with barbed needles to form a felted fiber mat.

carpet tile
A flooring tile made of carpeting material.

resilient flooring
Any of various floor coverings capable of springing back to the original form after being bent or compressed, available in either tile or sheet form and set in mastic over a suitable underlayment.

carpet
A heavy woven, knitted, needle-tufted, or felted fabric for covering a floor.

loop pile
A carpet texture created by weaving, tufting, or knitting the pile yarn into loops.

cut pile
A carpet texture created by cutting each loop of pile yarn, producing a range of textures from informal shag to short, dense velvets.

backing
The foundation material securing the pile yarns of a carpet and providing it with stiffness, strength, and dimensional stability.

carpet pad
A pad of cellular rubber or felted animal hair, over which carpet is installed to increase resilience, improve durability, and reduce impact sound transmission. Also called carpet cushion.

mastic
Any of various pasty substances used as a sealant, adhesive, or protective coating.

underlayment
A material, as plywood or hardboard, laid over a subfloor to provide a smooth, even base for resilient flooring, carpet, or other nonstructural flooring.
FORCE

An influence on a body producing or tending to produce a change in shape or movement.

vector
A quantity possessing both magnitude and direction, represented by an arrow whose length is proportional to the magnitude and whose orientation in space represents the direction.

line of action
A line of indefinite length of which a force vector is a segment. A force acting on a rigid body may be regarded as acting anywhere along its line of action without altering the external effect of the force.

components of a force
Two or more concurrent forces into which a single force may be resolved and having a net effect on a rigid body equivalent to that of the initial force. For convenience in structural analysis, these are usually the rectangular or Cartesian components of the initial force.

moment
The tendency of a force to produce rotation of a body about a point or line, equal in magnitude to the product of the force and the moment arm and acting in a clockwise or counterclockwise direction.

moment center
The point at which the axis of a moment intersects the plane of the forces causing the moment.

moment arm
The perpendicular distance from the line of action of a force to the point or line about which a moment occurs. Also called force arm.

couple
A force system of two equal, parallel forces acting in opposite directions and tending to produce rotation but not translation. The moment of a couple is equal in magnitude to the product of one of the forces and the perpendicular distance between the two forces.

parallel forces
Nonconcurent forces having parallel lines of action.

nonconcurent forces
Forces having lines of action that do not intersect at a common point, the vector sum of which is a single force that would cause the same translation and rotation of a body as the set of original forces.

collinear forces
Concurrent forces having the same line of action, the vector sum of which is the algebraic sum of the magnitudes of the forces, acting along the same line of action.

coplanar forces
Forces that operate in a single plane.

vector sum
A single vector equivalent to and producing the same effect on a body as the application of two or more given vectors. Also called resultant.

triangle method
A graphic technique for finding the vector sum of two concurrent forces by displacing one force vector parallel to itself until its tail coincides with the head of the other and completing the triangle with a vector that represents the resultant force.

polygon method
A graphic technique for finding the vector sum of a coplanar system of several concurrent forces by drawing to scale each force vector in succession, with the tail of each at the head of the one preceding it, and completing the polygon with a vector that represents the resultant force, extending from the tail of the first to the head of the last vector.

center of gravity
The point at which the entire weight of a body may be considered concentrated so that, if supported at this point, the body would remain in equilibrium in any position coincident with the center of mass in a uniform gravitational field. A force whose line of action passes through the center of gravity of a body affects only its translational equilibrium; the body remains in rotational equilibrium.

center of mass
The point at which the entire mass of a body may be considered concentrated such that the moment about any line through the point is zero.

centroid
The center of a one- or two-dimensional figure, about which the sum of the displacements of all points in the figure is zero.
The bodies or mic's with mechanics that deals with the effects of forces on bodies or material systems, comprising of statics and dynamics.

Statics
The branch of mechanics that deals with the rotations of forces producing equilibrium among bodies or material systems.

Dynamics
The branch of mechanics that deals with the motion and equilibrium of bodies or material systems under the action of forces.

Free-body diagram
A graphic representation of the complete system of applied and reactive forces acting on a body or an isolated part of a structure. Every elementary part of a structural system has reactions that are necessary for the equilibrium of the part, just as the larger system has reactions at its supports that serve to maintain the equilibrium of the whole. Also called equilibrium diagram.

1. Newton's first law of motion
The physical law that a body remains at rest or in motion with a constant velocity unless an external force acts on the body. Also called law of inertia.

Inertia
The tendency of a body at rest to remain at rest and of a body in motion to retain its velocity along a straight line unless acted upon by an external force.

Equilibrium
The state of balance or rest resulting from the equal action of opposing forces. For a rigid body to be in equilibrium, two conditions are necessary. First, the vector sum of all forces acting on it must equal zero, ensuring translational equilibrium: \[ \sum F_x = 0, \sum F_y = 0, \sum F_z = 0. \]
Second, the algebraic sum of all moments of the forces about any point or line must equal zero, ensuring rotational equilibrium: \[ \sum M = 0. \]

2. Newton's second law of motion
The physical law that the sum of the forces acting on a body is equal to the product of the mass of the body and the acceleration produced by the force, with motion in the direction of the resultant of the forces.

\[ \text{force (F)} = \text{mass (m)} \times \text{acceleration (a)} \]

3. Newton's third law of motion
The physical law that for every force acting on a body, the body exerts a force having equal magnitude and opposite direction along the same line of action as the original force. Also called the law of action and reaction.

Applied force
An external force acting directly on a body.

Reactive force
An external force generated by the action of one body on another.
FORTIFICATION

A defensive military work constructed for the purpose of strengthening a position.

- **circumvallate**
  - Surrounded by or as if by a rampart.

- **sally port**
  - A gateway in a fortification permitting a large number of troops to move rapidly from the besieged position and attack the besiegers.

- **canemate**
  - A vault or chamber in a rampart, having embrasures for artillery.

- **curtain**
  - An enclosing wall connecting two bastions or towers.

- **gorge**
  - The rear passageway into a bastion or similar outwork.

- **termreplein**
  - The top platform or horizontal surface of a rampart where guns are mounted.

- **flank**
  - The part of a bastion that extends from the curtain to the face.

- **shoulder**
  - The angle between the face and the flank of a bastion.

- **face**
  - Either of the two outer sides that form the salient angle of a bastion.

- **parapet**
  - A defensive wall or elevation of earth or stone protecting soldiers from enemy fire.

- **cordon**
  - A projecting course of stones below the parapet of a rampart.

- **berm**
  - A ledge between the exterior slope of a rampart and the most of a fortification. Also, berm.

- **rampart**
  - A broad embrasure of earth raised as a fortification around a place and usually surmounted by a parapet.

- **motte**
  - A steep mound of earth surrounded by a ditch and surmounted by a timber stockade and tower.

- **bailey**
  - The outer wall of a castle or the courtyard enclosed by it.

- **pallisade**
  - A fence of poles set firmly in the ground for enclosure or defense.

- **pale**
  - A pointed stick or stake.


**turret**
A small tower forming part of a larger structure, frequently beginning some distance above the ground. Also called tourrille.

**battlement**
A temporary wooden fortification in medieval architecture, erected at the top of a wall during a siege.

**chemin-de-ronde**
A continuous gangway providing a means of communication behind the rampart of a fortified wall.

**machicolation**
A projecting gallery or parapet at the top of a castle wall, supported by corbelled arches and having openings in the floor through which stones, molten lead, or boiling oil could be cast upon an enemy beneath.

**great hall**
A large hall serving as the main or central gathering space of a castle.

**dungeon**
A dark, often underground prison or cell, as in a medieval castle.

**oubliette**
A secret dungeon having an opening only in the ceiling, through which prisoners were dropped.

**keep**
The innermost and strongest structure or tower of a medieval castle, used as a place of residence, esp. in times of siege. Also called donjon.

**chapel**
A subordinate or private place of worship or prayer within a larger complex.

**ward**
An open space within or between the walls of a castle.

**barbican**
An outwork on the approach to a castle or town, esp. a watchtower at the gate or drawbridge. Also, barbacan.

**enceinte**
A fortified wall enclosing a castle or town, or the place so enclosed.

**battlement**
A parapet having a regular alternation of merlons and crenels, originally for defense but later used as a decorative motif. Also called embrasure.

**merlon**
One of the solid parts between the crenels of a battlement.

**crenel**
Any of the open spaces alternating with the merlons of a battlement.

**crenellated**
Having battlements.

**embrasure**
An opening, as a loophole or crenel, through which missiles may be discharged.

**loophole**
A small or narrow opening in a wall of a fortification for the discharge of missiles.

**eyelot**
A small aperture in the wall of a medieval castle used as a window or loophole. Also, oilet, oyelet.

**drawbridge**
A bridge that can be raised, let down, or drawn aside to prevent access or to permit passage beneath it.

**portcullis**
A strong grating of iron or timber hung over the gateway of a fortified place in such a way that it could be lowered quickly to prevent passage.

**moat**
A broad, deep ditch, usually filled with water, surrounding the rampart of a fortified town, fortress, or castle as protection against assault.

**castle**
A fortified group of buildings usually dominating the surrounding country and held by a prince or noble in feudal times.

**citadel**
A fortress in a commanding position in or near a city, used in the control of the inhabitants and in defense during attack or siege.
The lowest dimension of a building or other construction partly or wholly below the surface of the ground, designed to support and transmit the superstructure and transmit its loads to the soil directly or indirectly through a supporting soil mass. A foundation system placed directly below the lowest part of the structure and transmitting the loads directly to the supporting soil mass.
foundation wall
A wall occurring below the floor nearest grade, designed to support and anchor the superstructure.

ground slab
A concrete slab placed over a dense or compacted base and supported directly by the ground, usually reinforced with welded wire fabric or a grid of reinforcing bars to control any cracking caused by drying shrinkage or thermal stresses. Separate or integral footings are required for heavy or concentrated loads. Over problem soils, the slab must be designed as a mat or raft foundation. Also called slab on grade.

base course
A layer of coarse granular materials placed and compacted on undisturbed soil or prepared fill to prevent the capillary rise of moisture to a concrete ground slab.

substratum
Something that underlies or serves as a base or foundation. Also called substrate.

stepped footing
A continuous strip footing that changes levels in stages to accommodate a sloping site or bearing stratum.

spread footing
A concrete footing extended laterally to distribute the foundation load over a wide enough area so that the allowable bearing capacity of the supporting soil is not exceeded.

strip footing
The continuous spread footing of a foundation wall.

isolated footing
A single spread footing supporting a freestanding column or pier.

continuous footing
A reinforced concrete footing extended to support a row of columns.

raft
A mat footing or铺 footings is provided for spread or raft footings that can support a number of columns or an entire building.

ribbed mat
A mat foundation reinforced by a grid of ribs above or below the slab.

grillage
A framework of crossing beams for spreading heavy loads over large areas. Also called grid.

cellular mat
A composite structure of reinforced concrete slabs and basement walls serving as a mat foundation.
deep foundation
A foundation system that extends down through unsuitable soil to transfer building loads to a more appropriate bearing stratum well below the superstructure.

pile foundation
A system of piles, pile caps, and tie beams for transferring building loads down to a suitable bearing stratum, used esp. when the soil mass directly below the construction is not suitable for the direct bearing of footings.

bearing stratum
A stratum of soil or rock on which a footing bears, or to which a building load is transmitted by a pile or caisson.

pile
A long slender column of wood, steel, or reinforced concrete, driven or hammered vertically into the earth to form part of a foundation system.

end-bearing pile
A pile depending principally on the bearing resistance of soil or rock beneath its base for support. The surrounding soil mass provides a degree of lateral stability for the long compression member. Also called point-bearing pile.

allowable pile load
The maximum axial and lateral loads permitted on a pile, as determined by a dynamic pile formula, a static load test, or a geotechnical investigation of the foundation soil.

glide eccentricity
The deviation of a pile from its plan location or from the vertical, resulting in a reduction of its allowable load.

pipe pile
A heavy steel pipe driven with the lower end either open or closed by a heavy steel plate or point and filled with concrete. An open-ended pipe pile requires inspection and excavation before being filled with concrete.

H-pile
A steel H-section driven as a pile, sometimes encased in concrete to a point below the water table to prevent corrosion. H-sections can be welded together in the driving process to form any length of pile.

dynamic pile formula
Any of several formulas by which the allowable axial load on a pile can be calculated from the energy required for a pile hammer to advance the pile foot a specified distance into the subsoil.

point of resistance
The point at which a pile load causes a specified net settlement after being applied continuously for a specified period of time.

point of refusal
The point at which no additional settlement takes place after a pile has been loaded continuously for a specified period of time.

yield point
The point at which an increase in pile load produces a disproportionate increase in settlement.
cast-in-place concrete pile
A pile constructed by placing concrete into a shaft in the ground.

cased pile
A concrete pile constructed by driving a steel pipe or casing into the ground until it meets the required resistance and then filling it with concrete.

casing
A cylindrical steel section, sometimes corrugated or tapered for increased stiffness, driven or dropped in place to serve as a form for a cast-in-place concrete pile.

mandrel
A heavy steel tube or core that is inserted into a thin-walled casing to prevent it from collapsing in the driving process, and then withdrawn before concrete is placed in the casing.

pier
A cast-in-place concrete foundation formed by boring with a large auger or excavating by hand a shaft in the earth to a suitable bearing stratum and filling the shaft with concrete.

caisson
A pier, esp. when the boring is 2 ft. (610 mm) or larger in diameter to permit inspection of the bottom.

bell
The base of a caisson enlarged to increase its bearing area.

bell bucket
An attachment to an earth auger having expanding blades for excavating a bell at the bottom of a caisson shaft.

uncased pile
A concrete pile constructed by driving a concrete plug into the ground along with a steel casing until it meets the required resistance, and then ramming concrete into place as the casing is withdrawn.

pedestal pile
A cast-in-place concrete pile having an enlarged foot to increase its bearing area and strengthen the bearing stratum by compression, formed by forcing concrete out at the bottom of the casing into the surrounding soil.

bulb
A bulge cast or formed at the bottom of a cast-in-place concrete pile to enlarge its bearing area and strengthen the bearing stratum by compression.

sand pile
A base for a footing in soft soil, made by compacting sand in a cavity left by a timber pile.

socketed caisson
A caisson that is drilled into a stratum of solid rock rather than belted.

rock caisson
A socketed caisson having a steel in-section core within a concrete-filled pipe casing.
FRAME

A skeletal structure of relatively slender members designed to give shape and support to a building or other construction.

Braced frame
A structural frame whose resistance to lateral forces is provided by diagonal or other type of bracing.

Rigid frame
A structural frame of linear members rigidly connected at their joints. Applied loads produce axial, bending, and shear forces in all members of the frame since the rigid joints restrict the ends of the members from rotating freely. In addition, vertical loads cause a rigid frame to develop horizontal deflections at its base. A rigid frame is statically indeterminate and rigid only in its plane. Also called moment-resisting frame.

Hinged frame
A rigid frame connected to its supports with pin joints. The pin joints prevent high bending stresses from developing by allowing the frame to rotate as a unit when strained by support settlements, and to flex slightly when stressed by changes in temperature.

Three-hinged frame
A structural assembly of two rigid sections connected to each other and to its supports with pin joints. While more sensitive to deflection than either the fixed or hinged frame, the three-hinged frame is least affected by support settlements and thermal stresses. The three pin joints also permit the frame to be analyzed as a statically determinate structure.

Plastic hinge
A virtual hinge that develops when all fibers are fully yielded at a cross section of a structural member.

Fixed frame
A rigid frame connected to its supports with fixed joints. A fixed frame is more resistant to deflection than a hinged frame but also more sensitive to support settlements and thermal expansion and contraction.

Slipway
The lateral displacement produced in a rigid frame by lateral loads or asymmetrical vertical loading.

A-frame
A building constructed with a steep triangular frame resting directly on a foundation.
Vierendeel truss
A framed beam structure having vertical web members rigidly connected to parallel top and bottom chords. A Vierendeel truss is not a true truss since its members are subject to nonaxial bending forces. Also called Vierendeel girder.

portal method
A method for analyzing a multi-story frame as a cantilever subjected to bending. The portal method assumes that a point of inflection occurs at the midlength of all members in the frame, and that the frame acts as a series of independent portals to which the total lateral shear at each level is distributed in proportion to the floor area each column supports. Imaginary pin joints can be inserted at each point of inflection, making the frame a statically determinate structure.

cantilever method
A method for analyzing a multi-story frame as a cantilever subject to bending. The cantilever method assumes that a point of inflection occurs at the midlength of all members in the frame, and that the axial force in each column of a story is proportional to the horizontal distance from the centroid of all the columns on that level. Imaginary pin joints can be inserted at each point of inflection, making the frame a statically determinate structure.

moment distribution method
A method for analyzing an indeterminate structure through an iterative process of fixing a rigid joint in space, determining the fixed-end moments at the joint, then releasing the joint to allow it to rotate, and studying the transfer of moments and rotations to other joints.

Indeterminate
Of or pertaining to a structure having more than the minimum number of members, connections, or supports needed for stability, resulting in more unknown forces than there are static equations for solution.

degree of indeterminacy
The difference between the number of unknown forces in an indeterminate structure and the number of static equations available for solution.

determinate
Of or pertaining to a structure able to be analyzed completely by means of the principles of statics.

redundancy
A structural member, connection, or support not required for a statically determinate structure.

degree of redundancy
The number of members beyond that required for the stability of a statically determinate structure.
framing
The act, process, or manner of fitting and joining together relatively slender members to give shape and support to a structure.

framework
A skeletal structure of parts fitted and joined together in order to support, define, or enclose.

skeleton construction
A system of construction utilizing a framework of columns and beams to transmit building loads down to the foundation.

plank-and-beam construction
Floor or roof construction utilizing a framework of timber beams to support wood planks or decking.

post-and-beam construction
Wall construction utilizing a framework of vertical posts and horizontal beams to carry floor and roof loads. Also called post-and-lintel construction.

light frame construction
A system of construction utilizing closely spaced and sheathed members of dimension lumber or light-gauge metal to form the structural elements of a building.

principal beam
Any large beam in a structural frame that supports secondary beams or joists. Also called primary beam.

secondary beam
Any beam that transmits its load to a principal beam.

tertiary beam
Any beam that transmits its load to a secondary beam.

girder
A large principal beam designed to support concentrated loads at isolated points along its length.

trabeate
Of or pertaining to a system of construction employing beams or lintels. Also, trabeated.

arcuate
Of or pertaining to a system of construction employing arches or arched forms. Also, arcuated.

pole construction
A system of construction employing a vertical structure of pressure-treated wood poles which are firmly embedded in the ground as a pier foundation.

pole house
A house of pole construction.

pole
A long, cylindrical, often slender piece of wood or metal.

stilt
One of several piles or posts for supporting a structure above the surface of land or water.
principal
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principal rafter

straining piece

queen post

summer

A heavy timber serving as a principal beam or girder. Also called summertree.

plate

knee brace

breastsummer

A summer supporting a wall over an opening. Also called breast beam.

trave

A cross beam or a bay formed by crossbeams.

blind

A principal beam supporting the ends of two sets of floor joists. Also called binding beam.

leaves

A lantern or turret on the roof of a medieval building having slatted apertures for the escape of smoke and admission of air.

thatch

A material for covering a roof, as straw, rushes, or palm leaves, fastened together so as to shed water and sometimes to provide thermal insulation. Also, thatching.

wattle and daub

A form of wall construction, consisting of wattles covered and plastered with clay or mud. Also, wattle and daub.

wattle

A framework of rods or poles interwoven with thin branches, twigs, and reeds, used in the construction of walls and fences.

nog

One of a number of short wooden pieces inserted between the principal members of a half-timbered wall to strengthen the frame and retain the brick infill. Also, nogging.

nogging

Brick masonry used to fill the spaces between the members of a timber frame.

summer beam

A horizontal timber connecting the posts of a braced frame at an intermediate level above the ground floor.

raised girder

A girder parallel to and level with the floor joists. Also called flush girder.

dropped girder

A girder set below the floor joists it supports.

half-timbered

Having a timber framework with the spaces filled with masonry or plaster. Also, half-timbered.

open-timbered

Constructed so that a framework of timbers is exposed.

solar

A room or apartment on an upper floor of a medieval English house. Also, solar, solar.

jetty

An upper story of a building projecting beyond the one below. Also, jetty.

pan

A major vertical division of a wall, esp. a nogged panel of half-timber construction.

braced frame

A building frame employing a heavy, braced framework of solid girts mortised into solid posts the full height of the frame, with studs one story high filling the interstices. Also called full frame.
GEOMETRY

A branch of mathematics that deals with the properties, measurement, and relationships of points, lines, angles, and solids, deduced from their defining conditions by means of certain assumed properties of space.

point
A dimensionless geometric element that has no property but location, as the intersection of two lines.

y-axis
The axis along which ordinates or y-values are measured in a Cartesian coordinate system. Also called axis of ordinates.

z-coordinate
A coordinate determined by measuring parallel to the z-axis.

The space between two lines diverging from a common point, or within two planes diverging from a common line, the figure so formed.

line
A geometric element generated by a moving point and having extension without breadth or thickness.

angle
The space between two lines diverging from a common point, or within two planes diverging from a common line, the figure so formed.

absissa
A coordinate determined by measuring parallel to the x-axis. Also called x-coordinate.

coordinate
Any of a set of numbers that serve to specify the location of a point on a line, surface, or in space by reference to a fixed figure or system of lines.

Cartesian coordinate
Any of the coordinates for locating a point on a plane by its distance from each of two intersecting lines, or in space by its distance from each of three planes intersecting at a point.

ordinate
A coordinate determined by measuring parallel to the y-axis. Also called y-coordinate.

rectangular coordinate system
A Cartesian coordinate system in which the axes or coordinate planes are perpendicular.

x-axis
The axis along which abscissas or x-values are measured in a Cartesian coordinate system. Also called axis of abscissas.

vertical
Perpendicular to the plane of the horizon.

oblique
Neither parallel nor perpendicular to a given line or surface.

horizontal
Parallel to or operating in a plane parallel to the horizon.

vertex
The point at which the sides of an angle intersect.

right angle
An angle of 90° formed by the perpendicular intersection of two straight lines.

acute angle
An angle less than 90°.

obtuse angle
An angle greater than 90°, but less than 180°.

Euclidean geometry
Geometry based upon the postulates of Euclid, esp. the postulate that only one line may be drawn through a given point parallel to a given line.

radius vector
A straight line segment thus joining a variable point to the fixed origin of a polar coordinate system.

cartesian coordinate system
A system for locating a point on a plane by its radius vector and polar angle.

parallel
Extending in the same direction, equidistant at all points, and never converging or diverging.

skew lines
Any lines in space that are neither parallel nor intersecting.

angle
The amount of rotation needed to bring one line or plane into coincidence with another, measured in radians or in degrees, minutes, and seconds.

radian
A unit of angular measure equal to the central angle subtending an arc equal in length to the radius: 360° is approx. 6.28 rad.

degree
A unit of angular measure, equal to 1/360 of a complete angle or turn, or of the circumference of a circle.

minute
The 60th part of a degree of angular measure.

second
The 60th part of a minute of angular measure.
height
Extent or distance upward from a given level to a fixed point.

base
The line or surface forming the part of a geometric figure that is most nearly horizontal or on which it is supposed to stand, from which an altitude can be constructed.

isosceles
Having two sides of equal length.

acute
Composed only of acute angles.

obtuse
Having an obtuse angle.

scalene
Having three unequal sides.

coincident
Occupying the same place in space or line.

congruent
Coinciding at all points when superimposed.

similar
Having corresponding sides proportional and corresponding angles equal.

goingonometry
The branch of mathematics that deals with the properties of triangles and trigonometric functions, and of their applications.

trigonometric function
A function of an angle, as sine or cosine, expressed as the ratio of the sides of a right triangle.

goinge
The trigonometric function defined as the ratio of the side opposite a given angle to the hypotenuse.

goinge
The trigonometric function defined as the ratio of the side adjacent to a given angle to the hypotenuse.

goinge
The trigonometric function defined as the ratio of the side opposite a given angle to the side adjacent to the angle.

goinge
The trigonometric function defined as the ratio of the hypotenuse to the side adjacent to a given angle.

goinge
The trigonometric function defined as the ratio of the hypotenuse to the side opposite a given angle.

goinge
The trigonometric function defined as the ratio of the side opposite a given angle to the side adjacent to the angle.

Pythagorean theorem
The theorem that the square of the length of the hypotenuse of a right triangle equals the sum of the squares of the lengths of the other two sides. $a^2 + b^2 = c^2$.
circle
A closed plane curve every point of which is equidistant from a fixed point within the curve.

arc
Any part of the circumference of a circle.

radius
A straight line extending from the center of a circle or sphere to the circumference or bounding surface.

sector
A plane figure bounded by two radii and the included arc of a circle.

diameter
A straight line extending through the center of a circle or sphere and meeting the circumference or bounding surface at each end.

center
The point within a circle or sphere equally distant from all points of the circumference or surface, or the point within a regular polygon equally distant from the vertices.

circumference
The boundary line of a closed curvilinear figure, esp. the perimeter of a circle.

ellipses
A closed plane curve generated by a point moving in such a way that the sums of its distances from two fixed points, the foci, is a constant.

major axis
The axis passing through the two foci of an ellipse.

minor axis
The axis of an ellipse that is perpendicular to the major axis at a point equidistant from the foci.

chord
The straight line segment between two points on a given curve.

parabola
A plane curve generated by a point so moving that it remains equidistant from a fixed line and a fixed point not on the line.

hyperbola
A plane curve generated by a point so moving that the difference of the distances from two fixed points in the plane remains constant.

asymptote
A straight line limiting a curve such that the perpendicular distance from the curve to the line approaches zero as the curve is extended to infinity.

eccentric
Not having the same center or center line.

eff-center
Not centered or at the center point.

concentric
Having a common center, as circles or spheres.

centerline
An imaginary line that bisects a plane figure.

quadrate
An arc of 90°, or any of the four quarters into which a plane figure is divided by two perpendicular lines, numbered counterclockwise from the upper right.

curve
A continuously bending line, without angles.

concave
Curved inward like the interior of a circular arc or hollow sphere.

infection
A change of curvature from convex to concave or vice versa.

corner
Curved or rounded outward like the exterior of a circle or sphere.

cusp
A point where two branches of curve meet, and are tangents.

tangent
Touching at a single point, as a straight line is related to a curve, or in contact along a single line, as a plane with a cylinder.

evolute
The locus of the centers of curvature of, or the envelope of the normals to, another curve.

involute
A curve traced by a point on a string as it is kept taut and unwound from a stationary cylinder.

helix
A three-dimensional curve traced on a cylinder or cone by the rotation of a point crossing its right sections at a constant oblique angle.

cycloid
A curve generated by a point on the circumference of a circle as it rolls along a straight line.
**spheroid**
A solid geometrical figure similar in shape to a sphere, as an ellipsoid.

**ellipsoid**
A solid figure all plane sections of which are ellipses.

**prolate spheroid**
A spheroid generated by rotating an ellipse about its major axis.

**oblate spheroid**
A spheroid generated by rotating an ellipse about its minor axis.

**right circular cylinder**
A cylinder generated by a rectangle about one of its sides.

**cone**
A solid whose surface is generated by a straight line, the generator, passing through a fixed point, the vertex, and moving along the intersection with a closed plane curve, the directrix.

**right circular cone**
A cone generated by rotating a right triangle about one of its legs.

**branched**
Having the apex, vertex, or end cut off by a plane, esp. by one parallel to the base.

**frustum**
The portion of a conical solid left after cutting off the top with a plane parallel to the base.

**elliptic**
A conic section formed by the intersection of a right circular cone with a plane that cuts through both the axis and the surface of the cone.

**parabola**
A conic section formed by the intersection of a right circular cone with a plane parallel to a generator of the cone.

**hyperbola**
A conic section formed by the intersection of a right circular cone with a plane that makes a greater angle with the base than does the generator of the cone.

**solid geometry**
The branch of geometry that deals with solid figures and three-dimensional space.

**sphere**
A solid generated by the revolution of a semicircle about its diameter, whose surface is at all points equidistant from the center.

**polyhedron**
A solid geometric figure bounded by plane faces.

**regular**
Having all faces congruent regular polygons and all solid angles congruent.

**pyramid**
A polyhedron having a polygonal base and triangular faces meeting at a common point or vertex.

**tetrahedron**
A regular polyhedron bounded by four plane faces.

**cube**
A solid bounded by six equal square sides, the angle between any two adjacent faces being a right angle.

**hexahedron**
A regular polyhedron having six faces.

**prism**
A polyhedron having ends that are parallel, congruent polygons and sides that are parallelograms.

**Platonic solid**
One of the five regular polyhedrons: tetrahedron, hexahedron, octahedron, dodecahedron, or icosahedron.

**octahedron**
A regular polyhedron having eight faces.

**dodecahedron**
A regular polyhedron having 12 faces.

**icosahedron**
A regular polyhedron having 20 faces.
**GLASS**

A hard, brittle, usually transparent or translucent substance, produced by fusing silica together with a flux and a stabilizer into a mass that cools to a rigid condition without crystallization.

**crown glass**
An old form of window glass formed by blowing and whirling a hollow sphere of glass into a flat, circular disk with a center hump left by the worker's rod.

**sheet glass**
A flat, soda-lime-silica glass fabricated by drawing the molten glass from a furnace (drawn glass), or by forming a cylinder, decreeing it lengthwise, and flattening it (cylinder glass). The fire-polished surfaces are not perfectly parallel, resulting in some distortion of vision.

**plate glass**
A flat, soda-lime-silica glass that is extremely smooth and nearly distortion-free, manufactured by pouring molten glass onto a surface of molten tin and allowing it to cool slowly. Float glass is the successor to plate glass and accounts for the majority of flat glass production.

**insulating glass**
A glass unit consisting of two or more sheets of glass separated by hermetically-sealed airspaces.

**hermetic**
Made airtight by fusing or sealing.

**tinted glass**
Glass having a chemical admixture to absorb a portion of the radiant heat and visible light that strikes it. Iron oxide gives the glass a pale blue green tint; cobalt oxide and nickel imparts a grenish tint; selenium imparts a bronze tint. Also called heat-absorbing glass.

**reflective glass**
Glass having a thin, translucent metallic coating bonded to the exterior or interior surface to reflect a portion of the light and radiant heat that strike it.

**low-iron glass**
Glass that transmits visible light while selectively reflecting the longer wavelength of radiant heat, produced by depositing a low-iron coating either on the glass itself or over a transparent plastic film suspended in the sealed air space of insulating glass. Also called low-e glass.

**emissivity**
The relative ability of a surface to emit radiant heat, measured against a black body at the same temperature.

**shading coefficient**
The ratio of solar heat transmission through a particular glass to the solar heat transmission through double-strength clear glass.

**annealed glass**
Glass that is cooled slowly to relieve internal stresses.

**heat-strengthened glass**
Annealed glass that is partially tempered by a process of reheating and slow cooling. Heat-strengthened glass has about twice the strength of annealed glass of the same thickness.

**tempered glass**
Annealed glass that is reheated to just below the softening point and then rapidly cooled to induce compressive stresses in the surfaces and edges of the glass. Tempered glass has twice to five times the resistance of annealed glass to impact and thermal stresses but cannot be altered after fabrication. When fractured, it breaks into relatively harmless particles.

**laminated glass**
Two or more plies of flat glass bonded under heat and pressure to interlayers of polyvinyl butyral resin to prevent the fragments of the glass from breaking. Also called safety glass.

**safety glass**
Laminated glass having exceptional tensile and impact strength, consisting of multiple plies of glass bonded under heat and pressure to interlayers of polyvinyl butyral resin.

**acoustical glass**
Laminated or insulating glass used for sound control.

**wire glass**
Flat or patterned glass having a square or diamond wire mesh embedded within it to prevent shattering in the event of breakage or excessive heat. Wire glass is considered a safety glazing material.

**patterned glass**
Glass having an irregular surface pattern formed in the rolling process to obscure vision or to diffuse light. Also called figured glass.

**obscure glass**
Glass having one or both sides acid-etched or sandblasted to obscure vision.

**acid-etched glass**
An opaque glass for concealing the structural elements in curtain wall construction, produced by fusing a ceramic frit to the interior surface of tempered or heat-strengthened glass.

**glass block**
A translucent, hollow block of glass with clear, textured, or patterned faces, made by fusing two halves together with a partial vacuum inside and used for glazing openings.

**glass brick**
A solid, impact-resistant glass block unit, sometimes having an insert or coating to reduce solar heat transmission.
**face glazing**  
The setting of a glass pane in a rabbeted frame, holding it in place with glazer's points, and sealing it with a beaded bead of putty or glazing compound.

**face putty**  
The putty or glazing compound formed on the exterior side of a glass pane.

**bedding**  
A thin layer of putty or glazing compound laid in the rabbet of a window sash to give a pane of glass an even backing.

**glazer's point**  
A small, pointed piece of sheet metal for holding a glass pane in a wood sash until the face putty has hardened. Also called glazing brad, spike.

**putty**  
A compound of whiting and linseed oil, of doughlike consistency when fresh, used in securing window panes or patching woodwork defects.

**glazing compound**  
An adhesive compound used as putty, formulated so as not to become brittle with age.

**glass size**  
The size of a glass pane or unit required for glazing an opening, allowing for adequate edge clearances. Also called glazing size.

**united inches**  
The sum of one length and one width of a rectangular glass pane or unit, measured in inches.

**edge block**  
One of the small blocks of synthetic rubber placed between the side edges of a glass pane or unit and a frame to center it, maintain a uniform width of sealant, and limit lateral movement caused by building vibrations or thermal expansion or contraction. Also called centering shim, spacer.

**face clearance**  
The distance between the face of a glass pane or units and the nearest face of its frame or stop, measured normal to the plane of the glass.

**bite**  
The amount of overlap between the edge of a glass pane or unit and a window frame, stop, or lock strip gasket.

**edge clearance**  
The distance between the edge of a glass pane or unit and a window frame, measured in the plane of the glass.

**glass mullion system**  
A glazing system in which sheets of tempered glass are suspended from special clamps, stabilized by perpendicular stiffeners of tempered glass, and joined by a structural silicone sealant and sometimes by metal patch plates.

**double glazing**  
The installation of two parallel panes of glass with a sealed air space between to reduce the transmission of heat and sound.

**wet glazing**  
The setting of a glass in a window frame with glazing tape or a liquid sealant.

**glazing tape**  
A preformed ribbon of synthetic rubber having adhesive properties and used in glazing to form a watertight seal between glass and frame.

**cap sealant**  
An adhesive liquid of synthetic rubber injected into the joint between a glass pane or unit and a window frame, curing to form a watertight seal. Also called cap bead.

**glazing bead**  
A wood molding or metal section secured against the edge of a glass pane or unit to hold it in place. Also called glazing stop.

**dry glazing**  
The setting of a glass in a window frame with a compression gasket instead of glazing tape or a liquid sealant.

**compression gasket**  
A preformed strip of synthetic rubber or plastic compressed between a glass pane or unit and a window frame to form a watertight seal and cushion for the glass.

**lockstrip gasket**  
A preformed gasket of synthetic rubber for securing a glass pane or unit in a window frame or opening, held in compression by forcing a keyed locking strip into a groove in the gasket.

**flush glazing**  
A glazing system in which the framing members are set entirely behind the glass panes or units to form a flush exterior surface, the glass adhering to the framing with a structural silicone sealant.

**structural sealant**  
A high-strength silicone sealant capable of adhering glass to a supporting frame.

**butt-joint glazing**  
A glazing system in which the glass panes or units are supported at the head and sill in a conventional manner, with their vertical edges being joined with a structural silicone sealant without Mullions.
HARDWARE

The metal tools, fastenings, and fittings used in construction.

rough hardware
Bolts, screws, nails, and other metal fittings that are concealed in a finished construction.

finish hardware
Exposed hardware serving a decorative as well as a utilitarian purpose, as the locks, hinges, and other accessories for doors, windows, and cabinets. Also called architectural hardware.

doors hardware
The finish hardware required for hanging and operating a door.

door closer
A hydraulic or pneumatic device for controlling the closing of a door and preventing it from slamming. Also called door check.

overhead concealed closer
A door closer concealed in the head of a doorframe.

backcheck
A device in a hydraulic door closer for slowing the speed with which a door may be opened.

knocker
A hinged ring, bar, or knob on a door for use in knocking.

doors plate
A small identifying plate on the outside door of a house or room, bearing the occupant's name, the house or apartment number, or the like.

Judas
A peephole, as in an entrance door or the door of a prison cell. Also called Judas hole.

doors chain
A short chain with a removable slide fitting that can be attached between the inside of a door and the doorsill to prevent the door from being opened more than a few inches without the chain being removed.

mail slot
A small opening in an exterior door or wall, often with a lugged closer, through which mail is delivered. Also called letter slot.

doors stop
A device for holding a door open, as a wedge or small weight.

stopper
A projecting rim, guard, pad, or disk for absorbing shock or preventing damage from bumping.

hand
The position of the hinges of a door, in terms of right and left, when seen from the exterior of the building or room to which the doorway leads.

left-hand
Having the hinges on the left of an inward opening door when seen from the exterior of the building or room to which the doorway leads.

left-hand reverse
Having the hinges on the left of an outward opening door when seen from the exterior of the building or room to which the doorway leads.

right-hand
Having the hinges on the right of an inward opening door when seen from the exterior of the building or room to which the doorway leads.

right-hand reverse
Having the hinges on the right of an outward opening door when seen from the exterior of the building or room to which the doorway leads.
### HARDWARE

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mortise hinge</td>
<td>A butt hinge mortised into the abutting surfaces of a door and doorjamb.</td>
</tr>
<tr>
<td>half-mortise hinge</td>
<td>A hinge having one leaf mortised into the edge of the door and the other surface-mounted on the doorframe.</td>
</tr>
<tr>
<td>half-surface hinge</td>
<td>A hinge having one leaf mortised into the doorframe and the other surface-mounted on the face of the door.</td>
</tr>
<tr>
<td>flag hinge</td>
<td>A hinge having two leaves surface-mounted to the adjacent faces of a door and doorframe. Also called blacktop hinge, full-surface hinge.</td>
</tr>
<tr>
<td>template hinge</td>
<td>A mortise hinge manufactured to fit the recess and match the arrangement of holes of hollow metal doors and frames.</td>
</tr>
<tr>
<td>ball-bearing hinge</td>
<td>A hinge equipped with ball bearings between the brackets to reduce friction and ensure ease of operation.</td>
</tr>
<tr>
<td>fast-pin hinge</td>
<td>A hinge having a nonremovable pin.</td>
</tr>
<tr>
<td>loose-pin hinge</td>
<td>A hinge having a removable pin so that a door can be unhung by separating the two leaves.</td>
</tr>
<tr>
<td>loose-joint hinge</td>
<td>A hinge having a knuckle formed from half of each leaf, with the upper half removable from the pin. Also called liftoff hinge.</td>
</tr>
<tr>
<td>pintle</td>
<td>A pin or bolt on which something turns, as the gudgeon of a hinge.</td>
</tr>
<tr>
<td>gudgeon</td>
<td>A socket for the pintle of a hinge.</td>
</tr>
<tr>
<td>spring hinge</td>
<td>A hinge containing a coiled spring in its barrel for closing a door automatically.</td>
</tr>
<tr>
<td>double-acting hinge</td>
<td>A hinge permitting a door to swing in either direction, usually fitted with springs to bring the door to a closed position after opening.</td>
</tr>
<tr>
<td>piano hinge</td>
<td>A long, narrow hinge that runs the full length of the two surfaces to which its leaves are joined. Also called continuous hinge.</td>
</tr>
<tr>
<td>invisible hinge</td>
<td>A hinge consisting of a number of flat plates rotating about a central pin, with shoulders mortised into the door edge and doorframe so as to be concealed when closed. Also called concealed hinge.</td>
</tr>
<tr>
<td>strap hinge</td>
<td>A hinge having two long leaves for securing to the adjacent faces of a door and doorjamb.</td>
</tr>
<tr>
<td>cross-garnet</td>
<td>A T-shaped strap hinge with the crosspiece as the stationary member and the long stem being the movable leaf. Also called T-hinge.</td>
</tr>
<tr>
<td>dovetail hinge</td>
<td>A strap hinge having leaves which are narrower at their junction than at their other extremities.</td>
</tr>
<tr>
<td>parliament hinge</td>
<td>An H-shaped hinge having a protruding knuckle so that a door can stand away from the wall when fully opened.</td>
</tr>
<tr>
<td>paumelle</td>
<td>A hinge having a single projection.</td>
</tr>
<tr>
<td>olive knuckle hinge</td>
<td>A paumelle having an oval-shaped knuckle. Also called olive hinge.</td>
</tr>
<tr>
<td>gravity hinge</td>
<td>A hinge that closes automatically by means of gravity.</td>
</tr>
<tr>
<td>rising hinge</td>
<td>A gravity hinge causing a door to rise slightly when opened.</td>
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lock
A device for securing a door, drawer, or
bulb in position, when closed, consisting of
a bolt or combination of bolts propelled
and withdrawn by a key or combination-
operated mechanism.

rim lock
A lock fastened to the face of a
door, as opposed to one
butt into its edge.
cylinder lock
A lock housed within two holes
bored at right angles to each other,
one through the face of a door and
the other in the door edge.

mortise lock
A lock housed within a mortise cut into
door edge so that the lock mechanism
is covered on both sides.

doorlock
The knob-shaped handle
by which a door is
opened or closed.

keyhole
A hole in a lock case or escutcheon
for inserting a key.

latch
A device for holding a door
closed, consisting essentially of
a bar that falls or slides
into a groove or hole.

key
A small metal instrument
especially cut to fit into lock
and move its bolt.

bit
One of the projecting blades
cut to engage with and actuate
either or both the bolts and the
turners of a lock.

tumbler
An oblong, flat metal device
having a projecting motion actuated by
the turning of a key.

cam
A disk or cylinder having an
irregular form that rotates or
slides to impart motion to a roller
moving against its edge or to a pin
free to move in a groove on its face.

keyway
A slot in a lock for receiving
and guiding a key.

wards
A projecting edge of metal in a
lock or keyhole that prevents
the insertion of any key that
does not have a corresponding
notch.

reversible lock
A lock having a latchbolt that can
be reversed for installation in
either a right-hand or left-hand
door.

bevel
The side of a lock facing in the
same direction as the bevel at the
close of the latchbolt.

regular bevel
The bevel of a bolt or lock on a door
opening into the building or room
to which the doorway leads.

reverse bevel
The bevel of a bolt or lock on a door
opening outward from the building
or room to which the doorway leads.
HEAT

A form of energy associated with the random motion of atoms or molecules, capable of being transmitted by convection, conduction, or radiation and causing substances to rise in temperature, fuse, expand, or evaporate.

calorie
A unit of heat equal to the quantity of heat required to raise the temperature of one gram of water 1°C at a pressure of one atmosphere, equivalent to 4.186 joules. Also called gram calorie, small calorie.
kilocalorie
A unit of heat equal to the quantity of heat required to raise the temperature of one kilogram of water 1°C at a pressure of one atmosphere, equivalent to 1000 small calories. Also called kilogram calorie, large calorie.

Fahrenheit scale
A temperature scale in which 32°F represents the freezing point and 212°F the boiling point of water under standard atmospheric pressure. When you know degrees Fahrenheit, first subtract 32 and then multiply by 9/5 to find degrees Celsius.

Celsius scale
A temperature scale divided into 100 degrees, in which 0°C represents the freezing point and 100°C the boiling point of water under standard atmospheric pressure. Also called Centigrade scale. When you know degrees Celsius, first multiply by 9/5 and then add 32 to find degrees Fahrenheit.

Kelvin scale
An absolute scale of temperature having a zero point of -273.16°C. Absolute scale
A temperature scale based on absolute zero, with scale units equal in magnitude to centigrade degrees. Absolute zero
The hypothetical lowest limit of physical temperature characterized by complete absence of heat, equal to -273.16°C or -459.67°F.

Absolute temperature
Temperature as measured on an absolute scale.

heat capacity
The quantity of heat required to raise the temperature of a substance by one degree.
specific heat
Heat capacity per unit mass of a substance: the number of Btu required to raise the temperature of one pound of a substance 1°F, or the number of calories per gram per degree centigrade.

temperature
A measure of the warmth or coldness of a substance, object, or environment with reference to some standard value.

thermometer
An instrument for measuring temperature, consisting typically of a glass tube with a numbered scale and a bulb containing a liquid, as mercury, that rises and falls with changes in temperature.

British thermal unit
The quantity of heat required to raise the temperature of one pound (0.45 kg) of water 1°F. Abbr.: Btu

therm
A unit of heat equal to 100,000 British thermal units.

kelvin
The base SI unit of temperature equal to the inverse of the triple point of water. Symbol: K

triple point
The particular temperature and pressure at which the liquid, gaseous, and solid phases of a substance can exist in equilibrium.

Sensible heat
The quantity of heat absorbed or released by a substance during a change in temperature without a change in phase.
HEAT

**Convection**
The transfer of heat by the circulatory motion of the heated parts of a liquid or gas owing to a variation in density and the action of gravity.

**Radiation**
The process in which energy in the form of waves or particles is emitted by one body, passed through an intervening medium or space, and absorbed by another body.

**Thermal Conductivity**
The time rate of heat flow through a unit area of a given material of unit thickness when the temperature difference across the thickness is one unit of temperature.

**Thermal Conductance**
The time rate of heat flow through a unit area of a given material when the temperature difference across a specified thickness of the material is one unit of temperature.

**Thermal Resistance**
The reciprocal of thermal conductance, expressed as the temperature difference required to cause heat to flow through a unit area of a material of given thickness at the rate of one heat unit per unit time.

**R-value**
A measure of thermal resistance of a given material used esp. to specify the performance of thermal insulation. The total R-value for a building component or assembly is the sum of the R-values for each layer in the component or assembly.

**Thermal Transmittance**
The time rate of heat flow through a unit area of a building component or assembly when the difference between the air temperatures on the two sides of the component or assembly is one unit of temperature. Also called coefficient of heat transfer.

**U-value**
A measure of the thermal transmittance of a building component or assembly, equal to the reciprocal of the total R-value of the component or assembly.

**Weather Strip**
A strip of metal, felt, vinyl, or foam rubber, placed between a door or window sash and its frame to provide a seal against windblown rain and air infiltration. Also, weather stripping.
mineral wool
Any of various lightweight, inorganic, fibrous materials used esp. for thermal and sound insulation, as glass wool and rock wool.

glass wool
Synthetic glass fibers resembling wool and used for thermal insulation and air filters.

fiberglass
A material consisting of extremely fine filaments of glass, woven into fabric, massed for use as a thermal and acoustical insulator, or embedded to reinforce various materials.

Fiberglass
Trademark for a brand of fiberglass.

rock wool
Mineral wool made by blowing steam or air through melted slag or rock.

foamed plastic
Plastic, as polystyrene or polyethylene, made light and cellular by the introduction of pockets of gas or air and used as thermal insulation. Also called expanded plastic, plastic foam.

polyurethane foam
A rigid expanded polyurethane having a closed-cell structure and used as thermal insulation.

molded polystyrene
A rigid polystyrene foam having an open-cell structure and used as thermal insulation.

extruded polystyrene
An extruded polystyrene foam having a closed-cell structure and used as thermal insulation.

Styrofoam
Trademark for a brand of foamed plastic made from polystyrene.

foam glass
Cellular glass made by foaming softened glass and molding it into blocks or slabs for use as thermal insulation.

wood wool
Fine wood shavings, usually of pine or chemically treated wood fibers, used as an insulating material, as a binder in plaster, and for packing. Also called excelsior.

reflective insulation
Thermal insulation in the form of a material of high reflectivity and low emissivity, as paper-backed aluminum foil or foil-backed gypsum board, used in conjunction with a dead-air space to reduce the transfer of heat by radiation.

dead-air space
An unvented air space in which the air does not circulate.

thermal insulation
A material providing high resistance to heat flow, as mineral wool, vermiculite, or foamed plastic, fabricated in the form of batts, blankets, boards, or loose fill.

weatherize
To make a house or building secure against cold or stormy weather, as by adding thermal insulation or storm windows, or by sealing joints.

fibreboard
An insulating board made of wood or cane fibers compressed and cemented into rigid sheets, used as an inexpensive wall finish or as ceiling tiles.

fibreboard sheathing
Insulating fiberboard treated or impregnated with asphalt for water resistance and used primarily for sheathing light wood frame walls.

emissivity
The ability of a surface to emit heat by radiation, equal to the ratio of the radiant energy emitted by that surface to the energy emitted by a black body at the same temperature.
HEAT

thermal comfort
Human comfort as determined by the ability of the body to dissipate the heat and moisture it produces by metabolic action.

effective temperature
A temperature representing the combined effect of ambient temperature, relative humidity, and air movement on the sensation of warm or cold felt by the human body, equivalent to the dry-bulb temperature of still air at 50% relative humidity which induces an identical sensation.

wet-bulb temperature
The temperature recorded by the wet-bulb thermometer in a psychrometer.

dew point
The temperature at which air becomes saturated with water vapor. Also called dew-point temperature.

humidity ratio
The ratio of the mass of water vapor to the mass of dry air in a mixture of air and water vapor. Also called mixing ratio.

enthalpy
A measure of the total heat contained in a substance, equal to the internal energy of the substance plus the product of its volume and pressure. The enthalpy of air is equal to the sensible heat of the air and the water vapor present in the air plus the latent heat of the water vapor, expressed in Btu per pound (kilocalories per kilogram) of dry air. Also called heat content.

psychrometric chart
A chart relating the wet-bulb and dry-bulb readings from a psychrometer to relative humidity, absolute humidity, and dew point.

comfort zone
The range of dry-bulb temperature, relative humidity, mean radiant temperature, and air movement judged to be comfortable by a majority of Americans and Canadians tested. This comfort zone varies with climate, the season of the year, the type of clothing worn, and the activity level of the individual. Also called comfort envelope.

psychrometer
An instrument for measuring atmospheric humidity, consisting of two thermometers, the bulb of one being dry and the bulb of the other being kept moist and ventilated so that the cooling that results from evaporation makes it register a lower temperature than the dry one, with the difference between the readings being a measure of atmospheric humidity.

relative humidity
The ratio of the amount of water vapor actually present in the air to the maximum amount that the air could hold at the same temperature, expressed as a percentage. Abbreviation: rh

absolute humidity
The mass of water vapor present in a unit volume of air.

specific humidity
The ratio of the mass of water vapor in air to the total mass of the mixture of air and water vapor.

hygrometer
Any of various instruments for measuring the humidity of the atmosphere.

mean radiant temperature
The sum of the temperatures of the surrounding walls, floor, and ceiling of a room, weighted according to the solid angle subtended by each at the point of measurement. Mean radiant temperature is important to thermal comfort since the human body receives radiant heat from or loses heat by radiation to the surrounding surfaces if their mean radiant temperature is significantly higher or lower than the air temperature.

radiant heat
Heat energy transmitted by the radiation of electromagnetic waves in contrast to heat transmitted by conduction or convection.

adiabatic heating
A rise in temperature occurring without the addition or removal of heat, as when excess water vapor in the air condenses and the latent heat of vaporization of the water vapor is converted to sensible heat in the air.

evaporative cooling
A drop in temperature occurring without the addition or removal of heat, as when water evaporates and the sensible heat of the liquid is converted to latent heat in the vapor. Also called adiabatic cooling.
A furnace recessed in or mounted on a wall and supplying heated air directly to a space without the use of ducts.

A furnace designed for installation in a low attic or crawl space.

A protective sleeve of sheet metal passing through the wall of a chimney, for holding the end of a stovepipe.

A pipe, usually of sheet metal, serving as a stove chimney or connecting a stove with a chimney flue.

The air required for combustion of fuel in a furnace.

A device that automatically responds to changes in temperature and activates switches controlling such equipment as furnaces, refrigerators, and air conditioners.

A mechanical system that supplies heat to an entire building from a single source through a network of ducts or pipes.

A fluid substance, as warm air, hot water, or steam, capable of conveying heat from a source to the space being heated.

A unit that represents one degree of departure in the mean daily outdoor temperature from a given standard temperature.

The hourly rate of net heat loss in an enclosed space, expressed in BTU per hour and used as the basis for selecting a heating unit or system.

A degree-day below the standard temperature of 65°F (18°C), used in estimating fuel or power consumption by a heating system.

Any of the systems that provide essential services to a building, as water supply, sewage disposal, electric power, heating, ventilation, air-conditioning, vertical transportation, or fire fighting.

A mechanical system that supplies heat to an entire area, esp. by means of a heat source located within the space.

The heating of a limited area, as a room, by a single source.
forced warm-air heating
A system for heating a building by means of air heated in a furnace and distributed by a fan through ductwork to registers or diffusers.

extended plenum system
A perimeter heating system in which a main duct conveys warm air to a number of branch ducts, each serving a single floor register.

bunnet
A chamber at the top of a hot-air furnace from which the leaders emerge. Also called plenum.

leader
A duct for conveying warm air from a furnace to a stack or branch duct. Also called main trunk.

manifold
A pipe or duct fitting having several outlets for making multiple connections.

gathering
A tapered section of a duct or flue forming a transition between two sections, one of which has a greater area than the other.

boot
A duct fitting forming a transition between two sections which vary in cross-sectional shape.

perimeter heating
A heating system that distributes warm air to registers placed in or near the floor along exterior walls.

perimeter loop system
A perimeter heating system in which a loop of ductwork, usually embedded in a concrete ground slab, distributes warm air to each floor register.

perimeter radial system
A perimeter heating system in which a leader from a centrally located furnace carries warm air directly to each floor register.

return grille
A grille through which return air is withdrawn from an air-conditioned space.

cold-air return
A duct for conveying cool air back to a furnace for reheating.

duct
A pipe or conduit of sheet metal or fiberglass for conducting heated or conditioned air. Also called air duct.

ductwork
A system of ducts, connectors, and dampers for conveying air in a heating, ventilating, or air-conditioning system. Also called ducting.

stack
A vertical duct for conveying warm air from a leader to a register on an upper floor.

chase
A continuous space or recess built into a wall or through a floor for pipes or ducts.

grille
A grating or perforated screen for covering, concealing, or protecting a wall, floor, or ceiling opening.

register
A device for controlling the flow of warm or conditioned air from an outlet, composed of a grille with a number of parallel blades that may be adjusted so as to overlap and close the opening.

flexible duct
A pliable, airtight fitting installed between two ducts, or between a fan and a duct, to prevent the transmission of noise and vibrations along the ductwork.

duct liner
A fiberglass blanket for lining the inside of a duct to reduce noise and serve as thermal insulation.

diffuser
A device having slats at different angles for deflecting warm or conditioned air from an outlet in various directions.

throw
The distance a projected airstream travels from an outlet to a point where its velocity is reduced to a specified value.

terminal velocity
The average velocity of a projected airstream at the end of the throw.

drop
The vertical distance a horizontally projected airstream falls from the elevation of its outlet, measured at the end of the throw.

spread
The extent to which a projected airstream diffuses at the end of the throw.
radiator
A heating device consisting of a series of coils of pipes through which hot water or steam passes.

convector
A heating unit in which heat is transferred by convection.

baseboard heater
A long, narrow hydronic or electric convective heater designed for installation along the base of a wall.

unit heater
A self-contained electric or gas-fired space heater, consisting of a heating element, fan, and a directional outlet.

space heater
A device for heating the space in which it is located, e.g., a unit that has no external heating ducts or connection to a chimney.

quartz heater
An electric space heater having heating elements sealed in quartz-glass tubes that produce infrared radiation in front of a reflective backing.

venetian tape
A special fitting used in a one-pipe system to induce the flow of water from a return branch into the supply main.

bucket trap
A valve for eliminating air and condensate moisture from a radiator without allowing steam to escape. Also called steam trap.

bleeder
A valve for draining a pipe, radiator, or tank. Also called bleeder valve.

reverse return
A two-pipe hot-water system in which the lengths of the supply and return pipes for each radiator or conveter are nearly equal.

direct return
A two-pipe hot-water system in which the return pipe from each radiator or conveter takes the shortest route back to the boiler.

dry return
A return pipe in a steam-heating system that carries both air and water of condensation.

fin tube
A type of radiator having horizontal tubes with closely spaced vertical fins to maximize heat transfer to the surrounding air.

safety valve
A relief valve that opens when actuated by a gas or vapor pressure above a predetermined level, allowing the gas or vapor to escape until its pressure is reduced to a safe or acceptable level.

relief valve
A valve that opens when actuated by static pressure above a predetermined level in order to reduce the pressure to it.

gate
A small faucet or valve for draining or releasing compression in pipes, radiators, and boilers.

boiler
A closed vessel or arrangement of vessels and tubes in which water is heated or steam is generated to supply heat or power.

electric heat
Heat generated by the resistance of a conductor to the flow of electric current.

panel heating
The radiant heating of a room or building by means of wall, floor, baseboard, or ceiling panels containing electrical conductors, hot-water pipes, or hot-air ducts.

radiant heating
A system for heating by radiation from a surface, e.g., one that is heated by means of electric resistance or hot water.
HEAT

air conditioning
A system or process for simultaneously controlling the temperature, humidity, purity, distribution, and motion of the air in an interior space, esp. one capable of cooling.

compressive refrigeration
A refrigeration process in which cooling is effected by the vaporization and expansion of a liquid refrigerant.

heat extracted from air or water
The component of a refrigeration system in which the refrigerant absorbs heat from a cooling medium and changes from a liquid to a gas.

heat pump
A device that uses a compressible refrigerant to transfer heat from one reservoir to another, with the process being reversible so that it can be used for both heating and cooling a building.

absorption refrigeration
A refrigeration process that uses a generator and an absorber instead of a compressor to transfer heat.

heat exchanger
A device for transferring the heat of a fluid flowing on one side of a barrier to a fluid flowing on the other.

heat released to air or water

load
The demand placed on a heating, ventilating, or air-conditioning system in order to maintain the desired conditions of thermal comfort in a building.

cooling load
The hourly rate of heat gain in an enclosed space, expressed in Btu per hour and used as the basis for selecting an air-conditioning unit or system.

cooling degree-day
A degree-day above the standard temperature of 70°F (21°C), used in estimating energy requirements for air-conditioning and refrigeration.

cooling medium
A fluid substance, as chilled water or cool air, for removing heat, as from the interior spaces of a building.

ton of refrigeration
The cooling effect obtained when 1 ton of ice at 32°F (0°C) melts to water at the same temperature in 24 hours, equivalent to 12,000 Btu per hr.

energy efficiency rating
An index of the efficiency of a refrigerating unit, expressing the Btu removed per watt of electrical energy input.

coolant
A fluid agent for reducing the temperature of a system below a specified value by conducting away the heat produced in the operation of the system.

heat sink
A medium or environment for the absorption or dissipation of unwanted heat.

absorber
The component of an absorption-refrigeration system that uses a saline solution to draw water vapor from the evaporator, cooling the remaining water in the process.

generator
The component of an absorption-refrigeration system that uses a heat source to remove excess water vapor from a saline solution.
central air conditioning
An air-conditioning system that treats air at a central location and distributes the conditioned air to an entire building by means of fans and ductwork.

HVAC
Abbreviation for heating, ventilating, and air conditioning.

supply air
The conditioned air delivered by an air-conditioning system to the served spaces.

blower
A fan for supplying air at a moderate pressure, as to supply forced drafts in a heating or air-conditioning system.

humidifier
A device for maintaining or increasing the amount of water vapor in the air of a room or building.

pump
A machine that raises, transfers, or compresses fluids or gases by the suction or pressure produced by a piston, plunger, or set of rotating vanes.

chilled water plant
A room containing one or more chillers and pumps for air-conditioning a building.

chiller
A device employing the compressive refrigeration cycle to chill the water used in cooling a building.

preheater
A coil for heating air that is below 32°F (0°C) to a temperature slightly above freezing, in advance of other processing.

condenser
A device for removing heat from the water that has been used for cooling.

cooling tower
A structure, usually on the roof of a building, in which heat is extracted from water that has been used for cooling.

return air
The air conveyed from an air-conditioned space back to the central plant for processing and recirculation.

damper
A movable plate for regulating the draft in an air outlet, air duct, or the throat of a fireplace.

exhaust air
The air exhausted from an interior space to the outside.

fresh air
Outdoor air drawn in for treatment in an air-conditioning system. Also called outside air.

air-handling unit
An air-conditioning assembly containing the fans, filters, and other components necessary to treat and distribute conditioned air to an entire building or to specific zones within the building.

filter
A porous substance or mass, as cloth or a layer of charcoal, through which a gas or liquid is passed to remove suspended impurities or to recover solids.

mechanical equipment room
Any room containing permanently installed machinery and equipment for the mechanical systems of a building.
all-water system
An air-conditioning system in which either hot or chilled water is piped to fan-coil units in the served spaces, where air is circulated locally.

two-pipe system
An all-water system in which one pipe supplies the hot or chilled water to the fan-coil units, and the other pipe returns it to the boiler or chilled-water plant.

dual-pipe system
An all-water system in which separate hot-water and chilled-water piping circuits provide for simultaneous heating and cooling as needed in various zones of a building.

all-air system
An air-conditioning system in which central fans distribute conditioned air to the served spaces by means of ductwork.

single-duct system
An all-air system in which a single duct conveys conditioned air to the served spaces.

constant-air-volume system
An all-air system in which a master thermostat automatically regulates the quantity of conditioned air supplied to each zone.

variable-air-volume system
An all-air system in which a thermostatically controlled variable-volume box regulates the quantity of conditioned air supplied to each zone.

dual-duct system
An all-air system in which separate cold-air and warm-air supply ducts meet at a mixing box where the air is blended before distribution to each zone.

terminal reheat system
An all-air system in which a reheat coil regulates the temperature of the air being furnished to each individually controlled zone.

high-velocity duct
A small duct capable of conveying primary air at a velocity of 2,400 ft. (750 m) per minute or higher.

primary air
The conditioned air supplied at a high pressure and high velocity by a central air-handling unit.

supply pipe
A pipe for conveying hot or chilled water from the boiler or chilled-water plant to a fan-coil unit.

return pipe
A pipe for conveying water from a fan-coil unit to the boiler or chilled-water plant.

terminal unit
Any of various devices for delivering a heating or cooling medium to a space.

fan-coil unit
A terminal unit containing an air filter, heating or cooling coils, and a centrifugal fan for drawing in a mixture of room air and outside air.

coil
A connected series of pipes or tubing in rows or layers, often having fins attached to dissipate heat.

multizone system
A central air-handling unit capable of serving up to eight zones simultaneously.

zone
A space or group of spaces in a building whose temperature and air quality is regulated by a single control.

mixing box
A chamber for proportioning and blending cold and warm air under thermostatic control to reach the desired temperature.

reheat coil
An electric or hot-water coil for raising the temperature of the air in the supply duct of an air-conditioning system.

induction unit
A terminal unit in which primary air draws in room air through a filter and the mixture passes over coils that are either heated or chilled by secondary water from a boiler or chilled-water plant.
air change
The replacement of the volume of air contained within a room with an equivalent volume of fresh air within a given period of time. The term air changes per hour is often used to specify ventilation standards.

ventilator
A lowered opening or motor-driven fan for replacing stagnant air with fresh air.

attic ventilator
A wind- or motor-driven fan for assisting the natural air flow through an attic space.

ventilate
To provide a room with fresh air to replace air that has been used or contaminated.

natural ventilation
The process of ventilating a space by the natural movement of air rather than by mechanical means.

chimney effect
The tendency of air or gas in a shaft or other vertical space to rise when heated, creating a draft that draws in cooler air or gas from below.

cross ventilation
The circulation of fresh air through open windows, doors, or other openings on opposite sides of a room.

plenum ventilation
A system of mechanical ventilation in which fresh air is forced into the space to be ventilated from a chamber (plenum chamber) at a pressure slightly higher than atmospheric pressure, so as to expel stale air.

fan
A device that rotates an array of blades or vanes about an axis in order to produce a current of air.

exhaust fan
A fan for ventilating an interior space by drawing air from the interior and expelling it outside.

centrifugal fan
A fan that receives air along its axis and discharges it radially.
HISTORY

A systematic, often chronological narrative of significant events as relating to a particular people, country, or period, often including an explanation of their causes.

civilization
An advanced state of human society marked by a relatively high level of cultural, technical, and political development.
society
An enduring and cooperating large-scale community of people having common traditions, institutions, and identity, whose members have developed collective interests and beliefs through interaction with one another.
culture
The integrated pattern of human knowledge, beliefs, and behaviors built up by a group of human beings and transmitted from one generation to the next.
style
A particular or distinctive form of artistic expression characteristic of a person, people, or period.
expression
The manner in which meaning, spirit, or character is symbolized or communicated in the execution of an artistic work.

prehistoric
Of, pertaining to, or existing in the time prior to the recording of human events, knowledge of which is gained mainly through archaeological discoveries, study, and research.

Stone Age
The earliest known period of human culture, preceding the Bronze Age and the Iron Age and characterized by the use of stone implements and weapons.

Neolithic
Of or relating to the last phase of the Stone Age, characterized by the cultivation of grain crops, domestication of animals, settlement of villages, manufacture of pottery and textiles, and use of polished stone implements thought to have begun ca 9000-8000 B.C.

Mesopotamia
An ancient region in western Asia between the Tigris and Euphrates rivers, comprising the lands of Sumer and Akkad and occupied successively by the Sumerians, Babylonians, Assyrians, and Persians; now part of Iraq.

Fertile Crescent
An agricultural region arching from the eastern shores of the Mediterranean Sea in the west to Iraq in the east, the location of humankind’s earliest cultures.

Catal Höyük
A Neolithic settlement in Anatolia, dated 6500–5000 B.C. One of the world’s earliest cities, it had mud-brick fortifications and houses, frescoed shrines, a fully developed agriculture, and extensive trading in obsidian, the chief material for tool-making.

Anatolia
A vast plateau between the Black, Mediterranean, and Aegean Seas, synonymous with the peninsula of Asia Minor; today comprises most of Turkey.

Bronze Age
A period of human history that began ca 3500–2500 B.C., following the Stone Age and preceding the Iron Age, characterized by the use of bronze implements.

Sumerian architecture
The architecture developed by the Sumerians who dominated southern Mesopotamia from the 4th to the end of the 3rd millennium B.C., characterized by monumental temples of sun-dried brick faced with burnt or glazed brick, often built upon the ruins of their predecessors.

Sumer
An ancient region in southern Mesopotamia, where a number of independent cities and city-states were established as early as 5500 B.C. A number of its cities, as Ereš, Uruk, and Ur, are major archaeological sites.

tell
An artificial mound accumulated from the remains of one or more ancient settlements; often used in the Middle East as part of a place name.

Egyptian Architecture
The architecture of the ancient civilization that flourished along the Nile River in northeast Africa from before 3000 B.C. to its annexation by Rome in 30 B.C., characterized by the use of trabeated construction with precise stonework, and the decoration of battered walls with pictographic carvings in relief. A predilection with eternity and the afterlife dominated the building of these funerary monuments and temples, which reproduced the features of domestic architecture but on a massive scale using stone for permanence.

Minoan architecture
The architecture of the Bronze Age civilization that flourished on Crete from about 3500 to 1500 B.C., named after the legendary King Minos of Knossos and characterized by the elaborate palaces at Knossos and Phaestos.

3000 BC

Harappa
A Bronze Age culture that flourished in the Indus valley 2300–1500 B.C.

Xia
A legendary dynasty in China, 2205–1766 B.C. Also, Hsia.

Shang
A Chinese dynasty, 1600 B.C.–1023 B.C., marked by the introduction of writing, the development of an urban civilization, and a mastery of bronze casting. Also, Yin.

Yang-shao
A Neolithic culture in China centered around the fertile plains of the Yellow River, characterized by pit dwellings and fine pottery painted in geometric designs.

Lacmaux Cave
A cave in Lacmaux, France, containing wall paintings and engravings thought to date from c30,000–8500 B.C.

HISTORY

Chinese architecture
The indigenous architecture of a vast country in eastern Asia whose civilization has continually evolved and survived longer than any other nation in the world. Despite the marked diversity in the architecture of various regions caused by differences in geographic and climatic conditions, a unique system of wood frame construction gradually took shape over several millennia of innovation and synthesis and exerted a profound influence over the architecture of Korea, Japan, and Southeast Asia.

Preclassic
Of or pertaining to Mesoamerican culture from 2200 B.C. to A.D. 200.
Hittite architecture
The architecture of the Hittite Empire, which dominated Asia Minor and northern Syria from about 1500 to 1000 B.C., characterized by fortifications of cyclopean stone masonry and gateways with portal sculptures.

Assyrian architecture
The Mesopotamian architecture developed under the Assyrian king-emperor of the 9th to 7th centuries B.C. Within city walls strengthened by towers with crenelated battlements, palaces took precedence over religious buildings. Vaulting played a greater role than in southern Mesopotamia and polychrome glazed brickwork showed the influence of Egyptian decoration.

Neo-Babylonian architecture
The Mesopotamian architecture that developed after the decline of the Assyrian Empire, deriving much from Assyrian architecture and enhanced by figured designs of heraldic animals in glazed brickwork. Hanging Gardens of Babylon
A series of terraced ornamental gardens planted with the terraces of the Citadel, the palace complex in ancient Babylon, regarded as one of the Seven Wonders of the World.

Persian architecture
The architecture developed under the Achaemenid dynasty of kings who ruled ancient Persia from 550 B.C. until its conquest by Alexander the Great in 336 B.C., characterized by a synthesis of architectural elements of surrounding countries, as Assyria, Egypt, and Ionian Greece.

Elamite architecture
A cuneiform documented identity in Persian dress.

Parthian architecture
The architecture developed under Parthian rule in Iran and western Mesopotamia, from the 3rd century B.C. to the 3rd century A.D., combining classical with indigenous features.

Etruscan architecture
The architecture of the Etruscan people in western-central Italy from the 9th to 5th centuries B.C., before the rise of Rome, its construction methods, esp. that of the true stone arch, influenced later Roman architecture.

Maurya
A dynasty in India, c. 240–185 B.C., marked by the emergence of a centralized government and the construction of much of the Great Wall of China. Also, Ch'iu.

Great Wall of China
A fortified wall commenced under the Chinese dynasty of China against nomads from the north and serves as a means of communication. Various sections were built and connected until, during the Ming dynasty, 1669–1644. It extended for 1,500 miles (2,414 km), from northern Kansu province to the coast east of Peking. Rebuilt and refaced repeatedly, it is the only human-made construction visible from outer space.

Chavin
A Peruvian culture lasting from c. 9000 B.C. to c. 200 B.C., based on the worship of the jaguar god and characterized by excellent stone sculpture, elaborate gold work, and remarkable ceramic art after the town of that same name in central Peru, where a complex of massive stone buildings with surrounding pyramids surround formal cemeteries.

Mochica
A pre-Incan culture that flourished on the northern coast of Peru from c. 2000 B.C. to A.D. 700, noted for its fine pottery and and the colossal Temple of the Sun, a terraced pyramid made entirely of adobe bricks. Also called Moche.

Indian architecture
The architecture of the Indian subcontinent, from the Indus valley culture of the Harappa to the Maurya, and later to periods of foreign domination and indigenous rule, characterized esp. by Hindu and Buddhist monuments, sometimes sharing the same site, and by the production of objects and the building, often combining the religious and the sensuous.

Taoism
Chinese philosophy and religion considered next to Confucianism in importance. Based on the teachings of the Chinese philosopher Lao-tzu, c. 604–551 B.C., it emphasizes a life of simplicity and noninterference with the course of nature. Events in order to attain a happy existence in harmony with the Tao. As a religion, it dates from the 4th century B.C., becoming popular during the decline of the Han dynasty and the introduction of Buddhism to China. Tao
The Way: the creative principle thatunder 有序推进.

Zhou
A Chinese dynasty, c. 1000 B.C. to 256 B.C., marked by the division of China into separate kingdoms and the emergence of Confucianism and Taoism, which gave rise to all subsequent Chinese culture. Also, Chou.

Confucianism
A philosophy that dominated China until the early 20th century, an ethical system based on the teachings of the Chinese philosopher Confucius, c. 551–480 B.C., emphasizing love for humanity, harmony in thought and conduct, devotion to family, and reverence for parents, including the spirits of one's ancestors.

Greek architecture
The architecture of the civilization that flourished on the Greek peninsula, in Asia Minor, in the north and west of Africa, and in the western Mediterranean until the establishment of Roman domination in A.D. 36. Characterized by a system of construction based on rules of form and proportion, temples of post-and lintel construction were continually refined in a quest for perfection and their design influenced a wide range of secular civic buildings.

Hellenistic
Of or pertaining to ancient Greek history, culture, and art, esp. after the time of Alexander the Great.

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Babylon
A city in ancient Mesopotamia, the capital of the Babylonian Empire, notable for its great ziggurat temple, and the Hanging Gardens, one of the Seven Wonders of the World.

Ch'iu
The dynastic title of China, 221–206 B.C., esp. after the time of Alexander the Great.

Gin
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Classical architecture
The architecture of ancient Greece and Rome, on which the Italian Renaissance and subsequent styles, as the Empire and the Classic Revival, based their development.

Roman architecture
The architecture of the ancient Roman people, characterized by massive brick and concrete construction employing such features as the semicircular arch, the barrel and groin vaults, and the dome, a simplicity and grandeur of massing often combined with elaborate detailing, the elaboration of the Greek orders as purely decorative motifs for the adornment of facades and interiors, and the use of marble inlays, mosaics, and molded stucco in interiors.

Rome
A city on the central part of Italy which, according to tradition, was founded by Romulus and Romenius in 354 B.C.: ancient capital of the Roman Empire and site of the Vaticano City, the seat of authority of the Roman Catholic Church.

Sassanian architecture
The architecture prevalent in Persia under the Sassanian dynasty that ruled A.D. 224-651, forming a link between the older Mesopotamian traditions and the Byzantine, and characterized by palaces with elliptical vaults and domes set on squinches and decorated masonry walls articulated by pilasters and cornices.

Byzantine architecture
The architecture of the eastern sphere of the later Roman Empire, developing from late Roman and early Christian antecedents in the 5th century and influencing church building in Greece, Italy, and elsewhere for more than a thousand years, characterized by masonry construction, round arches, shallow domes carried on pendentives, and the extensive use of rich frescoes, colored glass mosaics, and marble revetments to cover whole interiors.

Early Christian architecture
The final phase of Roman architecture, following the adoption of Christianity as the state religion by Constantine in A.D. 313 and lasting until the coronation of Charlemagne in A.D. 800 as emperor of the Holy Roman Empire, characterized by churches planned for congregational worship, esp. the basilica, coincident with and related to the rise of Byzantine architecture.

Gupta
The dynasty of the Mauryan empire in northern India, A.D. 320-644, whose court was the center of classical Indian art and literature; the earliest substantial architectural remains are from this period.

Pallava
A Hindu state established in southern India about A.D. 500; contributed to the expansion of Indian culture into Southeast Asia.

Dravidian
A style of Indian architecture in the Pallava period, named after the language spoken in southern India.

Mayan architecture
The architecture of the Mesoamerican civilization of the Yucatan Peninsula, Guatemala, and part of Honduras, from the 1st century A.D. to its peak in the 9th century, characterized by magnificent ceremonial centers with temple-pyramids, ritual ball courts, spacious plazas, and palaces with sculptured facades.

Zapotec architecture
The eclectic architecture of the American Indian civilization which flourished c500 B.C.-A.D. 1000 in the Highland valley of Oaxaca in southern Mexico, assimilating influences from the Olmec and from Teotihuacan during the Classic period.

Tiahuanaco
A pre-Incan culture existing from about 300 B.C. to A.D. 900, chiefly in Peru and Bolivia, characterized by monumental stone carving, polychrome pottery, and bronze artifacts.

Medieval architecture
The architecture of the European Middle Ages, comprising the architecture of the Byzantine, pre-Romanesque, Romanesque, and Gothic periods.

Middle Ages
The time in European history between classical antiquity and the Renaissance, often dated from A.D. 476 when Romulus, the last Roman emperor of the Western Roman Empire, was deposed, to about 1500.

Dark Ages
The early part of the Middle Ages, from about A.D. 476 to 700.
Romanesque architecture
A style of architecture emerging in Italy and western Europe in the 11th century and lasting until the advent of Gothic architecture in the 13th century, comprising a variety of related regional styles and characterized by heavy, articulated masonry construction with narrow openings, the use of the round arch and barrel vaults, the development of the vaulting rib and shaft, and the introduction of central and western towers for churches.

Carolingian architecture
The early Romanesque architecture of the Frankish dynasty that reigned in France A.D. 751–887 and in Germany until A.D. 911, characterized by a revival of the forms of classical antiquity modified by ecclesiastical requirements.

Lombard architecture
The early Romanesque architecture of northern Italy during the 7th and 8th centuries, characterized by the use of Early Christian and Roman forms and the development of the ribbed vault and vaulting shafts.

Islamic architecture
The architecture of the Muslim peoples from the 7th century on, developing in the wake of Muhammadan conquests of diverse territories from Spain in the west to India in the east and absorbing elements of art and architecture from each region, characterized by the development of the mosque as a distinct building type, masonry domes and vaulted ceilings, round and horseshoe arches, and rich surface decorations incorporating calligraphy and floral motifs in a geometric framework because of the ban on human and animal representations. Also referred to as Muslim architecture.

Moslem architecture
The Islamic architecture of North Africa and esp. of the regions of Spain under Moslem domination, characterized by the building of large mosques and elaborate fortress-palaces.

Moor
A member of the Muslim people of northwest Africa who invaded Spain in the 9th century and occupied it until 1492.

Moorish architecture
The Islamic architecture of North Africa and esp. of the regions of Spain under Moorish domination, characterized by the building of large mosques and elaborate fortress-palaces.

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A member of the Muslim people of northwest Africa who invaded Spain in the 9th century and occupied it until 1492.

Japanese architecture
The architecture of the civilization that emerged on the Japanese archipelago off the east coast of Asia, characterized by a synthesis of seminal ideas from China and native conditions producing a distinctive style characterized by lightness, delicacy, and refinement.

Miezu architecture
The architecture of the Amerindian culture centered in the Guaza Valley of Mexico from about A.D. 800 to the Spanish conquest, characterized by great stone masses, the use of interior stone columns, and the highly detailed fretwork of interior and exterior fringes.

Toltec architecture
The architecture of the Amerindian people who settled in central Mexico around A.D. 900 and who are traditionally credited with laying the foundation of Aztec culture, characterized by colossal basalt stelemones of Toltec warriors, colonnades several ranks deep, and stone panels carved with human-headed jaguars and symbols of Quetzalcoatl, set in plain wall surfaces.

Quetzalcoatl
Priest-ruler of the Toltec people, who was deified as the feathered-serpent god called by that name.

Islam
The religious faith of Muslims, based on the teachings of the prophet Muhammad, the central tenets of which are belief in the one God, Allah, the existence of Paradise and Hell, and the universal Judgment Day to come. Also, the civilization built on Islamic faith. Also called Muhammadanism.

Muhammad
Arab prophet and founder of Islam, A.D. 570–632. Also, Mohammed.

Nara
A period in Japanese history, A.D. 710–794, characterized by the adoption of Chinese culture and form of government; named after the first permanent capital and chief Buddhist center in ancient Japan.

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Helan
Of or pertaining to the period in Japan, A.D. 785–1185, characterized by the modification and naturalization of ideas and institutions that were earlier introduced from China. During this time indigenous feudalism superseded Chinese-based social order and Japanese architecture developed in isolation from China.
**Gothic architecture**
The style of architecture originating in France in the 12th century and existing in the western half of Europe through the middle of the 16th century, characterized by the building of great cathedrals, a progressive lightening and heightening of structure, and the use of the pointed arch, ribbed vault, and a system of richly decorated fenestration.

**Early French style**
The first of the three phases of French Gothic architecture, characterized by the pointed arch and geometric tracery.

**Rayonnant style**
The middle phase of French Gothic architecture from the end of the 12th through the late 13th centuries, characterized by circular windows with radiating lines of tracery.

**Decorated style**
The second of the three phases of English Gothic architecture from the late 12th through the late 13th centuries, characterized by rich tracery, elaborate ornamental vaulting, and refinement of stonemasonry techniques.

**Geometric style**
The early development of the Decorated style in the late 13th and early 14th centuries, characterized by the use of geometric tracery.

**Perpendicular style**
The final phase of English Gothic architecture prevailing from the late 14th through the early 15th centuries, characterized by perpendicular tracery, fine intricate stone work, and elaborate fan vaults. Also called Rectilinear style.

**Renaissance architecture**
The various adaptations of Italian Renaissance architecture that occurred throughout Europe until the advent of Mannerism and the Baroque in the 16th and 17th centuries, characterized by the use of Italian Renaissance forms and motifs in more or less traditional buildings.

**Italian Renaissance architecture**
The group of architectural styles that originated in Italy in the 16th and 17th centuries, characterized by an emphasis on symmetry, exact mathematical relationships between parts, and an overall effect of simplicity and repose.

**Early Renaissance**
A style of Italian Renaissance art and architecture developed during the 14th century, characterized by the development of linear perspective, chiaroscuro, and in building, by the free and inventive use of classical details.

**Mudejar architecture**
A style of Spanish architecture produced from the 9th to 15th centuries by Moors and Christians working within the Muslim tradition, characterized by a fusion of Romanesque and Gothic with Islamic elements.

**Seljuk architecture**
The Islamic architecture of several Turkish dynasties that ruled over central and western Asia from the 9th to 13th centuries, much influenced by Persian architecture.

**Ottoman architecture**
The Islamic architecture of the Ottoman Empire from the 14th century on, much influenced by Byzantine architecture.

**Chimu**
An American people inhabiting the northern coast of Peru and having a highly developed urban culture that lasted from about A.D. 900 to its destruction by the Incas c.1470.

**Inca architecture**
The architecture of the Quechuan people who migrated into the Guccoo area about A.D. 1000 and ruled Peru until the Spanish conquest in the 16th century, characterized esp. by strong simple forms of smooth aslar or polygonal masonry which was cut, finished, and fitted with great precision without the use of iron chisels.

**Aztec architecture**
The architecture of the American people who settled near the shore of Lake Texcoco in central Mexico c.1300 and who rose to dominance c.1450; characterized chiefly by the pyramidal supporting twin temples on a common platform, approached by parallel stairways. The destruction of Aztec architecture by the Spanish conquerors has left few remains.

**HISTORY**

**1100**

**Mudéjar**
A Muslim permitted to remain in Spain after the Christian reconquest, esp. during the 9th to 13th centuries.

**duomo**
Italian designation for a true cathedral.

**Postclassic**
Of or pertaining to Mesoamerican culture from A.D. 900 to the Spanish conquest in 1519.
The Indo-Islamic architecture typified Mogul architecture, characterized by fine and sculptural use of the classical orders and ornament, dynamic opposition and interpenetration of spaces, and the dramatic combined effects of architecture, sculpture, painting, and the decorative arts.

High Renaissance
A style of Italian Renaissance art and architecture developed in the late 15th and early 16th centuries, characterized by an emphasis on draftsmanship, the illusion of sculptural volume in painting, and in building, by the initiative use of whole orders and compositional arrangements in the classical style, with great attention to the formation of compositional rules after the precepts of Vitruvius and the precedents of existing rules.

Baroque architecture
A style of architecture originating in Italy in the early 17th century and variously prevalent in Europe and the New World for a century and a half, characterized by free and sculptural use of the classical orders and ornament, dynamic opposition and interpenetration of spaces, and the dramatic combined effects of architecture, sculpture, painting, and the decorative arts.

Tudor architecture
A transitional style of English architecture that developed during the reign of the royal house of Tudor in the second half of the 16th century, characterized by the Tudor arch and the application of Renaissance details to buildings otherwise late Perpendicular in style.

Renaissance
The Italian Renaissance architecture of the 16th century.

Mannerism
A transitional style in European architecture in the late 16th century, particularly in Italy, characterized by the unconventional use of classical elements. In the fine arts, Mannerism was chiefly characterized by a distortion of perspective, elongated forms, and intense, often strident color.

Rococo
A style of decorative art that evolved from the Baroque, originating in France about 1730 and distinguished by fanciful, curved spatial forms and elaborate, profuse designs of shellwork and foliage used for a delicate overall effect.

Neoclassicism
The principles or styles characteristic of the culture, art, and literature of ancient Greece and Rome.

Classical Revival
Art and architecture in the style of the ancient Greeks and Romans, as that of the Italian Renaissance and the neoclassical movements in England and the United States in the late 18th and early 19th centuries. Also, Classical Revival.

Cinquecento architecture
The Italian Renaissance architecture of the 16th century.

Colonial architecture
The style of architecture, decoration, and furnishings of the British colonies in America in the 17th and 18th centuries, mainly adapted to local materials and demands from prevailing English styles.

Regency style
The neoclassical style of architecture, furnishings, and decoration during the period in British history, 1811–20, during which George, Prince of Wales (later George IV) was regent, similar to the Directoire and Empire styles and characterized by close imitation of ancient Greek forms as well as by less frequent and looser adaptations of ancient Roman, Gothic, Chinese, and ancient Egyptian forms.

Directoire style
A style of French furnishings and decoration preceding the Empire style, characterized by an increasing use of Greco-Roman forms along with an introduction, toward the end, of Egyptian motifs named after the Directory, the body of five directors forming the executive power of France from 1795–99.

Empire style
The neoclassical style of architecture, furnishings, and decoration prevailing in France and imitated in various other countries during the first French Empire, 1800–30, characterized by the use of delicate but elaborate ornamentation imitated from Greek and Roman examples and by the occasional use of military and Egyptian motifs.

Royal Academy of Fine Arts
The official academy of visual arts in France, founded in 1718 by Louis XV, under the presidency of Maurice Leblanc.
**Gothic Revival**
A movement aimed at reviving the spirit and forms of Gothic architecture, originating in the late 18th century but flourishing mainly in the 19th century in France, Germany, England and to a lesser extent in the U.S. Gothic remained the accepted style for churches well into the 20th century.

**Steamboat Gothic**
A flimsy architectural style used for homes built in the middle of the 19th century in the Ohio and Mississippi river valleys, suggesting the gingerbread-decorated construction of riverboats of the Victorian period.

**Gingerbread**
Heavily gaudy, and superfluously ornamented, esp. in architecture.

**Rationalism**
A design movement of the mid-19th century that emphasized the decorative use of materials and textures and the development of ornament as an integral part of a structure rather than as applied adornment.

**Arts and Crafts Movement**
A movement that originated in England in 1860 as a reaction against poor-quality mass-produced goods, emphasizing craft and decoration as a single entity in the handcrafting of both utilitarian and decorative objects.

**Mission Style**
A style of architecture associated with that of early Spanish colonial missions in Mexico and the southwestern U.S., mainly in the 19th century.

**Richardsonian Romanesque**
The revival of the Romanesque style in the U.S. by Henry Hobson Richardson, 1863–86, and his followers, characterized by heavy arches, rusticated masonry walls, and dramatic asymmetrical effects.

**Rundbogenstil**
A style of architecture in the mid-19th century, esp. in Germany, characterized by the use of the round-arch motif and combining in various degrees elements from the Early Christian, Byzantine, Romanesque, and Early Renaissance styles from the German term for round-arched style.

**Victorian architecture**
The revival and eclectic architecture, decor, and furnishings popular in English-speaking countries during the reign of Queen Victoria of England, 1837–1901, characterized by rapid changes of style as a consequence of aesthetic controversy and technological innovations, by the frequent presence of ostentatious ornament, and by an overall trend from classicism at the start to romanticism and eclecticism at the middle of the period and then to Classicism again.

**Beaux-Arts architecture**
A style of architecture favored by the École des Beaux-Arts in late 19th-century France and adopted in the U.S. and elsewhere c1900, characterized by symmetrical plans and the eclectic use of architectural features combined so as to give a massive, elaborate, and often ostentatious effect. The term is often used in a pejorative sense to designate excessive formalism disregarding considerations of structural truth, advanced aesthetic theory, rational planning, or economy.

**Eclecticism**
A tendency in architecture and the decorative arts to freely mix various historical styles with the aim of combining the virtues of diverse sources, or of increasing allusive content, particularly during the second half of the 19th century in Europe and the U.S.

**Stick style**
An eclectic style of American architecture in the second half of the 19th century, characterized esp. by the use of vertical boarding with buttons or grids of boards over horizontal siding to express the frame construction beneath.

**Art Nouveau**
A style of the and applied art current in the late 19th and early 20th centuries, characterized by fluid, undulating motifs, often derived from natural forms.

**Sezession**
The Austrian version of Art Nouveau, so named because its adherents seceded from the official Academy of Art in Vienna.

**Modernismo**
The Spanish, particularly Catalan, version of Art Nouveau.

**Jugendstil**
Art Nouveau as practiced in German-speaking countries, from the German term for youth style.
**1900**

**Chicago School**
A group of U.S. architects active c1860–1930 and known for major innovations in high-rise construction and for the development of modern commercial building design.

**Constructivism**
A movement which originated in Moscow after 1917, primarily in sculpture but with broad application to architecture. The expression of construction was to be the basis for all building design, with emphasis on functional machine parts.

**Functionalism**
A design movement that evolved from several previous movements in Europe in the early 20th century. Advocating the design of buildings, furnishings, or the like as direct fulfillment of functional requirements, with the construction, materials, and purpose clearly expressed, and with aesthetic effect derived chiefly from proportions and finish to the exclusion or subordination of purely decorative effects.

**Organic architecture**
A philosophy of architectural design that emerged in the early 20th century, asserting that a building should have a structure and plan that fulfill its functional requirements, harmonize with its natural environment, and form an intellectually solid, integrated whole. The shapes or forms in such a work are often of irregular contour and seem to resemble or suggest forms found in nature.

**Art Deco**
A style of decorative art developed originally in the 1920s with a revival in the 1960s, marked chiefly by geometric motifs, streamlined and curvilinear forms, sharply defined outlines, often bold colors, and the use of synthetic materials, as plastics. Derived from Exposition Internationale Des Arts Décoratifs et Industriels Modernes, an exposition of modern and decorative arts held in Paris, France, in 1925. Also called Style Moderne.

**High-tech**
A style of design incorporating industrial, commercial, and institutional fixtures, equipment, materials, or other elements having the utilitarian appearance characteristic of industrial design.

**De Stijl**
A school of art that was founded in the Netherlands in 1917, embracing painting, sculpture, architecture, furniture, and the decorative arts, marked esp. by the use of black and white with the primary colors, rectangular forms, and asymmetry. From 'the style,' the name of a magazine published by participants in the movement.

**Cubism**
A style of painting and sculpture developed in the early 20th century, characterized by an emphasis on formal structure, the reduction of natural forms to their geometrical equivalents, and the organization of the planes of a represented object independently of representational requirements.

**Modernism**
A philosophical and critical movement that started in the 1960s, esp. in the study of literature, questioning traditional assumptions about the ability of language to represent reality and emphasizing that a text has no stable reference because words essentially refer only to other words. A reader must therefore approach a text by eliminating any abstract reasoning or utopian assumptions through an active role of defining meaning, sometimes by a reliance on etymology and new word construction.

**International Style**
A functional architecture devoid of regional characteristics, developed in the 1920s and 1930s in Western Europe and the U.S. and applied throughout the world characterized by simple geometric forms, large untinted, often white surfaces, large areas of glass, and general use of steel or reinforced concrete construction.

**Brutalism**
A movement in architecture in the 1950s, emphasizing the aesthetic use of basic building processes, esp. of cast-in-place concrete, with no apparent concern for visual amenity.

**Deconstructivism**
A philosophical and critical movement that started in the 1960s, esp. in the study of literature, questioning traditional assumptions about the ability of language to represent reality and emphasizing that a text has no stable reference because words essentially refer only to other words. A reader must therefore approach a text by eliminating any abstract reasoning or utopian assumptions through an active role of defining meaning, sometimes by a reliance on etymology and new word construction.
HOUSE

A building in which people live.

shelter
Something beneath, behind, or within which a person is protected from storms or other adverse conditions.

hut
A small, simple dwelling or shelter, esp. one made of natural materials.

pit dwelling
A primitive form of shelter consisting of a pit excavated in the earth and roofed over. Also called pit house.

lake dwelling
A dwelling, esp. of prehistoric times, built on piles or other supports over the water of a lake.

longhouse
A communal dwelling characteristic of many early cultures, esp. that of the Iroquois and various other North American Indian peoples, consisting of wooden, bark-covered framework often as much as 100 ft. (30.5 m) in length.

igloo
An Eskimo house, usually built of blocks of hard snow or ice in the shape of a dome, or whose permanent, of sod, wood, or stone. Also, iglu.

pueblo
A communal dwelling and defensive structure of the Pueblo Indians of the southwestern U.S., built of adobe or stone, typically many-storied, and terraced, with entry through the flat roofs of the chambers by ladders. Pueblo structures were built on the desert floor, in valleys, or in the more easily defended cliff walls of mesas.

kiva
A large underground or partly underground chamber in a Pueblo Indian village, used by the men for religious ceremonies or councils.

tepee
A tent of the American Indians, made usually from animal skins laid on a conical frame of long poles and having an opening at the top for ventilation and a flap door. Also, teepee.

wigwam
An American Indian dwelling, usually of round or oval shape, formed of poles overlaid with bark, rush mats, or animal skins.

hogan
A Navajo Indian dwelling constructed usually of earth and logs and covered with mud and sod.

sod house
A house built of strips of sod, laid like brickwork, and used esp. by settlers on the Great Plains when timber was scarce.

totem pole
A pole or post carved and painted with totemic figures, erected by Indians of the northwest coast of North America, esp. in front of their houses.

totem
An animal, plant, or natural object serving as an emblem of a family or clan by virtue of an ancestral relationship.

plank house
A large, usually rectangular house constructed of timber planks, built and used by Indians and, less frequently, by Eskimos.

trullo
A circular stone shelter of the Apulia region of southern Italy, roofed with conical constructions of corbeled dry masonry, usually whitewashed and painted with figures or symbols. Many trulli are over 1,000 years old and still in use today, usually located among vineyards to serve as storage structures or as temporary living quarters during the harvest.
compluvium
A roof opening in an ancient Roman house, through which rainwater discharged into a cistern in the atrium beneath it.

displuviate
Having roofs sloping downward toward the compluvium.

impluvium
A cistern set in the atrium of an ancient Roman house to receive rainwater from the compluvium.

atrium
The male or central inner hall of an ancient Roman house, open to the sky at the center and usually having a pool for the collection of rainwater. Also called caveaevium.

peristyle
A colonnade surrounding a building or a courtyard.

shoin-zukuri
A ceremonial style of Japanese residential architecture in the Kamakura period, deriving its name from the characteristic shoin or study-hall and marked by a hierarchical arrangement of public and private rooms.

zashiki
Reception room, the main room in a traditional Japanese house, used for receiving and entertaining guests. Its importance is evident in the presence of a tokonoma, tara, and shoji.

tana
In Japanese residential architecture, a recess with built-in shelving, usually adjoining a tokonoma.

shoji
One of a series of sliding translucent panels used in Japanese architecture between the exterior and the interior, or between two interior spaces, consisting of a light wooden framework covered on one side with rice paper; the lower section is occasionally filled by a thin wooden panel.

kakejiku
A picture scroll, intended to be viewed on a wall and rolled when not in use.

tokonoma
A picture recess: a shallow, slightly raised alcove for the display of a kakemono or flower arrangement. One side of the recess borders the outside wall of the room through which light enters, while the interior side adjoins the tara. As the spiritual center of a traditional Japanese house, the tokonoma is located in its most formal room.

tobashira
A post marking the front of the partition between the tokonoma and the tara, sometimes of exquisite wood of particular grain and shape.

tatami
A thick straw mat, covered with smooth, finely woven reeds and bound with plain or decorated bands of silk, cotton, or hemp, serving as a floor covering and a standard for designating room size in a traditional Japanese house. Tatami measured approximately 3 x 6 ft. (0.9 x 1.8 m), but varied in actual dimensions according to region and method for determining column spacing.

ken
A linear unit for regulating column spacing in traditional Japanese construction, initially set at 6 ft. or 1.8 m, but later varying according to room width as determined by tatami units.

**Note:** The image contains a diagram illustrating various elements of Japanese architecture, such as the atrium, impluvium, tokonoma, and tatami. The text accompanying the diagram provides definitions and explanations for these architectural terms. The diagram is part of a larger page that discusses the importance and arrangement of these elements in traditional Japanese residential architecture.
detached dwelling
A house having no wall in common with another house.

Cape Cod
A style of cottage developed mainly on Cape Cod, Massachusetts, in the 18th and early 19th centuries, typically a rectangular, one- or one-and-a-half-story, wood-frame house with white clapboarded or shingle walls, a gable roof with low eaves and usually no dormer, a large central chimney, and a front door located on one of the long sides.

saltbox
A type of wood-framed house found esp. in New England, generally two full stories high in front and one story high in back, the roof having about the same pitch in both directions so that the ridge is well toward the front of the house.

Prairie School
A group of early 20th-century architects, notably Frank Lloyd Wright, who designed houses and other buildings with emphasized horizontal lines responding to the flatness of the Midwestern prairie.

rambler
A one-story house with a low-pitched roof, esp. one built in the suburbs.

tract house
A house forming part of a real-estate development, usually having a plan and appearance common to some or all of the houses in the development.

semidetached dwelling
A house joined by a party wall to another house or row of houses.

duplex house
A house having separate apartments for two families, esp. a two-story house having a complete apartment on each floor and two separate entrances. Also called duplex.

triplex
A building having three apartments, an apartment having three floors, or a multiplex of three theaters.

dogtrot
A breezeway linking two parts of a house.

bungalow
A derivative of the Indian bungalow, popular esp. in the first quarter of the 20th century, usually having one or one-and-a-half stories, a widely bracketed gable roof, a large porch, and often built of rustic materials.

bungalow court
A group of three or more detached, one-story, single-family dwellings, arranged with common utilities and accessories under a common ownership.

split-level
A house having a room or rooms somewhat above or below adjacent rooms, with the floor levels usually differing by approximately half a story.

bi-level
A two-story house having the lower level sunk below grade and an entry at grade halfway between the two floor levels.

Dutch Colonial
Of or pertaining to the domestic architecture of Dutch settlers in New York and New Jersey in the 17th century, often characterized by gambrel roofs having curved eaves over porches on the long sides.

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condominium
An apartment house, office building, or other multiple-unit complex, the units of which are individually owned, each owner receiving a recordable deed to the individual unit purchased, including the right to sell or mortgage that unit, and sharing in the joint ownership of any common elements, as hallways, elevators, mechanical and plumbing systems, or the like.

cooperative
A building owned and managed by a nonprofit corporation in which shares are sold, entitling the shareholders to occupy units in the building. Also called co-op, cooperative apartment.

townhouse
One of a row of houses in a city joined by common sidewalks.

brownstone
A building, esp. a row house, fronted with a reddish-brown sandstone.

crescent
A curved street, often having solid facades of unified architectural design.

terrace
A row of houses or residential street on or near the top of a slope.

terrace house
One of a row of houses situated on a terraced site.

cluster housing
A group of buildings and esp. houses built close together to form relatively compact units on a stable tract in order to preserve open spaces larger than the individual yard for common recreation.

commons
A tract of land owned or used jointly by the residents of a community, usually a central square or part in a city or town.
JOINERY
The art or craft of forming joints, esp. in woodwork.

end joint
Any joint formed by cutting two members end to end so as to increase their length. Also called lengthening joint.

dado joint
A rectangular groove cut in a member to receive the end of another.

dado joint
A joint made by inserting the end or edge of one member into a corresponding groove on the edge of another member to produce a flush surface. Abb.: T & G

stopped dado
A dado that is not cut across the full width of a member.

joined dado joint
A dado joint where a dado is cut into the end of a member to form a butt joint.

tongue and groove joint
A joint made by fitting a raised area or tongue on the edge of one member into a corresponding groove on the edge of another member to produce a flush surface. Also called feather.

spline joint
A thin strip of material inserted into the grooved edges of two members to make a butt joint between them. Also called housed joint.

butterfly wedge
A fastener in the form of a double dovetail for joining two members at their edges. Also called butterfly.

rabbet joint
A joint between rabbeted parts.

miter joint
An oblique surface formed so as to butt against another oblique surface to be joined with it.

shoulder miter
A miter joint having a raised surface to limit motion between the joined parts.

tongued miter
A miter joint that incorporates a tongue and groove.

jogged joint
A joint between two moldings made by undercutting the end of one of them to the profile of the other. Also called scripched joint.

stop chamfer
A chamfer that narrows gradually to merge with a sharp edge. Also called stopped chamfer.

chamfer
A beveled surface, usually formed or cut at a 45° angle to the adjacent principal faces.

eased edge
A slightly rounded edge.

easedment
A curved joint forming a smooth transition between surfaces that would otherwise intersect at an angle.

flush joint
Any joint finished even or level with the surrounding surfaces.

butt joint
Any of various joints formed by abutting the surfaces of two members squarely together without overlapping.

finger joint
A lengthening joint formed by interlacing finger-like projections on the ends of the joined members.

fish joint
A lengthening joint in which the abutting members are held in alignment and strengthened by fishplates.

fishplate
A metal plate bolted to each of two abutting members.
halved joint
A lap joint formed by cutting away half of each member at the place of joining so that a flush surface results. Also called half-lap joint.

end-lap joint
An angle joint formed by halving each member for a length equal to the width of the other.

cross-lap joint
A halved joint formed by two crossing members.

mitered halving
An end-lap joint incorporating a miter on one face.

plain lap
A lap joint formed by overlapping two members without any change in form.

dovetail
A fan-shaped tenon broader at its end than at its base.

lapped joint
Any of various joints formed by overlapping the ends or edges of two members.

dovetail halving
A halved joint made by fitting a dovetail at the end of one member into a corresponding mortise in the second member.

blind mortise
A mortise that does not pass completely through a member. Also called stopped mortise.

secret dovetail
A corner dovetail joint showing only the line of a miter. Also called miter dovetail.

lap dovetail
A corner dovetail joint visible on one face only. Also called half-blind dovetail.

common dovetail
A corner dovetail joint visible on both faces.

dovetail joint
A joint formed by one or more dovetails fitting tightly within corresponding mortises.

stuck tenon
A short tenon for fitting into a blind mortise.

undercut tenon
A tenon having its shoulder cut at an angle to ensure that it bears on the mortised piece.

hunched tenon
A tenon that is narrower at its tip than at its root.

drawbore
A hole in a tenon bored eccentric with the corresponding holes in the mortise so that the two pieces being joined will be forced tightly together when the drawbore pin is hammered into place.

bridle joint
A joint formed by fitting the end of one member, notched to form two parallel tenons, into two grooves cut into the edge of a second member.

foxtail wedge
A small wedge in the slots end of a stub tenon for spreading and securing it when driven into a blind mortise. Also called fox wedge.

dovetail end lap joint
A mortise joint formed by housing a tenon in a mortise. Also called mortise-and-tenon joint.

tenon
A projection formed on the end of a member for insertion into a mortise of the same dimensions.

through tenon
A tenon that extends completely through or beyond the piece into which its corresponding mortise is cut.

key
A piece of wood or metal used as a wedge to tighten a joint or to prevent rotation between parts.

keyed joint
A joint fastened or secured by a key.

articulate
To unite by means of a joint or joints, esp. so as to make distinct or reveal how the parts fit into a systematic whole.
**LIGHT**

Electromagnetic radiation that the unaided human eye can perceive, having a wavelength in the range from about 370 to 700 nm and propagating at a speed of 299,792 km/sec.

- **nanometer**
  A unit of length equal to one billionth of a meter, used esp. to express the wavelengths of light in or near the visible spectrum. Abbr.: nm

- **angstrom**
  A unit of length equal to one ten-billionth of a meter, used esp. to express the wavelengths of radiation. Symbol: Å

- **wavelength**
  The distance traveled by a wave in a given direction in one period, or the distance between two consecutive wave crests or troughs.

- **visible light**
  Light that is perceived or visible to the human eye, having a wavelength in the range of approximately 380 to 740 nanometers.

- **gamma rays**
  High-energy radiation, including X-rays and cosmic rays.

- **X-rays**
  A form of electromagnetic radiation with wavelengths ranging from about 0.001 to 10 nanometers, produced by accelerating charged particles or by the deceleration of charged particles.

- **ultraviolet**
  Light with wavelengths shorter than visible light, ranging from about 10 to 380 nanometers.

- **infrared**
  Light with wavelengths longer than visible light, ranging from about 700 nanometers to 1 millimeter.

- **microwaves**
  Electromagnetic radiation with wavelengths ranging from about 1 millimeter to 1 meter, used in various applications such as telecommunications and ovens.

- **radio waves**
  Electromagnetic radiation with wavelengths longer than microwaves, ranging from about 1 meter to 300 kilometers.

**luminous intensity**

The luminous flux emitted per unit solid angle by a light source, expressed in candela.

**candelpower**

Luminous intensity expressed in candela.

**candle**

A unit of luminous intensity used prior to 1948, equal to the luminous intensity of a standard candle.

**candela**

The basic SI unit of luminous intensity, equal to the luminous intensity of a source that emits monochromatic radiation of frequency 540×10^12 hertz and that has a radiant intensity of 1 watt per steradian.

**cosine law**

The law that the illumination produced on a surface by a point source is proportional to the cosine of the angle of incidence. Also called Lambert's law.

**inverse square law**

One of several laws relating two quantities such that one quantity varies inversely as the square of the other, as the law that the illumination produced on a surface by a point source varies inversely as the square of the distance from the source.

**illumination**

The intensity of light falling at any given place on a lighted surface, equal to the luminous flux incident per unit area and expressed in lumens per unit area. Also called illumination.

**lux**

The SI unit of illumination, equal to one lumen per square meter. Abbr.: lx

**foot-candle**

A unit of illumination on a surface that is everywhere one foot from a uniform point source of one candle and equal to one lumen incident per square foot. Abbr.: fc

**luminance**

The quantitative measure of brightness of a light source or an illuminated surface, equal to the luminous intensity per unit projected area of the source or surface viewed from a given direction.

**lambert**

A unit of luminance or brightness equal to 0.32 candle per square centimeter. Abbr.: L

**foot-lambert**

A unit of luminance or brightness equal to 0.32 candle per square foot. Abbr.: Fl
**Light**

- **Incidence**: The striking of a ray of light or sound wave on a surface.
- **Reflection**: The return of light, sound, or radiant heat after striking a surface.
- **Angle of Incidence**: The angle that a straight line, as a ray of light falling on a surface, makes with a normal to the surface at the point of incidence.
- **Angle of Reflection**: The angle that a reflected ray makes with a normal to a reflecting surface at the point of incidence.
- **Law of Reflection**: The principle that when light or sound is reflected from a smooth surface, the angle of incidence is equal to the angle of reflection, and the incident ray, the reflected ray, and the normal to the surface all lie in the same plane.
- **Specular**: Directed from a smooth, polished surface.
- **Diffusion**: A scattered reflection of light from an irregular surface or an erratic dispersion through a translucent material.
- **Diffuse**: Dispersed from an irregular surface.
- **Reflectance**: The ratio of the radiation reflected by a surface to the total incident on the surface.
- **Absorptance**: The ratio of the radiation absorbed by a surface to the total incident on the surface.
- **Transmittance**: The ratio of the radiation transmitted through and emerging from a body to the total incident on it, equivalent to one minus the absorptance.
- **Opaque**: Impermeable to light.
- **Translucent**: Transmitting and diffusing light so that bodies on the opposite side are not clearly visible.
- **Transparent**: Capable of transmitting light so that bodies situated beyond or behind can be distinctly seen.
Lamp
Any of various devices for producing light or heat, as by electricity or gas.

Incandescent lamp
A lamp in which a filament gives off light when heated to incandescence by an electric current. Also called light bulb.

Filament
The threadlike conductor of an electric lamp that is heated to incandescence by the passage of an electric current.

Incandescence
The emission of visible light by a body when heated to a high temperature.

Extended-service lamp
A lamp designed for reduced energy consumption and a life longer than the conventionally set value for its general class. Also called long-life lamp.

Efficacy
A measure of the effectiveness with which a lamp converts electric power into luminous flux, equal to the ratio of flux emitted to power input and expressed in lumens per watt.

Rated life
The average life in hours of a given type of lamp, based on laboratory tests of a representative group under controlled conditions.

Three-way lamp
An incandescent lamp having two filaments so that it can be switched to three successive degrees of illumination.

Tungsten lamp
An incandescent lamp using a tungsten filament.

Tungsten-halogen lamp
A tungsten lamp having a quartz bulb containing a small amount of a halogen that vaporizes on heating and redeposits any evaporated tungsten particles back onto the filament. Also called halogen lamp or quartz lamp.

IR lamp
A tungsten-halogen lamp having an infrared dichroic coating for reflecting infrared energy back to the filament, raising lamp efficiency, and reducing radiant heat in the emitted light beam.

Infrared lamp
An incandescent lamp having a higher percentage of its radiant power in the infrared region than a standard incandescent lamp, often having a red glass bulb to reduce the radiated visible light.

B bulb
The standard rounded shape for the bulbs of general-service incandescent lamps.

C bulb
A cone-shaped bulb for low-wattage, decorative incandescent lamps.

PAR bulb
A parabolic aluminized reflector bulb of cast glass for incandescent and high-intensity-discharge lamps, having an internal reflective coating and either a clear or frosted glass front to produce the desired beam spread.

ER bulb
An elliptical reflector bulb for incandescent and high-intensity-discharge lamps, having a precisely formed internal reflector that collects light and redirects it into a dispersed pattern at some distance in front of the light source.

AJSB bulb
An A bulb having a hemispherical, reflective silver bowl opposite the lamp base to decrease glare.

G bulb
A globe-shaped bulb for incandescent lamps having a low brightness for exposed side.

PS bulb
A pear-shaped bulb for large incandescent lamps.

S bulb
A straight-sided bulb for low-wattage, decorative incandescent lamps.
ballast
A device for maintaining the current through a fluorescent or HID lamp at the desired constant value, and sometimes also providing the required starting voltage and current.

starter
A device used with a ballast to provide the starting voltage for a preheat fluorescent lamp.

T bulb
A tubular bulb for incandescent, fluorescent, and high-intensity-discharge lamps.

circle lamp
A doughnut-shaped fluorescent lamp for circular luminaires.

U-bent lamp
A U-shaped fluorescent lamp for square or rectangular luminaires.

compact fluorescent lamp
Any of various small, improved efficiency fluorescent lamps having a single, double, or spiral tube, and often an adapter for fitting an incandescent lamp holder.

color temperature
The temperature at which a blackbody emits light of a specified spectral distribution, used to specify the color of a light source.

spectral distribution curve
A curve plotting the radiant energy in each wavelength of a particular light source.

color rendering index
A measure of the ability of an electric lamp to render color accurately when compared with a reference light source of similar color temperature. A tungsten lamp operating at a color temperature of 2856K, noon sunlight having a color temperature of 6000K, and average daylight having a color temperature of 7000K all have an index of 100 and are considered to render color perfectly.

neon lamp
A cold-cathode lamp emitting a glow when a high voltage is applied across two electrodes in a neon-filled glass tube.

cold-cathode lamp
A discharge lamp having cathodes that emit electrons without having to be heated.

BT bulb
A bulbular bulb for high-intensity-discharge lamps.

E bulb
An elliptical bulb for high-intensity-discharge lamps.

discharge lamp
A lamp in which light is produced by the discharge of electricity between electrodes in a gas-filled glass enclosure.

fluorescent lamp
A tubular discharge lamp in which light is produced by the fluorescence of phosphors coating the inside of the tube.

fluorescence
The emission of radiation, esp. of visible light, by a substance during exposure to external radiation.

preheat lamp
A fluorescent lamp that requires a separate starter to preheat the cathodes before opening the circuit to the starting voltage.

rapid-start lamp
A fluorescent lamp designed to operate with a ballast having a low-voltage winding for continuous heating of the cathodes, which allows the lamp to be started more rapidly than a preheat lamp.

instant-start lamp
A fluorescent lamp designed to operate with a ballast having a high-voltage transformer to initiate the arc directly without any preheating of the cathodes.

high-output lamp
A rapid-start fluorescent lamp designed to operate on a current of 800 milliamperes, resulting in a corresponding increase in luminous flux per unit length of lamp.

ever-high-output lamp
A rapid-start fluorescent lamp designed to operate on a current of 1600 milliamperes, providing a corresponding increase in luminous flux per unit length of lamp.

high-intensity discharge lamp
A discharge lamp in which a significant amount of light is produced by the discharge of electricity through a metallic vapor in a sealed glass enclosure. Also, HID lamp.

mercury lamp
A high-intensity discharge lamp producing light by means of an electric discharge in mercury vapor. Also called mercury-vapor lamp.

sodium lamp
A high-intensity discharge lamp producing light by means of an electric discharge in sodium vapor. Also called sodium-vapor lamp.

low-pressure sodium lamp
A sodium lamp producing a yellow, glassless light and used esp. to illuminate roadways. Also, LPS lamp.

high-pressure sodium lamp
A sodium lamp producing a broader spectrum, golden-white light than a low-pressure sodium lamp. Also, HPS lamp.

metal halide lamp
A high-intensity discharge lamp similar in construction to a mercury lamp, but having an arc tube to which various metal halides are added to produce more light and improve color rendering.
LUMINAIRE
A lighting unit consisting of one or more electric lamps with all of the necessary parts and wiring for positioning and protecting the lamps, connecting the lamps to a power supply, and distributing the light. Also called lighting fixture.

reflector
A surface for reflecting light, heat, or sound; esp. the device on a luminaire having such a surface for controlling the distribution of light emitted by a lamp.

lens
A piece of transparent material, as glass or plastic, having two opposite surfaces either or both of which are curved, used in luminaires to focus, disperse, or collimate the emitted light.

freeform lens
A lens having concentric, prismatic grooves to concentrate light from a small source.

prismatic lens
A lens having a multifaceted surface with parallel prisms to redirect the rays from a light source.

baffle
A bared device for shielding a light source from view at certain angles.

shielding angle
The angle below which a light source can be seen.

parabolic reflector
A reflector having a parabolic surface to collimate, spread, or focus the rays from a light source, depending on the location of the source.

collimate
To make rays of light parallel.

eccentric reflector
A reflector having an elliptical surface to focus the rays from a light source.
diffuser
Any of a variety of translucent materials for filtering glare from a light source and distributing the light over an extended area.

candlepower distribution curve
A polar plot of the luminous intensity emitted by a lamp, luminaire, or window in a given direction from the center of the light source, measured in a single plane for a symmetrical light source, and in a perpendicular, parallel, and sometimes a 45° plane for an asymmetrical source.

isoocart
A graphic plot of the pattern of illumination produced on a surface by a lamp or luminaire.

isoflux line
A line through all points on a surface where the level of illumination is the same. Called isoflux/candle line if illumination is expressed in footcandles.
wall washer
A downlight mounted close to the plane of a wall and equipped with a reflector, baffle, or lens to illuminate the vertical surface.

floodlight
A lamp designed to project or diffuse a comparatively uniform level of illumination over a large area. Also called flood, flood lamp.

donight
A luminaire consisting of a lamp set in a metal cylinder, recessed into or mounted on a ceiling to direct a beam of light downward.

point source
A light source having a maximum dimension less than one fifth the distance from the source to the surface illuminated.

track lighting
Lighting provided by adjustable spotlights mounted along a narrow, ceiling or wall-mounted metal track through which current is conducted.

cove lighting
Indirect lighting directed upward from an interior cornice at the edge of a ceiling.

valance lighting
Indirect lighting directed upward or downward from a light source concealed by a horizontal board or band.

cornice lighting
Indirect lighting directed downward from an interior cornice at the edge of a ceiling.

bridge lamp
A floor lamp having the light source on a hinged, horizontally adjustable arm.

gooseneck lamp
A desk lamp having a flexible shaft resembling the neck of a goose.

torchiere
A floor lamp having its light source within a reflecting bowl that directs the light upward. Also, torchiere, torchier.

chandelier
A decorative lighting fixture suspended from a ceiling, usually having branched supports for a number of lamps.

sconce
A decorative wall bracket for candles or other lights.

light strip
A rigid or flexible tape with exposed low-voltage light sources of 1 to 10 watts.

troffer
A luminaire having a trough-shaped reflector holding one or more fluorescent lamps.

linear source
A light source having one dimension significantly greater than its other dimensions, as a fluorescent lamp.

area source
A light source having significant dimensions in two directions, as a large window or a luminous ceiling.

droplight
A lighting fixture suspended from a ceiling or wall by a flexible cord, by which it can be raised or lowered.

pendant
A lighting fixture suspended from a ceiling.

spotlight
A lamp designed to project a strong, focused beam of light on an object or area. Also called spot.

spill
Superfluous or useless light rays, as from a spotlight or other focused light source. Also called spill light.

valance lighting
Indirect lighting directed upward or downward from a light source concealed by a horizontal board or band.

cornice lighting
Indirect lighting directed downward from an interior cornice at the edge of a ceiling.

valance light
A luminous surface that is often used to conceal the light source.

sconce lighting
Indirect lighting directed upward from a wall sconce.

pendant lighting
Lighting fixture suspended from a ceiling or wall by a flexible cord, by which it can be raised or lowered.

light strip
A rigid or flexible tape with exposed low-voltage light sources of 1 to 10 watts.

troffer
A luminaire having a trough-shaped reflector holding one or more fluorescent lamps.

linear source
A light source having one dimension significantly greater than its other dimensions, as a fluorescent lamp.

area source
A light source having significant dimensions in two directions, as a large window or a luminous ceiling.

droplight
A lighting fixture suspended from a ceiling or wall by a flexible cord, by which it can be raised or lowered.

pendant
A lighting fixture suspended from a ceiling.

point source
A light source having a maximum dimension less than one fifth the distance from the source to the surface illuminated.
lighting
The science, theory, or method of providing illumination through the use of electric lamps.

general lighting
Lighting designed to provide a uniform level of illumination throughout an area.

local lighting
Lighting designed to provide a relatively high level of illumination over a small area, with a surrounding area of lower intensity from spill light.

task lighting
Lighting designed to provide strong illumination for a visually demanding activity, as reading or drafting.

direct lighting
Lighting in which luminaires distribute 90% to 100% of the emitted light downward on the surface or area to be illuminated.

semidirect lighting
Lighting in which luminaires distribute 60% to 90% of the emitted light downward.

general diffuse lighting
Lighting from luminaires that emit an approximately equal distribution of light upward and downward.

direct-indirect lighting
General diffuse lighting in which little light is emitted in the horizontal plane of the luminaires.

semi-indirect lighting
Lighting in which luminaires distribute 60% to 90% of the emitted light upward.

indirect lighting
Lighting in which luminaires distribute 90% to 100% of the emitted light upward, esp. to avoid glare or prevent shadows.

glare
The sensation produced by any brightness within the visual field that is sufficiently greater than the luminance to which the eye is adapted to cause annoyance, discomfort, or loss of visibility.

adaptation
The regulating by the pupil of the quantity of light entering the eye, resulting in a change in the sensitivity of the eye's photoreceptors to light.

visual comfort probability
A rating of the likelihood that a lighting system will not cause direct glare, expressed as the percentage of people who may be expected to experience visual comfort when seated in the least favorable visual position.

brightness ratio
The ratio between the luminance of an object and that of its background. Also called contrast ratio.

blinding glare
Glares so intense that, for an appreciable length of time after it has been removed, visibility is lost.

disability glare
Glares that reduce visibility or impair visual performance, often accompanied by discomfort.

discomfort glare
Glares that produce discomfort but does not necessarily interfere with visibility or visual performance.

glare
Glares resulting from a high brightness ratio or an insufficiently shielded light source in the visual field.

reflected glare
Glares resulting from the specular reflection of a light source within the visual field. Also called indirect glare.

veiling reflectance
Reflected glare on a task surface that reduces the contrast necessary for seeing details.
beam spread
The angle of a light beam that intersects the candlepower distribution curve as points where the luminous intensity equals a stated percent of a maximum reference intensity.

spacing criteria
A formula for determining the distance apart luminaires may be installed for uniform lighting of a surface or area, based on mounting height.

point method
A procedure for calculating the illumination produced on a surface by a point source from any angle, based on the inverse square and cosine laws.

beam
A group of nearly parallel rays of light.

throw
The effective length of a beam of light.

celling cavity
The cavity formed by the ceiling, a plane of suspended luminaires, and the wall surfaces between these two planes.

room cavity
The cavity formed by a plane of luminaires, the work plane, and the wall surfaces between these two planes.

glow cavity
The cavity formed by the work plane, the floor, and the wall surfaces between these two planes.

room cavity ratio
A single number derived from the dimensions of a room cavity for use in determining the coefficient of utilization.

coefficient of utilization
The ratio of the luminous flux reaching a specified point on the total lumens output of a luminaire, taking into account the proportions of a room and the reflectances of its surfaces.

average maintained illuminance = \[
\frac{\text{initial lamp lumens} \times \text{CU} \times \text{RLLF} \times \text{NRLF}}{\text{work area}}
\]

initial lamp lumens = lumens per lamp \times \text{lamps per luminaire}

lumen method
A procedure for determining the number and types of lamps, luminaires, or windows required to provide a uniform level of illumination on a work plane, taking into account both direct and reflected luminous flux. Also called zenithal cavity method.

work plane
The horizontal plane at which work is done and on which illumination is specified and measured, usually assumed to be 30 in. (762 mm) above the floor.

lamp lumen depreciation
A light loss factor representing the decrease in luminous output of a lamp during its operating life, expressed as a percentage of initial lamp lumens.

luminaire dirt depreciation
A light loss factor representing the decrease in luminous output of a luminaire resulting from the accumulation of dirt on its surfaces, expressed as a percentage of the illumination from the luminaire when new or clean.

room surface dirt depreciation
A light loss factor representing the decrease in reflected light resulting from the accumulation of dirt on a room's surfaces, expressed as a percentage of the light reflected from the surfaces when clean.

nonrecoverable light loss factor
Any of several permanent light loss factors that take into account the effects of temperature, voltage drops or surges, ballast variations, and partition heights.
daylighting
The science, theory, or method of providing illumination through the use of light of day.

daylight
To provide an interior space with daylight from both direct and indirect sources.

sunlight
The direct light of the sun.

clear sky
A sky having less than 30% cloud cover with the solar disk unobstructed. Also, the CIE standard for a reference cloudless sky condition, having the greatest luminance near the sun and least luminance 90° from the sun.

cloudy sky
A sky having between 30% and 70% cloud cover, with the solar disk obstructed.

overcast sky
A sky having 90% cloud cover. Also, the CIE standard for a reference sky having a luminance distribution three times brighter near the zenith than at the horizon.

CIE
Commission Internationale de l'Éclairage, an international commission developing definitions, standards, and procedures for the art, science, and technology of lighting.

IES
Illuminating Engineering Society, a professional society in North America devoted to the development and dissemination of standards and procedures relating to the art, science, and technology of lighting.

artificial sky
A hemispherical dome or similar enclosure illuminated by concealed light sources that simulate the luminance distribution of a clear or overcast sky, used for studying and testing daylighting techniques or architectural models placed near its center.

heliodon
A device for orienting an architectural model to a light source representing the sun, calibrated with respect to latitude, time of day, and season of the year and used for studying daylighting techniques and shadows cast by the sun.

daylight factor method
A method for calculating the performance of a daylighting system, based on the daylight factor.

daylight factor
A measure of daylight illuminance, expressed as the ratio of daylight illuminance at a point on a given plane to the simultaneously measured illuminance on a horizontal plane from an unobstructed sky of assumed or known luminance distribution.

sky component
A component of the daylight factor, equal to the ratio of daylight illuminance at a point on a given plane received directly from a sky of assumed or known luminance distribution to the simultaneously measured illuminance on a horizontal plane from an unobstructed hemisphere of this sky.

external reflected component
A component of the daylight factor, equal to the ratio of the daylight illuminance at a point on a given plane received directly from exterior reflecting surfaces to the simultaneously measured illuminance on a horizontal plane from an unobstructed sky of assumed or known luminance distribution.

internal reflected component
A component of the daylight factor, equal to the ratio of the daylight illuminance at a point on a given plane received directly or indirectly from interior reflecting surfaces to the simultaneously measured illuminance on a horizontal plane from an unobstructed sky of assumed or known luminance distribution.

counterlight
Light originating from sources facing each other, as from windows in opposite walls.

crosslight
Light originating from sources not facing each other, as from windows in adjacent walls.
concentrated load
A load acting on a very small area or
particular point of a supporting structural
element.

distributed load
A load extending over the length or area of
the supporting structural element.

uniformly distributed load
A distributed load of uniform magnitude.

occupancy load
The live load on a structure resulting from
the weight of people, furniture, stored material, and other similar
items in a building. Building codes specify minimum live loads for
various uses and occupancies.

snow load
The live load resulting from the weight of snow accumulating on a
roof. Snow loads vary with geographic location, site exposure,
wind conditions, and roof geometry.

water load
The live load of water that may accumulate on a roof because of its
form, deflection, or the clogging of its drainage system.

equivalent load
A load substituted by a building code for
an actual load, derived on the basis of
statistical evidence for given types of
buildings. For safety, the equivalent load
is usually a multiple of the load that
would produce failure or unacceptable
deflection.

load combination
The dead load and two or more live loads
assumed to occur simultaneously on a
structure when their combined effects can be
reasonably expected to be less than the sum of their separate actions.

1.00 (dead + live + snow loads)
0.75 (dead + live + snow + wind or seismic loads)

load reduction
A reduction in design loading allowed by
building codes for certain load
combinations, based on the assumption
that not all live loads will act
simultaneously on a structure at their
full value. After all possible load
combinations are considered, a structure
is designed to carry the most severe but
realistic distribution, concentration, and
combination of loads.

elevation stress
The stress induced on a building
unit or component by loads
applied during the erection
process.

elevation bracing
The temporary bracing required
to secure the units or
components of a building until
permanently fastened in place.

Any of the forces to which a
structure is subjected.

static load
A load applied slowly to a structure
until it reaches its peak value without
fluctuating rapidly in magnitude or
position. Under a static load, a
structure responds slowly and its
deflection reaches a peak when the
static force is maximum.

dead load
The static load acting vertically
downward on a structure, comprising
the self-weight of the structure and
the weight of building elements,
fixtures, and equipment permanently
attached to it.

water pressure
The uplift force a water table
exerts on a foundation system.

earth pressure
The horizontal force a soil mass
exerts on a vertical retaining
structure.

settlement load
A load imposed on a structure by
subsidence of a portion of the
supporting soil and the resulting
differential settlement of its
foundation.

dynamic load
A load applied suddenly to a structure,often with rapid changes in magnitude
and location. Under a dynamic load, a
structure develops inertial forces in
relation to its mass and its maximum
deflection does not necessarily
correspond to the maximum magnitude
of the applied force.

wind load
earthquake load
moving load
A kinetic load of short duration due
to moving vehicles, equipment, and
machinery. Building codes treat this
load as a static load, compensating
for its dynamic nature by amplitizing
the static load. Also called impact
load.

impact factor
A factor by which the effect of a
static load is multiplied to
approximate the effect of applying
the same load dynamically.

cracking load
A temporary load on a structure
occurring during its erection, as
from wind or the weight of
construction equipment and stored
materials
Lateral load
A load acting horizontally on a structure, as a wind or earthquake load.

Earthquake load
The forces exerted on a structure by an earthquake.

Earthquake
A series of longitudinal and transverse vibrations induced in the earth's crust by the abrupt movement of plates along fault lines. The shocks of an earthquake propagate along the earth's surface in the form of waves and attenuate logarithmically with distance from its source.

epocenter
A point directly above the hypocenter, from which the shock waves of an earthquake apparently emanate.

Hypocenter
The point of origin of an earthquake. Also called focus.

Fault
A break in the earth's crust accompanied by a dislocation in the plane of the fracture.

Plate
Any of the huge movable segments into which the earth's crust is divided.

Vibration
The oscillating, reciprocating, or other periodic motion of an elastic body or medium when forced from a position or state of equilibrium.

Periodic motion
Any motion that recurs in the same form at equal intervals of time.

Harmonic motion
Periodic motion consisting of one or more vibratory motions that are symmetric about a region of equilibrium, as the motion of a vibrating string of a musical instrument.

Drift
The lateral deflection or movement of a structure due to wind, earthquake, or asymmetrical vertical loading.

Ground acceleration
The rate of change in the velocity of ground movement with respect to time. High accelerations are the most damaging to a structure, which must try to follow the rapid changes in ground movement during an earthquake.

Damping
The absorption or dissipation of energy so progressively diminish successive oscillations or waves of a vibrating structure.

Seismic
Of, pertaining to, or caused by an earthquake or vibration of the earth.

Seismic force
Any of the forces caused by the vibratory ground motions of an earthquake. While these motions are three-dimensional in nature, their horizontal components are considered to be the most important in structural design: the vertical loads carrying elements of a structure usually have considerable reserve for resisting additional vertical loads. During an earthquake, the mass of a structure develops an inertial force as it tries to resist ground acceleration. From Newton's second law, this force is equal to the product of mass and acceleration. For design purposes, a statically equivalent lateral force, base shear, is computed by formula.

Amplitude
The maximum displacement from the mean position during one period of an oscillation.

Oscillation
A single swing of an oscillating body from one extreme limit to another.

Resonance
An abnormal large vibration in a system caused by a relatively small vibratory force of the same or nearly the same period as the natural period of vibration of the system.
seismic zone factor
A coefficient for adjusting base shear according to the probable seismic activity and intensity of a geographic location. There are 5 seismic zones in the U.S., with zone 0 being the least active and zone 4 being an area close to a major fault system.

seismic coefficient
A coefficient for adjusting base shear according to the relationship between the natural period of vibration of a structure and that of the underlying soil on which the structure rests. When these periods are similar, base shear is increased to reflect the likelihood of destructive resonances occurring in the structure. Also called base shear coefficient.

site coefficient
A coefficient reflecting the nature and profile of the foundation soil, usually based on a geotechnical investigation. Ground movements are potentially much greater in alluvial soils than in rocky areas or alluvial soils.

liquefaction
The sudden loss of shear resistance in a cohesionless soil, causing the soil mass to behave as a liquid.

building type factor
A coefficient for adjusting base shear according to construction type and material, and the energy-absorbing capacity of the structural and lateral force-resisting systems used. Base shear is inversely proportional to the energy-absorbing capacity of a structure; the greater the structure's stiffness or ductility, the lower the base shear.

horizontal force factor
A coefficient used in calculating the lateral seismic force on structural elements, nonstructural components, or their connections, according to their weight and function.

story shear
The total shear in any horizontal plane of a structure subject to lateral loads, distributed according to the various lateral force-resisting elements in proportion to their rigidity. Story shear is cumulative and increases from its minimum value at the top to its maximum at the base.

building separation
The distance required to avoid contact between separated structures under deflection from seismic action or wind forces.

story drift
The horizontal movement of one level of a structure relative to the level above or below.

drifts index
The maximum rate of story drift to story height allowed by a building code in order to minimize damage to building components or adjacent structures. Also called drift limitation.

horizontal torsion
The torsion resulting from a lateral load acting on a structure having noncoincident centers of mass and resistance. To avoid destructive torsional effects, structures subject to lateral loads should be arranged and braced symmetrically with centers of mass and resistance as coincident as possible. In asymmetrical layouts, bracing elements should be distributed with stiffnesses that correspond to the distribution of the mass.

restoring moment
A resisting moment provided by the dead load of a structure reacting at the same point of rotation as the overturning moment. Building codes usually require that the restoring moment be at least 50% greater than the overturning moment. Also called righting moment, stabilizing moment.

base shear
The shearing force developed at the base of a structure by the tendency of its upper mass to remain at rest while the base is translated by ground motions during an earthquake. Base shear is the minimum design value for the total lateral seismic force on a structure, and is assumed to act nonconcurrently in the direction of each of the main axes of the structure. It is computed by multiplying the total dead load of the structure by a number of coefficients to reflect the character and intensity of the ground motions, the mass and stiffness of the structure and the way these are distributed, the type of soil underlying the foundation, and the presence of damping mechanisms in the structure.

distribution of base shear
The manner in which base shear is distributed over the height of a structure according to the displacements that would occur during an earthquake. For a building of regular rectangular shape with equal floor weights and floor levels the weight of the sections of the structure parallel to the shortest direction remains at rest while the other sections move. For structures having a natural period of vibration greater than 0.7 seconds, a portion of the total base shear is assumed to be concentrated at the top of the structure to account for the whirl effect of seismic forces. For structures with irregular shapes or framing systems, the distribution of lateral forces should be determined according to the relative stiffnesses of adjacent floor levels and the dynamic characteristics of the structure.

overturning moment
An external moment generated at the base of a structure by a lateral load applied at a distance above grade. For equilibrium, the overturning moment must be counterbalanced by an external restoring moment and an internal resisting moment provided by forces developed in column members and shear walls.
Building with units of various natural or manufactured products, as stone, brick, or concrete block, usually with the use of mortar as a bonding agent.

Field
The expanse of a masonry wall between openings and corners, usually composed primarily of stretchers.

Head joint
The vertical joint between two masonry units, perpendicular to the face of a wall.

Shoveled joint
A head joint formed by applying mortar to the end of a masonry unit and forcing it into position against the last masonry unit laid.

Collar joint
The vertical joint between two wythes of masonry.

Bed joint
The horizontal joint between two masonry courses.

Bed
The underside of a brick or other masonry unit, or the layer of mortar in which a masonry unit is laid.

Clip joint
A bed joint made thicker than usual in order to level the course above.

Wythe
A continuous vertical section of a masonry wall one unit in thickness. Also, wythe.

Troweled joint
A mortar joint finished by striking off excess mortar with a trowel.

Tooleled joint
A weather-resistant mortar joint compressed and shaped with any tool other than a trowel.

Point
To fill and finish the surface of a masonry joint with mortar after the masonry has been laid, either to finish the joint or to repair a defective joint.

Tuck pointing
The process of raking out defective mortar from a masonry joint, filling with fresh mortar, and tooling the joint.

Tuck and pat pointing
Tuck pointing having an ornamental fillet of lime or putty projecting from the joint.

Bastard pointing
An imitation of tuck and pat pointing, having a fillet made from the mortar of the joint.

Flat-joint pointing
Pointing having flush joints of common mortar.

Course
A continuous, usually horizontal range of bricks, tiles, or shingles, as in a wall or roof.

Range
A continuous course of masonry units having the same height from end to end.

Closer
The last masonry unit laid in a course.

Corbel
A brick or stone projecting from within a wall, usually to support a weight.

Corbelling
An overlapping arrangement of bricks or stones in which each course steps upward and outward from the vertical face of a wall.

Concave joint
A curved, hollowed mortar joint formed by a rounded iron.

V-joint
An angular, hollowed mortar joint formed by a V-shaped jointer.

Weathered joint
A mortar joint smoothed by pressing the trowel in at the upper edge of the joint, forming a sloping surface that sheds water readily.

Flush joint
A mortar joint struck flush with the masonry.

Struck joint
A mortar joint pressed in at the lower edge and sloping in the reverse direction from a weathered joint.

Raked joint
A mortar joint made by removing mortar to a gleam depth with a square-edged tool before hardening.
MASONRY

solid masonry
A wall constructed of brick or other solid masonry units laid contiguously with all joints solidly filled with mortar and adjacent wythes bonded by masonry headers or metal ties.

cavity wall
A masonry wall having a facing and backing completely separated except for metal ties and enclosing an inner space serving to prevent penetration by water.

facing
An ornamental or protective layer, as the outer wythe of a masonry wall.

backing
Something that forms the back or provides support, strength, or protection from the back, as the inner wythe or wythes of a masonry wall.

weep hole
A small opening in a cavity wall, retaining wall, or other construction for draining off accumulated moisture, as from condensation or leakage.

faced wall
A wall having a masonry facing bonded to a backing so as to meet a common action under load.

adhered veneer
A veneer supported by and secured to a backing by means of a bonding material.

veneer
A nonstructural facing of brick, stone, concrete, or tile attached to a backing for the purpose of ornamentation, protection, or insulation.

veneered wall
A wall having a nonstructural facing attached but not bonded to a supporting structure.

anchored veneer
A veneer supported by and secured to a backing by means of mechanical fasteners.

economy wall
A brick wall 4 in. (102 mm) thick, plastered and strengthened at intervals with 6-in. (203-mm) pilasters to support roof trusses.

composite wall
A masonry wall having at least one wythe dissimilar to the other wythe or wythes with respect to type or grade of masonry unit or mortar.

adjustable tie
A metal tie consisting of two interlocking parts which enable it to adapt to bed joints at different elevations.

tie
Any of various corrosion-resistant metal devices for holding two parts of a construction together, as the wythes of a masonry wall.

back plaster
To pave a part of a wall that is not seen, as behind the outer wythe of a cavity wall in order to exclude air and moisture from the interior of the wall.

panel wall
A non-load-bearing exterior masonry wall wholly supported at each story.

dowel
A device for lifting a dressed stone or precast concrete panel, consisting of a number of pieces fitting together to fill a dovetailed recess cut into the stone or panel.

soft joint
A compressible joint directly below a supporting shelf or relieving angle, allowing for the expansion and contraction of a panel wall and preventing the weight of higher courses from being transmitted to the masonry below.
mortar
A plastic mixture of lime or cement, or a combination of both, with sand and water, used as a bonding agent in masonry construction.

cement mortar
A mortar made by mixing portland cement, sand, and water.

cement-lime mortar
A cement mortar to which lime is added to increase its plasticity and water-resistance.

masonry cement
A proprietary mix of portland cement and other ingredients, as hydrated lime, plasticizers, air-entraining agents, and gypsum, requiring only the addition of sand and water to make cement mortar.

epoxy mortar
A mortar consisting of epoxy resin, catalysts, and the aggregate.

nonstaining mortar
A mortar having a lower free alkali content to minimize efflorescence or the staining of adjacent masonry by the migration of soluble materials.

lime mortar
A mixture of lime, sand, and water that is rarely used because of its slow rate of hardening and low compressive strength.

lime
A white or grayish white, caustic, odorless solid obtained by heating forms of calcium carbonate, as shells or limestone, at a high temperature. Also called calcium oxide, caustic lime, quicklime.

hydrated lime
A soft, crystalline powder obtained by the action of water on lime and used in making mortar, plaster, and cement. Also called calcium hydroxide, slaked lime.

green
Of or pertaining to concrete or mortar that is freshly set but not completely hardend.

fat mix
A concrete or mortar mix that is easy to work or spread because of a relatively high cement or lime content. Also called rich mix.

lean mix
A concrete or mortar mix that is difficult to work or spread because of a shortness of cement or lime.

plasticizer
An admixture for making a concrete or mortar mix workable with little water.
MASONRY

rubble
Rough fragments of broken stone or the masonry built of such stones.

gallet
To embed small stone chips in the mortar joints of rough masonry to wedge larger stones in position or add detail to the appearance. Also, garret.

random rubble
A rubble wall having discontinuous but approximately level beds or courses.

coursed rubble
A rubble wall having approximately level beds and brought at intervals to continuous level courses.

squared rubble
A rubble wall built of squared stones of varying sizes and coursed at every third or fourth stone.

cyclopean
Formed with large, irregular blocks of stones fitted closely together without the use of mortar.

ashlar
A squared building stone finely dressed on all faces adjacent to those of other stones so as to permit very thin mortar joints.

coursed ashlar
Ashlar masonry built in discontinuous courses.

ashlar masonry
Ashlar masonry having the visible faces of the dressed stones raised or otherwise contrasted with the horizontal and usually the vertical joints, which may be rabbeded, chamfeted, or beveled.

quoin
An exterior angle of a masonry wall, or one of the stones or bricks forming such an angle, usually differentiated from adjoining surfaces by material, texture, color, size, or projection.

perpend
A large stone passing through the entire thickness of a wall and exposed on both faces. Also called through stone.

bondstone
A stone for bonding facing masonry to a masonry backing. Also called binder.

long-and-short work
An arrangement of rectangular quoins or jambs set alternately horizontally and vertically.

in-and-out bond
A masonry bond having headers and stretchers alternating vertically.

rustication
Ashlar masonry having the visible faces of the dressed stones raised or otherwise contrasted with the horizontal and usually the vertical joints, which may be rabbeded, chamfeted, or beveled.

rustic joints
A mortar joint or stonework between stones recessed from the adjacent faces between sunken drafts or levels.

rustic
Having rough, irregular surfaces and sunken or beveled joints.

interlocking joint
A joint in ashlar masonry made by fitting a projection on one stone into a routed groove on the next stone.

cramp iron
An iron bar or rod with bent ends for holding together stone masonry units.
capstone
A finishing stone of a structure, as a copingstone.

kneeler
Any of the stones having a sloping top for supporting or forming a gable coping. Also called skew.

skew corbel
A stone overhanging at the foot of a gable coping, often serving as a stop for eave gutters or wall cornices.

corblestone
A gable having corblesteps.

corblestep
Any of a series of steplike projections that terminate a masonry gable above the surface of the roof. Also called crowstep.

corble gable
A gable having corblesteps.

saddle joint
A vertical joint raised above the level of the washes on a stone sill or coping to prevent the penetration of rainwater.

fractable
A coping on a gable wall concealing the slopes of the roof, esp. one having an ornamental silhouette.

boss
A stone roughly formed and set in place for later carving.

tail in
To fasten a beam or stone by one end.
		
tailing
The part of a stone or brick projecting from a wall.

label
A molding or dripstone over a door or window, esp. one that extends horizontally across the top of the opening and vertically downward for a short distance at the sides.

jambstone
A stone, or one of the stones, forming the jamb of a door or window opening.

embrasure
A splayed enlargement of a door or window opening toward the inner face of a wall.

string course
A horizontal course of brick or stone flush with or projecting beyond the face of a building, often molded to mark a division in the wall. Also called belt course.

cordon
A stringcourse, esp. one having little or no projection.

table
A course or band, esp. of masonry, having a distinctive form or position.

water table
A projecting stringcourse, molding, or ledge placed so as to divert rainwater from a building.

scarcement
A footing or ledge formed by a setback in the face of a wall.

plinth
A continuous, usually projecting course of stones forming the base or foundation of a wall. Also called plinth course.
a concrete masonry unit
A precast masonry unit of Portland cement, fine aggregate, and water, molded into various shapes.

stretcher block
A concrete masonry unit having nominal dimensions of 8 x 8 x 16 in. (203 x 203 x 406 mm).

partition block
A concrete masonry unit used in constructing non-load-bearing walls, usually having a nominal thickness of 4 or 8 in. (102 or 152 mm).

bulbous block
A concrete masonry unit having one or more rounded exterior corners.

corner block
A concrete masonry unit having a solid end face and used in constructing the end or corner of a wall.

return-corner block
A concrete masonry unit used at the corners of walls to maintain horizontal coursing with the appearance of full- and half-length units.

double-corner block
A concrete masonry unit having solid faces at both ends and used in constructing a masonry wall.

piller block
Any of various concrete masonry units used in constructing a plain or reinforced masonry plasterer.

coping block
A solid concrete masonry unit used in constructing the top or finishing course of a masonry wall.

sash block
A concrete masonry unit having an end skirt or rebate to receive the jamb of a door or window frame. Also called jamb block.

sill block
A solid concrete masonry unit having a wash to shed rainwater from a sill.

wash
An upper surface inclined to shed rainwater from a building. Also called weathering.

cap block
A concrete masonry unit having a solid top for use as a bearing surface in the finishing course of a foundation wall. Also called solid-top block.

control-joint block
Any of various concrete masonry units used in constructing a vertical control joint.

bond-beam block
A concrete masonry unit used in constructing a bond beam, having a depressed section in which reinforcing steel can be placed for embedment in grout.

bond beam
A masonry course grouted and reinforced to serve as a beam, a horizontal tie, or a bearing course for structural members.

concrete block
A hollow or solid concrete masonry unit, often incorrectly referred to as cement block.

face shell
One of the two sidewalls of a hollow concrete masonry unit.

web
One of the cross walls connecting the face shells of a hollow masonry unit.

core
The molded open space in a concrete masonry unit. Also called cell.

open-end block
A concrete masonry unit having one end open in which vertical steel reinforcement can be placed for embedment in grout.

lintel block
A concrete masonry unit used in constructing a lintel or bond beam, having a U-shaped section in which reinforcing steel can be placed for embedment in grout.

header block
A concrete masonry unit having a portion of one face shell removed to receive headers in a bonded masonry wall.

sound-absorbing masonry unit
A concrete masonry unit having a solid top and a slotted face shell, and sometimes a fibrous filter, for increased sound absorption.

slump block
A concrete masonry unit having an irregular face and surface texture caused by the settlement of a wet mix during curing.

split-face block
A concrete masonry unit, split lengthwise by a machine after curing to produce a rough, fractured face texture.

faced block
A concrete masonry unit having a special ceramic, glazed, or polished face.

graded block
Any of various concrete masonry units having one or more vertical grooves which simulate raked joints.

shadow block
Any of various concrete masonry units having a face shell with a pattern of horizontal recesses.

screen block
A concrete masonry unit used esp. in tropical architecture, having a decorative pattern of transverse openings for admitting air and excluding sunlight.

concrete brick
A solid rectangular concrete masonry unit, usually not larger than 4 x 4 x 12 in. (102 x 102 x 305 mm).

sand-lime brick
A hard, light-colored brick made by mixing a mixture of damp sand and slaked lime under high pressure and curing in a steam oven.

solid masonry unit
A masonry unit having a net cross-sectional area in any plane parallel to the bearing surface that is 75% or more of the gross cross-sectional area measured in the same plane.

hollow masonry unit
A masonry unit having a net cross-sectional area in any plane parallel to the bearing surface less than 75% of the gross cross-sectional area measured in the same plane.

gross cross-sectional area
The total cross-sectional area of a hollow masonry unit perpendicular to the direction of loading, including cellular and restraint spaces, except when these spaces are to be occupied by portions of adjacent masonry.

net cross-sectional area
The gross cross-sectional area of a hollow masonry unit minus the area of ungrouted cores of cellular space.

equivalent thickness
The thickness that would be obtained if the amount of concrete contained in a hollow masonry unit were recast without any cellular spaces, used esp. to determine the fire resistance of a wall constructed with such units.

absorption
The weight of water absorbed by a concrete masonry unit when immersed in water, expressed in pounds of water per cubic foot of concrete.

Grade N
A grade of load-bearing concrete masonry unit suitable for general use, as in exterior walls above and below grade.

Grade S
A grade of load-bearing concrete masonry unit limited to use above grade, in exterior walls with weather-protective coatings, or in walls not exposed to the weather.

Type I
A concrete masonry unit manufactured to a specified limit of moisture content in order to minimize the drying shrinkage that can cause cracking.

Type II
A concrete masonry unit not manufactured to a specified limit moisture content.

normal-weight block
A concrete masonry unit made with sand, gravel, or other dense aggregate and weighing more than 125 pcf (2000 kg/m3).

lightweight block
A concrete masonry unit made with lightweight aggregate, as cinder or expanded slag, and weighing less than 125 pcf (2000 kg/m3).

surface bonding
The bonding of a concrete masonry wall by stacking the units without mortar and brushing on a stucco-like compound of portland cement and glass fiber.
bond
The attractive force by which atoms, ions, or groups of atoms are bound together in a molecule or crystalline structure. Also called chemical bond.

ionic bond
A chemical bond characteristic of salts and ceramic materials, formed by the complete transfer of one or more electrons from one kind of ion to another. Also called ionic bond.

positive ion
A positively charged ion created by electron loss. Also called cation.

negative ion
A negatively charged ion created by electron gain. Also called anion.

valence
A measure of the capacity of an atom or group to combine with other atoms or groups, equal to the number of chemical bonds the atom or group can form.

valence electron
An electron located in the outer shell of an atom that can be transferred or shared in forming a chemical bond with another atom.

hydrogen bond
An electrostatic bond between an electronegative atom and a hydrogen atom already linked to another electronegative atom by a covalent bond.

molecule
The smallest particle of a substance that displays all of the characteristic physical and chemical properties of the substance, consisting of one or more like atoms in an element, or two or more different atoms in a compound.

molecular weight
The average weight of a molecule of an element or compound calculated as the sum of the atomic weights of the molecule’s constituent atoms. Also called formula weight.

mole
The molecular weight of a substance expressed in grams; gram molecule. Also, mol.

condense
To reduce to a denser form, as a gas or vapor to a liquid or solid state.

heat of condensation
The heat liberated by a unit mass of gas at its boiling point as it condenses to a liquid.

heat of vaporization
The quantity of heat required to convert a unit mass of liquid at its boiling point into vapor at the same temperature equal to the heat of condensation.

condensate
Matter distinguished from the solid or gaseous states by a characteristic readiness to flow, little or no tendency to disperse, and relatively high incompressibility.

gas
Matter having neither independent shape nor volume, possessing perfect molecular mobility and the tendency to expand indefinitely.

condensation
To change or convert from a liquid or solid into a gas.

evaporate
To change or convert from a liquid or gas into a vapor.

solidify
To change or convert from a liquid or gas into a solid.

heat of solidification
The heat liberated by a unit mass of liquid at its freezing point as it solidifies.

heat of fusion
The quantity of heat required to convert a unit mass of a solid at its melting point into a liquid at the same temperature equal to the heat of solidification.

heat of sublimation
The heat required to convert a unit mass of a solid at its sublimation point into a gas at the same temperature equal to the heat of sublimation.

material
That which occupies space, can be perceived by the senses, and constitutes the substance of a physical body.

solid
Matter having relative firmness, coherence of particles, or persistence of form.

lattice
A regular pattern of isolated points in space giving the location of atoms, ions, or molecules in a crystalline solid.

crystal
A solid having a regularly repeating internal structure of atoms, ions, or molecules and enclosed by symmetrically arranged plane surfaces.

amorphous
Not crystalline in structure.
MATERIAL

property
An essential or distinctive attribute or quality peculiar to a thing.

tensile force
The act of stretching or state of being pulled apart, resulting in the elongation of an elastic body.

axial force
An applied force producing or tending to produce tension in an elastic body.

axial stress
A tensile or compressive force acting along the longitudinal axis of a structural member and at the centroid of the cross section, producing axial stress without bending, tension, or shear. Also called axial load.

compressive stress
An applied force producing or tending to produce compression in an elastic body.

eccentric force
A force applied parallel to the longitudinal axis of a structural member but not to the centroid of the cross section, producing bending and an uneven distribution of stresses in the section. Also called eccentric load.

tensile test
A test for determining the behavior of a material under axial tension, in which a specimen is gripped at both ends and pulled apart until rupture occurs; the most common test for structural materials.

tensile strength
The resistance of a material to longitudinal stress, measured by the minimum amount of longitudinal stress required to rupture the material.

elongation
A measure of the ductility of a material, expressed as the percentage increase in length of a test specimen after failure in a tensile test.

reduction of area
A measure of the ductility of a material, expressed as the percentage decrease in cross-sectional area of a test specimen after rupturing in a tensile test.

compression test
A test for determining the behavior of a material under axial compression, in which a specimen is crushed until fracture or densification occurs. The compression test is used for brittle materials since their low tensile strength is difficult to measure accurately.

strain gauge
An instrument for measuring minute deformations in a test specimen caused by tension, compression, bending, or twisting. Also called extensometer.

bulk modulus
A coefficient of elasticity of a material, expressing the ratio between a pressure and the corresponding fractional change in volume produced.

compressibility
The reciprocal of bulk modulus, equal to the ratio of the fractional change in volume to the pressure applied to a substance.
shear force
An internal force tangential to the surface on which it acts, developed by a body in response to a shear force. For equilibrium of a rectangular element subject to shear, shearing in a vertical plane necessarily involves shearing in a horizontal plane, and vice versa.

shearing stress
The force per unit area developed along a section of an elastic body to resist a shear force. Also called shear stress, tangential stress.

shearing strain
The lateral deformation developed in a body in response to shearing stresses, defined as the tangent of the skew angle of the deformation. Since this skew angle is always very small, shearing strain is a pure number very nearly equal to the skew angle in radians. Also called shear strain.

combined stresses
A set of tensile and compressive stresses resulting from the superposition of axial and bending stresses in the cross section of a structural member, acting in the same direction and equal at any point to their algebraic sum.

stress concentration
An increase in stress that develops at discontinuities or flaws in a material. Stress concentrations in brittle materials develop cracks which propagate until failure. In ductile materials, stress concentrations develop local deformations which serve to redistribute and relieve the stresses.

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shear
The lateral deformation produced in a body by an external force that causes one part of the body to slide relative to an adjacent part in a direction parallel to their plane of contact.

shear force
An applied force producing or tending to produce shear in a body.

shear modulus
A coefficient of elasticity of a material, expressing the ratio between shearing stress and the corresponding shearing strain produced by the stress. Also called modulus of rigidity, modulus of torsion.

shearing strain
The lateral deformation produced in a body by an external force that causes relative motion between sections of an object parallel to their plane of contact.

shearing stress
The force per unit area developed along a section of an elastic body to resist a shear force. Also called shear stress, tangential stress.

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stress-strain diagram
A graphic representation of the relationship between unit stress values and the corresponding unit strains for a specific material.

elastic range
The range of unit stresses for which a material exhibits elastic deformation.

deflection
A change in the shape or dimensions of a body or structure resulting from stress.

elastic deformation
A temporary change in the dimensions or shape of a body produced by a stress less than the elastic limit of the material.

brittleness
The property of a material that causes it to rupture suddenly under stress with little evident deformation. Since brittle materials lack the plastic behavior of ductile materials, they can give no advance warning of impending failure.

proportional limit
The stress beyond which the ratio of stress to strain for a material no longer remains constant.

stiffness
A measure of a material's resistance to deformation when stressed within its elastic range.

allowable stress
The maximum unit stress permitted for a material in the design of a structural member; usually a fraction of the material's elastic limit, yield strength, or ultimate strength. The allowable stresses for various materials are specified by building codes, engineering societies, and trade associations, based on specifications and methods of testing established by the American Society for Testing and Materials. Also called allowable unit stress, working stress.

yield strength
The stress necessary to produce a specified limiting permanent set in a material, usually 0.2% of its original length when tested in tension. Yield strength is used to determine the limit of usefulness of a material having a poorly defined yield point. Also called proof stress.

permanent set
The inelastic strain remaining in a material after complete release of the stress producing the deformation.

plastic range
The range of unit stresses for which a material exhibits plastic deformation.

plastic deformation
A permanent change in the dimensions or shape of a body produced by a stress greater than the elastic limit of the material, remaining rigid under stresses of less than a certain intensity. The molecular bonds in a material that exhibit plastic behavior reform after being stressed beyond the elastic limit. The material thus retains a measure of reserve strength. Also called plastic flow.

yield point
The stress beyond which a marked increase in strain occurs in a material without a concurrent increase in stress. Many materials do not have clearly defined yield points. For these materials, a theoretical yield strength is calculated from the stress-strain curve.

elastic limit
The maximum stress that can be applied to a material without causing permanent deformation.

strain-hardening range
The range of unit stresses for which a material exhibits increased strength with some loss of ductility.

ultimate strength
The maximum tensile, compressive, or shear stress a material can be expected to bear without rupturing or fracturing. Also called ultimate stress.

fracture
The breaking of a material resulting from the rupturing of its atomic bonds when stressed beyond its ultimate strength.

ductility
The property of a material that enables it to undergo plastic deformation after being stressed beyond the elastic limit and before rupturing. Ductility is a desirable property of a structural material since plastic behavior is an indicator of reserve strength and can serve as a visual warning of impending failure.

elasticity
The property of a material that enables it to deform in response to an applied force and to recover its original size and shape upon removal of the force.

modulus of elasticity
A coefficient of elasticity of a material, expressing the ratio between a unit stress and the corresponding unit strain caused by the stress, as derived from Hooke's law and represented by the slope of the straight-line portion of the stress-strain diagram. Also called coefficient of elasticity, elastic modulus.

Hooke's law
The law stating that the stress on a body is directly proportional to the strain produced, provided the stress does not exceed the elastic limit of the material.

toughness
The property of a material that enables it to absorb energy before rupturing, represented by the area under the stress-strain curve derived from a tensile test of the material. Ductile materials are tougher than brittle materials.
moisture expansion
An increase in the bulk of a material caused by the absorption of water or water vapor. Also called bulking.

absorption
The taking in or reception of a gas or liquid by molecular or chemical action.

adsorption
The adhesion of a thin, condensed layer of gas, liquid, or dissolved substance to the surface of a solid, usually without any physical or chemical change in the material.

weatherability
The property of a material that enables it to retain its appearance and integrity when exposed to the effects of sun, wind, moisture, and changes in temperature.

weatherometer
A device for determining the weather resistance of a material by subjecting a test specimen to accelerated weathering.

accelerated weathering
A process for exposing a material to ultraviolet rays, water sprays, and heating elements in order to simulate the long-term effects of sun, rain, and temperature changes. Also called accelerated aging.

strain-rate effect
The brittle behavior an increased rate of load application can cause in a normally ductile material.

temperature effect
The brittle behavior low temperatures can cause in a normally ductile material.

stress relaxation
The time-dependent decrease in stress in a constrained material under a constant load.

creep
The gradual and permanent deformation of a body produced by a continued application of stress or prolonged exposure to heat. Creep deflection in a concrete structure continues over time and can be significantly greater than the initial elastic deflection.

coefficient of expansion
The fractional change in length, area, or volume of a material per unit change in temperature at a given constant pressure. Also called expansivity.

dimensional stability
The property of a material that enables it to maintain its original shape and dimensions when subjected to changes in temperature or humidity.

kinetic theory of heat
The theory that the temperature of a substance increases with an increase of the average kinetic energy of its particles when heat is absorbed.

thermal expansion
An increase in length, area, or volume of a material caused by a rise in temperature.

thermal contraction
A decrease in length, area, or volume of a material caused by a drop in temperature.

thermal stress
The tensile or compressive stress developed in a material constrained against thermal expansion or contraction.

thermal shock
The sudden stress a rapid change in temperature can produce in a material.

hardness
The property of a material that enables it to resist deformation by compression, indentation, or penetration.

Mohs' scale
A scale for measuring the hardness of a mineral. Its degrees, in increasing hardness, are: 1; talc; 2; gypsum; 3; calcite; 4; fluorite; 5; apatite; 6; feldspar; 7; quartz; 8; topaz; 9; sapphire; 10; diamond.

Brinell number
A measure of the hardness of a material, determined by pressing a standard steel ball into a test piece using a standard force and dividing the load by the area of indentation. The higher the number, the harder the material.

Rockwell number
A measure of the hardness of a material, determined by indenting a test piece with a conical diamond indentor, or with a standard steel ball, under two successive loads and measuring the net increase in depth of the impressions; the higher the number, the harder the material.

Vickers number
A measure of the hardness of a material, determined by indenting a test piece with the point of a diamond using a known force and dividing the load by the surface area of indentation; the higher the number, the harder the material.
A unit or standard of measurement used to ascertain the dimensions, quantity, or capacity of something.

**metric system**
A decimal system of weights and measures, adopted first in France but now widespread and universally used in science.

**International System of Units**
An internationally accepted system of coherent physical units, using the meter, kilogram, second, ampere, kelvin, and candela as the basic units of the fundamental quantities of length, mass, time, electric current, temperature, and luminous intensity.

**length**
The extent of anything measured along its greatest dimension.

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**conversion table**
A tabular arrangement of the equivalent values of the weight or measure units of different systems.

**SI unit**
One of the basic units of the International System of Units.

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**meter**
The basic unit of length in the metric system, equivalent to 39.37 inches, originally defined as one ten-millionth of the distance from the equator to the pole measured on the meridian, later as the distance between two lines on a platinum-iridium bar preserved at the International Bureau of Weights and Measures near Paris, and now as 1,650,720 of the distance light travels in a vacuum in one second. Abbrev.: m

**centimeter**
A metric unit of length equal to 1/100 of a meter or 0.3937 inch. The use of the centimeter is not recommended for use in construction. Abbrev.: cm

**kilometer**
A unit of length and distance equal to 1,000 meters and equivalent to 3280.8 feet or 0.621 mile. Abbrev.: km

**are**
A metric unit of area equal to 1/100 of a hectare, 100 square meters, or 119.6 square yards. Abbrev.: a

**hectare**
A metric unit of area equal to 10,000 square meters or 2.47 acres. Abbrev.: ha

**cubic meter**
A unit or system of units for measuring volume or capacity, derived from units of linear measure.

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**square measure**
A unit or system of units for measuring area, derived from units of linear measure.

**area**
A quantitative measure of a plane or curved surface.

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**cubic measure**
A unit or system of units for measuring volume or capacity, derived from units of linear measure.

**volume**
The size or extent of a three-dimensional object or region of space, measured in cubic units.

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**foot**
A unit of length originally derived from the length of the human foot, divided into 12 inches and equal to 0.304.8 millimeters. Abbrev.: ft

**inch**
A unit of length, 1/12 of a foot, equivalent to 25.4 millimeters. Abbrev.: in

**mil**
A unit of length equal to 0.001 of an inch or 0.0254 mm, used in measuring the diameter of wire and the thickness of very thin sheet materials.

**yard**
A unit of length equal to 3 feet or 36 inches, and equivalent to 0.9144 meter. Abbrev.: yd

**rod**
A unit of length equal to 15 feet or 1/320th of a mile, and equivalent to 0.5029 meters.

**mile**
A unit of distance on land equal to 5280 feet or 1760 yards, and equivalent to 1.609 km. Also called a statute mile. Abbrev.: mi

**nautical mile**
A unit of distance used in sea or air navigation, equal to 1852 kilometers or about 6.076 feet. Also called air mile.

**acre**
A unit of land area equal to 1/640 of a square mile, 4840 square yards, 43,560 square feet, or 4047 square meters.

**circular mil**
A unit used principally for measuring the cross-sectional area of wire, equal to the area of a circle having a diameter of one mil.

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**milliliter**
A metric unit of capacity equal to 1/1000 of a liter or 0.061 cubic inch. Abbrev.: ml

**fluid ounce**
A unit of liquid capacity equal to 1.805 cubic inches or 29.635 milliliters. Abbrev.: fl. oz

**gallon**
A unit of liquid capacity equal to 4 quarts, 3.785 cubic meters, or 3.867 liters. Abbrev.: gal.
density
The mass of a substance per unit volume.

specific volume
The reciprocal of density, equal to volume per unit mass.

specific gravity
The ratio of the density of a substance to the density of another substance taken as a standard, usually distilled water for liquids and solids, and air or hydrogen for gases.

pound
A unit of force equal to the weight of a one-pound mass under the acceleration of gravity. Abbr.: lb

newton
The SI unit of force equal to the force required to accelerate a mass of one kilogram at the rate of one meter per second per second. Abbr.: N

kilogram
A unit of force and weight equal to the weight of a kilogram mass under the acceleration of gravity. Abbr.: kg

atmosphere
A unit of pressure equal to the normal pressure of the air at sea level, equal to 1.01325 x 10^5 N/m^2 or about 14.7 pounds per square inch. Abbr.: atm

standard atmosphere
A standard unit of atmospheric pressure, having a value of 29.92 in. (760 mm) of mercury.

atmospheric pressure
The pressure exerted by the earth's atmosphere at any given point, usually expressed in terms of the height of a column of mercury. Also called barometric pressure.

barometer
An instrument for measuring atmospheric pressure, used in weather forecasting and determining elevation.

horsepower
A unit of power equal to 550 foot-pounds per second or 746.7 watts. Abbr.: hp

mechanical equivalent of heat
The number of units of work or energy equal to one unit of heat, as 778.2 ft-lb = 1 Btu or 1,055 joules = 1 calorie

gram
A metric unit of mass equal to 1/1000 of a kilogram or 0.00220 pounds. Also called tonne. Abbr.: g

metric ton
A unit of mass equal to 1,000 kilograms and equivalent to 2,204.62 avoirdupois pounds. Also called tonne. Abbr.: mt

pound
A unit of weight equal to 16 ounces and equivalent to 0.453 kg. Abbr.: lb

kip
A unit of weight equal to 1,000 pounds or 453.6 kg. Abbr.: kip

ton
A unit of weight equal to 2,000 pounds or 907.2 metric tons. Also called short ton.

Boyle's law
The principle that, as relatively low pressures and a fixed temperature, the pressure of a confined ideal gas varies inversely with its volume.

foot-pound
A unit of energy equal to the work done when the point of application of a force of one pound moves through a distance of one foot in the direction of the force. Abbr.: ft-lb

inch-pound
One-twelfth of a foot-pound. Abbr.: in-lb

power
The amount of work done or energy transferred per unit of time, usually expressed in watts or horsepower.

work
The transfer of energy produced by the motion of the point of application of a force, equal to the product of the components of the force that acts in the direction of the motion of the point of action and the distance through which the point of application moves.
**MEMBRANE**

A thin, flexible surface that carries loads primarily through the development of tensile stresses.

**tent structure**
A membrane structure prestressed by externally applied forces so that it is held completely taut under all anticipated load conditions. To avoid extremely high tensile forces, a membrane structure should have relatively sharp curvatures in opposite directions.

**net structure**
A membrane structure having a surface of closely spaced cables instead of a fabric material.

**pneumatic structure**
A membrane structure that is placed in tension and stabilized by the pressure of compressed air.

**air-supported structure**
An air-supported structure consisting of a single membrane supported by an internal air pressure slightly higher than normal atmospheric pressure, and securely anchored and sealed along the perimeter to prevent leaking. Air locks are required at entrances to maintain the internal air pressure.

**cable-restrained pneumatic structure**
An air-supported structure that uses a net of cables placed in tension by the inflating force to restrain the membrane from developing its natural inflated profile.

**air-inflated structure**
A pneumatic structure supported by pressurized air within inflated building elements, which are shaped to carry loads in a traditional manner, while the enclosed volume of building air remains at normal atmospheric pressure. The tendency for a double-membrane structure to bulge in the middle is restrained by a compression ring or by internal ties or diaphragms.
Ingot
A mass of metal cast into a convenient shape for storage or transportation before further processing.

Blank
A piece of metal ready to be drawn, pressed, or machined into a finished object.

Scale
An oxide occurring in a scaly form on the surface of metal when brought to a high temperature.

Mill scale
A loose coating of iron oxide that forms on iron or steel during hot-rolling. Mill scale increases the bond between steel and concrete in reinforced concrete or in structural steelwork encased in concrete for fire protection.

Heat treatment
The controlled heating and cooling of a metal to develop certain desirable physical or mechanical properties.

Anneal
To remove internal stress from metal or glass by heating to a temperature below that of recrystallization and then gradually cooling it in a fluid or air, esp. to make the material more ductile.

Quench
To rapidly cool a heated metal by immersion in water, esp. to increase its hardness.

Temper
To strengthen or toughen a metal by reheating at a lower temperature and slowly cooling the material.

Stress relieving
The tempering of a metal at a temperature high enough to relieve residual stresses, followed by slow, uniform cooling.

Residual stress
Microscopic stress in a metal resulting from nonuniform thermal changes, plastic deformation, or other causes aside from external forces or applications of heat.

Case harden
To make the outside surface of an iron-based alloy hard by carburization and heat treatment, leaving the interior tough and ductile.

Bloom
A bar of steel reduced from an ingot to dimensions suitable for further rolling.

Blooming mill
A mill for rolling ingots into blooms.

Billet
A narrow, generally square, bar of steel, forged or hot-rolled from an ingot or bloom.

Hot-rolled finish
The dark, oxidized, relatively rough finish obtained by rolling metal while hot.

Die casting
The process of or product of forcing molten metal into a metallic mold under hydraulic pressure so as to give it a particular shape or form.

Casting
The process of or product of forming a material into a particular shape by pouring it into a mold in a fluid state and letting it harden.

Mold
A hollow form or matrix for giving a particular shape to something in a molten or plastic state.

Forge
To form metal by heating and hammering.

Cold-rolling
To roll metal at a temperature below that at which recrystallization occurs, so as to increase its tensile strength or improve its surface finish.

Mill finish
The straitened finish that cold rolling or extrusion imparts to a metal surface.

Extrusion
The process or product of forming a metal or plastic with a desired cross section by forcing it through a die with a pressure ram.

Cold-draw
To draw metal through a set of dies to reduce its cross-sectional area without overheating, as in the fabrication of wire or tubing.

Drawn finish
A smooth, bright finish produced by drawing metal through a die.

die
A steel block or plate having small conical holes through which metal or plastic is extruded or drawn for shaping.
ferrous metal
A metal containing iron as a principal element.

iron
A malleable, ductile, magnetic silvery-white metallic element from which pig iron and steel are made. Symbol: Fe

cast iron
A hard, brittle, nonmalleable iron-based alloy containing 2.0% to 4.5% carbon and 0.5% to 3% silicon, cast in a sand mold and machined to make many building products.

wrought iron
A tough, malleable, relatively soft iron that is readily forged and welded, having a fibrous structure containing approximately 0.2% carbon and a small amount of uniformly distributed slag.

steel
Any of various iron-based alloys having a carbon content less than that of wrought iron and more than that of cast iron and having qualities of strength, hardness, and elasticity varying according to composition and heat treatment.

pig
An oblong mass of metal that has been poured while still molten into a mold of sand, e.g., such a mass of iron from a blast furnace.

malleable cast iron
Cast iron that has been annealed by transforming the carbon content into graphite or removing it completely.

malleable
Capable of being shaped or formed by hammering or by pressure from rollers.

carbon steel
Ordinary, unalloyed steel in which the residual elements, as carbon, manganese, phosphorus, sulfur, and silicon, are controlled. Any increase in carbon content increases the strength and hardeness of the steel but reduces its ductility and weldability.

carbon
A nonmetallic element occurring in a pure state as diamond and graphite, or as a constituent of coal and petroleum. Symbol: C

alloy steel
Carbon steel to which various elements, as chromium, cobalt, copper, manganese, molybdenum, nickel, tungsten, or vanadium, have been added in sufficient amount to obtain particular physical or chemical properties.

alloy
A substance composed of two or more metals, or of a metal and a nonmetal, intimately mixed, as by fusing or electrodeposition.

base metal
The principal metal of an alloy or a piece underlying a coating of another metal.

smelt
To melt or fuse one in order to separate the metal constituents.

blast furnace
A large vertical furnace for smelting iron from ore, in which combustion is intensified by a continuous blast of air through the fuel.

blast-furnace slag
Slag left as a residue by the smelting of iron ore in a blast furnace.

slag
The vitreous matter left as a residue from the smelting of a metallic ore. Also called cinder.

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Rust
The reddish brittle coating formed on the surface of iron esp. when exposed to moisture and air, consisting essentially of hydrated ferric oxide formed by oxidation.

Oxidation
The process or result of combining with oxygen to form an oxide.

Oxide
A binary compound of oxygen with another element.

Cladding
The process or product of bonding one metal to another, usually to protect the inner metal from corrosion.

Pickling
An acid or other chemical solution in which a metal object is dipped to remove oxide scale or other adhering substances.

Bonderizing
To coat steel with an anticorrosive phosphate solution in preparation for the application of paint, enamel, or lacquer.

Noble Metal
A metal, as gold, silver, and mercury, that resists oxidation when heated in air, and solution by inorganic acids.

Galvanizing
The protective coating of ferrous metal by dipping in a bath of molten zinc.

Galvanized Iron
Iron coated with zinc to prevent rust.

Zinc
A ductile, crystalline, bluish-white metallic element, used for galvanizing iron and steel and in making other alloys. Symbol: Zn

Sacrificial Anode
An anode that is attached to a metal object subject to electrolysis and is decomposed instead of the object.

Cathodic Protection
The protection of ferrous metals against electrolysis by the attachment of sacrificial anodes. Also called electrolytic protection.

Electroplating
To plate with an adherent metallic coating by electrolysis, usually to increase the hardness, improve the durability, or enhance the appearance of the base metal.

Electrolysis
The producing of chemical changes by the passage of an electric current through an electrolyte, with subsequent migration of positively and negatively charged ions to the negative and positive electrodes.
METAL

W-shape
A hot-rolled structural steel section having an H-shape with wide parallel flanges, designated by the prefix W followed by the size and weight of the member. Also called wide flange.

M-shape
A hot-rolled structural steel shape similar to but not classified as a W-shape, designated by the prefix M followed by the size and weight of the member.

HP-shape
A hot-rolled structural steel section similar to a W-shape but having flanges and web of equal thickness and typically used as a load-bearing pile, designated by the prefix HP followed by the size and weight of the member.

S-shape
A hot-rolled structural steel section having an I-shape with sloped inner flange surfaces, designated by the prefix S followed by the size and weight of the member. Also called American standard beam.

American standard channel
A hot-rolled structural steel section having a rectangular C-shape with sloped inner flange surfaces, designated by the prefix C followed by the size and weight of the member.

miscellaneous channel
A hot-rolled structural steel section similar to a C-shape but designated by the prefix M followed by the size and weight of the member.

angle
A hot-rolled structural steel section having an L-shape, designated by the prefix L followed by the size and their thickness. Also called angle iron.

equal leg angle
An angle iron having legs of equal length.

unequal leg angle
An angle iron having legs of unequal length.

double angle
A structural member consisting of a pair of angles joined back to back. The parallel legs may be in contact or slightly separated.

structural tee
A structural steel section cut from a W, S, or M-shape and having a T-shape. It is designated by the prefix WT, ST, or MT, depending on the section from which it is cut, followed by the size and weight of the member.

tee
A rolled metal bar having a T-shaped cross section. Also called T-bar.

tee
A rolled metal bar having a Z-shaped cross section with internal right angles. Also called Z-bar.

bar
A long, solid piece of metal, esp. one having a square, rectangular, or other simple cross-sectional shape.

structural tubing
A hollow structural steel shape of square, rectangular, or circular cross section. It is designated by the prefix ST followed by the size dimensions or diameter and the wall thickness.

standard pipe
A structural steel pipe of standard weights and wall thickness, designated as ST (nominal inside diameter) Std.

extra-strong pipe
A structural steel pipe having increased wall thickness for greater strength, designated as ST (nominal inside diameter) X-S.

double-extra-strong pipe
A structural steel pipe having a wall thickness greater than that of extra-strong pipe, designated as ST (nominal inside diameter) XX-S.

equivalent round
The diameter of a circle having a circumference equal to the perimeter of a noncircular tube.

plate
A thin, flat sheet or piece of metal, esp. one of uniform thickness.

checkered plate
A steel or cast-iron plate having a perforated pattern.

sheet metal
Metal in thin sheets or plates, used in the manufacture of ductwork, flashing, and roofing.

corrugated metal
Sheet metal drawn or rolled into parallel ridges and furrows for additional mechanical strength.

expanded metal
Sheet metal slotted and stretched into a stiff open mesh or lattice, used esp. as lath.

blackplate
Cold-rolled sheet steel before pickling or cleaning, used for coating with zinc, tin, or tene metal.


gauge
Any of various standards for designating the thickness or diameter of a thin object, as the thickness of sheet metal or the diameter of a wire or screw. Also, gauge.

wire gauge
A gauge calibrated for determining the diameter of wire or thickness of sheet metal, consisting of a steel plate with a series of standard-sized notches around the edge.

wire cloth
A fabric of woven metallic wire, used in screens, fences, or the like.

hardware cloth
A galvanized steel wire cloth with a mesh between 0.25 and 0.50 in. (6.4 to 12.7 mm).

mesh
The number of openings per inch in wire cloth.

wire rope
A heavy rope made of or containing wire strands twisted around a central core.
flange
A broad ridge or pair of ridges projecting at
a right angle from the edge of a structural
shape in order to strengthen or stiffen it.

web
An integral part of a beam that forms a
flat, rigid connection between two broader,
parallel parts, as the flanges of a
structural shape.

I-beam
A rolled or extruded metal beam
having a cross section resembling
the capital letter I.

structural steel
Steel that is hot-rolled or cold-formed
in a variety of standard shapes and
fabricated for use as load-bearing
members or elements.

steel beam
A beam consisting of a single or built-up
structural steel section.

open-web steel joist
A lightweight, fabricated steel joist
having an open web. A K-Series joist
has a web consisting of a single bent
bar, running in a zig-zag pattern
between the upper and lower chords.
LH- and DH-Series joists have heavier
web and chord members for increased
loads and spans. Also called bar joist.

stiffener
A trussed girder for supporting open-
web steel joists.

plate girder
A steel girder built up from plates or
shapes that are welded or riveted
together.

box girder
A steel beam built up from shapes and
having a hollow, rectangular cross
section.

castellated beam
A steel beam fabricated by dividing the
web of a wide-flange section with a
lengthwise zigzag cut, then welding
both halves together at the peaks,
thus increasing its depth without
increasing its weight.
MOISTURE PROTECTION

Joint sealant
Any of various viscous substances injected into a building joint, curing to form a flexible material that adheres to the surrounding surfaces and seals the joint against the passage of air and water.

Joint movement
The change in width of a building joint resulting from a change in temperature.

Extenility
The capacity of a sealant to be extended in tension.

High-range sealant
A joint sealant of polysulfide, polyurethane, or silicone capable of elongations up to 25%, used for sealing joints in curtain-wall systems.

Medium-range sealant
A joint sealant of butyl rubber or acrylic capable of elongations up to 10%, used for sealing nonworking or mechanically fastened joints.

Caulk
A low-range joint sealant used for filling or closing a seam, crevice or crack in order to make it watertight and air-tight. Also, caulking.

Bead
A narrow deposit of sealant applied to a building joint.

Bond face
The surface of a building component or joint that serves as a substrate for a sealant and to which the sealant is bonded.

Substrate
Any material that underlies and serves as a base or foundation.

Primer
A liquid for improving the adhesion of a sealant to a substrate.

Joint filler
A compressible strip, rod, or tube of resilient material, as neoprene or butyl, used for filling a joint and controlling the depth of a sealant. Also called backup rod.

Bond breaker
Any of various materials, as polyethylene tape, used for preventing the adhesion of a sealant to the bottom of a joint.

Construction joint
A joint between two successive placements of concrete, often keyed or dowelled to provide lateral stability across the joint.

Dowel
A short reinforcing bar extending equally into two adjoining sections of concrete to prevent differential movement.

Expansion sleeve
A pipe sleeve that allows the housed element to move freely in a longitudinal direction.

Waterstop
A flexible strip of rubber or plastic inserted across a concrete or masonry joint to prevent the passage of water.

Expansion joint
A joint between two parts of a building or structure permitting thermal or moisture expansion to occur without damage to either part. Expansion joints also serve as isolation joints and control joints.

Expansion joint cover
A prefabricated cover for protecting an expansion joint while allowing relative movement between the two parts being connected.

Control joint
A continuous groove or separation formed, sawed, or tooled in a concrete or masonry structure to form a plane of weakness and thus regulate the location and amount of cracking resulting from drying shrinkage or thermal stresses.

Contraction joint
A joint between two parts of a structure, designed to compensate for the contraction of either part.

Isolation joint
A joint separating two sections of a structure so that differential movement or settlement can occur between the parts.
cymatium
The crowning member of a classical cornice, usually a cyma recta.
corona
The projecting, sloping member of a classical cornice, supported by the bed molding and crowned by the cymatium.
bed molding
The molding or group of moldings immediately beneath the corona of a cornice.
columnation
The use or arrangement of columns in a structure.
diastyle
Having two columns on one or each front.
tristyle
Having three columns on one or each front.
tetraostyle
Having four columns on one or each front.
pentaostyle
Having five columns on one or each front.
hexastyle
Having six columns on one or each front.
heptastyle
Having seven columns on one or each front.
eptastyle
Having eight columns on one or each front.
enneastyle
Having nine columns on one or each front. Also, noneastyle.
decastyle
Having ten columns on one or each front.
dodecaostyle
Having 12 columns on one or each front. Also, dodecaostyle.
triple rule
Having an intercolumniation of 3/6 diameters.
eostyle
Having an intercolumniation of 1/6 diameters.
eostyle
Having an intercolumniation of 2/6 diameters.
diastyle
Having an intercolumniation of 3/6 diameters.
areostyle
Having an intercolumniation of 4/6 diameters. Also, areostyle.

Any of five styles of classical architecture characterized by the type and arrangement of columns and entablatures employed, as the Doric, Ionic, Corinthian, Tuscan, and Composite orders.

entablature
The horizontal section of a classical order that rests on the columns, usually composed of a cornice, frieze, and architrave.

column
A cylindrical support in classical architecture, consisting of a capital, shaft, and usually a base, either monolithic or built up of drums the full diameter of the shaft.
pedestal
A construction upon which a column, statue, memorial shaft, or the like, is elevated, usually consisting of a cornice or cap, a dado, and a base.

intercolumniation
The space between two adjacent columns, usually the clear space between the lower parts of the shafts, measured in diameters. Also, a system for spacing columns in a colonnade based on this measurement.
ORDER

Doric order
The oldest and simplest of the five classical orders, developed in Greece in the 7th century B.C. and later imitated by the Romans, characterized by a fluted column having no base, a plain cushion-shaped capital supporting a square abacus, and an entablature consisting of a plain architrave, a frieze of triglyphs and metopes, and a comice. In the Roman Doric order, the columns are more slender and usually have bases, the channeling is sometimes altered or omitted, and the capital consists of a fluted necking, an echinus, and a molded abacus.

triglyph
One of the vertical blocks separating the metopes in a Doric frieze, typically having two vertical grooves or glyphs on its face, and two chamfers or hemi glyph s at the sides.

metope
Any of the panels, either plain or decorated, between triglyphs in the Doric frieze. Also called intertriglyph.

taenia
A raised band or fillet separating the frieze from the architrave on a Doric entablature. Also, taenia.

entablature
A fillet beneath the taenia in a Doric entablature, corresponding to a triglyph above and from which guttas are suspended. Also called guttus band.

abacus
The flat slab forming the top of a column capital, plain in the Doric style, but molded or otherwise enriched in other styles.

echinus
The prominent circular molding supporting the abacus of a Doric or Tuscan capital.

necking
The upper part of a column, just above the shaft and below the projecting part of the capital, when differentiated by a molding, groove, or the omission of fluting.

annulet
An encircling band, molding, or fillet, on a capital or shaft of a column.

fluting
A decorative motif consisting of a series of long, rounded, parallel grooves, as on the shaft of a classical column.

flute
A rounded channel or groove. Also called stria.

sofit
The underside of an architectural element, as an arch, beam, cornice, or staircase.

gutta
One of a series of small, drop-like ornaments, attached to the undersides of the mutules and regulae of a Doric entablature. Also called drop.

mutule
A projecting flat block under the corona of a Doric comice, corresponding to the modillion of other orders.

zoophorus
A frieze bearing carved figures of people or animals. Also, zoophorus.

Tracchium
That part of the necking between the hypotrachelium and the capital of a classical column.

hypotrachelium
Any member between the capital and the shaft of a classical column.

entasis
A slight convexity given to a column to correct an optical illusion of concavity if the sides were straight.

drum
Any of several cylindrical stones laid one above the other to form a column or pier.

Tuscan order
A classical order of Roman origin, basically a simplified Roman Doric characterized by an unfluted column and a plain base, capital, and entablature having no decoration other than moldings.
eg and dart
An ornamental motif for enriching an ovolo or echinus, consisting of a closely set, alternating series of oval and pointed forms. Also called egg and tongue.

dentil
Any of a series of closely spaced, small, rectangular blocks forming a molding or projecting beneath the cornices of Ionic, Corinthian, and Composite corinices.
fascia
One of the three horizontal bands making up the architrave in the Ionic order.

Attic base
A base to a classical column, consisting of an upper and a lower torus separated by a scotia between two fillets.

scotia
A deep concave molding between two fillets. Also called trochilus.
torus
A large convex, semicircular molding, commonly found directly above the plinth of the base of a classical column.

Ionic order
A classical order that developed in the Greek colonies of Asia Minor in the 6th century B.C., characterized esp. by the spiral volutes of its capital. The fluted columns typically had molded bases and supported an entablature consisting of an architrave of three fascias, a richly ornamented frieze, and a cornice corbeled out on egg-and-dart and dentil moldings. Roman and Renaissance examples are often more elaborate, and usually set the volutes of the capitals 45° to the architrave.

volute
A spiral, scroll-like ornament, as on the capitals of the Ionic, Corinthian, and Composite orders.

canthetus
The vertical guideline through the eye of a volute in an Ionic capital, from which the spiral form is determined.
echinus
The circular molding under the ovolo of an Ionic capital between the volutes, usually carved with an egg-and-dart pattern. Also called cymatium.

fillet
A narrow part of the surface of a column lefts between adjoining flutes.
apophyge
A small, concave curve joining the shafts of a classical column to its base. Also called apophysis.

modillion
An ornamental bracket, usually in the form of a scroll with acanthus, used in series beneath the cornice of a Corinthian, Composite, or Roman Ionic cornice.

helix
A spiral ornament, as any of the volutes issuing from a caulicle in a Corinthian capital.

caulicle
Any of the ornamental stalks rising between the acanthus leaves of a Corinthian capital, from which the volutes spring. Also called caulicle.

Corinthian order
The most ornate of the five classical orders, developed by the Greeks in the 4th century B.C. but used more extensively by Roman architecture, similar in most respects to the Ionic but usually of slenderer proportions and characterized esp. by a deep bell-shaped capital decorated with acanthus leaves and an abacus with concave sides.
ORNAMENT

An accessory, article, or detail that lends grace or beauty to something to which it is added or of which it is an integral part.

ornament
A pictorial sign or symbol.

ornament
A pictorial sign or symbol.

ornament
A decoration produced by cutting or scratching through a surface layer of paint or plaster to reveal a ground of contrasting color.

ornament
A large picture painted on or applied directly to a wall or ceiling surface.

ornament
The art or technique of painting on a freshly spread, moist plaster surface with pigment mixed in water and a lime-water mixture. Also, a picture or design so painted.

ornament
Any mosaic of regularly cut material.

ornament
A mosaic of tesserae having a geometric pattern formed with few colors, as black and white, or dark green and red.

ornament
A mosaic of tesserae arranged in wavy lines resembling the form or tracks of a worm.

ornament
A mosaic made by inlaying fine, delicately colored stones into a white or black marble surface.

ornament
A decoration or ornament made by cutting out a design and fastening it to a larger piece of material.

ornament
To decorate by setting pieces of wood, ivory, or the like into a surface, usually at the same level.

ornament
To carve, cut, or etch designs on a hard surface, as of metal, stone, or the end grain of wood.

ornament
A figure or design incised into the surface of a stone or metal plate so that an impression yields a figure in relief.

ornament
Ornamental or structural work having a lattice-like nature or showing openings through its substance.

ornament
Ornamental openwork of delicate or intricate design. Also, Filagree.
**pectoral**
An artistic composition consisting of forms or motifs borrowed from different sources.

**pastiche**
Artificial, counterfeit, or false, as an architectural ornament that is added superfluously or inappropriately.

**star**
A conventional figure usually having five or more points radiating from a center, often used as an ornament and symbol.

**Star of David**
A hexagram used as a symbol of Judaism. Also called Magen David, Majen David.

**hexagram**
A six-pointed starlike figure, formed by extending each of the sides of a regular hexagon into equilateral triangles.

**glory**
A ring, circle, or surrounding radiance of light, as a halo, nimbus, or aureole.

**halo**
A disk or ring of radiant light around or above the head, traditionally symbolizing the sanctity of a divine or sacred personage in religious paintings and sculptures. Also called nimbus.

**aureole**
A circle of light or radiance surrounding the head or body in the representation of a sacred personage.

**vesica piscis**
An elliptical, pointed figure used esp. in early Christian art as an emblem of Christ. Also called mandorla.

**Chi-Rho**
A Christian monogram and symbol formed by superimposing the first two letters of the Greek word for Christ. Also called chretism.

**table**
A raised or sunken rectangular panel on a wall, distinctively treated or ornamented with inscriptions, painting, or sculpture.

**tablet**
A flat slab or plaque having a surface suitable for or bearing an inscription, carving, or the like.

**medallion**
A usually oval or circular tablet, often bearing a figure or ornament in relief.

**cartouche**
An oval or oblong, slightly convex surface, usually surrounded with ornamental scrollwork, for receiving a painted or low-relief decoration. Also, cartouche.

**grotesque**
A decorative style characterized by the fantastic shaping and combining of incongruous human and animal forms with foliage or similar figures, often distorting the natural into caricature or absurdity.

**antic**
A grotesque sculpture of animal, human, or foliated forms, as a gargyle.

**mask**
An often grotesque representation of a head or face, used as an architectural ornament. Also called mascaron.

**griffin**
A mythological animal typically having the head and wings of an eagle and the body and tail of a lion. Also, griffon, gruyphon.

**griffe**
An ornament projecting from the round base of a column toward a corner of a square or polygonal plinth. Also called agur.

**ballflower**
A medieval English ornament suggesting a flower of three or four petals enclosing and partially concealing a ball.

**cross**
An object or figure consisting essentially of an upright and a transverse piece at right angles to each other; often used as a symbol of Christianity.

**Latin cross**
A cross having an upright or vertical shaft crossed near the top by a shorter horizontal bar.

**Celtic cross**
A cross shaped like a Latin cross and having a ring about the intersection of the shaft and crossbar.

**Greek cross**
A cross consisting of an upright crossed in the middle by a horizontal of the same length.

**Jerusalem cross**
A cross whose four arms each terminate in a crossbar, often with a small Greek cross centered in each quadrant.

**Maltese cross**
A cross formed having the outer face of each arm indented in a V.

**cross formée**
A cross having arms of equal length, each expanding outward from the center.
ORNAMENT

motif
A distinctive and recurring shape, form, or color in a design.

chequer
To mark or decorate with a squared pattern.

tenaculate
Repeating or covered with a network of regularly intersecting lines.

diaper
A pattern of small, repeated figures connecting or growing out of one another, originally used in the Middle Ages in weaving silk and gold.

imbrication
A pattern or design resembling the regular overlapping of tiles or shingles.

herringbone
A pattern consisting of rows of short, parallel lines which in any two adjacent rows slant in opposite directions, used in masonry, parquetry, and weaving.

chevron
A V-shaped pattern used in heraldry and as ornamentation.

dancette
An ornamental zigzag, as in a molding.

fret
A decorative design contained within a band or border, consisting of repeated, often geometric figures. Also called key pattern.

meander
A running ornament consisting of an intricate variety of fret or fretwork.

guilloche
An ornamental border formed of two or more interlaced bands around a series of circular voids.

dentil band
A molding occupying the position of a row of dentile, and often carved to resemble one.

Venetian dentil
Any of a series of small rectangular blocks alternating with sloping surfaces on an arch, window, or molding.

scroll
An ornament having a spiral or convoluted form resembling a partly or loosely rolled parchment.

Vitruvian scroll
A series of scrolls forming a stylized wave pattern. Also called Vitruvian wave, wave scroll.

banderole
A sculptured band resembling a long ribbon or scroll, adapted to receive an inscription. Also, banderole, banderole.

strapwork
Ornamentation composed of folded, crossed, and interlaced bands, sometimes cut with foliations.

foliated
Ornamented with folis or representations of foliage. Also, foliate.

wreath
A decorative band or garland of flowers, foliage, or other ornamental material.

fret
A decorative representation of a string or garland of flowers, foliage, ribbon, or the like, suspended in a curve between two points.

fleur-de-lis
A stylized three-petaled flower tied by an encircling band, used as the heraldic bearing of the royal family of France. Also, fleur-de-lis.

lotus
A representation of various aquatic plants in the water lily family, used as a decorative motif in ancient Egyptian and Hindu art and architecture.

anthemion
An ornament of honeysuckle or palm leaves in a radiating cluster. Also called honeysuckle ornament.

palmette
A stylized palm leaf shape used as a decorative element in classical art and architecture.

rosette
An ornament having a generally circular combination of parts resembling a flower or plant. Also, rose.

dogtooth
Any of a series of closely spaced, pyramidal ornaments, formed by sculptured leaves radiating from a raised center, used esp. in early English Gothic architecture.

arabesque
A complex and ornate design that employs flowers, foliage, and sometimes animal and geometric figures to produce an intricate pattern of interlaced lines.

calf's tongue
A molding having pendant, tongue-like elements carved in relief against a flat or curved surface.

scallop
Any of a series of curved projections forming an ornamental border.

purflle
To decorate a shrine or tabernacle with miniature architectural forms so as to produce a lacy effect.
ORNAMENT

profile
An outline of an object formed on a vertical plane passed through the object at right angles to one of its principal horizontal dimensions.

cove
A concave surface or molding, esp. at the transition from wall to ceiling.
cavetto
A concave molding having an outline that approximates a quarter circle.
congé
A concave molding having the form of a quadrant curving away from a given surface and terminating perpendicular to a fillet parallel to that surface. Also, congée.

egg
A molding having a profile of a double curve in the shape of an elongated S. Also called gala.

cyma
A projecting molding having the profile of a double curve formed by the union of a convex line and a concave line.
cyma recta
A cyma having the concave part projecting beyond the convex part. Also called Doric cyma.
cyma reverse
A cyma having the convex part projecting beyond the concave part. Also called Lesbian cyma.

beak
A small pendant molding forming a drip and casting a deep shadow, as on the soffit of a cornice. Also called bird's beak.
brace molding
A projecting molding having a profile formed by two oges symmetrically disposed about an aris or fillet. Also called keel.

billet
Any of a series of closely spaced cylindrical forms ornamenting a hollow molding or cornice.

cornice
A molding having a profile shaped to produce modulations of light, shade, and shadow. Almost all moldings derive at least in part from wood prototypes, as those in classical architecture, or stone prototypes, as those in Gothic architecture. By extension, the term now refers to a slender strip of wood or other material having such a surface and used for ornamentation and finishing. Also, mold, molding.

half round
A molding having a semicircular cross section.
quarter round
A convex molding whose section is a quarter circle.
ovolo
A convex molding having a profile approximating a quarter section of a circle or ellipse.
boutel
A convex, rounded molding. Also, boutel, bowtell.
gadroon
A convex molding elaborately carved with reeding or indented with notches. Also, gadroon.
Aaron's rod
A convex molding having pointed leaves or scrollwork emerging at regular intervals.
cable molding
A convex molding having the form of a rope.
bead
A small convex molding usually having a continuous cylindrical surface.
avstragal
A small convex molding usually semicircular in section.
baguette
A small convex molding of semicircular section, smaller than an astragal. Also, baquet.

bead and reel
A convex molding having the form of disks alternating with spherical or elongated beads.

pearl molding
A molding having the form of a row of pearls or beads. Also called bead molding, Patemaster.

reeding
A parallel set of small convex moldings for ornamenting a plane or curved surface.
trim
The finished woodwork or the like used to decorate, border, or protect the edges of openings or surfaces.

cornice
A continuous, molded projection that crowns a wall or other construction, or divides it horizontally for compositional purposes.

dado
A horizontal molding near a ceiling from which pictures can be suspended. Also called picture mold.

plate rail
A rail or narrow shelf fixed along a wall and served to hold plates, esp. for ornament or display.

chair rail
A horizontal molding on an interior wall for preventing the backs of chairs from rubbing against and damaging the wall surface.

base molding
An ornamental molding above the plinth of a pedestal, pillar, or wall.

baseboard
A board or molding concealing the joint between an interior wall and the floor. Also called a floorboard, skirtboard, or shoe.

shoe
A small molding, as a quarter round, covering the joint between a baseboard and the floor. Also called base shoe.

broken pediment
A pediment having its raking ornaments interrupted at the crown or apex, the gap often being filled with an urn, a cartouche, or other ornament.

architrave
A molded or decorative band framing a rectangular door or window opening.

return
The continuation of a molding, projection, or other part at an angle, usually 90°, to the main part.

tabernacle frame
A frame around a doorway or niche, having two columns or pilasters on a base supporting a pediment.
paint system
A combination of one or more coatings selected for compatibility with each other and the surface to which they are applied, as well as suitability for the expected exposure and desired decorative effect.

glaze coat
A thin coat of transparent color applied to enhance the color of a painted surface.

mistcoat
A thin, sometimes pigmented coat applied to a finish coat to improve its luster.

topcoat
The final coat of paint applied to a surface. Also called finish coat.

undercoat
A primer or intermediate coat applied to hide the color of the substrate and improve adhesion of the topcoat.

ground coat
A primer or basecoat of paint intended to show through a topcoat. Also called ground color.

basecoat
A first coat of paint or other liquid finish applied to a surface.

primer
A basecoat applied to a surface to improve the adhesion of subsequent coats of paint or varnish. Also called prime coat.

sealer
A basecoat applied to a surface to reduce the absorption of subsequent coats of paint or varnish, or to prevent bleeding through the finish coat.

dye
A soluble coloring material that imparts color by absorption.

water stain
A penetrating stain made by dissolving dye in a water vehicle.

spirit stain
A penetrating stain made by dissolving dye in an alcohol or spirit vehicle.

oil stain
A stain made by dissolving dye or suspending pigment in a drying oil or oil varnish vehicle.

stain
A solution of dye or suspension of pigment in a vehicle, applied to penetrate and color a wood surface without obscuring the grain.

penetrating stain
A stain that penetrates a wood surface, leaving a very thin film on the surface.

pigmented stain
An oil stain containing pigments capable of obscuring the grain and texture of a wood surface. Also called opaque stain.

copal
A hard, lustrous resin obtained from various tropical trees, used chiefly in making varnishes.

epoxy varnish
A durable, weather-resistant varnish made from durable resins and insides or tung oil. Also called marine varnish.

copolyurethane varnish
An exceptionally hard, abrasion-resistant, and chemical-resistant varnish made from a plastic resin of the same name.

lac
A resinous secretion of the female of the lac insect, used in making shellac.

shellac
A spirit varnish made by dissolving purified lac resins in denatured alcohol. Also called shellac varnish.

Chinese lacquer
A natural varnish obtained from an Asian sumac, used to produce a highly polished, lustrous finish on wood. Also called Japanese lacquer.

lacquer
Any of various clear or colored synthetic coatings consisting of nitrilecellulose or other cellulose derivative dissolved in a solvent that dries by evaporation to form a high-gloss film.
PLASTER

A composition of gypsum or lime, water, sand, and sometimes hair or other fiber, applied in a pasty form to the surfaces of walls or ceilings in a plastic state and allowed to harden and dry.

gypsum plaster
A basecoat plaster made of calcined gypsum mixed with sand, water, and various additives to control its setting and working qualities.

calcined gypsum
Gypsum heated to drive off most of its chemically combined water.

plaster of Paris
Calcined gypsum in white, powdery form, containing no additives to control the set, used as a base for gypsum plaster, as an additive in lime plaster, and as a material for making ornamental casts.

three-coat plaster
Plasterwork applied in three successive coats, a scratch coat followed by a brown coat and a finish coat.

two-coat plaster
Plasterwork applied in two coats, a basecoat followed by a finish coat.

gauzed plaster
A finish coat in plastering, consisting of lime putty to which gauzed plaster is added to control the setting time and counteract shrinkage.

gauging plaster
A specially ground gypsum plaster for mixing with lime putty, formulated to provide either a quick-set or a slow-set for a finish coat of plaster.

hard finish
A finish coat of lime putty and Keene's cement or gauzed plaster, traveled to a smooth, dense finish.

lume putty
Quick lime slaked with sufficient water to form a thick paste. Also called plasterer's putty.

Keene's cement
Trademark for a brand of white anhydrous gypsum plaster that produces an exceptionally strong, dense, crack-resistant finish.

anhydrous
Having all water of crystallization removed.

white coat
A finish coat of lime putty and white gauzed plaster, traveled to a smooth, dense finish.

veneer plaster
A ready-mixed gypsum plaster applied as a very thin, one- or two-coat finish over a veneer base. Also called thincoat plaster.

acoustical plaster
A low-density plaster containing vermiculite or other porous material to enhance its ability to absorb sound.

gypsum
A soft mineral, hydrated calcium sulfate, used as a retarder in portland cement and is the making of gypsum plaster.

alabaster
A finely granular form of pure gypsum, often white and translucent, used for ornamental objects and work.

lime plaster
A mixture of lime, sand, and sometimes a fiber, used as a basecoat plaster.

cement temper
The addition of portland cement to lime plaster to improve its strength and durability.

finished coat
The final coat of plaster, serving either as a finished surface or as a base for decoration.

thin coat
A thin leveling or finish coat of plaster.

brown coat
A roughly finished, leveling coat of plaster, either the second coat in three-coat plaster or the base coat in two-coat plaster applied over gypsum trash or masonry. Also called float coat.

basecoat
Any plaster coat applied before the finish coat.

scratch coat
The first coat in three-coat plaster, which is scratched to provide a better bond for the second or brown coat.

hardwall
A basecoat of neat gypsum plaster.

neat plaster
A gypsum basecoat plaster having no admixture except hair or other fiber, used for on-the-job mixing with aggregates.

wood-fibered plaster
A mild-mixed gypsum basecoat plaster containing coarse cellulose fibers for greater bulk, strength, and fire resistance, used neat or mixed with sand to obtain a basecoat of superior hardness.

bond plaster
A gypsum basecoat plaster containing a small amount of lime and chemical additives to improve the bond of succeeding coats to dense, nonporous surfaces.

gypsum-perlite plaster
A gypsum basecoat plaster containing perlite as an aggregate to reduce its weight and increase its thermal and fire resistance.

gypsum-vermiculite plaster
A gypsum basecoat plaster containing vermiculite as an aggregate to reduce its weight and increase its thermal and fire resistance.

ready-mixed plaster
Plaster that is formulated and dried by the manufacturer, requiring only the addition of water at the job site.
rendering coat
The first coat of plaster on a masonry wall. Also called rough coat.

spatter dash
A wet, rich mix of Portland cement and sand thrown onto a smooth brick or concrete surface and allowed to harden to provide a key for a first coat of plaster.

key
A grooving or roughness applied to a surface to improve its bond with another surface.

molding plaster
A plaster used in ornamental work, consisting of finely ground gypsum and hydrated lime.

running mold
A sheet-metal template cut to the desired pattern, backed with wood, and pushed along between temporary grounds or ribs to form a plaster molding along the angle between a wall and ceiling. Also called horsetail mold.

horsetail
The wooden support for the sheet-metal template of a running mold.

plasterwork
Fine ornamental plasterwork, esp. exterior plasterwork bearing designs in low relief. Also, pargeting.

plaster
A coarse plaster composed of Portland or masonry cement, sand, and hydrated lime, mixed with water and applied in a plastic state to form a hard covering for exterior walls.

Portland cement stucco
Stucco made with masonry cement or with Portland cement mixed with less than 50% by volume of lime.

Portland cement-lime stucco
Portland cement stucco to which lime is added in an amount greater than 50% by volume to improve the plasticity of the mix.

alabaster
A stucco used in ancient times, made from powdered marble and lime mortar and often polished.

intarsia
A finish coat of plaster made with white marble dust to receive a fresco.

scagliola
Plasterwork imitating granite or marble.

sand-float finish
A textured finish coat of plaster containing sand, leveled and smoothed with a float.

float finish
A fine-textured stucco finish produced by smoothing with a carpet-or-rubber-faced float.

dash-troweled finish
A stucco finish produced by dragging a serrated tool across the stucco surface before it sets. Also called dragged finish.

tipple-troweled finish
A stucco finish produced by troweling the high spots of a stippled stucco surface before it sets.

tooping
The process of giving a wall a rough finish by throwing plaster against it.

pebble dash
An exterior wall finish produced by throwing and pressing small pebbles into unset stucco.

roughcast
An exterior wall finish composed of a stucco mixed with fine pebbles and dashed against a wall. Also called spatter dash.
lath
Any of a number of suitable surfaces for receiving plasterwork, as 
gypsum lath, metal lath, wood lath, Masonry, or brickwork.

metal lath
A plaster base fabricated of expanded metal or wire fabric, painted or 
galvanized for corrosion resistance.

expanded-metal lath
Metal lath fabricated by cutting and 
expanding a sheet of steel alloy to form a 
stiff network with diamond-shaped 
openings.

rib lath
An expanded-metal lath having V-shaped 
ribs to provide greater stiffness and 
permit wider spacing of the supporting 
framing members.

self-centering lath
A rib lath used over steel joists as 
formwork for concrete slabs, or as lathing 
in solid plaster partitions.

self-furring lath
Expanded metal, welded wire, or woven-wire 
plasterboard that is attached to space itself 
from the supporting surface, creating a 
space for the keying of plaster or stucco

wire lath
Welded- or woven-wire fabric, usually with 
a paper backing, used as a base for 
plaster or stucco.

paper-backed lath
Expanded metal or wire lath having a 
backing of perforated or building paper, 
used as a base for plaster or stucco.

corner lath
A strip of expanded-metal lath bent to 
form a 90° angle, used at an internal 
corner to prevent cracks in plastering. 
Also called corner reinforcement.

strip lath
A narrow strip of expanded-metal lath for 
reinforcing joints in plaster lath or 
junctions between different types of 
plaster bases.

scrim
Coarse cotton, fiberglass, or metal mesh, 
used for bridging and reinforcing a joint or 
as a base for plastering or painting.

gypsum lath
Gypsum board having an air-entrained 
core faced with absorbent paper, used as 
a base for plaster. Also called rock lath.

perforated gypsum lath
Gypsum lath punched with small holes to 
provide a mechanical key for plaster.

insulating gypsum lath
Gypsum lath having an aluminum foil 
backing that serves as a vapor retarder 
and reflective thermal insulator.

veneer base
Gypsum lath having a special paper facing 
for receiving veneer plaster.

plaster bond
The adhesion of plaster to its base 
produced by mechanical or chemical means.

mechanical bond
The physical keying of a plaster coat to a 
plaster base or with another plaster coat 
roughened by scoring.

bonding agent
A chemical substance applied to a suitable 
substrate to improve its bond with a 
succeeding layer.

suction
The absorption of water from a trowel coat 
of plaster on the back of a base or paper, 
resulting in a better bond

ground
A strip of wood or a metal bead used at 
an opening as a guide for plastering to a 
given thickness and as a stop for the 
plasterwork.

screed
A strip of wood, plaster, or metal applied 
to a surface to be plastered to serve as a 
guide for making a true surface and 
plastering to a given thickness.

base screed
A perforated metal screed for separating 
a plastered surface from another 
material along the base of a wall.

vented screed
A perforated metal screed for ventilating 
a concealed space behind a plastered 
surface.

expansion screed
A perforated metal screed applied over 
the surface of gypsum lath to control cracking.

control joint
A perforated metal strip installed to 
relieve shrinkage, temperature, or 
structural stresses within a large 
plastered or stuccoed area.

corner bead
A perforated metal strip having two 
expanded or perforated flanges and 
variously shaped projecting noses, used 
as a ground and to strengthen and 
protect an external angle in plasterwork or 
a gypsum board surface. Also called 
age head.

bullnose corner bead
A corner bead having a rounded edge.

arch corner bead
A flexible corner bead for forming and 
reinforcing the curved portion of an 
arched opening.

casing bead
A perforated metal strip having an 
expanded or perforated flange and 
variously shaped ends, used as a ground 
and to strengthen and reinforce the 
edges of plasterwork or a gypsum board 
surface.
joint compound
A pasty compound for embedding joint tape, filling indentations, and finishing the joints in a gypsum-board surface.

Joint tape
A strip of paper, paper-faced cotton, or plastic mesh used with joint compound to cover the joints between sheets of gypsum board.

gypsum board
A sheet material having a gypsum core faced with paper on each side, used for covering walls or as lath. Also called drywall, plasterboard.

Sheetrock
Trademark for a brand of gypsum board.

type-X gypsum board
A gypsum board having a core containing additives for increased fire resistance.

backing board
An inexpensive gypsum board used as the base layer in a multilayer assembly for increased rigidity, sound insulation, and fire resistance.

coreboard
A gypsum board 1/8 in. (25.4 mm) thick, used as a base in solid gypsum-board partitions and for lining shafts.

prefinished gypsum board
A gypsum board having a decorative vinyl or printed paper surface.

foil back gypsum board
Gypsum board having an aluminum foil backing that serves as a vapor retarder and as a reflective thermal insulator when the foil faces a 3/4 in. (19 mm) minimum air space.

gypsum sheathing
A gypsum board having a fire-resistant core and faced with a water-repellent paper, used as exterior sheathing.

wallboard
Any of various sheet materials used in covering a wall or ceiling as a substitute for plaster or paneling.

square edge
tapered edge
beveled edge
rounded edge
tongue & groove
PLASTIC

Any of numerous synthetic or natural organic materials that are mostly thermoplastic or thermosetting polymers of high molecular weight and that can be molded, extruded, or drawn into objects, films, or filaments.

polymerization
A chemical reaction in which the molecules of a monomer combine to form larger molecules that contain repeating structural units of the original molecules.

monomer
A molecule of low molecular weight that can be chemically bound as a unit of a polymer.

polymer
A compound of high molecular weight formed by polymerization and consisting essentially of repeating structural units.

high polymer
A polymer consisting of molecules that are large multiples of monomers.

copolymer
A compound of high molecular weight formed by polymerizing two or more different monomers together.

casting
A method of shaping a plastic object by pouring the material into a mold and allowing it to harden without the use of pressure.

blow molding
A method of forming hollow ware by injecting air under pressure into a molten mass, as of a thermoplastic or glass, and shaping the material within a mold.

injection molding
A method of forming a thermoplastic, thermoset, metal, or ceramic material by rendering it fluid in a heating chamber and then forcing it under high pressure into a closed mold.

compression molding
A method of forming thermosetting plastic by cold molding it, forming the material by heat and pressure.

transfer molding
A method of forming thermosetting plastic by softening it in one chamber before it is forced into an adjacent mold where it is cured under heat and pressure.

thermoforming
A method of shaping a thermoplastic sheet by heating and forcing it against the contours of a mold by heat and pressure.

pressure forming
A method of thermoforming a plastic sheet by forcing it against the contours of a mold with compressed air.

vacuum forming
A method of thermoforming a plastic sheet by evacuating the space between the sheet and the contours of a mold.

resin
Any of numerous solid or semisolid organic substances prepared by polymerization and used with fillers, stabilizers, and other components to form plastics.

flour
A relatively inert substance added to modify the bulk, strength, heat resistance, electrical resistance, or working properties of a resin.

stabilizer
A substance added to prevent or retard the degradation of a plastic when exposed to the ultraviolet radiation or other environmental conditions.

plasticizer
Any of various substances added to a resin to increase its workability and flexibility.

catalyst
A substance that causes an acceleration of a chemical reaction without itself undergoing a permanent change in composition.

thermoplastic
A plastic capable of softening or fusing when heated without a change in any inherent properties, and of hardening again when cooled.

acrylic resin
Any of a class of thermoplastic resins used for casting or molding plastic parts that are exceptionally transparent, tough, and resistant to weather and chemicals, or as the main ingredient in coatings, adhesives, and caulking compounds.

Lucite
Trademark for a brand of transparent acrylic resin.

PLEXIGLAS
Trademark for a brand of glass, transparent, weather-resistant acrylic resin.

polycarbonate
A tough, transparent thermoplastic characterized by its high-impact strength and used for lighting fixtures, safety glazing, and hardware.

Lexan
Trademark for a brand of tough polycarbonate used for shutterproof windows.

polyethylene
A tough, light, and flexible thermoplastic used esp. in the form of sheeting and film for packaging, demarcing, and as a vapor retarder. Also called polyethylene.

polypropylene
A tough, thermoplastic that is resistant to heat and chemicals and used for pipe fittings, electrical insulation, and carpeting fibers.

polyurethane
A hard, tough, stable thermoplastic that is easily colored and molded, expanded, or rolled into sheeting.

acrylonitrile-butadiene-styrene
A thermoplastic used for making plastic pipes and hardware products that are tough, rigid, and resistant to heat and chemicals. Abb.: ABS.

vinyl
Any of various tough, flexible plastics made from polyvinyl resin.

polyvinyl resin
Any of a class of thermoplastic resins formed by polymerizing or copolymerizing a vinyl compound. Also called vinyl resin.

polyvinyl chloride
A white, water-insoluble thermoplastic widely used in the manufacture of floor coverings, insulation, and piping. Abb.: PVC.

polyvinyl butyral
A thermoplastic resin used chiefly as the interlayer of safety glass.

nylon
Any of a class of thermoplastics characterized by extreme toughness, strength, and elasticity and capable of being extruded into filaments, fibers, and sheets.
thermosetting plastic
A plastic that becomes permanently rigid when heated and cannot be softened again. Also called thermoset.

polystyrene
Any of various thermoplastic or thermosetting resins used in flexible and rigid forms, adhesives, and resins for sealants, adhesives, and coatings.

polyester
Any of a group of thermosetting resins used in the manufacture of plastics and textile fibers.

fiberglass-reinforced plastic
A polyester reinforced with glass fibers and used in translucent roofs and skylights, facings for sandwich panels, and molded plumbing fixtures.

Dacron
Trademark for a brand of strong, wrinkle-resistant polyester fiber.

Mylar
Trademark for a brand of strong, thin polyester film used in photography, recording tapes, and electrical insulation.

epoxy resin
Any of various thermosetting resins capable of forming tight cross-linked polymer structures characterized by toughness, strong adhesion, and high chemical resistance. Used esp. in surface coatings and adhesives.

melamine resin
Any of a class of thermosetting resins formed by the interaction of melamine and formaldehyde and used for molded products, adhesives, and surface coatings. Also called phenoplast.

phenolic resin
Any of a class of hard, heat-resistant thermosetting resins formed by the condensation of phenol with formaldehyde and used for molded products, adhesives, and surface coatings. Also called phenoplast.

bakelite
Trademark for a brand of dark phenolic resin, invented by Dr. Leo Baekeland in 1909, and used for telephone receivers, radio cabinets, electric insulators, and molded plastic hardware.

urea-formaldehyde resin
Any of various thermosetting synthetic resins made by condensing urea with formaldehyde and used in appliance housings, electrical devices, adhesives, and surface coatings.

postforming
A method of shaping a fully or partially cured thermosetting laminate over a mold by heat and pressure.

service temperature
The maximum temperature at which a plastic can be continuously employed without a noticeable reduction in any of its inherent properties.

softening point
The temperature at which a plastic changes from a rigid to a soft state.

rubber
A material made by chemically treating and toughening natural rubber, valued for its elasticity, nonconduction of electricity, and resistance to shock and moisture.

natural rubber
A highly elastic solid substance, essentially a polymer of isoprene, obtained by coagulating the milky juice of rubber trees and plants. Also called India rubber.

foam rubber
A light, spongy, cellular rubber made by foaming latexes before vulcanization.

vulcanization
The treatment of rubber with sulfur and heat to impart greater elasticity, stiffness, and durability.

synthetic rubber
An elastomer similar to natural rubber in properties and uses, produced by the polymerization of an unsaturated hydrocarbon, as butylene or isoprene, or by the copolymerization of hydrocarbons with styrene or butadiene.

elastomer
Any of various polymers having the elastic properties of natural rubber, as butyl rubber or neoprene.

butyl rubber
A synthetic rubber having exceptional resistance to sunlight and unusually low gas permeability, produced by polymerizing butylene and used in roofing membranes and waterproofing barriers.

Butyl
Trademark for a brand of butyl rubber.

neoprene
A synthetic rubber characterized by superior resistance to oils and sunlight, and used in paints, roofing membranes, flashing, gaskets, and bearings.

silicone rubber
A rubber made from silicone elastomers and noted for its retention of flexibility, resilience, and tensile strength over a wide temperature range.

silicone
Any of a group of polymers containing alternating silicon and oxygen atoms, characterized by thermal stability, chemical inertness, and extreme water repellence, and used in adhesives, lubricants, protective coatings, and synthetic rubber.
PLATE

A rigid, planar, usually monolithic structure that disperses applied loads in a multidirectional pattern, with the loads generally following the shortest and stiffest routes to the supports.

plate action
The manner in which an applied load is transmitted to the supports of a plate in a multidirectional pattern.

A plate can be envisioned as a series of adjacent beam strips interconnected continuously along their lengths.

As an applied load is transmitted to the supports through bending of one beam strip, the load is distributed over the entire plate by vertical shear transmitted from the deflected strip to adjacent strips.

The bending of one beam strip also causes twisting of transverse strips, whose torsional resistance increases the overall stiffness of the plate. Therefore, while bending and shear transfer an applied load in the direction of the loaded beam strip, shear and twisting transfer the load at right angles to the loaded strip.

A plate should be square or nearly square to ensure that it behaves as a two-way structure. As a plate becomes more rectangular than square, the two-way action decreases and a one-way system spanning the shorter direction develops since the shorter plate strips are stiffer and carry a greater portion of the load.

isoastatic plate
A plate reinforced by a grid of curved ribs which follow the isoastatics of the structure.

isoastatics
Lines of principal stress indicating the flow of bending stresses and along which torsional shear stresses are zero.

continuous plate
A plate extending as a structural unit over three or more supports in a given direction. A continuous plate is subject to lower bending moments than a series of discrete, simply supported plates.

folded plate
A plate structure composed of thin, deep elements joined rigidly along their boundaries and forming sharp angles to brace each other against lateral buckling. The resulting stiffness of the cross section enables a folded plate to span relatively long distances.

Each plane behaves as a beam in the longitudinal direction.

In the short direction, the span is reduced by each fold acting as a rigid support.

Transverse strips behave as a continuous beam supported at fold points.

Vertical diaphragms or rigid frames stiffen a folded plate against deformation of the fold profile.
skew grid
A grid structure of beams or flat trusses running obliquely to the sides of the base rectangle in order to equalize their spans and stiffnesses. The shorter spans at the corners result in additional stiffness.

lamella roof
A vaulted roof composed of lamellae forming a crisscross pattern of parallel arches skewed with respect to the sides of the covered space.

lamella
One of the relatively short timber, metal, or reinforced-concrete elements forming a lamella roof.

grid structure
A framework of crisscrossing beams connected at their intersections by rigid joints and dispersing an applied load in two directions according to the physical properties and dimensions of the beam elements.

All beam elements participate in carrying a load through a combination of bending and twisting. If two beams at right angles to each other are identical, they share an applied load equally in bending. If the beams have different lengths, however, the shorter beam carries more of the load since the stiffness of a beam is inversely proportional to the cube of its length and a load generally follows the path of least resistance to supports. For example, if two beams have a span ratio of 1:2, their stiffnesses will have a ratio of 1:8. Consequently, the shorter beam will carry 9/8 of the load. The torsional resistance of beams against the twisting induced by the bending of a transverse beam increases the stiffness of the grid.

space frame
A three-dimensional structural frame based on the rigidity of the triangle and composed of linear elements subject only to axial tension or compression. The simplest spatial unit of a space frame is a tetrahedron having 4 joints and 6 structural members. As with plate structures, the supporting leg for a space frame should be square or nearly square to ensure that it acts as a two-way structure. Also called space truss.

Increasing the bearing area of the supports increases the number of members into which shear is transferred and reduces the forces in the members.
PLUMBING

The system of pipes, valves, fixtures, and other apparatus of a water supply or sewage system.

water supply
The supply of purified water to a community, usually including facilities for storing and distributing this water, as reservoirs and pipelines.

cistern
A reservoir or tank for storing or holding water or other liquid, as rainwater collected from a roof, for use when required.

drawdown
A lowering of the water surface level, as in a well, or the distance by which the groundwater level is lowered as a result of pumping.

drawdown
A lowering of the water surface level, as in a well, or the distance by which the groundwater level is lowered as a result of pumping.

reservoir
A natural or artificial place where water is collected and stored for use, esp. water for supplying a community, irrigating land, or furnishing power.

raw water
Water that requires treatment before it can be used for drinking.

shutoff valve
Any valve for shutting off the flow of water or gas from a supply pipe.

water meter
A device for measuring and recording the quantity of water that passes through a pipe.

water tower
A tower into which water is pumped to a height sufficient to maintain a desired pressure for distributing to customers, or for firefighting.

potable water
Water fit for human consumption.

water treatment
The act or process of making water more palatable or useful, as by purifying, clarifying, or softening.

corporation stop
A valve controlling the flow of water or gas from a main to a service pipe. Also called corporation cock.

curb cock
A control valve for shutting off the water supply to a building in case of an emergency, installed in a water service pipe and operated by means of a long key inserted through a curb box. Also called curb stop.

service pipe
A pipe connecting a building to a water or gas main, usually installed by or under the jurisdiction of a public utility.

water main
A main pipe or conduit through which a public or community water system conveys water to all service connections.
gravity water system
A water supply and distribution system in which the water source is set at a height sufficient to maintain adequate supply pressure throughout the water distribution system. Also called downfeed distribution system.

head
The pressure at the lower of two given points in a liquid, expressed in terms of the vertical distance between the points. Also called pressure head.

pressure drop
A loss of head or fluid pressure between two points of a pipe or across a valve, due to hydraulic friction.

fixture unit
A unit for measuring the probable demand for water by a plumbing fixture, or the probable discharge of liquid waste from the fixture, equivalent to 7 1/2 gallons or one cubic foot per minute.

pneumatic water supply
A water supply system in which water is distributed from a water main or an enclosed storage tank under pressure from compressed air. Also called upfeed distribution system.

water softener
An apparatus that removes calcium and magnesium salts from hard water by ion exchange in order to give the water more efficient Sudsing ability with soap.

hard water
Water containing dissolved salts of calcium or magnesium and forming soap scum with difficulty.

water heater
An electric or gas appliance for heating water to a temperature between 130°F and 140°F (55°C and 60°C) and storing it for use.

PLUMBING

branch
Any member of a piping system other than a main, riser, or stack.

downfeed distribution system
Also called gravity water supply and distribution system.

main
A principal pipe, conduit, or duct in a utility system.

riser
A vertical pipe, conduit, or duct in a utility system.

expansion bend
An expansion joint of pipe and pipe fittings permitting thermal expansion to occur in a long run of hot-water piping. Also called expansion loop.

hose bibb
A threaded exterior faucet, as for attaching a garden hose, often attached to the side of a house at about the height of a sill. Also called hosecock, sillcock.

faucet
A device for controlling the flow of a liquid from a pipe by opening or closing an orifice. Also called spigot, tap.

flow pressure
The fluid pressure in a supply pipe at a faucet or other outlet while the faucet or outlet is wide open and water is flowing, expressed in psi (N/m²).

mixing faucet
A faucet having a single outlet for water from separately controlled hot-water and cold-water taps. Also called mixer.

water system
A system of pipes, valves, and fixtures for distributing and using water in a building.

water heater
An electric or gas appliance for heating water to a temperature between 120°F and 140°F (55°C and 60°C) and storing it for use.

branch
Any member of a piping system other than a main, riser, or stack.

riser
A vertical pipe, conduit, or duct in a utility system.

main
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aerator
A sleeve-like device for mixing air with the water flowing from the end of a spigot.

anti-scald faucet
A faucet having a thermostatically controlled valve for maintaining the desired water temperature regardless of pressure or flow.

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plumbing fixture
Any of various receptacles for receiving water from a water system and discharging the liquid waste into a drainage system.

sanitary ware
Plumbing fixtures, as sinks and toilet bowls, made of vitreous china, porcelain enameled, or enameled metal.

wall-hung
Designed to be attached to or hung from a wall.

water closet
A fixture consisting of a ceramic bowl with a detachable, hinged seat and lid and a device for flushing with water, used for defecation and urination. Also called toilet.

flushometer valve
A valve that supplies a fixed quantity of water to fixtures for flushing purposes when actuated by direct water pressure.

backsplash
A vertical panel of waterproof material attached to the wall behind a countertop or stovetop to protect against splashed liquids.

air gap
The clear vertical distance between the spout of a faucet or other outlet of a supply pipe and the flood level of a receptacle.

flood level
The level at which water would overflow the rim of a plumbing fixture.

backwater valve
A valve for preventing flow of liquid, as sewage, from reversing its direction. Also called backflow valve.

flow rate
The rate of discharge from a plumbing fixture, equal to the total number of gallons discharged per minute divided by 7.5 and expressed in fixture units.

ball cock
A device for regulating the supply of water in a flush tank by means of a hollow floating ball which rises from or falls through it and opens or  closes a supply valve. Also called float valve.

overflow
An outlet, pipe, or receptacle for excess liquid.

backflow
A flow of a liquid opposite to the usual or desired direction.

back-siphonage
A backflow of unused or contaminated water from a plumbing fixture into a pipe supplying potable water due to negative pressure in the pipe.

backwater valve
A valve for preventing flow of liquid, as sewage, from reversing its direction. Also called backflow valve.

sink
A basin, as in a kitchen or laundry, connected with a water supply and drainage system for washing.

disposal
An electrical device in the drain of a sink, for grinding food wastes to be washed down the drain. Also called disposer.

laundry trap
A deep sink for washing clothes.

service sink
A deep sink used in janitorial work. Also called shop sink.

waste
The water from a sink, tub, or trapway.

dumping
The act of discharging water, or liquids from a sink, tub, or trapway.

plumbing fixture
Any of various receptacles for receiving water from a water system and discharging the liquid waste into a drainage system.

reverse-trap
A toilet bowl similar to the siphon-jet, but having a smaller water surface and trapway.

siphon-vortex
A toilet bowl similar to the siphon-jet, but having the flushing water directed through the rim to create a vortex that occurs in the bowl.

wash-down
A toilet bowl having a simple washout action and emptying through a small, irregular passage, prohibited by some health codes.

bidet
A basin-like fixture designed to be straddled for bathing the genitals and posterior parts of the body.

urinal
A flushable fixture used by men for urinating.

toilet partition
A panel forming an enclosure around a water closet for privacy in a public lavatory.

bathtub
An oblong tub to bathe in, esp. one that is a permanent fixture in a bathroom.

shower
A bath in which water is sprayed on the body from an overhead nozzle or showerhead.

grab bar
A bar attached to a wall near a bathtub or shower to provide a hand grip for a person who is bathing.

receptor
The shallow base pan of a stall shower.

lavatory
A bowl or basin with running water for washing the face and hands.

drum trap
A cylindrical trap closed on the bottom and having a cover plate for access, usually installed on the drain line from a bathtub.
PLUMBING

plumbing wall
A wall or partition containing vertical space for a plumbing stack. Also called stack partition.

closet bend
A 90° elbow fitting installed directly beneath a water closet.

developed length
The length of a pipeline measured along the centerline of the pipe and pipe fittings.

molded insulation
Thermal insulation molded to fit around pipes and pipe fittings.

pipe
A hollow cylinder of metal or plastic used for the conveyance of water, steam, gas, or other fluid material.

pipe fitting
A standard part, as an elbow, union, or tee, for connecting two or more pipes.

ebrow
A pipe fitting having an angled, usually 90° bend. Also called ell, el.

drop elbow
An elbow having lugs for attachment to a wall or joist. Also called drop ell.

sweep fitting
A pipe fitting having a large radius of curvature.

return bend
A 180° bend in a pipe.

tee
A T-shaped pipe fitting for making a three-way joint.

drop tee
A tee having lugs for attachment to a wall or joist.

sanitary tee
A tee having a slight curve in the 90° transition to channel the flow from a branch pipe to the direction of the main.

y-tee
A Y-shaped pipe fitting for joining a branch pipe with a main, usually at a 45° angle.

cross
A pipe fitting for making a four-way connection.

sanitary cross
A cross having a slight curve in each of the 90° transitions to channel the flow from branch pipes in the direction of the main.

crossover
A T-shaped pipe for bypassing another pipe.

nipple
A short length of pipe with threads on each end, used for joining couplings or other pipe fittings.

coupling
A short length of pipe having each end threaded on the inside, used for joining two pipes of the same diameter.

increaser
A coupling increasing in diameter at one end.

reducer
A coupling decreasing in diameter at one end.

union
A coupling device for connecting two pipes neither of which can be turned, consisting of two internally threaded end pieces which are tightened around the pipe ends to be joined, and an externally threaded center piece which draws the two end pieces together as it is rotated.

plug
An externally threaded fitting for closing the end of a pipe.

cap
An internally threaded fitting for enclosing the end of a pipe.

roughing-in
The act or process of installing all parts of a plumbing system that will later be concealed, usually to the fixture connections.

valve
Any device for controlling or stopping the flow of a liquid or gas by a movable part that opens, partially obstructs, or shuts a passage, pipe, inlet, or outlet.

bonnet
The part of a valve casing through which the stem passes and that forms a guide and seal for the stem.

seat
The part or surface of a valve on which the stem is closed to stop flow completely.

globe valve
A valve with a globular body, closed by a disk seating on an opening in an internal wall.

gate valve
A shut-off valve closed by lowering a wedge-shaped gate across the passage.

gate valve
A globe valve having an outlet at a right angle to the interior.

alignment valve
A washerless valve opened by aligning holes in a disk, cylinder, or ball.

misting valve
A valve for controlling the relative amount of hot and cold water admitted from separate hot-water and cold-water lines.

check valve
A valve permitting a liquid or gas to flow in one direction only.

bell-and-spigot
A pipe joint made by fitting the end (spigot) of one pipe into the enlarged end (bell) of another pipe and sealing with a coupling compound or a compressible ring.
gasket
A rubber or metal ring inserted between two mating surfaces to make the joint watertight.

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plumbing

drainage system
A system of pipes, traps, and other apparatus for conveying sewage, waste water, or rainwater to a public sewer or a private treatment facility.

drain
Any pipe or channel by which a liquid is drawn off.

fixture drain
A drain extending from the trap of a plumbing fixture to a junction with a waste or soil stack.

branch drain
A drain connecting one or more fixtures to a soil or waste stack.

stack
A vertical waste pipe or vent pipe serving a number of floors.

soil stack
A vertical soil pipe.

soil pipe
Any pipe carrying the discharge from water closets or urinals to the building drain or building sewer.

waste stack
A vertical waste pipe.

waste pipe
Any pipe carrying the discharge from plumbing fixtures other than water closets or urinals.

indirect waste pipe
A waste pipe that is not connected directly with a drainage system, but discharges into it through a properly trapped plumbing fixture.

branch interval
A length of soil or waste stack corresponding to a story height but never less than 6 ft (1.8 m), within which the horizontal branch drains from one floor are connected.

fall
The downward slope of a pipe, conduit, or channel, expressed either as a percentage or in inches per foot.

wet vent
An oversize pipe functioning both as a soil or waste pipe and a vent.

cleanout
A pipe fitting with a removable plug giving access to a soil or waste pipe for inspection or cleaning.

sump pump
A pump for removing the accumulations of liquid from a sump.

sump
A pit or reservoir serving as a drain or receptacle for water or other liquids.

inlet
The lowest point on the interior of a drain line or sewer where the liquid is deepest.

devour system
A system of pipes supplying a flow of air to or from a drainage system or providing a circulation of air within the system to protect trap seals from siphonage and back pressure.

stack vent
The extension of a soil or waste stack above the highest horizontal drain connected to the stack. Also called soil vent, waste vent.

battery
A group of two or more similar plumbing fixtures discharging into a common waste or soil branch.

vent
A pipe connecting a drain near one or more traps to a vent stack or stack vent.

relief vent
A vent that provides circulation of air between a drainage and a venting system by connecting a vent stack to a horizontal drain between the first fixture and the soil or waste stack.

loop vent
A circuit vent that loops back and connects with a stack vent instead of a vent stack.

common vent
A single vent serving two fixture drains connected at the same level. Also called dual vent.

vent stack
A vertical vent installed primarily to provide circulation of air to or from any part of a drainage system.

branch vent
A vent connecting one or more individual vents with a soil or waste stack vent.

individual vent
A vent connecting a fixture drain to a main or branch vent. Also called revent.

circuit vent
A vent serving two or more traps and extending from in front of the last fixture connection of a horizontal branch to the vent stack.

back vent
A vent installed on the sewer side of a trap.

continuous vent
A vertical vent formed by a continuation of the drain line to which it connects.

fresh-air inlet
A vent pipe admitting fresh air into the drainage system of a building, connected to the building drain at or before the building trap.

building sewer
A drain connecting a building drain to a public sewer or a private treatment facility. Also called house sewer.

sewer
A pipe or other artificial conduit, usually underground, for carrying off sewage and other liquid waste to a treatment plant or other point of disposal.

sanitary sewer
A sewer conveying only the sewage from plumbing fixtures and excluding storm water.

sewage
The liquid waste containing animal or vegetable matter in suspension or solution that passes through a sewer.
scum — A layer of sewage matter that rises to the surface of the sewage in a septic tank.

scum clear space — The distance between the top of the layer of scum and the bottom of the outlet in a septic tank.

sludge clear space — The distance between the top of the sludge and the bottom of the outlet in a septic tank.

sludge — Sediment that settles out of sewage, forming a semi-solid mass on the bottom of a septic tank.

cesspool — A covered pit for receiving the sewage from a house, having a perforated lining to allow the liquid portion of the sewage to leach into the ground while the sludge is retained in the pit to undergo decomposition. Cesspools are no longer acceptable as a means of sewage disposal.

seepage pit — A pit that is lined with a perforated asbestos or concrete wall to allow effluent collected from a septic tank to seep or leach into the surrounding soil, sometimes used as a substitute for a drainfield.

sand filter — A filter for cleansing water or purifying effluent, consisting of layers of coarse stone, coarse gravel, and sand becoming finer toward the top.

subsurface sand filter — A sewage filtering system consisting of a number of distribution pipes surrounded by graded gravel, an intermediate layer of clean, coarse sand, and a system of underdrains to carry off the filtered effluent.

percolation trench — A sequence of absorption trenches, absorption beds, or seepage pits so arranged that the total effective absorption area of one is utilized before effluent flows into the next.

percolation test — A test for determining the rate at which a soil will absorb effluent made by measuring the rate at which the water level drops after a hole is dug in the soil and filled with water.

culvert — A box-like device paved over and under which water flows to carry it to another location.

septic tank — A covered watertight tank for receiving the discharge from a building sewer, separating out the solid organic matter which is decomposed and purified by anaerobic bacteria, and allowing the clarified liquid to discharge for final disposal.

dosing chamber — A chamber of a large septic tank employing a siphonic action to automatically discharge a large volume of effluent when a predetermined quantity has accumulated.

distributor — Liquid sewage that has been treated in a septic tank or a sewage treatment plant.

grease tray — A tank installed between a kitchen sink and a house sewer for retaining and removing grease from waste water. Also called grease interceptor.

distribution box — A box through which the flow of effluent from a septic tank is distributed to the drainage tiles of a drainfield. Also called diversion box.

drainfield — An open area containing an arrangement of absorption trenches through which septic-tank effluent from a septic tank may seep or leach into the surrounding soil. Also called absorption field, disposal field.

absorption trench — A narrow trench 12 to 36 in. (305 to 914 mm) wide containing coarse aggregate and a distribution pipe through which the effluent from a septic tank is allowed to seep into the soil.

absorption bed — A trench wider than 36 in. (914 mm), containing coarse aggregate and more distribution pipes through which the effluent from a septic tank may seep into the surrounding soil. Also called seepage bed.

distribution pipe — Drain tiles burl with open joints or perforated pipe having sufficient openings for the distribution of the effluent from a septic tank. Also called distribution line.

drain tile — A hollow tile laid end to end with open joints to discharge effluent in a drainfield, or to drain water-saturated soil. Also, drainage tile.
REINFORCED CONCRETE

Concrete in which steel reinforcement is embedded in such a manner that the two materials act together in resisting forces. Also called steel-armed concrete.

reinforcement
A system of steel bars, strands, or wires for absorbing tensile, shear, and sometimes compressive stresses in a concrete member or structure.

reinforcing bar
A steel bar for reinforcing concrete, usually specified by a number equivalent to its diameter in eighths of an inch. Also called deformed bar.

defomed bar
A reinforcing bar that is rolled with surface deformations to develop a greater bond with concrete.

tension reinforcement
Reinforcement designed to absorb tensile stresses.

compressive reinforcement
Reinforcement designed to absorb compressive stresses.

plain concrete
Concrete having no reinforcement, or reinforced only by bending shrinkage or thermal stresses.

ferrocement
Concrete having a cement-sand mortar over a wire mesh that has been preshaped over a mold.

fiber-reinforced concrete
Concrete reinforced with dispersed, randomly oriented fibers of glass or plastic.

gfr
Abbreviation for glass-fiber-reinforced concrete.

welded-wire fabric
A grid of longitudinal and transverse steel wires or bars welded together at all points of intersection, usually specified by the size of the grid in inches and the wire gauge. Also called welded-wire mesh.

woven-wire fabric
A mesh of cold-drawn steel wires mechanically twisted together to form hexagonally shaped openings.

cracked section
A concrete section designed or analyzed on the assumption that concrete has no resistance to tensile stresses.

cracking load
A load that causes the tensile stress in a concrete member to exceed the tensile strength of the concrete.

balanced section
A concrete section in which the tension reinforcement theoretically reaches its specified yield strength as the concrete in compression reaches its assumed ultimate strain.

overreinforced section
A concrete section in which the concrete in compression reaches its assumed ultimate strain before the tension reinforcement reaches its specified yield strength. This is a dangerous condition since failure of the section could occur instantaneously without warning.

underreinforced section
A concrete section in which the tension reinforcement reaches its specified yield strength before the concrete in compression reaches its assumed ultimate strain. This is a desirable condition since failure of the section would be preceded by large deformations, giving prior warning of impending collapse.

effective depth
The depth of a concrete section measured from the compression face to the centroid of the tensile reinforcement.

effective area of reinforcement
The area of the cross-sectional area of reinforcement and the cosine of the angle between its direction and the direction for which its effectiveness is considered.

percentage reinforcement
The ratio of effective area of reinforcement to effective area of concrete at any section of a reinforced concrete member, expressed as a percentage.

embobdement length
The length of embedded reinforcement provided beyond a critical section for anchorage.

hook
A bend or curve given to the end of a tension bar to develop an equivalent embedment length, used where there is insufficient room to develop an adequate embedment length.

standard hook
A 90° LSJP, or 160° bend made at the end of a reinforcing bar according to industry standards with a radius based on the bar diameter.

anchorage
Any of various means, as embedment length or hooked bars, for developing tension or compression in a reinforcing bar on each side of a critical section in order to prevent bond failure or splitting.

critical section
The section of a flexural concrete member at a point of maximum stress, a point of inflection, or a point within the span where tension bars are no longer needed to resist stress.
**REINFORCED CONCRETE**

**reinforced concrete beam**
A concrete beam designed to act together with longitudinal and web reinforcement in resisting applied forces.

**longitudinal reinforcement**
Reinforcement essentially parallel to the horizontal surface of a slab or to the long axis of a concrete beam or column.

**deep beam**
A reinforced concrete beam having a depth-to-span ratio in excess of 0.35 for continuous spans, or 0.40 for simple spans, subject to nonlinear distribution of stress and lateral buckling.

**T-beam**
A monolithic reinforced concrete construction in which a portion of the slab on each side of a beam acts as a flange in resisting compressive stresses, and the portion of the beam projecting below the slab serves as a web or stem in resisting bending and shear stresses.

**reinforced concrete column**
A concrete column designed to act together with vertical and lateral reinforcement in resisting applied forces. Reinforced concrete columns consisting of the principal supports for a floor or roof should have a minimum diameter of $10 \text{ in. (254 mm)}$, or if rectangular in section, a thickness of $8 \text{ in. (203 mm)}$, and a minimum gross area of $203 \text{ sq. in. (1603 sq. mm)}$.

**lateral reinforcement**
Spiral reinforcement or lateral ties placed in a concrete column to laterally restrain the vertical reinforcement and prevent buckling.

**spiral reinforcement**
Lateral reinforcement consisting of an evenly spaced continuous spiral held firmly in place by vertical spacers. Spiral reinforcement should have a diameter of at least $7/8 \text{ in. (22.2 mm)}$, with a maximum center-to-center spacing between spirals of $10/9$ of the core diameter, and a clear spacing between spirals not to exceed $3 \text{ in. (76 mm)}$, nor be less than $7/10 \text{ in. (17 mm)}$, or $7/10$ times the size of the coarse aggregate.

**compound column**
A structural steel column encased in concrete at least $25/8 \text{ in. (64 mm)}$ thick, reinforced with wire mesh.

**composite column**
A structural steel column thoroughly encased in concrete reinforced with both vertical and spiral reinforcement.
REINFORCED CONCRETE

Reinforced concrete slab
A rigid planar structure of concrete designed to act together with principal and secondary reinforcement in resisting applied forces.

Principal reinforcement
Reinforcement designed to absorb the stresses from applied loads and moments.

Shrinkage reinforcement
Reinforcement placed perpendicular to the principal reinforcement in a one-way slab to absorb the stresses resulting from shrinkage or changes in temperature. Also called temperature reinforcement.

One-way slab
A concrete slab of uniform thickness reinforced in one direction and cast integral with parallel supporting beams. One-way slabs are suitable only for relatively short spans.

Beam-and-girder slab
A one-way slab supported by secondary beams which in turn are supported by primary beams or girders.

Ribbed slab
A reinforced concrete slab cast integral with a series of closely spaced joists which in turn are supported by a parallel set of beams. Ribbed slabs are economical for medium spans with light to medium live loads. Also called joist slab.

Two-way slab
A reinforced concrete slab cast reinforced in two directions and cast integral with supporting edge beams or bearing walls on four sides. Two-way slabs are economical for medium spans with intermediate to heavy live loads.

Continuous slab
A reinforced concrete slab extending as a structural unit over three or more supports in a given direction. A continuous slab is subject to lower bending moments than a series of discrete, simply supported slabs.

distribution rib
A rib formed perpendicular to the joists of a ribbed slab to distribute possible load concentrations over a larger area. Required for spans between 20 and 30 ft. (6 and 9 m), and two for spans over 30 ft.

Joist band
A broad, shallow supporting beam for a ribbed slab that is economical to form since its depth is the same as that of the joists.

Panel
A portion of a reinforced concrete slab bounded on all sides by the centerlines of columns, beams, or walls.

Panel strip
A strip running in each direction of a two-way slab, within which moments per foot are assumed to be constant.

Middle strip
A panel strip, one-half panel in width and symmetrical about the panel centerline.

Column strip
A panel strip occupying the adjacent quarter panels on both sides of a column centerline.

Topping
A thin layer of high-quality concrete placed over a concrete base to form a floor surface.

Bonding layer
A thin layer of mortar spread on a moistened and prepared existing concrete surface prior to laying a new concrete slab.
**punching shear**
The potentially high-shearing stress developed by the reactive force of a column on a reinforced concrete slab.

**shear head**
The overstressed region of a reinforced concrete slab at a column support.

**drop panel**
The portion of a flat slab thickened around a column or column capital to increase its resistance to shear.

**column capital**
The head of a column support for a flat slab enlarged to increase the plate area in shear.

**exterior panel**
A panel of a flat slab having at least one edge which does not adjoin another panel.

**interior panel**
Any panel of a flat slab that adjoins other panels along all four edges.

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**flat plate**
A concrete slab of uniform thickness reinforced in two or more directions and supported directly by columns without beams or girders. Flat plates are suitable for short to medium spans with relatively light live loads. Since there are no column capitals or drop panels, shear governs the thickness of a flat plate.

**flat slab**
A flat plate thickened at its column supports with column capitals and drop panels to increase its shear strength and moment-resisting capacity. Flat slabs are suitable for heavily loaded spans.

**mushroom construction**
Flat slab construction utilizing column capitals and drop panels.

**waffle slab**
A two-way concrete slab reinforced by ribs in two directions. Waffle slabs are able to carry heavier loads and span longer distances than flat slabs. Supporting beams and drop panels can be formed by omitting dome forms in selected areas.

**dome**
A square metal or fiberglass pan used in forming the ribs of a waffle slab, available in standard 8- and 30-in. (203- and 762-mm) widths and a variety of depths.
precast concrete
A concrete member or product that is cast and cured in a place other than where it is to be installed in a structure.

solid flat slab
A precast, prestressed concrete slab used for short spans and uniformly distributed floor and roof loads.

hollow-core slab
A precast, prestressed concrete slab internally cured to reduce dead weight. Hollow-core slabs are suitable for medium to long spans and uniformly distributed floor and roof loads.

prestressed concrete
Concrete reinforced by pretensioning or posttensioning high-strength steel tendons within their elastic limits to actively resist a service load. The tensile stresses in the tendons are transferred to the concrete, placing the entire cross section of a flexural member in compression. The resulting compressive stresses counteract the tensile-bending stresses from the applied load, enabling the prestressed member to deflect less, carry a greater load, or span a greater distance than a conventionally reinforced member of the same size, proportion, and weight.

prestress
To introduce internal stresses to a concrete member in order to counteract the stresses that will result from an applied load.

pretensioning
To prestress a concrete member by tensioning the reinforcing tendons before the concrete is cast. The tendons are first stretched between two abutments until a predetermined tensile force is developed. Concrete is then cast in formwork around the tendons and fully cured. Finally, the tendons are cut, and the tensile stress in the tendons is transferred to the concrete through bond stresses.

tendon
A high-strength steel strand or bar for prestressing concrete.

strand
A cable composed of high-strength steel wires twisted about a core.

casting bed
A long horizontal slab on which a number of prestressed concrete members may be prestressed, formed, and cast simultaneously.

abutment
A structure for anchoring the reinforcing tendons in the prestressing of a concrete member.

anchor
A mechanical device for locking a stressed tendon in position and delivering the prestressing force to the concrete, either permanently or temporarily during hardening of a prestressed concrete member. Also called anchorage.

jacking force
The tensile force exerted temporarily by a jack in the prestressing of a concrete member.

jack
A hydraulic device for stretching and stressing tendons in the prestressing of a concrete member.

initial prestress
The tensile force in the reinforcing tendons transferred to a concrete member at the time of stressing.

loss of prestress
A reduction in initial prestress resulting from the combined effects of creep, shrinkage, or elastic shortening of the concrete, relaxation of the reinforcing steel, friction losses resulting from the curvature of draped tendons, and slipage at the anchorages.

final prestress
The internal stress that exists in a prestressed concrete member after all losses in prestress have occurred.

effective prestress
The final prestress in a prestressed concrete member, including the effect of the weight of the member but excluding the effect of any superimposed load.

partial prestressing
The prestressing of a concrete member to a level of stress such that nominal tensile stresses exist at design or service loads.
To prestress a concrete member by tensioning the reinforcing tendons after the concrete has set. Unstressed tendons are placed in sheaths before concrete is cast in formwork around the tubes. After the concrete has cured, the tendons are clamped on one end and jacked against the concrete on the other end until the required force is developed. The tendons are then anchored on the jacking end and the jack removed.

**Bonded Posttensioning**
- Posttensioning in which the reinforcing tendons are bonded to the surrounding concrete by injecting grout into the annular spaces around the strands.

**Unbonded Posttensioning**
- Posttensioning in which the annular spaces around the reinforcing tendons are not grouted, allowing the tendons to move relative to the surrounding concrete.

**Sheath**
- A tube for encasing tendons in a posttensioned member to prevent their bonding to the concrete during placement.

**Pre-Posttension**
- To prestress a concrete member by pretensioning some of the tendons and posttensioning others.

**Concentric Tendon**
- A tendon having a straight trajectory coincident with the centroidal axis of a prestressed concrete member. When tensioned, the tendon produces a uniformly distributed compressive stress across the section that counteracts the tensile stress from bending.

**Eccentric Tendon**
- A tendon having a straight trajectory not coincident with the centroidal axis of a prestressed concrete member. When tensioned, the tendon produces an eccentric prestressing force that reduces the compressive stress across the section to that produced by bending alone.

**Draped Tendon**
- A posttensioning tendon having a parabolic trajectory that mirrors the moment diagram of a uniformly distributed gravity load. When tensioned, the tendon produces a variable eccentricity that responds to the variation in applied bending moment along the length of the member.

**Depressed Tendon**
- A pretensioning tendon that approximates the curve of a draped tendon with straightline segments, used in the pretensioning process since the pretensioning force does not allow for draping the tendon.

**Harped Tendon**
- One of a series of depressed tendons having varying slopes.
ROOF

The external upper covering of a building, including the frame for supporting the roofing.

flat roof
A roof having no slope, or one with only a slight pitch so as to drain rainwater.

pitched roof
A roof having one or more slopes.

gable roof
A roof sloping downward in two parts from a central ridge, so as to form a gable at each end.

gable
The triangular portion of wall enclosing the end of a pitched roof from cornice or eaves to ridge.

hip roof
A roof having sloping ends and sides meeting at an inclined projecting angle. Also, hipped roof.

curb roof
A roof divided on each side of the ridge into two or more slopes, as a gambrel or mansard.

mansard
A roof having on each side a steeper lower part and a shallower upper part. Also called mansard roof.

gable
The triangular portion of wall enclosing the end of a pitched roof from cornice or eaves to ridge.

pitch
The slope of a roof, commonly expressed in inches of vertical rise per foot of horizontal run.

rise
The measured height of a sloping roof from the eaves to the ridge.

run
The horizontal distance from the eaves to the ridge of a sloping roof.

gambrel roof
A ridged roof divided on each side into a shallower slope above a steeper one.

curb
The aris between an upper and a lower slope on a gambrel or mansard roof.

rainbow roof
A gable roof in the form of a broad Gothic arch, with gently sloping convex surfaces.

barrel roof
A roof or ceiling having a semicylindrical form.

sawtooth roof
A roof composed of a series of small parallel roofs of triangular cross section, usually asymmetrical with the shorter slope glazed.
monitor
A raised construction straddling the ridge of a roof, having windows or louvres for lighting or ventilating a building.

ridge
A horizontal line of intersection at the top between two sloping planes of a roof.

valley
An intersection of two inclined roof surfaces toward which rainwater flows.

hip
The inclined projecting angle formed by the junction of two adjacent sloping sides of a roof.

dormer
A projecting structure built out from a sloping roof, usually housing a vertical window or ventilating lower.

trench
Either of two similar sides of a projection, as a dormer or buttress.

shed dormer
A dormer having a shed roof.

gable dormer
A dormer having a gable roof.

link dormer
A large dormer that houses a chimney or joins one part of a roof to another.

eyebrow
A low dormer having a roof that is an upwardly curving continuation of the main roof plane.

box gutter
A gutter built into the slope of a roof, above the cornice.

olar board
A board laid next to the gutter on a sloping roof to receive the turned-up edge of the metal lining. Also called layer board.

arris gutter
A gutter having a V-shaped section, fixed to the eaves of a building.

hanging gutter
A gutter fastened to the ends of rafters or to a fascia at the eaves of a roof.

gutter hanger
A metal strap or bracket for supporting and securing a gutter.

spike-and-ferrule
A long nail and formed-metal sleeve for fastening a gutter to the eaves of a roof.

gutter hanger
A metal strap or bracket for supporting and securing a gutter.

saddle
A ridge connecting two higher elevations of a roof.

cricket
A small roof for diverting rainwater around a projection, as a chimney, on a sloping roof.

box gutter
A gutter built into the slope of a roof, above the cornice.

scupper
An opening in the side of a building, as in a parapet, for draining off rainwater.

gutter
A channel of metal or wood at the eaves or on the roof of a building, for carrying off rainwater. Also called eaves trough.

leader head
The butte head of a downspout connected to a scupper or gutter.

downspout
A vertical pipe for conveying rainwater down from a roof or gutter to the ground. Also called drainspout, leader.

shoe
The base of a downspout, curved outward to direct the flow away from the wall.

splash block
A precast concrete block having a depressed, splashed surface, placed at the base of a downspout to disperse rainwater that would otherwise erode the soil.
**ROOF**

**double roof**
A roof in which longitudinal members, as a ridge beam and purlins, are used as intermediate supports for common rafters. Also called double-framed roof.

**king post**
A vertical member from the apex to the bottom chord of a pitched truss.

**joggle post**
A king post having notches or raised areas for receiving and supporting the feet of inclined struts. Also called joggle piece.

**joggle**
An extended area of a post for supporting the foot of a strut or brace.

**straining piece**
A horizontal tie beam uniting the tops of two queen posts. Also called straining beam.

**queen post**
Either of the two vertical web members set at equal distances from the apex of a pitched truss.

**tie beam**
A horizontal timber for connecting two structural members to keep them from spreading apart, as a beam connecting the feet of two principal rafters in a roof truss.

**straining sill**
A compression member lying along and slotted to the tie beam of a queen truss and separating the feet of the queen posts.

**hammer post**
A vertical timber set on the inner end of a hammer beam and braced to a collar beam above to support a purlin.

**hammer beam**
One pair of short horizontal members attached to the foot of a principal rafter at the level of the wall plate, used in place of a tie beam.

**hammer brace**
A bracket for supporting a hammer beam.

**bracket**
A support projecting horizontally from a wall to bear the weight of a cantilever or to strengthen an angle.

**pendant post**
A vertical timber supported at its lower end by a cord and carrying at its upper end a hammer beam or tie beam.

**purlin**
A longitudinal member of a roof frame for supporting common rafters between the ridge and the eaves. Also, purline. Also called binding rafter.

**subpurlin**
A light structural member for carrying roofing materials, supported by and running at right angles to purlins.

**common rafter**
A rafter extending from a wallplate to a ridgeboard or ridge beam and having no function other than to support sheathing and covering of a roof.

**pole plate**
A beam perpendicular to the ends of tie beams in a trussed roof and supporting common rafters near their lower ends.

**principal rafter**
A diagonal member of a roof principal, usually forming part of a truss and supporting the purlins on which common rafters rest.

**principal**
A member in a frame structure upon which adjacent or similar members depend for support or reinforcement.

**arch brace**
A curved brace, usually used in pairs to support a roof frame and give the effect of an arch.

**cruck**
One of a pair of naturally curved timbers, forming one of several arched frames supporting the roof of an old English cottage or farm building.
ridge beam
A beam for supporting the upper ends of rafters at the ridge of a roof.

plumb
Vertical or perpendicular in direction.

stepping off
A method of determining the length of a rafter with a framing square, by marking an increment of angular length for each foot of horizontal run.

lookout
A relatively short bracket or cantilever for supporting the overhang of a roof. Also called tailpiece.

fly rafter
Either of the end rafters in the part of a gable roof that projects beyond the gable wall.

va!ey jack
A jack rafter extending from a valley rafter to a ridge.

valley rafter
A rafter connecting the ridge to the wall plate along a valley.

cripple jack
A rafter joining a hip to a valley. Also called double jack rafter.

hip jack
A jack rafter extending from a wall plate to a hip rafter.

hip rafter
A rafter forming the junction of the sloping sides of a hip roof.

dragon beam
A short beam receiving and holding the foot of a hip rafter to counteract its thrust. Also called dragon piece.

dragon tie
An angle brace for supporting one end of a dragon beam.

bird's mouth
A right-angled notch cut on the underside of a rafter to fit over a longitudinal member, as a wall plate.

foot cut, plate cut
A horizontal cut at the lower end of a rafter that allows it to rest on and be connected to a wall plate. Also called foot cut, plate cut.

collar
Having a length or height less than that of most of the others in a framed structure, as a jack rafter or jack truss.

Jack rafter
Any rafter that is shorter than the full length of the roof slope, as one meeting a hip or a valley.

rafters at a point
A horizontal cut at the lower end of a rafter that allows it to rest on and be connected to a wall plate. Also called foot cut, plate cut.

knee wall
A short wall supporting rafters at some intermediate position along their length.

cutout
A relatively short bracket or cantilever for supporting the overhang of a roof. Also called tailpiece.

hinge couple
A pair of rafters supporting the part of a gable roof that projects beyond the gable wall.

hingeboard
A board, often carved, attached to the projecting end of a gable roof. Also called vergeboard.

outrigger
A beam extending outward from a main structure to support the projection of a floor or roof.

backing
A level given to the outer and upper edge of a hip rafter in order to allow sheathing to fit the top of the rafter without leaving a triangular space between it and the lower side of the roof covering.

check cut
An oblique angular cut at the end of a jack rafter enabling it to fit tightly against a hip rafter or valley rafter. Also called side cut.
roofing
Any of various water-resistant materials, as shingles, slates, or tiles, laid on a roof to shed or drain rainwater.

shingle
A thin, usually oblong piece of wood, asphaltic material, slate, metal, or concrete, laid in overlapping rows to cover the roof and walls of buildings.

imbrication
The overlapping of shingles or roofing tiles with breast joints to form a weather-tight covering.

break joints
The arranging of building units, as masonry, shingles, or siding, to ensure that vertical joints are not continuous in adjacent courses. Also called staggered joints.

common lap
A method of laying shingles by offsetting alternate courses one half the width of the shingle.

toplap
The distance by which a shingle, slate, or roofing tile overlaps another in the course immediately below it.

exposure
The portion of the length of a shingle, slate, or roofing tile left exposed to the weather when laid in place. Also called gauge, margin.

headlap
The distance by which a shingle, slate, or roofing tile overlaps another in the second course below it.

ridgeslap
A course or layer of roofing material covering the ridge of a roof.

ridge course
The top course of shingles, slates, or roofing tiles next to a ridge, cut to the required length.

ribbon course
One of the alternate courses of shingles or slate laid with shorter or longer exposure.

staggered course
A course of shingles laid with the butts slightly over or below the one adjacent.

doubled course
A double layer of shingles or tiles laid at the foot of a roof slope or a vertical section of shingling.

starting course
The first course of shingles, slates, or tiles along the eaves of a roof before the first regular course is laid.

drip edge
A metal molding placed along the eaves and rakes of a sloping roof to allow rainwater to drip free.

sheathing
Boards or structural panels, as plywood, fastened to the frame of a wall or roof as a base for cladding or roofing.

panel clip
An H-shaped metal device for joining sheets of plywood roof sheathing at unsupported joints.

underlayment
A weather-resistant material, as roofing felt, for covering and protecting a roof deck before shingles are applied.

eaves flashing
An additional layer of underlayment cemented to a roof deck to prevent melting ice and snow from backing up under the roofing along the eaves.

ice dam
A buildup of snow and ice along the eave of a sloping roof.

Dutch lap
A method of laying shingles or slates by lapping each shingle over one to the side and one below.

sidelap
The distance by which a shingle, slate, or roofing tile overlaps an adjacent one along its side edge. Also called endlap.

coverage
The amount of weather protection provided by the overlapping of shingles or slates.

square
A unit for measuring roofing materials, equal to 100 sq. ft. (9.3 sq. m) of coverage.

asphalt shingle
A composition shingle having an asphalt-impregnated felt base, surfaced with the weather side with colored mineral granules embedded in a hot asphaltic coating.

fiberglass shingle
A composition shingle having an inorganic fiberglass base, saturated with asphalt and surfaced on the weather side with colored ceramic granules.

closed valley
A valley formed by overlapping successive courses of shingles in alternate directions. Also called laced valley, woven valley.

open valley
A valley at which shingles or slates are not laid to the intersection, exposing a lining of sheet metal or roll roofing.

valley flashing
A wide strip of sheet metal or roofing felt for lining the valley of a roof.
blue label
A premium grade of red cedar shingle of
clear, edge-grained heartwood.

red label
An intermediate grade of red cedar
shingle having a limited amount of flat
grain and sapwood.

black label
A utility grade of red cedar shingle.

undercourse
A row of wood shingles laid along the rake of
a sloping roof with the butt projecting
downward to give an inward slope to the
surface shingles. Also called undercloak.

spaced sheathing
Roofing boards laid some distance apart to
provide ventilation for wood shingles and
slates. Also called open boarding, skip
sheathing.

Boston hip
The weathing of shingles at the hip or ridge of
a roof. Also called Boston ridge.

weathing
A method of laying shingles on adjoining
surfaces of a roof or wall so that shingles
on each face lap each other alternately.

cornice return
The continuation of a cornice around
the gable end of a house.

diagonal slating
A method of laying roofing slates with
the diagonal of each tile running
horizontally. Also called drop-point
slating.

honeycomb slating
Diagonal slating in which the tails are
cut from the roofing slates.

open slating
A method of laying roofing slates with
spaces between adjacent tiles in a
course. Also called spaced slating.

diminish course
One of a number of courses of roofing
slates that diminish in exposure, and
sometimes width, from the eaves to
the ridge.

dimension shingles
Wood shingles cut to a uniform size.

random shingles
Wood shingles of uniform length, but of
random width.

shake
A thick shingle formed by splitting a
short log into a number of tapered radial
sections.

tapered shake
A handsplit shake tapered by reversing
the block in a manner similar to spalted
wood.

handsplit-and-resawn shake
A tapered shake having a split face and
a sawn back.

straitline shake
A handsplit shake of uniform thickness.

batt
A strip of wood fixed to each rafter at the
eaves in order to extend a sloping roof
with a flatter pitch. Also called cocking piece.

procket
A strip of wood fixed to each rafter at the
eaves in order to extend a sloping roof
with a flatter pitch. Also called cocking piece.

rafter tail
The lower, sometimes exposed, end of
a rafter that overhangs a wall.

tail cut
A sometimes ornamental cut at the
lower end of a rafter tail.

corner board
A wide board set vertically to cover the
lower ends of rafters or the joint between
the top of a wall and the projecting eaves.

box cornice
A slightly projecting, hollow cornice of
boards and moldings, nailed to rafters
and lockouts. Also called closed cornice.

sized slates
Roofing slates of uniform width.

random slates
Roofing slates of varying width, often
laid in diminishing courses. Also called
rustic slates.

head
The upper end of a roofing slate.

tail
The lower, exposed portion of a
roofing slate.

slating nail
A copper nail having a large, flat head
and a medium-diameter-shaped point, wood
especially for fixing slates.
**ROOF**

- **r - field tile**: A row of tiles placed on and projecting over the raking edges of a gable.
- **r - rake tile**: A roofing tile formed to cover the rate of a sloping roof.
- **r - arris tile**: A V-shaped roofing tile for covering the ridge, hip, or rake of a roof. Also called arris fillet.
- **r - eaves course**: A first course of shingles, slates, or tiles on a roof.
- **r - ridge tile**: A convex, sometimes decorated roofing tile for covering the ridge of a roof. Also called crown tile.
- **r - starter tile**: A roofing tile, usually shorter or flatter than the field tiles, placed under the eaves course to give it a proper slope.
- **r - ridge roll**: A rounded cap for covering the ridge of a roof.
- **r - oil-canning**: The slight waviness of a sheet metal surface.
- **r - corrugated roofing**: A roof covering of corrugated sheets of galvanized iron, coated steel, aluminum, fiberglass, or reinforced plastic.
- **r - copper roofing**: A roof covering of copper sheets, joined by standing seams.
- **r - tin roofing**: A roof covering of flexible tinplate or terneplate.
- **r - Monel metal**: Trademark for a brand of an alloy consisting mainly of nickel and copper.
- **r - hold-down clip**: A metal clip for securing lengths of sheet metal.
- **r - overtuck**: The part of a sheet of metal roofing that laps over a sheet beneath it as a drip or seam.
- **r - undertuck**: The lower sheet of metal roofing at a drip or seam.
- **r - cleat**: A strip of metal or wood attached to a surface to restrain or support an element or member.
- **r - lock seam**: A joint between two pieces of sheet metal, made by folding up the adjoining edges against each other, folding them over, and flattening the interlock.
- **r - standing seam**: A joint between two pieces of sheet metal, made by folding up the adjoining edges against each other, then folding their upper portion over in the same direction a number of times.
- **r - batten seam**: A joint between two pieces of sheet metal, made by turning up the adjoining edges against a batten and locking them in place with a metal strip placed over the batten.
- **r - roll seam**: A joint between two pieces of sheet metal in the direction of fall of a curved or sloping roof, made by turning up the adjoining edges against each other, then bending them around to form a cylindrical roll.
- **r - lead**: An edge of sheet metal stiffened by bending and flattening a narrow strip or rolling the edge into a tube shape.
Hypalon  
Trademark for a brand of chlorinated polyethylene.

EPDM  
Ethylene propylene diene monomer, a synthetic rubber manufactured in sheets and used as a roofing membrane.

single-ply roofing  
A sheet of elastomeric material, as neoprene, EPDM, or PVC, having seams fused by heat or a solvent, fluid to a roof deck with adhesive, mechanical fasteners, or by the weight of a gravel ballast. Also called elastomeric roofing.

e lastomeric  
Having the elastic qualities of natural rubber.

gravel stop  
A metal strip with a vertical flange for retaining surfacing aggregate and preventing leaks around the edge of a built-up roof.

protected membrane roof  
A single-ply roofing membrane protected from sunlight and extremes of temperature by a layer of rigid board insulation and an additional layer of gravel ballast.

sealage  
The edge of a sheet of roof covering that is free of granules and most of the asphalt coating so as to provide a better bond with the top of the next sheet.

roll roofing  
A roofing material consisting of felt saturated with asphalt and surfaced on the weather side with a barrier asphalt mastic with mineral or glass fibers, and a covering of mineral granules.

bitumen  
Any of various mixtures of hydrocarbons occurring naturally or distilled from coal or petroleum, as asphalt or coal tar, used for surfacing roads, waterproofing, and roofing. Before application, the semisolid material must be dissolved in a solvent, emulsified, or heated to a liquid state.

asphalt  
A brownish-black mixture of bitumens obtained from the natural deposits or as a petroleum by-product, used for paving, waterproofing, and roofing.

coal tar  
A viscous, black liquid formed during the distillation of coal, used for paints, waterproofing, and roofing.

wear course  
A layer of gravel serving to protect a roofing membrane from mechanical abrasion and uplifting wind forces.

cap sheet  
A sheet of coated, mineral-surfaced felt, used as the top ply in a built-up roof.

base sheet  
A felt impregnated with asphalt or coal tar for use as the first ply in the laying of a built-up roof.

roofing felt  
A felt, fibrous material impregnated with a bituminous material for increased toughness and resistance to weather. Also called roofing paper.

fluid-applied roofing  
A continuous covering for roofs of complex geometry, consisting of an elastomeric material, as neoprene, Hypalon, or butyl rubber, applied in multiple coats with a roller or spray gun and curing to form a continuous membrane.

structural insulating roof deck  
A cementitious insulating board of lightweight aggregate or wood fibers bonded under pressure with portland cement, having a factory-finished underlayment for use on roofs with exposed beams.

rigid board insulation  

cold-process roofing  
A roof covering consisting of layers of roofing felt or synthetic fabric bonded and sealed with a cold application of an asphalt mastic or cement.

roofing bond  
A guarantee by a surety company that a roofing manufacturer will repair a roof membrane or covering under the conditions listed in the bonding contract.

built-up roofing  
A continuous covering for flat or low-pitched roofs, consisting of alternating layers or plies of roofing felt and heated bitumen, surfaced with a cap sheet or a layer of gravel or slag in a heavy coat embedded in bitumen.
ROOM
A portion of space within a building, separated by walls or partitions from other similar spaces.

ante-room
An outer room that leads to a larger, more important room, often used as a waiting area.

hallway
A corridor or passageway in a house, hotel, or other building. Also called hall.

corridor
A narrow passageway or gallery connecting parts of a building, esp. one into which several rooms or apartments open.

suite
A connected series or group of rooms arranged to be used together.

closed plan
A floor plan consisting of fully enclosed spaces or distinct rooms linked by doorways.

open plan
A floor plan having no fully enclosed spaces or distinct rooms.

above
A recess or small room connected to or forming part of a larger room.

vestibule
A small entrance hall between the outer door and the interior of a house or building.

functional grouping
A set of furniture pieces arranged according to function and use.

tight fit
A close, often compact correspondence between functional groupings and the form or structure of the enclosing space.

loose fit
A free and unrestrained arrangement of furniture groupings that does not necessarily correspond to the form or structure of the surrounding space.

hall
A large room or building for public gatherings or entertainment.

gallery
A long, relatively narrow room or hall, esp. one for public use and having architectural importance through its scale or decorative treatment.

enfilade
An axial arrangement of doorways connecting a series of rooms so as to provide a vista down the entire length of the suite.
mass
The physical volume or bulk of a solid body.

void
An empty space contained within or bounded by mass.

refuge
A place affording shelter, protection, or safety from danger or distress.

repose
A state of rest and tranquility.

place
A physical environment having particular characteristics or used for a particular purpose.

ambiance
The mood, character, or atmosphere of an environment or milieu. Also, ambiance.

animated
Full of life, activity, movement, or spirit.

focus
A central point of attraction, attention, or activity.

center
A point or place upon which interest, activity, or emotion focuses.

outlook
A view from a particular place, or the place offering a view.

prospect
An outlook over a region or in a particular direction, or the place that commands such a view.
**ROOM**

**adjacent spaces**
Two spaces abutting or contiguous with each other, esp. when having a common boundary or border.

**linked spaces**
Two spaces joined or connected by a third intervening space.

**interlocking spaces**
Two spaces interwoven or fit into each other so as to form a zone or field of shared space.

**embedded space**
A space enveloped or incorporated as an essential part of a larger space.

**linear organization**
Spaces extended, arranged, or linked along a line, path, or gallery.

**centralized organization**
Spaces gathered about or coming together at a large or dominant central space.

**radial organization**
Spaces arranged like radii or rays from a central space or core.

**grid organization**
Spaces organized with reference to a rectangular system of lines and coordinates.

**clustered organization**
Spaces grouped, collected, or gathered closely together and related by proximity rather than geometry.

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**transition**
Movement, passage, or change from one form, state, or place to another.

**edge**
A line or narrow part where an area begins or ends.

**threshold**
A place or point of entering or beginning.

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**circulation**
The passage of persons or things from one place to another or through an area.

**path**
A route or course along which movement occurs, or the pattern of such movement.
membrane stresses
The compressive, tensile, and shear stresses acting in the plane of the surface of a shell structure. A shell can sustain relatively large forces if uniformly applied. Because of its thinness, however, a shell has little bending resistance and is unsuitable for concentrated loads.

thin shell
A shell structure constructed of reinforced concrete.

A thin, curved plate structure, shaped to transmit applied forces by compressive, tensile, and shear stresses acting in the plane of the surface.

translational surface
A surface generated by sliding a plane curve along a straight line or over another plane curve.

cylindrical surface
A surface generated by sliding a straight line along a plane curve, or vice versa. Depending on the curve, a cylindrical surface may be circular, elliptic, or parabolic. Because of its straight line geometry, a cylindrical surface can be regarded as being either a translational or a ruled surface.

paraboloid
A surface all of whose intersections by planes are either parabolas and ellipses or parabolas and hyperbolas.

saddle surface
A surface having an upward curvature in one direction and a downward curvature in the perpendicular direction. In a saddle-surfaced shell structure, regions of downward curvature exhibit archlike action, while regions of upward curvature behave as a cable structure. If the edges of the surface are not supported, beam behavior may also be present.

anticlastic
Having opposite curvatures at a given point.
ruled surface
A surface generated by the motion of a straight line. Because of its straight line geometry, a ruled surface is generally easier to form and construct than a rotational or translational surface.

conoid
A ruled surface generated by sliding a straight line with one end on a straight line segment and the other on a plane curve. Depending on the curve, a conoid may be circular, elliptic, or parabolic.

hyperboloid
A surface having a finite center with certain plane sections that are hyperboloids and others that are circles or ellipses.

one-sheet hyperboloid
A ruled surface generated by sliding an inclined line segment on two horizontal circles. Its vertical sections are hyperboloids.

rotational surface
A surface generated by rotating a plane curve about an axis.

synclastic
Having similar curvatures at a given point.

spherical surface
A rotational surface generated by the revolution of a circular arc about a vertical axis.

elliptical surface
A rotational surface generated by the revolution of a half ellipse about a vertical axis.

parabolic surface
A rotational surface generated by the revolution of a parabola about a vertical axis.

torus
A doughnut-shaped surface generated by the revolution of a circle about an exterior line lying in its plane.
encroachment
The unauthorized extension of a building, or part thereof, on the property or domain of another.

setback
The minimum required distance from every structure to the property lines of a lot, established by a zoning ordinance to provide for air, light, solar access, and privacy.

curb cut
A depression in a curb providing vehicular access from a street to a driveway on private property.

contract limit
A perimeter line established on the drawings or elsewhere in the contract documents defining the boundaries of the site available to the contractor for construction purposes.

overburden
Waste earth and rock overlying a useful mineral deposit, bedrock, or a deposit of sand, gravel, or rock needed for construction. Also called burden.

test pit
A small pit dug to examine the existing soil conditions and determine the depth of the water table at a proposed building site.

shoring
A system of shores for bracing or supporting a wall or other structure.

shore
A temporary supporting strut, esp. one placed obliquely against the side of an excavation, formwork, or structure.

raker
An inclined shore for supporting a wall. Also called raking shore.

flying shore
A horizontal strut fixed between and supporting two walls above ground level.

cofferdam
A watertight enclosure constructed underground in the water-bearing soil and pumped dry to allow access for construction or repairs.

dewater
To remove water from an excavated job site, usually by draining or pumping.

blow
An unwanted flow of water and solid matter into an excavation, due to excessive outside water pressure. Also called blow.

Abyssinian well
A perforated pipe driven into the ground for pumping out collected ground water.

batter board
One of a number of boards set horizontally with vertical stakes to support the strings outlining the foundation plan of a proposed building.
SITEWORK

fill
To raise an existing grade with earth, stone, or other material, or the quantity of material used in building up the level of an area.

made ground
Ground that has been raised to a higher level by filling with hard rubble, as stone or broken brick. Also called made-up ground.

borrow pit
A pit from which sand, gravel, or other construction material is taken for use as fill in another location.

cut and fill
An excavating operation in which the excavated material is moved to another location and used as fill.

grade
The ground elevation, at any particular point, on a construction site, esp. where the ground meets the foundation of a building. Also called grade line.

existing grade
The elevation of the original ground surface before excavation or grading begins. Also called natural grade.

finish grade
The elevation of driveways, walks, lawns, or other improved surfaces after completion of construction or grading operations. Also, finished grade.

below grade
Occurring or situated below the surface of the ground.

rough grading
The cutting, filling, and shaping of earth in preparation for finish grading.

fine grading
The precise grading of an area after rough grading to prepare for paving, seeding, or planting.

grade stake
A stake marking the amount of cut or fill required to bring the ground to a specified level.

controlled fill
Fill material that is placed in layers, compacted, and tested after each compaction for moisture content, depth of lift, and bearing capacity before additional layers are placed.

vertical curve
A smooth parabolic curve in the vertical plane for connecting two grades of different slope in order to avoid an abrupt transition.

bench terrace
An embankment constructed across sloping ground with a steep drop on the downslope.

backfill
To refill an excavation with earth, stone, or other material, esp. the space around exterior foundation walls.

subgrade
The prepared earth surface upon which a pavement, concrete slab, or foundation is built. A subgrade should be stable, drain well, and be relatively free of frost action.

needle
A short beam passed through a wall as a temporary support while the foundation or part beneath is repaired, altered, or strengthened. Also called needle beam.

dead axle
An upright timber for supporting a deadload during the structural alteration of a building, esp. one of two supports for a needle.

underpinning
A system of supports that enables an existing foundation to be rebuilt, strengthened, or deepened, esp. the additional support required when a new excavation in adjoining property is deeper than the existing foundation.
swale
A shallow depression formed by the intersection of two ground slopes, often designed to direct or divert the runoff of surface water.

runoff
Something that drains or flows off, as rain that flows off the land in streams.

groundwater
The water beneath the surface of the ground that supplies wells and springs, consisting largely of surface water that has seeped down.

recharge
The process by which groundwater is absorbed into the water table.

water table
The underground surface beneath which the earth is saturated with water.

perched water table
A water table of limited area, held above the normal water table by an impervious layer.

culvert
A drain or channel passing under a road or sidewalk.

box culvert
A reinforced concrete culvert having a rectangular cross section.

headwall
A concrete or masonry retaining wall at the outlet of a drain or culvert.

drain
A concrete or masonry retaining wall at the outlet of a drain or culvert.

building storm drain
A building drain for conveying rainwater, groundwater, or similar discharge to a building storm sewer or a combined sewer. Also called house storm drain.

building storm sewer
A drain connecting a building storm drain to a storm sewer, combined sewer, or other point of disposal. Also called house storm sewer.

storm sewer
A sewer for conveying rainfall drained from roofs and paved surfaces. Also called storm drain.

combined sewer
A sewer conveying both sewage and rainfall drained from roofs and paved surfaces.

site drainage
The surface and subsurface drainage of a site is in order to prevent the collection of excess surface water or groundwater.

surface drainage
The grading and surfacing of a site is in order to divert rain and other surface water into natural drainage patterns or a storm sewer system.

cutoff
A wall or other structure intended to eliminate or reduce percolation through porous strata.

sewer line
A drain placed between the source of water and the area to be protected. Also called intercepting drain.

underdrain
A perforated pipe installed in porous fill to draw off groundwater.

French drain
A drainage trench filled to ground level with loose stones or rock fragments.

subsurface drainage
An underground network of piping for conveying groundwater to a point of disposal, as a storm sewer system. Excess groundwater reduces the load-carrying capacity of a foundation soil and increases the hydrostatic pressure on a building foundation.

area drain
A drain for collecting surface water or rainwater from a basement floor or paved area.

dry well
A drainage pit lined with gravel or rubble to receive surface water and allow it to percolate away to absorbent earth underground. Also called absorbing well.

manhole
A covered hole through which a person may enter a sewer or drain.

catch basin
A receptacle for the runoff of surface water, having a basin which retains heavy sediment before it can pass into an underground drainage pipe.
SOIL

The top layer of the earth's surface, consisting of disintegrated rock and decayed organic matter suitable for the growth of plant life.

topsoil
The fertile surface layer of soil, as distinct from the subsoil.

subsoil
The bed or layer of earth immediately beneath the surface soil.

permafrost
Permanently frozen subsoil in arctic or subarctic regions. Also called pergelisol.

bedrock
The unbroken, solid rock that underlies all unconsolidated material on the earth's surface, as soil, clay, sand, or rock fragments.

soil analysis
A process for determining the particle-size distribution in an aggregate, soil, or sediment.

soil class
A numerical classification of soil by texture, used by the U.S. Department of Agriculture: (1) gravel, (2) sand, (3) clay, (4) loam, (5) loam with some sand, (6) silt-loam, and (7) clay-loam.

boulder
A large, naturally rounded rock, lying on the surface of the ground or partially embedded in it.

cobble
A naturally rounded stone, smaller than a boulder and larger than a pebble, used for rough paving, walls, and foundations. Also called cobblestone.

gravel
Small pebbles and stones, or a mixture of these with sand, formed either naturally or by crushing rock, esp. such material that will pass a 3-in. (76 mm) sieve and be retained on a No. 4 (4.75 mm) sieve.

crushed gravel
Gravel having one or more fractured faces produced by mechanical crushing.

crushed stone
Stone having well-defined edges produced by the mechanical crushing of rocks or boulders. Also called crushed rock.

pea gravel
A small-diameter, natural gravel, usually 1/4 to 3/8 in. (6.4 to 9.5 mm) in size, screened to specification.

pebble
A small, rounded stone, especially one worn smooth by the action of water.

sand
A loose, granular material resulting from the disintegration of rocks, consisting of grains smaller than gravel but coarser than silt.

sand clay
A well-grade, naturally occurring sand of a more or less homogenous mass, consisting of 1/16 to 1/4 in. (0.002 to 0.025 mm) in diameter.

silt
Loose sedimentary material consisting of fine mineral particles between 0.002 mm and 0.025 mm in diameter.

clay
A natural, earthy material that is plastic when moist but hard when dried and is used for making brick, tile, and pottery, composed mainly of fine particles of hydrous aluminum silicates less than 0.002 mm in diameter.

clay loam
Soil containing 25% to 40% clay and 20% to 46% sand.

loess
A loamy deposit formed by the deposition of windblown dust, having the ability to absorb large amounts of water and to expand to several times its dry volume.
Atterberg limits
The levels of water content defining the boundaries between the different states of consistency of a plastic or cohesive soil, as determined by standard tests.

- Liquid limit
  The water content, expressed as a percentage of dry weight, at which a soil passes from a plastic to a liquid state.

- Plastic limit
  The water content, expressed as a percentage of dry weight, at which a soil loses its plasticity and begins to behave as a solid.

- Shrinkage limit
  The water content, expressed as a percentage of dry weight, at which a reduction in water content will not cause a further decrease in the volume of a soil mass.

Granular material
Any gravel, sand, or silt that exhibits no cohesiveness or plasticity.

Permeability
The property of a porous material that allows a gas or liquid to pass through its pore spaces.

Void ratio
The ratio of the volume of void spaces to the volume of solid particles in a soil mass.

Critical void ratio
The void ratio corresponding to the critical density of a soil mass.

Critical density
The unit weight of a saturated granular material above which it will gain strength and below which it will lose strength when subjected to rapid deformation.

Pervious soil
Any permeable soil that allows the relatively free movement of water.

Impervious soil
Any fine-grained soil, as clay, having pores too small to permit water to pass except by slow capillary action.

groundwater

geochemical

geotechnical

Of or pertaining to the practical applications of geological science in civil engineering.

Foundation investigation
The investigation and classification of a foundation soil based on observation and tests of materials obtained by borings or excavations to obtain the information necessary for the design of a foundation system, including the bearing strength, compressibility, cohesion, expansiveness, permeability, and moisture content of the soil, the elevation of the water table, and the anticipated total and differential settlement. Also called subsurface investigation.

- Cohesive soil
  Soil that has considerable strength when unconfined and air-dried, and significant cohesion when submerged.

- Cohesionless soil
  Soil that has little or no strength when unconfined and air-dried, and little or no cohesion when submerged.

- Compaction
  The consolidation of sediments by the weight of overlying deposits, or a similar compression of soil, aggregate, or cementsitious material by rolling, tamping, or soaking.

- Optimum moisture content
  The water content of a soil at which maximum density can be attained through compaction.

Penetration test
A test for measuring the density of granular soils and the consistency of some clays at the bottom of a borehole, recording the number of blows required by a hammer to advance a standard soil sampler.

- Penetration resistance
  The unit load required to produce a specified penetration into a soil at a specified rate of penetration.

- Shearing strength
  The property of a soil that enables its particles to resist displacement with respect to one another when an external force is applied, due largely to the combined effects of cohesion and internal friction. Also called shearing resistance.
Solar Energy

Energy derived from the sun in the form of solar radiation.

Solar Path Diagram
A graphic depiction of the path of the sun within the sky vault projected onto a horizontal plane.

Summer Solstice
The time of year, on or about June 21, when the sun reaches its northernmost point on the celestial sphere, marking the beginning of summer in the northern hemisphere.

Equinox
Either of the two times during the year when the sun crosses the plane of the celestial equator and when the lengths of day and night are everywhere approximately equal, occurring about March 21 (vernal equinox or spring equinox) and September 21 (autumnal equinox).

Winter Solstice
The time of year, on or about December 21, when the sun reaches its southernmost point on the celestial sphere, marking the beginning of winter in the northern hemisphere.

Latitude
The angular distance north or south from the equator of a point on the earth's surface, measured in degrees along the meridian passing through the point.

Meridian
A great circle on the earth's surface passing through both geographic poles.

Longitude
The angular distance east or west on the earth's surface, measured from the prime meridian at Greenwich, England, to the meridian of a given point and expressed either in degrees or a corresponding difference in time.

Solar Constant
The average rate at which radiant energy from the sun is received by the earth, equal to 450 Btu per hr. per sq. ft. (1.94 cal per min. per sq. cm), used in calculating the effects of solar radiation on buildings.

Solar House
A house designed to absorb and store solar heat in order to supplement or replace conventional heating methods.

Solar Heating System
A heating system using solar energy as the primary source of heat.

Active Solar Heating System
A solar-heating system using mechanical means, as solar collectors, fans, or pumps, to collect, store, and distribute solar energy.

Solar Collector
A device or system designed to use solar radiation to heat an absorber through which a transporting medium, as air or water, is circulated. Also called collector.

Solar Orientation
The placing of a building in relation to the path of the sun, either to maximize the amount of heat gained from solar radiation during the coldest months, or to minimize the amount of heat gained in the warmest months.
berm
A bank of earth placed against one or more exterior walls of a building as protection against extremes in temperature.

drumwall
A stack of black, water-filled drums placed on the inside of a window wall to absorb solar heat and then release it slowly into the interior of a building.

Trombe wall
A glass-fronted exterior masonry wall that absorbs solar heat for radiation into the interior of a building, usually after a time-lag of several hours.

solarium
A glass-enclosed porch, room, or gallery used for sunbathing or for therapeutic exposure to sunlight.

sunroom
A glass-enclosed porch or room oriented to admit large amounts of sunlight. Also called sun parlor, sun porch.

sun deck
A roof, balcony, or terrace that is exposed to the sun and used for sunbathing.

sun control
Any of various exterior devices for regulating the amount of solar heat and sunlight that enters a window, consisting of movable horizontal or vertical fins controlled manually or operated automatically with time or photoelectric controls.

shutter panel
A lowered awning of metal fins of which are angled to shade a window from direct sunlight and glare while preserving the outside view and admitting soft, diffused light.

shutter blind
A manually or electrically controlled exterior venetian blind for protecting a building interior from solar gain and glare.

brise-soleil
A screen, usually of louvers, placed on the outside of a building to shield the windows from direct sunlight.

solar screen
A panel of miniature external louvers for shading a window from direct sunlight and glare while allowing a high degree of visibility, daylighting, ventilation, visual daytime privacy, and insect protection.

passive solar-heating
A solar-heating system using a building's design and construction and the natural flow of heat to collect, store, and distribute solar energy with minimal use of fans or pumps.
Sound

The sensation stimulated in the organs of hearing by mechanical radiant energy transmitted as longitudinal pressure waves through the air or other medium.

Sound wave
A longitudinal pressure wave in air or an elastic medium, esp. one producing an audible sensation.

Wave
A disturbance or oscillation that transfers energy progressively from point to point in a medium or space without advance by the points themselves, as in the transmission of sound or light.

Waveform
A graphic representation of the shape of a wave, obtained by plotting deviation at a fixed point versus time.

Wavelength
The distance, measured in the direction of propagation of a wave, from any one point to the next point of corresponding phase.

Phase
A particular point or stage in a periodic cycle or process.

Fundamental
The lowest frequency at which a vibrating element or system will freely oscillate. Also called fundamental frequency.

Harmonic
A vibration having a frequency that is an integral multiple of that of the fundamental.

Band
A range of wavelengths or frequencies between two defined limits.

Speed of sound
The velocity of sound traveling through air at approximately 1087 ft. (0.3 km) per second at sea level, through water at approximately 4910 ft. (1.5 km) per second, through wood at approximately 11,350 ft. (3.5 km) per second, and through steel at approximately 18,000 ft. (5.5 km) per second.

Doppler effect
An apparent shift in frequency occurring when an acoustic source and listener are in motion relative to each other; the frequency decreasing when the source and listener approach each other and increasing when they move apart.
loudness
A subjective response to sound indicating the magnitude of the auditory sensation produced by the amplitude of a sound wave.

phon
A unit for measuring the apparent loudness of a sound, equal in number to the decibels of a 1000-Hz reference sound judged by a group of listeners to be equal in loudness to the given sound.

sone
A unit for measuring the apparent loudness of a sound, judged by a group of listeners to be equal to the loudness of a 1000-Hz reference sound having an intensity of 40 decibels.

decibel
A unit for expressing the relative pressure or intensity of sounds on a uniform scale from 0 for the least perceptible sound to about 150 for the average threshold of pain. Abbreviation: dB

Decibel measurement is based on a logarithmic scale since increments of equal physical pressure or intensity are perceived as equal when the ratio between successive changes in intensity remain constant. The decibel levels of two sound sources, therefore, cannot be added mathematically, e.g., 60 dB + 60 dB = 83 dB, not 120 dB.

Threshold of pain
The level of sound intensity high enough to produce the sensation of pain in the human ear, usually around 120 dB.

Auditory fatigue
Physical or mental weariness caused by prolonged exposure to loud noises.

Hearing loss
An increase in the threshold of audibility, at specific frequencies, caused by normal aging, disease, or injury to the hearing organs.

Threshold of hearing
The minimum sound pressure capable of stimulating an auditory sensation, usually 20 micropascals or zero dB.

Sound
The sense by which sound is perceived, involving the entire mechanism of the internal, middle, and external ear and including the nervous and cerebral operations that translate the physical operations into meaningful signals.

Sound power
The amount of acoustic energy radiated by a source per unit time, expressed in watts.

Sound power level
The acoustic power of a source measured on the decibel scale, equal to 10 times the common logarithm of the ratio of the acoustic power to a reference power, usually 10^-12 watts.

Sound meter
An electrical instrument for measuring sound pressure levels. To compensate for the way we perceive the relative loudness of different frequencies of sound, there are three networks: A, B, and C. These networks weight the recordings for different frequencies and combine the results in a single reading. The A-network scale, in dBA units, is most commonly used since it discriminates against the lower frequencies, as does the human ear at moderate sound levels.
The branch of physics that deals with the production, control, transmission, reception, and effects of sound.

The qualities or characteristics of a room, auditorium, or concert hall that determine the audibility of speech or fidelity of musical sounds in it.

A structure over or behind and above a speaker or orchestra to reflect the sound toward the audience.

Sound radiated directly into and transmitted through the air.

Highly reverberant or resonant, as an auditorium or concert hall.

Without resonance, as a room free from echoes and reverberation.

Impervious to audible sound.

The intensification and prolongation of sound produced by sympathetic vibration.

A vibration induced in one body by the vibrations of exactly the same period in a neighboring body.

The persistence of a sound within an enclosed space, caused by multiple reflection of the sound after its source has stopped.

The rate of decrease of sound pressure level after its source has stopped, usually expressed in decibels per second.

The time in seconds required for a sound made in an enclosed space to diminish by 60 decibels.

A decrease in energy or pressure per unit area of a sound wave, occurring as the distance from the source increases as a result of absorption, scattering, or spreading in three dimensions.

The repetition of a sound produced by the reflection of sound waves from an obstructing surface, loud enough and received late enough to be perceived as distinct from the source.

A rapid succession of echoes caused by the reflection of sound waves back and forth between two parallel surfaces, with sufficient time between each reflection to cause the listener to be aware of separate, discrete signals.

The convergence of sound waves reflected from a concave surface.
noise criteria curve
One of a series of curves representing the sound pressure level across the frequency spectrum for background noise that should not be exceeded in various environments. Higher noise levels are permitted at the lower frequencies since the human ear is less sensitive to sounds in this frequency region. Also called NC curves.

background noise level
The level of ambient sound normally present in a space, above which speech, music, or other sounds must be presented to be heard.

background noise
The sound normally present in an environment, usually a composite of sounds from both exterior and interior sources, none of which are distinctly identifiable by the listener. Also called ambient sound.

absorption
The interception and conversion of sound energy into heat or other form of energy by the structure of a material, measured in sabins or absorption units.

sabin
A unit of sound absorption, equal to one sq. ft. (0.09 sq. m.) of a perfectly absorptive surface.

metric sabin
A unit of sound absorption, equal to 1 square meter of perfectly absorptive surface. Also called absorption unit.
SOUND

sound isolation

The use of building materials and construction assemblies designed to reduce the transmission of airborne and structure-borne sound from one room to another or from the exterior to the interior of a building. Also called sound insulaion.

airborne sound transmission

Sound transmitted when a surface is set into vibration by the alternating air pressures of incident sound waves.

structure-borne sound transmission

Sound transmitted through the solid media of a building's structure as a result of direct physical contact or impact, as by vibrating equipment or footsteps.

transmission loss

A measure of the performance of a building material or construction assembly in preventing the transmission of airborne sound, equal to the reduction in sound intensity as it passes through the material or assembly when tested at all one-third octave band center frequencies from 125 to 4000 Hz expressed in decibels. Abb.: TL.

Three factors enhance the TL rating of a construction assembly: mass, separation into layers, and absorptive capacity.

average transmission loss

A single-number rating of the performance of a building material or construction assembly in preventing the transmission of airborne sound, equal to the average of its TL values at nine test frequencies.

sound transmission class

A single-number rating of the performance of a building material or construction assembly in preventing the transmission of airborne sound, derived by comparing the laboratory TL test curve for the material or assembly to a standard frequency curve. Abb.: STC.

The higher the STC rating, the greater the sound-insulating value of the material or construction. An open doorway has an STC rating of 0; normal construction has STC ratings from 30 to 60; special construction is required for STC ratings above 60.

impact noise

Structure-borne sound generated by physical impact, as by footsteps or the moving of furniture.

impact insulation class

A single-number rating of the performance of a floor-ceiling construction in preventing the transmission of impact noise. Abb.: IIC.

The higher the IIC rating, the more effective the construction is in isolating impact noise. The IIC rating replaces the previously-used Impact Noise Rating (INR) and is approximately equal to the INR rating x 0.65 for a given construction.

flanking path

A path for the transmission of sound other than through a floor, wall, or ceiling assembly, as along such interconnecting structures as ductwork or piping.

plenum barrier

An acoustic barrier erected in a plenum over a partition to reduce sound transmission between adjoining rooms.

acoustic mass

Resistance to the transmission of sound caused by the inertia and elasticity of the transmitting medium. In general, the heavier and more dense a body, the greater its resistance to sound transmission.

vibration isolator

A resilient base for mechanical equipment, installed to reduce the transmission of vibration and noise to the supporting structure. Also called isolation mount.

inertia block

A heavy concrete base for vibrating mechanical equipment, used in conjunction with vibration isolators to increase the mass of the equipment and decrease the potential for vibratory movement.

discontinuous construction

Any of several construction methods, as the use of staggered studs or resilient mountings, for breaking the continuity of a path through which structure-borne sound may be transmitted from one space to another.

staggered-stud partition

A partition for reducing sound transmission between rooms, framed with two separate rows of studs arranged in a zigzag fashion and supporting opposite faces of the partition, sometimes with a fiberglass blanket between.

resilient mounting

A system of flexible attachments or supports that permits room surfaces to vibrate normally without transmitting the vibratory motions and associated noise to the supporting structure.

resilient channel

A metal channel for the resilient mounting of wallboard to studs or joists, used in sound-isolating construction to reduce the transmission of vibrations and noise.

resilient clip

A flexible metal device for the resilient mounting of wallboard or metal lath to studs or joists, used in sound-isolating construction to reduce the transmission of vibrations and noise.
A handrail providing a handhold and serving as a support at the side of a stair or platform.

A stairwell A vertical shaft or opening containing a stairway.

A flight or series of steps for going from one level to another, as in a building.

A support for the foot in ascending or descending.

The horizontal upper surface of a step in a stair, on which the foot is placed.

The usually rounded edge of a stair tread that extends over the riser.

The vertical face of a stair step.

A riser that is inclined inward to permit more footroom on the tread below.

A flight A continuous series of steps between one floor or landing of a building and the next.

A critical angle The angle of pitch above which a stair is considered to be uncomfortable or unsafe, usually 50°.

The preferred ratio between the riser and tread of a stair step, specified by either of two formulas:

\[
R + T = 24 \\
R \times T = 72
\]

A ramp A sloping floor, walk, or roadway connecting two levels.

A stepped ramp A series of ramps connected by steps.

A helicline A curved ramp.

A ship's ladder A fixed stepladder having an angle of pitch between 65° and 70°, usually equipped with handrails.

A riser tread ratio The preferred ratio between the riser and tread of a stair step, specified by either of two formulas:

\[
R + T = 24 \text{ to } 25 \\
R \times T = 72 \text{ to } 75
\]

A preferred angle For a flight of stairs, any angle of pitch between 30° and 35°; for a ramp, an angle of pitch less than 5°.
STAIR

straight-run stair
A stair extending from one level to another without turns or winders.

winder
A more or less wedge-shaped stair step for changing direction.

quarter-turn stair
A stair making a right-angled turn, consisting of two straight flights connected by an intervening landing or a series of winders. Also called L-stair.

kite winder
The central of three stair winders making a 90° turn.

pace
A raised step or platform, esp. one serving as a landing or resting place at the end of a short flight of steps. Also called footpace.

half-turn stair
A stair that turns 180° or through two right angles at an intervening landing.

equilateral stair
A stair having equal right angles.

dog-leg stair
A half-return stair consisting of two straight flights immediately side by side and connected by an intervening landing.

half-space landing
A landing connecting two flights of a half-turn stair. Also, half-space landing.

double-L stair
A half-turn stair having two intermediate landings, each offering a 90° change of direction.

balanced step
Any of a series of winders so arranged that they are nearly as wide as the inside of the stair as the adjacent fliers. Also called dancing step, dancing winder.

three-quarter-turn stair
A stair requiring a three-quarter turn for continued ascent or descent.

double-return stair
A stair having one wide flight from the main floor to an intermediate landing, and two side flights from that landing to the floor above.

elliptical stair
A winding stair having an elliptically shaped well.

equilateral stair
A winding stair constructed around a circular or elliptical well without the use of newels and often no landings between floors.

winder
A curved section of handrail.

newel
A central post from which the winders of a spiral stair radiate.

wreath
A curved section of a staircase string.
string
One of the sloping boards running alongside a staircase to support or cover the ends of the treads and risers. Also called stringboard, stringer.

wall string
A stair string set against a wall, usually notched or housed.

carriage
An inclined beam for supporting the steps of a stair. Also called horse, rough stringer.

box stair
A stair having a housed string on both sides so that it may be more or less completely finished before being set in its final location.

housed string
A stair string reaching the ends of risers and treads in a series of housings. Also called closed string.

apron piece
A header receiving the ends of stair carriages, strings, and the joists of landings. Also called pitching piece.

kick plate
A plate for anchoring and anchoring the trench of an inclined number, as a stair carriage.

railing
A barrier composed of one or more horizontal rails supported by spaced uprights or balusters.

stanchion
An upright post or support, as in a window or railing.

balustrade
A railing with supporting balusters.

baluster
Any of a number of closely spaced supports for a railing. Also called banister.

newel drop
An ornamental, downward projection of a newel post, often through a soffit.

safety nosing
A nosing having an abrasive, non-slip surface flush with the tread surface.

safety tread
A tread having a roughened surface to prevent slipping.

waist
The least thickness of a reinforced-concrete stair slab.

ramp
A short concave slope or bend, as one connecting the higher and lower parts of a stair rail at a landing.

bracket
An ornamental piece filling the angle between a riser and the overhanging edge of its tread.

landing tread
A board directly over the uppermost riser in a flight of stairs, having an edge matching that of the nosings on the stair treads.

stair case
A flight or series of flights of stairs, including its supporting framework, casing, and handrails.

open-string stair
A stair having an open string on one or both sides.

open string
A staircase string having its upper edge cut to the profile of the treads and risers. Also called cut string.

face string
The outer string of a staircase, usually of better material or finish than the carriage which it covers. Also called finish string.

tread return
A continuation of the rounded nosing of a tread beyond the face of an open stringing.

cut-and-mitered string
An open string having the vertical edges of the notches mitered with the ends of the stair risers.

curtail
A horizontal, spiral termination to the lower end of a stair rail. Also called volute.

curtail step
A starting step having a scroll termination to one or both ends of the tread.

newel cap
The terminal feature of a newel post, often molded or turned in a decorative manner.

newel
A post supporting one end of a handrail at the top or bottom of a flight of stairs. Also called newel post.

open-riser stair
A stair having open spaces between successive treads, allowing light to pass from above.

open riser
An open space between two successive treads.

pan tread
A steel pan receiving a concrete fill and serving as a tread or as a combined tread and riser.

plate tread
A tread fabricated from metal plate, usually having a raised pattern to provide a non-slip surface.
STONE

Rock or a piece of rock quarried and worked into a specific size and shape for a particular purpose.

rock
Solid mineral matter, naturally formed by the action of heat or water and occurring in fragments or large masses.

sedimentary rock — A class of rock formed by the deposition of sediment, as limestone, sandstone, or shale.

limestone
A sedimentary rock formed chiefly by the accumulation of organic remains, as shells and coral, consisting mainly of calcium carbonate, and used as a building stone and in the manufacture of lime.

dolomite
A limestone rich in magnesium carbonate.

oolite
A limestone composed of small, round, calcareous grains resembling fish eggs. Also called oolitic stone.

sandstone
A sedimentary rock consisting of sand, usually quartz, cemented together by various substances, as silica, clay, or calcium carbonate.

bluestone
A dense, fine-grained, argillaceous sandstone that splits easily along bedding planes to form thin slabs.

brownstone
A reddish-brown sandstone quarried and used extensively as a building material.

soapstone
A muscovite, soft rock containing a high proportion of talc, used as dimension stone for hearths, table tops, and carved ornaments. Also called steatite.

metamorphic rock — A class of rock that has undergone a change in structure, texture, or composition due to natural agencies, as heat and pressure, esp. when the rock becomes harder and more crystalline.

marble
A metamorphic rock of crystallized limestone, consisting mainly of calcite or dolomite, capable of taking a high polish, and used esp. in architecture and sculpture. The presence and distribution of numerous minerals accounts for the distinctive variegated appearance that many marbles have. The commercial term includes many dense limestones and some coarse-grained dolomites.

verde antique
A dark-green, mottled serpentine that takes a high polish and is sold as a marble. Also, verde antique.

slate
A dense, fine-grained metamorphic rock formed by the compression of various sediments, as clay or shale, having good cleavage along parallel planes.

quartzite
A compact, granular metamorphic rock consisting essentially of quartz, derived from sandstone.

gneiss
A banded or foliated metamorphic rock corresponding in composition to granite, in which the minerals are arranged in layers.

igneous rock — A class of rock formed by the crystallization of molten magma, as granite.

granite
A very hard, coarse-grained igneous rock composed mainly of quartz, feldspar, and mica or other colored minerals.

obsidian
A volcanic glass similar in composition to granite, usually black with a bright luster, and transparent in thin pieces.

malachite
A green to nearly black mineral, copper carbonate, used as a highly polished veneer and for making ornamental articles.

serpentine
A mineral or rock consisting of hydrous magnesium silicate, usually green in color and having a mottled appearance.

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grain
The granular texture or appearance of a stone.

bedding plane
The surface that separates one stratum or layer of stratified rock from another.

cleavage plane
A relatively smooth surface along which certain rocks will tend to split.

split-faced
Noting a rough stone finish produced by splitting to expose the bedding planes.

freestone
Any fine-grained stone, as limestone or sandstone, that can be quarried or worked easily, esp. one that cuts well in all directions.

carved work
Hand-cut ornamental features in brick or stone masonry.

cast stone
A hardened mix of concrete with a fine stone aggregate, having a surface ground, polished, or molded to simulate natural stone.

cut stone
Building stone cut or machined to a relatively fine finish.

cut-sawn
Noting a coarse, pebbled stone finish produced by using a slurry of a loose abrasive and water in the sawing process.

cut-sawn
Noting a pebbled or rippled stone finish produced by using a slurry of water and hardened steel pellets in the sawing process.

flame finish
A textured stone finish produced by superheating the surface so as to cause small chips to spall off. Also called thermal finish.

honed finish
A smooth stone finish having little or no gloss, obtained by rubbing with an abrasive.

polished work
A stone face of crystalline texture, as of marble or granite, ground and buffed to form a glasslike surface. Also called glassed surface.

building stone
Any stone suitable for use in building construction, as limestone, marble, or granite.

fieldstone
Loose, unfinished stone found on the surface or in the soil, esp. when used for building, as in dry masonry.

dimension stone
Quarried and squared stone 2 ft. (610 mm) or more in length and width and of specified thickness.

dressed stone
Stone worked to desired shape and smoothed on the face.

pitch-faced
Noting a stone having all arrises cut in the same plane and the faces roughly dressed with a pick.

draft
A line or border chiseled at the edge of a stone to guide the stonemason in leveling the surfaces.

drafted margin
A smooth, uniform margin worked around a stone face.

sunk draft
A margin of a stone set below the rest of the face.

quarry-faced
Of or pertaining to a stone or stonework the visible face of which is dressed with a hammer. Also, rock-faced.

beasted surface
A scored stone surface made with a mason's chisel after the surface has been rubbed smooth. Also called tooled surface.
STRUCTURE

A stable assembly of structural elements designed and constructed to function as a whole in supporting and transmitting applied loads safely to the ground without exceeding the allowable stresses in the members.

linear structure
A structural member having a length that dominates its other two dimensions.

surface structure
A structural member having a length and width that dominates its thickness.

Rigid
Of or pertaining to a structure or structural member having a shape that does not change appreciably under the action of an applied load or changing loads.

Beam
A structural element that redirects external forces primarily through the flexural, bending, or shear continuity of its material, as in a beam or column.

Vector-active structure
A structure that redirects external forces primarily through the composition of tension and compression members, as a truss.

Surface-active structure
A structure that redirects external forces primarily through the continuity of a surface, as a plate or shell.

Flexible
Of or pertaining to a structure or structural member characterized by a lack of stiffness and having a shape that responds to changes in loading.

Form-active structure
A structural element that redirects external forces primarily through the form of its material, as an arch or cable.

structural member
One of the constituent parts into which a structure may be resolved by analysis, having a unitary character and exhibiting a unique behavior under an applied load.

compression member
A structural member subject primarily to compressive forces.

strut
A structural member designed primarily to resist longitudinal compression.

tension member
A structural member subject primarily to tension forces.

tie
A tension member designed to keep two structural members from spreading or separating.

bending member
A structural member subject primarily to transverse forces.

one-way
Of or pertaining to a structure or structural member having a load-carrying mechanism that acts in one direction only.

two-way
Of or pertaining to a structure or structural member having a load-carrying mechanism that acts in two or more directions.
**structural unit**
A discrete structure or assembly of structural members forming a spatial volume.

**bay**
A major spatial division, usually one of a series, marked or partitioned off by the principal vertical supports of a structure.

**structural grid**
A grid defining the principal points or lines of support for a structural system.

**regular grid**
A structural grid having regularly repeating bays in two directions.

**double grid**
A structural pattern consisting of two grids offset from each other and creating interstitial spaces between the bays.

**interstitial**
Forming an intervening space.

**slipped grid**
A structural grid having points or lines of supports spaced uniformly in one direction but varying in the other.

**structural pattern**
The arrangement of principal vertical supports for a structure, which influences the selection of an appropriate spanning system and establishes the possibilities for the ordering of spaces and functions.

**transition structure**
A structure mediating between two or more different structural patterns.

**irregular grid**
A structural grid having irregularly shaped bays in one or more directions.
structural design
The process of arranging, interconnecting, sizing, and proportioning the members of a structural system in order to safely carry a given set of loads without exceeding the allowable stresses of the materials employed.

allowable stress design
A method for sizing and proportioning a structural member based on the assumption that the service load will not stress the material beyond its allowable stresses. Also called elastic design, stress design, working stress design.

design load
A load used in structural design computations.

\[ DL = AL = SL \]

allowable load
A load inducing the allowable stresses at a critical section of a structural member.

ultimate strength design
A method for sizing and proportioning a structural member based on the assumption that a factored load will not stress the material beyond its ultimate strength. Also called factored load design, load-factor design.

limit design
Structural design based on any chosen limit of usefulness, as elastic limit, plastic limit, or fatigue limit.

\[ DL = FL = SL \times FS \]

service load
The maximum load a structure may be reasonably required to support during its useful life. Building codes specify minimum service loads for various uses, occupancies, types of construction, and environmental conditions. Also called working load.

structural analysis
The process of determining the ability of a structure or any of its constituent members to safely carry a given set of loads without material distress or excessive deformation, given the arrangement, shape, and dimensions of the members, the types of connections and supports utilized, and the allowable stresses of the materials employed. For an existing structure, this procedure is also known as structural rating.

factor of safety
The ratio of the maximum stress that a structural member can withstand to the maximum stress estimated for it in the use for which it is designed. Also called safety factor.

structural failure
Any condition, as fracturing, buckling, or plastic deformation, that renders a structural assembly, element, or joint incapable of sustaining the load-carrying function for which it was designed.
load trace
The process of modeling how a structure collects, channels, and redirects the loads resulting from external forces through the hierarchy of its members to the foundation and underlying soil. The analysis usually starts at the roof level with the smallest members actually picking up the loading and proceeds by tracing the loads through each collecting member. The reactions of each member to its loading becomes forces on the members supporting it. Also called load flow.

tributary area
The portion of a structure contributing to the load on a structural element or member. Also called contributory area.

tributary
Channeling into something more inclusive.

load strip
The tributary area per unit length of a supporting structural member.

tributary load
The load on a structural element or member collected from its tributary area.

primary member
A structural member essential to the stability of a structural whole. Also called main member.

secondary member
Any structural member supported by a primary member.

tertiary member
Any structural member supported by a secondary member.

bearing
A point, surface, or mass that supports weight, esp. the area of contact between a bearing member, as a beam or truss, and a column, wall, or other underlying support.

bearing stress
The stress developed between a bearing member and an underlying support, equal to the quotient of the magnitude of the force transmitted and the area of contact between the two elements.
STRUCTURE

support condition
The manner in which a structural member is supported and connected to other members, affecting the nature of the reactive forces developed on the loaded member.

point of support
A point on a structural member at which its reaction to a load is transmitted as a force to a supporting member.

unrestrained member
A structural member permitted to rotate freely about a point of support.

roller support
A structural support that allows rotation but resists translation in a direction perpendicular into or away from its face. Also called roller joint.

cable support
A cable anchorage that allows rotation but resists translation only in the direction of the cable.

pin joint
A structural connection that allows rotation but resists translation in any direction. Also called hinge joint, pinned connection.

pin
A slender rod driven through holes in adjacent parts to keep the parts together or to permit them to move in one plane relative to each other.

rigid joint
A structural connection that maintains the angular relationship between the joined elements, resists rotation and translation in any direction, and provides both force and moment resistance. Also called fixed connection, fixed joint, rigid connection.

fixed-end connection
A rigid piece connecting the end of a structural member to a support.

anchorage
A means for holding a structural member to another or to its foundation, often to resist uplifting and horizontal forces.
lateral stability
The ability of a structure to resist lateral forces without sliding, overturning, buckling, or collapsing.

collapsing
The straining and distortion of a structural frame by lateral forces.

stability
The ability of a structure, when disturbed from a condition of equilibrium by an applied load, to develop internal forces or moments that restore the original condition.

collapse mechanism
An unstable configuration of structural members susceptible to falling or breaking down under an applied load without a change in length of any individual member.

lateral bracing
Stabilizing a structural system against lateral forces by means of diagonal or cross bracing.

brace
A structural element for positioning, supporting, strengthening, or restraining the members of a structural frame.

diagonal bracing
A system of inclined members for bracing the angles between the members of a structural frame and ensuring the lateral stability of the whole.

away brace
A diagonal member for bracing a structure against lateral forces.

cross bracing
A pair of transverse braces for stabilizing a structural frame against lateral forces. When using cables, two are necessary to stabilize the structure against lateral forces from either direction. For each direction, one cable will operate effectively in tension while the other would simply buckle. If rigid braces are used, a certain degree of redundancy is involved since a single member is capable of stabilizing the structure. Also, X-bracing.

K-brace
A pair of diagonal braces for stabilizing a structural frame against lateral forces, meeting at some point along the length of a member of the frame.

knee brace
A diagonal member for bracing the angle between two joined members, being joined to each partway along its length.

diaphragm
A relatively thin, rigid structural member capable of withstanding shear when loaded in a direction parallel to its plane.

rigid floor or roof plane
A rigid floor or roof plane acting as a thin, deep beam in transferring lateral forces to vertical shear walls, braced frames, or rigid frames.

shear wall
A vertical diaphragm acting as a thin, deep cantilever beam in transferring lateral loads to the ground foundation.
regular structure
A structural system characterized by the symmetrical configuration of mass and lateral force-resisting elements and having no significant discontinuities of stiffness or strength. The effects of lateral forces on regular structures may be determined by static methods.

frame system
A structural system consisting of a three-dimensional array of interconnected linear members that functions as a complete, self-contained unit in supporting gravity loads and shear walls or braced frames for resisting lateral forces.

moment-resisting frame
A frame system designed to resist lateral forces primarily by flexure in the members and joints.

dual system
A structural system for resisting lateral forces, combining the ductility of a moment-resisting frame with the rigidity of a shear wall.

center of resistance
The centroid of the vertical elements of a lateral force-resisting system, through which the shear reaction to lateral forces acts. Also called center of rigidity.

discontinuous diaphragm
A horizontal diaphragm having a large cutout or open area, or a stiffness significantly less than that of the story above or below.

soft story
A story having a lateral stiffness significantly less than that of the stories above.

weak story
A story having lateral strength significantly less than that of the stories above.

irregular mass
A story having an effective mass significantly greater than that of an adjacent story.

discontinuous shear wall
A shear wall having a large offset or a significant change in horizontal dimension.

the plan configuration of a structure and its lateral force-resisting system having projections beyond a corner significantly greater than the plan dimensions in the given direction. A reentrant corner tends to produce differential motions between different portions of the structure, resulting in local stress concentrations at the corner. Solutions include providing a seismic joint to separate the building into simpler shapes, tying the building together more strongly at the corner, or splaying the corner.
perforated shell tube
A tube structure having perimeter shear walls with less than 30% of the surface area perforated by openings.

framed tube
A tube structure having closely spaced perimeter columns rigidly connected by deep spandrel beams.

braced tube
A framed tube structure tied together by a system of diagonal braces.

trussed tube
A braced tube structure having trussed wall frames of widely spaced columns tied together by diagonal or cross bracing.

latticed truss tube
A braced tube structure having perimeter frames of closely spaced diagonals with no vertical columns.

bundled tubes
An assembly of narrow tubes tied directly to each other to form a modular structure that behaves like a multicellular box girder cantilevering out of the ground. More tubes are sometimes provided in the lower portion of a tall structure where greater lateral force resistance is needed.

tube-in-tube structure
A tube structure having an inner braced tube added to the perimeter tube to improve its shear stiffness in resisting lateral forces.

braced core
An interior service core braced to provide additional stiffness in resisting lateral forces.

internal damping
The damping that naturally occurs as a building undergoes elastic or plastic deformation, as from the internal friction of a stressed material (hysteresis damping), from the friction between two moving parts (frictional damping), or from the viscous resistance of a fluid such as air (viscous damping).

aerodynamic damping
The shaping of a tall building to create turbulence which generates cross-wind lift to oppose cross-wind deflections during high wind.

turbulence
Irregular motion of the atmosphere characterized by up-and-down currents.
SURVEY

To determine the exact form, boundaries, extent, and position of a tract of land by linear and angular measurements and the application of the principles of geometry and trigonometry.

true north
The direction of the north pole from a given point.

magnetic north
North as indicated by the north-seeking pole of the magnetic needle in a compass.

bearing
A horizontal direction expressed in degrees east or west of a true or magnetic north or south direction.

azimuth
The angle of horizontal deviation, measured clockwise, of a bearing from a standard direction, as from north or south.

trace
A sequence of intersecting surveyed lines whose lengths and angles of intersection are recorded graphically on a map or as data in a table.

place of beginning
The starting point for a metes-and-bounds survey.

rectangular system
A system of land survey based on a modified grid of north-south principal meridians and east-west baselines. Also called government system.

range
One of a series of divisions numbered east or west from a guide meridian in the rectangular system of survey and consisting of a row of townships that are numbered north or south from a baseline.

township
A unit of land area in the rectangular system of survey, approximately 6 sq. mi. (93.2 sq. km) containing 36 sections.

section
One of the 36 numbered subdivisions of a township, each approximately one square mile (2.59 sq. km or 640 acres) and further subdivided into halves, quarters, and quarter quarters.

plane survey
A survey in which curvature of the earth's surface is ignored, and all distances and horizontal angles are assumed to be projected onto a horizontal plane.

land survey
A survey made to establish the length and bearing of boundary lines and the area of the tract bounded by these lines.

cadastral survey
A survey showing boundaries and property lines, usually made to create land units suitable for transfer of title.

metes and bounds
The property lines or boundaries of a parcel of land.

metes-and-bounds survey
A system of land survey in which the course and length of each boundary line of a parcel of land are called out starting at a known reference point and working around the periphery of the plat until returning to the place of beginning.

course
The compass direction from one reference point to the next for each leg of a metes-and-bounds survey, stated in degrees, minutes, and seconds as an angular deviation east or west of due north or south.

legal description
A written description of the location and boundaries of a specific parcel of land, based on a metes-and-bounds survey or a rectangular system of survey, or made with reference to a recorded plat.

principal meridian
In the rectangular system of survey, a north-south reference line established as a substantial landmark for a large area of land.

guide meridian
In the rectangular system of survey, a north-south reference line located between correction lines at 24-mile intervals to the east and west of principal meridians.

baseline
The principal east-west reference line for an area in the rectangular system of survey.

correction line
An east-west reference line located at 24-mile intervals to the north and south of a baseline in the rectangular system of survey, established to correct for the convergence of meridians and equalize east-west distances.

range line
In the rectangular system of survey, a north-south reference line located at 6-mile intervals between guide meridians.
trilateration
A method for determining the relative positions of three or more points by treating these points as vertices of a triangle or triangles of which the sides and angles can be measured.

tria ngulation
A trigonometric method for determining the position of a point by taking bearings from the end points of a baseline of known or measurable length.

baseline
A line of known length and position from which points or other lines may be established, as a corner of a building structure or a property line.

transit
A surveying instrument, as a theodolite, having a telescope that can be reversed by turning in a vertical plane, used for measuring horizontal and sometimes vertical angles.

theodolite
A precision instrument having a telescopic sight for establishing horizontal and sometimes vertical angles.

alidade
The entire upper part of a transit or theodolite, including the telescope, its supports, spirit level, horizontal circle, leveling devices, and the spindle.

horizontal circle
A circular plate, graduated in degrees, minutes, and seconds, and fixed to the base of a transit for measuring horizontal angles.

optical plummet
A device for centering a transit or theodolite over a reference point, used in place of a plumb bob in a strong wind.

levelling
A procedure for determining the difference in elevation between two points by means of a level or transit and a rod. Also called differential leveling.

elevation
The vertical distance above or below a datum.

spot elevation
The elevation of a certain point relative to a specified datum.

profile
A vertical section of the ground surface taken parallel to a survey line.

datum
Any level surface, line, or point used as a reference from which elevations are measured.

turning point
A point temporarily located and marked in order to establish the elevation or position of a surveying instrument at a new station.

station
A precisely located reference point over which a surveying instrument is centered. Also called instrument station, set-up.

bench mark
A marked point of known or assumed elevation, usually on a permanent object, from which other elevations may be established.
**TEMPLE**

An edifice or place dedicated to the worship or presence of a deity.

*Sacred*

Of or pertaining to religious objects, rites, or practices, as opposed to the secular or profane.

*Secular*

Of or pertaining to the temporal or worldly rather than the sacred or spiritual. Also, profane.

**Megalith**

A prehistoric monument consisting of an upright megalith, usually standing alone but sometimes aligned with others.

**Megalith**

A very large stone used as found or roughly dressed, esp. in ancient construction work.

**Monolith**

A single block of stone of considerable size, often in the form of an obelisk or column.

**Cairn**

A heap of stones piled up as a monument, tombstone, or landmark. Also, cairn.

**Passage grave**

A megalithic tomb of the Neolithic and early Bronze Ages found in the British Isles and Europe, consisting of a roofed burial chamber and narrow entrance passage, covered by a tumulus believed to have been used for successive family or clan burials spanning a number of generations. Also called chamber grave.

**Tumulus**

An artificial mound of earth or stone, esp. over an ancient grave. Also called barrow.

**Cromlech**

A circular arrangement of megaliths enclosing a dolmen or burial mound.

**Shaft grave**

A tomb of the Aegean civilizations consisting of a deep rectangular cut into sloping rock and a roof of timber or stone.

**Beehive tomb**

A stone-built subterranean tomb of the Mycenaean civilization consisting of a circular chamber covered by a corbeled dome and entered by a walled passage through a hillside. Also called tholos.

**Dromos**

A long, deep passageway into an ancient subterranean tomb.

**Ziggurat**

A temple-tower in Sumerian and Assyrian architecture, built in diminishing stages of mud brick with buttressed walls faced with burnt brick, culminating in a summit shrine or temple reached by a series of ramps; thought to be of Sumerian origin, dating from the end of the 4th millennium B.C. Also, zikurat.

**Tower of Babel**

A temple-tower presumed to be the great ziggurat at Babylon, which no longer survives, though it was seen and described by the Greek historian Herodotus, in the 5th century B.C.:

And they said to one another: Let us make brick, and burn it thoroughly. And they had brick for stone, and slime for mortar: And they said, Let us build us a city and a tower: whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth. 

—Genesis 11:4

**Lamassu**

The monumental stone sculptures of human-headed, winged bulls or lions that guarded the entrances to Mesopotamian palaces and temples.

**Dolmen**

A prehistoric monument consisting of two or more large upright stones supporting a horizontal stone slab, found esp. in Britain, France, and usually regarded as a tomb.

**Trilithon**

Two upright megaliths supporting a horizontal stone. Also called bilith.
pharaoh
Any of the rulers of ancient Egypt who were believed to be divine and had absolute power.

sphinx
A figure of an imaginary creature having the body of a lion and the head of a man, ram, or hawk, commonly placed along avenues leading to ancient Egyptian temples or tombs.

syrinx
A narrow rock-cut corridor in an ancient Egyptian tomb.

necropolis
A historic burial ground, esp. a large, elaborate one of an ancient city.

cavetto cornice
A characteristic cornice of Egyptian buildings, consisting of a large cavetto decorated with vertical leaves and a roll molding below. Also called Egyptian gorge.

obelisk
A tall, four-sided shaft of stone that tapers as it rises to a pyramidal point, originating in ancient Egypt as a sacred symbol of the sun-god Ra and usually standing in pairs aside temple entrances.

Osirian column
An ancient Egyptian column incorporating the sculptured figure of Osiris, the Egyptian god of death and resurrection.

Hathor-headed
Noting an ancient Egyptian column having as its capital the head of Hathor, the Egyptian goddess of love and happiness, often represented with the head or horns of a cow. Also, Hathoritic.

palm capital
An ancient Egyptian capital shaped like the crown of a palm tree.

lotus capital
An ancient Egyptian capital having the shape of a lotus bud.

pyramid
A massive masonry structure having a rectangular base and four smooth, steeply sloping sides facing the cardinal points and meeting at an apex, used in ancient Egypt as a tomb to contain the burial chamber and the mummy of the pharaoh. The pyramid was usually part of a complex of buildings within a walled enclosure, including mastabas for members of the royal family, an offering chapel and a mortuary temple. A raised causeway led from the enclosure down to a valley temple on the Nile, where purification rites and mummification were performed.

causeway
A raised passageway ceremonially connecting the valley temple with an ancient Egyptian pyramid.

cult temple
An ancient Egyptian temple for the worship of a deity, as distinguished from a mortuary temple.

mortuary temple
An ancient Egyptian temple for offerings and worship of a deceased person, usually a deified king. In the New Kingdom, cult and funerary temples had many features in common: an avenue of sphinxes leading to a tall portal guarded by a towering pylon, an axial plan with a colonnaded forecourt and a hypostyle hall set before a dark, narrow sanctuary in which stood a statue of the deity; and walls lavishly decorated with pictographic carvings in low or sunk relief. Many of the major temples grew by accretion due to the pious ambitions of successive pharaohs, who believed in the afterlife and were determined to create an enduring reputation through their buildings.

New Kingdom
The period in the history of ancient Egypt, c1550–1080 B.C., comprising the 18th to 20th dynasties; characterized by the dominance of its capital at Thebes.
TEMPLE

megaron
A building or semi-independent unit of a building, typically having a rectangular principal chamber with a central hearth and a porch, often of columns in antis: traditional in Greece since Mycenaean times and believed to be the ancestor of the Doric temple.

Greek temple
A temple built as a shrine to the ancient Greek god or goddess to whom it was dedicated. Since the temple was not intended for internal worship, it was built with special regard for external effect. It stood on a stylobate of three or more steps, with a cella containing the statue of the deity and front and rear porticoes, the whole being surrounded by a low gabled roof of timber, covered in terracotta or marble tiles.

altar
An elevated place or structure upon which sacrifices are offered or incense burned in worship, or from which religious rites are performed.

cella
The principal chamber or enclosed part of a classical temple, where the cult image was kept. Also called naos.

pediment
A wide, low-pitched gable surrounding a colonnade or a major division of a façade.

symposium
The triangular space enclosed by the horizontal and vertical cornices of a pediment, often recessed and decorated with sculpture.

stylobate
A course of masonry forming the foundation for a row of columns, esp. the outermost colonnade of a classical temple.

stereobate
A solid mass of masonry visible above ground level and serving as the foundation of a building, esp. the platform forming the floor and substructure of a classical temple. Also called crepidoma, podium.

tabor
The portable sanctuary in which the Hebrews carried the ark of the covenant through the desert until the building of the Temple of Jerusalem by Solomon.

holy of holies
The innermost chamber in the Holy of Holies, the Temple in Jerusalem where the ark of the covenant was kept. Also called sanctum sanctorum.

Ark of the Covenant
The chest containing two stone tablets inscribed with the Ten Commandments, carried by the Hebrews during their desert wanderings after the Exodus.

Temple of Solomon
The first Temple of Jerusalem, completed c.650 B.C. by Phoenician artisans under the direction of King Solomon and destroyed by Nebuchadnezzar II in 586 B.C. Based on Canaanite and Phoenician prototypes, it was oblong in shape, and consisted of three main parts: an outer hall (olam), the main sanctuary (hekhal), and the holy of holies (abin), all decorated with massive carvings in ivory, gold, and cedar.

synagogue
A building or place of assembly for Jewish worship and religious instruction.

bimah
The platform in a synagogue from which services are conducted. Also called amnemar; bema.

Holy Ark
The cabinet in a synagogue in which the scrolls of the Torah are kept, set into or against the wall that faces toward Jerusalem.

agora
A marketplace or public square in an ancient Greek city, usually surrounded with public buildings and porticoes and commonly used as a place for popular or political assembly.

stoa
An ancient Greek portico, usually detached and of considerable length, used as a promenade or meeting place around public places.

temenos
In ancient Greece, a piece of ground specially reserved and enclosed as a sacred place.
basilica
A large oblong building used as a hall of justice and public meeting place in ancient Rome, typically having a high central space lit by clerestory and covered by timber trusses, and a raised dais in a semicircular apse for the tribunal. The Roman basilica served as a model for early Christian basilicas.

tribunal
A raised platform in an ancient Roman basilica for the seats of magistrates. Also, tribune.

triumphal arch
A monumental monumental arch erected astride the line of march of a victorious army during its triumphal procession.

arch order
The engaged columns and entablature framing an arch, as in a triumphal arch.

clothed
Of or pertaining to a classical temple thus is roofed over.

hypothetical
Of or pertaining to a classical temple thus is wholly or partly open to the sky. Also, hypothetic.

pseudo-peripteral
Having engaged columns at the sides.

dipteral
Having two rows of columns on all sides.

pseudo-dipteral
Having an arrangement of columns suggesting a dipteral structure but without the inner colonnade.

peripteral
Having a single row of columns on all sides.

pteron
A colonnade parallel but apart from the cella.

pteron
The passage between the pteron and the cella.

forum
The public square or marketplace of an ancient Roman city, the center of judicial and business affairs, and a place of assembly for the people, usually including a basilica and a temple.

pantheon
A temple dedicated to all the gods of a people.

cenotaph
A monument erected in memory of a deceased person whose remains are buried elsewhere.
TEMPLE

mosque
A Muslim building or place of public worship. Also called masjid, masjidi.

madrassah
A Muslim theological school arranged around a courtyard and attached to a mosque, found from the 11th century on in Egypt, Tunisia, and Persia. Also, madrasa.

maidan
The large open square of a city, used as a marketplace or parade ground, esp. in India. Also, median, meydan.

zyada
A court or series of courts serving to shelter a mosque from immediate contact with secular buildings.

milbar
A pulpit in a mosque, recalling the three steps from which Muhammad addressed his followers.

qibla
The wall in a mosque in which the mihrab is set, oriented to Mecca. Also, qiblah, kibla, takab.

mihrab
A niche or decorative panel in a mosque designating the qibla.

Mecca
A city in Saudi Arabia, birthplace of Muhammad and spiritual center of Islam.

Ka'ba
A small, cubic stone building in the courtyard of the Great Mosque at Mecca containing a sacred black stone regarded by Muslims as the House of God, the objective of their pilgrimages, and the point toward which they turn in praying. Also, Ka'ba, Ka'bah.

caravansary
An inn in the Near East for the overnight accommodation of caravans, usually having a large courtyard enclosed by a solid wall and entered through an imposing gateway. Also, caravanserai.

pyramid
A masonry mass having a rectangular base and four stepped and sloping faces culminating in a single apex, used in ancient Egypt and pre-Columbian Central America as a tomb or a platform for a temple.

Islam
The religious faith of Muslims, based on the teachings of the prophet Muhammad, the central themes of which are belief in one God, Allah, the existence of Paradise and Hell, and the universal Judgment Day to come. Also called Muhammadanism.

Muslim
Of or pertaining to the law, religion, or civilization of Islam; a believer in Islam. Also, Moslem, Muslim.

Muhammad
Arab prophet and founder of Islam, A.D. 570–632. Also, Mohammed.

Koran
The sacred text of Islam, revered as the revelations made by Allah to Muhammad through the angel Gabriel and accepted as the foundation of Islamic law, religion, culture, and politics.

minaret
A lofty, slender tower attached to a mosque, having stairs leading up to one or more projecting balconies from which the muza in calls the Muslim people to prayer.

iwan
A large vaulted portal opening onto the central courtyard of a mosque. Also, iwan, IIwran.

sahn
The central courtyard of a mosque.

riwaq
An arcade hall of a mosque.

melon dome
A bulbous ribbed dome, found esp. in Islamic architecture.

stalactite work
A system of decoration in Islamic architecture, formed by the intricate corbeling of brackets, squinches, and inverted pyramids; sometimes wrought in stone but more often in plaster. Also called honeycomb work, muqarna.

pendentive bracketing
Corbeling having the general form of a pendentive, commonly found in Moorish architecture.

mezecorah
An openwork screen or partition enclosing an area for prayer or a tomb in a mosque.

tableto
A rectangular, strongly framed panel that overhangs a talud. An original contribution of Teotihuacan architecture, this talereto-talud combination was introduced c.900 to differentiate the stages of stepped pyramids and altar platforms. It is widely copied throughout Mesoamerica, with regional variations.

talud
In Mesoamerican architecture, an outer wall that slopes inward as it rises. The talud first appeared c.900 B.C. at the Olmec site of La Venta, in Tabasco state, Mexico.
Hinduism
The dominant religion of India, based upon the religion of the original Aryan settlers as expounded and evolved in the Vedas, having a diverse body of philosophy and cultural practices, many popular cults, and a large pantheon symbolizing a supreme being of many forms and natures. Buddhism is outside the Hindu tradition but is regarded as a related religion.

pantheon
The officially recognized gods of a people.

Vedas
The oldest sacred writings of Hinduism, composed between 1500 and 800 B.C., incorporating four collections: hymns, prayers, and liturgical formulas: Rig-Veda, Yajur-Veda, Sama-Veda, and Atharva-Veda.

stambha
A freestanding memorial pillar in Indian architecture, bearing carved inscriptions, religious emblems, or a statue. Also, stambha.

lit
A monolithic stambha, as distinguished from one built up of stone courses.

vihara
A Buddhist monastery in Indian architecture often excavated from solid rock, consisting of a central pillared chamber surrounded by a verandah onto which open small sleeping cells. Adjacent to this cluster was a courtyard containing the main stupa.

chattarp
A Buddha shrine in India, usually carved out of solid rock on a hillside, having the form of an ailed basilica with a stupa at one end.

wat
A Buddhist monastery or temple in Thailand or Cambodia.

Khmer
A people of Cambodia who established an empire in the 8th century A.D. and dominated most of Indochina from the 9th to the 12th centuries.

mandira
A Hindu temple.

rath
A Hindu temple cut out of solid rock to resemble a chariot. Also, ratha.

vimana
The sanctuary of a Hindu temple in which a deity is enshrined.

amalaka
The bulbous stone finial of a sikha.

sikha
A tower of a Hindu temple, usually tapering conically and capped by an amalaka. Also, sila.

mandapa
A large, porched hall leading to a Hindu temple and used for religious dancing and music.

gopura
A monumental, usually ornate gateway tower to a Hindu temple enclosure, esp. in southern India. Also, gopura.

stupa
A Buddhist memorial mound erected to enshrine a relic of Buddha and to commemorate some event or mark a sacred spot. Modeled on a funerary tumulus, it consists of an artificial dome-shaped mound raised on a platform, surrounded by an outer ambulatory with a stone vedika and four toranas, and crowned by a chattri. The name for the stupa in Ceylon is dagaba, and in Tibet and Nepal, chorten. Also called tope.

Buddhism
A religion based on the Four Noble Truths, originated in India by Gautama Buddha and later spreading to China, Burma, Japan, Tibet, and parts of Southeast Asia.

Four Noble Truths
The doctrines of Buddhism: all life is suffering; the cause of suffering is desire; cessation of suffering is possible through Nirvana—the extinction of craving. Nirvana can be reached through mental and moral self-purification.

Buddha
Title of Gautama Siddhartha (563–483 B.C.), Indian philosopher, religious leader, and founder of Buddhism. Also called Gautama Buddha.
TEMPLE

pagoda
A Buddhist temple in the form of a square or polygonal tower with roofs projecting from each of its many stories, erected as a memorial to hold relics. From the stupas, the Indian prototype, the pagoda gradually changed in form to resemble the traditional multi-storied watch tower as it spread with Buddhism to China and Japan. Pagodas were initially of timber, but from the 8th century on, were more frequently of brick or stone, possibly due to Indian influence.

pailou
A monumental gateway in Chinese architecture, having a tiered form of stone or wood construction with one, three, or five openings and often bold projecting roofs, erected as a memorial at the entrance to a palace, tomb, or sacred place; related to the Indian toranas and the Japanese torii. Also, pailou.

zhonglou
A bell tower or pavilion in Chinese architecture, located at the right side of a city gate, palace entrance, or forecourt of a temple.

gulou
A large drum tower or pavilion in Chinese architecture, located at the left side of a city gate, palace entrance, or forecourt of a temple.

dougong
A bracket system used in traditional Chinese construction to support roof beams, project the eaves outward, and support the interior ceiling. The absence of a triangular tied frame in Chinese architecture made it necessary to multiply the number of supports under the rafters. In order to reduce the number of pillars this would normally require, the area of support afforded by each pillar was increased by the dougong. Also, dou-kang.

ang
A lever arm in traditional Chinese construction, placed parallel to the rafters and raked at an angle to counterbalance the forces applied by the inner and outer purlins. The ang supports the outermost purlin by means of a bracket or cross-beam and is pinned at the inner end against a purlin.

Yingyang
A large Buddhist monastic center in northwest China, begun in A.D. 460, where there are numerous cave temples, each having a shallow, oval-shaped interior with a massive central image of Buddha flanked by two smaller Buddhas; the concept of carving into cliffs is believed to have come to China from India. Also, Yin-kang.

Yingzao
The spirit way that led from the south gate to a royal tomb of the Tang dynasty, lined with stone pillars and sculptured animal and human figures.

Tang
A dynasty in China, A.D. 618-907, marked by territorial expansion, the invention of printing, prosperous trade, and the development of poetry. Also, Tang.

Lindao
A monumentl gateway in Chinese architecture, located at the right side of a city gate, palace entrance, or forecourt of a temple.

gong
A cantilevered bracket in traditional Chinese construction. Also, kung.
dou
A bearing block in traditional Chinese construction. Also, tou.
Shinto
The indigenous religion of Japan, marked
by a cultic devotion to deities of natural
forces, ancestor worship, and veneration
of the emperor as a descendant of the
Sun Goddess, Amaterasu.

Shinmei-zukuri
A style of Shinto shrine embodying the
original style of Japanese building, before
the introduction of Buddhism. It consists
essentially of a small unpainted
rectangular structure raised above
ground level on posts inserted directly
into the earth. A raised veranda
surrounds the structure at floor level, a
freestanding post at each gable end
supports the ridge, and the eaves extend
outward from the thickly
thatched roof, forming chigi at each end.

kayon
An assembly hall for monks in a Japanese
Buddhist temple, in which sacred texts are
read.

torii
A monumental, freestanding gateway on
the approach to a Shinto shrine, consisting
of two pillars connected at the top by a
horizontal crosspiece and a lintel above it,
usually curving upward.

butsu
A representation of Buddha.

butsu
A large representation of Buddha.

chudo
The hall of worship of a Shinto shrine,
usually in front of the honden.

honden
The main sanctuary of a Shinto shrine.

haiden
The hall of worship of a Shinto shrine,
usually in front of the honden.

Kamagata-zukuri
A style of Shinto shrine, characterized
by a hipped roof extending from the
main roof, over a centrally placed
entrance stair at one gable end.

Kasuga-zukuri
A style of Shinto shrine, characterized
by a hipped roof extending from the
main roof, over a centrally placed
entrance stair at one gable end.

Nagare-zukuri
A style of Shinto shrine, based on the
latter prototype, but with the front slope
of the roof extending to form a canopy
over the entrance stair; this space
eventually developed into a prayer
room for worshipers.

kairo
The covered gallery surrounding
a precinct of a Japanese temple or shrine.

kashmon
The inner gateway to the precinct of a
Japanese temple or shrine.

shuro
A structure from which the temple bell is
hung, as one of a pair of small, identical,
symmetrically placed pavilions in a
Japanese Buddhist temple.

louko
An assembly hall for monks in a Japanese
Buddhist temple, in which sacred texts are
read.

murasaka
The crowning spire on a Japanese pagoda.

Kondo
Golden Hall, the sanctuary where the main
Image of worship is kept in a Japanese
Buddhist temple. The Jodo, Shinshu, and
Nichiren sects of Buddhism use the term
kondo for this sanctuary, the Shingon and
Tendai sects use chudo, and the Zen sect
uses butsuden.

nandaimon
The principal south gateway to a Japanese
temple or shrine.

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The Indigenous religion of Japan, marked
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forces, ancestor worship, and veneration
of the emperor as a descendant of the
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honden
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THEATER

A building, part of a building, or an outdoor area for housing dramatic presentations, stage entertainment, or motion-picture shows.

Greek theater
An open-air theater, usually hollowed out of the slope of a hillside with a tiered seating area around and facing a circular orchestra backed by the skene, a building for the actors' use.

orchestra
The circular space in front of the stage in the ancient Greek theater, reserved for the chorus.

chorus
The group of actors in ancient Greece that served as major participants in or commentators on the main action of the drama.

skene
A structure facing the audience in an ancient Greek theater, forming the background before which performances were given.

proscenium
The front part of the stage of an ancient Greek or Roman theater upon which the actors performed.

Greek amphitheater
An open-air theater, usu. hollowed out of the slope of a hillside, usually backed by the skene, a building for the actors' use.

Greek odeum:ter, usu. hollowed out of the slope of a hillside, as in ancient Greece.

Greek parodo: One of the two side passageways to an ancient Greek theater, between the stage and the seating area, through which the chorus entered the orchestra.

Greek parasceu:um
Either of two wings flanking and projecting forward from the skene of an ancient Greek theater, containing apartments for the actors.

Greek diazoma
A wedge-shaped section of seats between two stepped passageways in an ancient Greek theater.

Greek orchestra
A semicircular space in the front of the stage of an ancient Greek theater, reserved for senators and other distinguished spectators.

Greek podium
A raised platform encircling the arena of an ancient Greek amphitheater, having on it the seats of privileged spectators.

Greek vomitor: A large opening, as in an ancient Roman amphitheater or stadium, permitting large numbers of people to enter or leave. Also, vomitorium.

Greek supercolumnation
The placing of one order of columns above another, usually with the more elaborate orders at the top.

Roman theater
An open-air theater modeled upon that of the ancient Greeks, but often built on level ground with colonnaded galleries, a semicircular orchestra, and a raised stage backed by an elaborate architectural structure.

Roman orchestra
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Roman supercolumnation
The placing of one order of columns above another, usually with the more elaborate orders at the top.
seating
The arrangement of seats in a theater, stadium, or other place of assembly.

continental seating
A theater seating plan in which there is no center aisle, but with wide spacing between each row of seats to permit ease of passage.

isle
A walkway between or along sections of seats in a theater, auditorium, church, or other place of assembly.

blind row
A row of seats having its first seat at a side aisle and its last seat at a side wall.

stagehouse
The part of a theater in the stage side of the proscenium, including the stage, wings, and storage area.

gridiron
A still structure above the stage of a theater, from which hung scenery and equipment are manipulated. Also called grid.

flies
The space above the stage used chiefly for storing and hanging scenery and equipment. Also called fly loft.

bridge
A gallery or platform that can be raised or lowered over a stage and is used by technicians and stagehands.

batten
A length of metal pipe hung from the gridiron, for suspending scenery or equipment, as drop scenes, flats, or lighting units. Also called pipe batten.

flat
A piece of scenery consisting of a wooden frame, usually rectangular, covered with lightweight board or fabric.

orchestra shell
A sound-reflecting structure that closes off the flies and wings of a stage to form a performing area for music.

stage
The platform, usually raised, on which the actors perform in a theater. Also, the platform and all the parts of a theater back of the proscenium.

drop stage
A stage floor that moves vertically on an elevator, usually so that one set can quickly replace another. Also called lift stage.

proscenium stage
A stage that is framed by a proscenium arch.

proscenium arch
The arch that separates the stage from the auditorium. Also called proscenium.

surround theater
A theater or concert hall in which the seating is arranged around or on all four sides of a central stage.

arena theater
A theater with seats arranged on at least three sides around a central stage. Also called theater-in-the-round.

thrust stage
A stage that extends beyond the proscenium arch and is usually surrounded on three sides by seats.

spotlight
A strong, focused beam of light for calling attention to an object, person, or group on a stage. Also called spot.

houselights
The lamps providing illumination of an auditorium or the seating area of a theater.

drape
A narrow curtain or strip of painted canvas hung above the stage to mask the flies and form the top of the stage set.

teaser
A drapey or flat piece hung across the top of the proscenium arch to mask the flies and, together with the tormentors, frame the stage opening.

tormentor
A curtain or framed structure used directly behind the proscenium at each side of the stage to screen the wings and sidelights from the audience.

act curtain
A curtain for closing the proscenium opening between acts or scenes. Also called act drop, house curtain.

orchestra pit
The space reserved for musicians, usually the front part of the main floor, sometimes wholly or partly under the forward part of the stage.

footlights
The row of lights on the front of a stage, usually set in a trough, nearly on a level with the feet of the performers.

Theater

A structural frame based on the geometric rigidity of the triangle and composed of linear members subject only to axial tension or compression.

**plane truss**

A truss all of whose members lie in a single plane.

**trussing**

The rigid members forming a truss, subject to axial forces proportional to the rise of the truss. Buckling generally governs the size of compression members, while tensile stresses at the weakest points, usually at the connections, control the size of tension members.

**panel load**

A concentrated load applied to a panel point of a truss. To prevent secondary stresses from developing, the centroidal axes of truss members and the load at a joint should pass through a common point.

**direct stress**

The tensile or compressive stress that is constant through the depth of a structural member subject to axial tension or compression.

**secondary stresses**

Additional bending and shear stresses in a truss member resulting from an eccentric connection or a joint fixed against relative rotation. While trusses are assumed to have idealized pin connections, truss connections in reality may be bolted, welded, or riveted, imparting a degree of rigidity to the joints.

**stress reversal**

A change in the force of a truss member from tension to compression or vice versa caused by a change in the loading pattern.

**counterbrace**

A truss member subject to tension or compression under varying load conditions.

**funicular truss**

A truss having an overall shape derived from the funicular shape for a particular set of loads. The interior members of a funicular truss are zero-force members which serve only to brace compression members but they will carry forces if any changes occur in the pattern or magnitude of the loads.
method of sections
A method for determining member forces in a truss by considering the equilibrium of any portion of the truss assembly.

maxwell diagram
A graphic method for determining the magnitude and character of the stresses in the members of a truss.

Bow's notation
The method of labeling the spaces between forces or their lines of action with letters, each force being identified by the two letters in the adjacent spaces when proceeding in a clockwise manner around a joint.

Member forces are inversely proportional to the rise of a truss.

method of joints
A method for determining member forces in a truss by considering the equilibrium of the various joints idealized as joints in free-body diagrams.

A force polygon for external forces and reactions is constructed first, followed by the construction of force polygons for the member forces at individual joints.

Since theoretically only axial forces are transmitted from one member to another at the joints, the direction of member forces can be drawn parallel to the truss members. Working from two known points, a third point of intersection can be found by projecting force lines of known direction.
pitched truss
- A truss having inclined top chords.

trussed rafter
- A lightweight wood truss used in framing a roof, usually prefabricated of 2x4s and 2x6s joined with toothed-plate connectors.

crown post
- Any vertical member in a pitched truss, esp. a king post.

flat truss
- A truss having parallel top and bottom chords. Flat trusses are generally not as efficient as pitched or bowstring trusses. Also called parallel-chord truss.

trussed joist
- A lightweight, flat wood truss used in framing a floor, usually prefabricated of 2x4s and 2x6s joined with toothed-plate connectors.

A truss having inclined top chords.

Fink truss
- A Belgian truss having subdiagonals to reduce the length of compression web members toward the centerline of the span.

diagonal
- An inclined web member joining the top and bottom chords of a truss.

subdiagonal
- An inclined web member joining a chord with a main diagonal.

Belgian
- Of or pertaining to a pitched truss having only inclined web members.

Howe
- Of or pertaining to a flat or pitched truss having vertical web members in tension and diagonal web members in compression.

bowstring truss
- A truss having a curved top chord meeting a straight bottom chord at each end.

Belfast truss
- A timber bowstring truss.

crescent truss
- A truss having both top and bottom chords curving upward from a common point at each side. Also called camelback truss.

truss rod
- A metal tie rod serving as a tension member in a truss or trussed beam.

raised-chord truss
- A truss having a bottom chord raised substantially above the level of the supports.

sagging truss
- A truss having tension members extending from the foot of each top chord to an intermediate point on the opposite top chord.

kingbolt
- A steel rod serving as a king post. Also called king rod.

trussed beam
- A timber beam stiffened by a combination of diagonal truss rods and either compression struts or suspension rods.

gusset
- A plate for joining structural members meeting in a single plane. Also called gusset plate.

composite truss
- A truss having timber compression members and steel tension members.
VAULT

An arched structure of stone, brick, or reinforced concrete, forming a ceiling or roof over a hall, room, or other wholly or partially enclosed space.

key course
A course of keystones in the crown of a masonry vault.

vaulting course
A horizontal course forming the abutments or springers of a masonry vault.

transverse arch
An arch for stiffening a barrel vault or supporting a groin vault.

severey
A key between two transverse arches in a vaulted structure.

Since it behaves as an arch extended in a third dimension, the longitudinal supporting walls must be buttressed to counteract the thrusts of the arching action.

buttress
An external support built to stabilize a structure by opposing its outward thrusts, esp. a projecting support built into or against the outside of a masonry wall.

corbel vault
A vault constructed by corbeling courses of stone masonry. The resulting stepped surface can be smoothed or curved, but no arch action is incurred.

flying buttress
An inclined bar of masonry carried on a segmental arch and transmitting an outward and downward thrust from a roof or vault to a solid buttress that through its mass transforms the thrust into a vertical one. Also called arc-boutant.

pinnacle
A subordinate vertical structure terminating in a pyramid or spire, used esp. in Gothic architecture to add weight to a buttress pier.

buttress pier
The part of a pier that rises to take the thrust of a flying buttress.

amortization
A sloping top on a buttress or projecting pier to shed rainwater.

nosing
A projecting edge of a buttress.

shaft
A distinct, slender, vertical masonry feature engaged in a wall or pier and supporting or footing to support an arch or a ribbed vault.

vaulting shaft
A shaft that leads to the springer of a rib or group of ribs, either rising from the ground or from a corbel at a greater height in the face of the masonry.
barrel vault
A vault having a semicircular cross section. Also called crusade vault, tunnel vault, wagon vault.

groin
One of the curved lines or edges along which two intersecting vaults meet.

groin vault
A compound vault formed by the perpendicular intersection of two vaults, forming arched diagonal arches called groins. Also called cross vault.

web
A surface framed by the ribs of a ribbed vault.

underpitch vault
A compound vault having a central vault intersected by vaults of lower pitch. Also called Welsh vault.

rib vault
A vault supported by or decorated with arched diagonal ribs. Also called ribbed vault.

quadripartite vault
A rib vault divided into four parts by intersecting diagonal ribs.

sexpartite vault
A rib vault divided into six compartments by two diagonal ribs and three transverse ribs.

rib
Any of several arched members supporting a vault, defining its distinct surfaces or dividing these surfaces into panels.

arc doubleaux
A rib spanning the longitudinal axes of a rib vault and dividing it into bays or compartments. Also called transverse rib.

tierceron
A rib springing from a point of support on either side of the ogives or transverse ribs of a rib vault. Also called intermediate rib.

formeret
A rib against a wall, parallel to the longitudinal axis of a rib vault. Also called wall rib.

boss
An ornamental, knoblike projection, as a carved keystone at the intersection of ogives.

pendant
A sculptural ornament suspended from a roof truss, vault, or ceiling. Also called drop.

fan vault
A vault composed of a number of concave concoidal sections, usually four, springing from the corners of the vaulting compartment, often decorated with ribs that radiate from the springing like the framework of a fan.

conical vault
A vault having a circular cross section that is larger at one end than the other.

rampant vault
A vault springing from an abutment higher at one side than at the other.

annular vault
A barrel vault having a circular plan in the shape of a ring.

tripartite vault
A compound vault for covering a triangular space, formed by the intersection of three barrel vaults.

cloister vault
A compound vault formed by four coves meeting along diagonal vertical planes. Also called crossed vault.

key
The keystone at the crown or at the intersection of two or more vaulting ribs.

ogive
A rib crossing a compartment of a rib vault on a diagonal. Also called diagonal rib, groin rib.

lierne
An ornamental vaulting rib other than one springing from a pier or a ridge rib.

star vault
A vault having ribs, liernes, or tiercerons arranged in a star-shaped pattern. Also called stellar vault.
VISION

Sight: the act or power of sensing with the eyes.

To perceive with the eyes. The act of seeing is a dynamic and creative process. It is capable of delivering a stable, three-dimensional perception of the moving, changing images which make up our visual world. There are three steps in the swift and sophisticated processing which results in the images we see.

- Reception: our eyes receive energy input in the form of light.
- Extraction: basic visual features are extracted from this input.
- Inference: on the basis of these extracted features, inferences are made about our world.

Binocular vision
The three-dimensional stereoscopic vision resulting from the use of both eyes at the same time.

Convergence
The coordinated turning of the eyes inward to focus on a nearby point.

Accommodation
The process by which the human eye changes focus for objects at various distances, involving changes in the shape of the crystalline lens.

Parallax
The apparent displacement or change in direction of an observed object caused by a change in the position of the observer that provides a new line of sight.

Visual field
The area of the visual world that can be seen at one time.

Visual literacy
The ability to apprehend and interpret pictures, drawings, or other visual images.

Eye
Appreciative or discriminating visual perception.

Optical illusion
A perception of visual stimuli that represents what is perceived in a way different from the way it is in reality.

Field of vision
The entire field encompassed by the human eye when it is trained in any particular direction. Also called visual field.

Visual angle
The angle that an object or detail subtends at the point of observation, usually measured in minutes of arc.

Visual cortex
The portion of the cerebral cortex of the brain that receives and processes impulses from the optic nerves.

Visual acuity
Acuteness of vision as determined by a comparison with the normal ability to define certain letters at a given distance, usually 20 ft. (6 m).

Discrimination
The ability or power to see or make fine distinctions.

Aspect
Appearance to the human eye or mind.
figure-ground
A property of perception in which there is a tendency to see parts of a visual field as solid, well-defined objects standing out against a less distinct background.

foreground
The parts or portion of a scene, situated in the rear, as opposed to foreground.

background
The parts or portion of a scene, situated in the front, nearest to the viewer.

Gestalt psychology
The theory or doctrine that physiological or psychological phenomena do not occur through the summation of individual elements, but through gestalts functioning separately or interrelatedly. Also called configurationalism.

gestalt
A unified configuration, pattern, or field of specific properties that cannot be derived from the summation of the component parts.

pattern
A consistent, characteristic, or coherent arrangement based on the interrelation of component parts.

simultaneous contrast
A phenomenon of visual perception in which the stimulation of one color or value leads to the sensation of its complement, which is projected simultaneously on a juxtaposed color or value. Simultaneous contrast intensifies complementary colors and shifts analogous colors toward each other's complementary hue, esp when the juxtaposed colors are similar in value. When two colors of contrasting value are juxtaposed, the lighter color will deepen the darker color while the darker color will lighten the lighter one.

successive contrast
A phenomenon of visual perception in which intense exposure to one color or value leads to the sensation of its complement, which is projected as an afterimage on another color or surface viewed immediately thereafter.

afterimage
A visual sensation that persists after the stimulus that caused it is no longer operative or present.
Any of various upright constructions presenting a continuous surface and serving to enclose, divide, or protect an area.

**bearing wall**
A wall capable of supporting an imposed load, as from a floor or roof of a building. Also called load-bearing wall.

**nonbearing wall**
A wall supporting no load other than its own weight. Also called non-load-bearing wall.

**cantilever**
A plaster or similar feature projecting from a corner of a building.

**pilaster**
A shallow rectangular feature projecting from a wall, having a capital and a base and architecturally treated as a column.

**engaged column**
A column built so as to be truly or seemingly bonded to the wall before which it stands.

**return wall**
A short wall perpendicular to the end of a longer wall.

**piere**
A vertical supporting structure, as a section of wall between two openings or one supporting the end of an arch or lintel.

**discharging arch**
An arch built above another structural member to relieve its load. Also called relieving arch.

**lintel**
A beam supporting the weight above a door or window opening.

**template**
A horizontal timber or stone set in a wall to receive and distribute the pressure of a girder or beam, as over an opening. Also, templet.

**exterior wall**
A wall forming part of the envelope of a building, having one face exposed to the weather or to earth. Also called external wall.

**interior wall**
Any wall within a building, entirely surrounded by exterior walls.

**partition**
An interior wall dividing a room or part of a building into separate areas.

**bearing partition**
An interior wall carrying a structural load. Also called load-bearing partition.

**nonbearing partition**
An interior wall supporting no load other than its own weight. Also called non-load-bearing partition.

**screen**
A movable or fixed device, esp. a framed construction, designed to divide, conceal, or protect.

**movable partition**
A partition capable of being moved to different locations. Also called demountable partition.

**coping**
A finishing or protective cap or course to an exterior wall, usually sloped or curved to shed water.

**splayed coping**
A coping that slopes only in one direction. Also called wedge coping.

**saddle coping**
A coping that slopes to either side of a center ridge. Also called saddlebacked coping.

**parapet**
A low, protective wall at the edge of a terrace, balcony, or roof, esp. that part of an exterior wall, line wall, or party wall that rises above the roof.

**gable wall**
A wall bearing or crowned by a gable.

**basement wall**
A foundation wall that encloses a usable area under a building.

**party wall**
A wall used jointly by contiguous structures, erected upon a line dividing two parcels of land, each of which is a separate real estate entity.

**blind wall**
A wall having no windows, doorways, or other openings.
frame house
A house constructed with a skeletal framework of timber, usually sheathed with siding or shingles.

plate
Any of various horizontal timbers laid flat across the heads of studs or upon floors to support joists, rafters, or studs at or near their ends.

wall plate
A horizontal member built in or laid along the top of a wall to support and distribute the load from joists or rafters. Also called raising plate.

top plate
The uppermost horizontal member of a framed wall on which joists or rafters rest.

corner brace
A diagonal brace set into stud framing to reinforce the corner of a frame structure.

let in
To insert into the surface of a stud, wall, or the like as a permanent addition.

corner post
An assembly of two or more studs spiked together at the intersection of two framed walls to provide a nailing surface for finish materials.

backing
A narrow wood strip fixed to the corner of a framed partition to provide a nailing surface for finish materials.

finestop
A material or member built into a building frame to block a concealed hollow space through which a fire might spread from one part of the building to another.

ledger strip
A piece attached to the face of a beam at the bottom as a support for the ends of joists.

ribbon
A thin, horizontal board let into stud framing to carry the ends of joists. Also called ledger, ribbon, ribbon strip.

balloon frame
A wooden building frame having studs that rise the full height of the frame from the sill plate to the roof plate, with joists nailed to the studs and supported by sills or by ribbons let into the studs.

blocking
A number of small wood pieces inserted to space, join, or reinforce members of a building frame, fill the spaces between them, or provide a nailing surface for finish materials.

stud wall
A wall or partition framed with studs and faced with sheathing, siding, wallboard, or plasterwork. Also called stud partition.

stud
Any of a series of slender, upright members of wood or metal forming the structural frame of a wall or partition.

cramp
Any framing member that is shorter than usual, as a stud above a door opening or below a window sill.

center-to-center
From the centerline of one element, member, or part to the centerline of the next. Also called on center.

soleplate
The bottom horizontal member of a framed wall upon which a row of studs is erected. Also called shoe, sole, solepiece.

platform frame
A wooden building frame having studs only one story high, regardless of the stories built, each story resting on the top plates of the story below or on the sill plates of the foundation wall. Also called western frame.

pony wall
A dwarf wall for supporting floor joists.

dwarf wall
A wall less than a full story in height.

sill
The lowest horizontal member of a frame structure, resting on and anchored to a foundation wall. Also called mudding sill, sill plate.

box sill
A sill for a building frame, composed of a plate resting on a foundation wall and a joist or header at the outer edge of the plate, as well as a soleplate for studs resting either directly on the joists or on the rough flooring.

f. sill
A sill for a building frame, composed of a plate resting on a foundation wall and a joist or header at the outer edge of the plate.

anchor bolt
Any of various nails or bolts embedded in masonry or concrete to hold, secure, or support a structural member.

sill sealer
A resilient, fibrous material placed between a sill and a foundation wall to reduce air infiltration.

termite shield
Sheet metal installed atop a foundation wall or around pipes to prevent the passage of termites.

sheet metal
A material usually made of a thin metal sheet, used for finishes such as roofing, siding, and window framing.

wall
Any vertical structure, such as a wall, partition, or barrier, that encloses an area or separates two spaces.

frame
A structural system of vertical and horizontal members that provides support and division for a building or structure.

foundation
The portion of a building that supports the weight of the superstructure and provides stability against settling, sliding, and lateral forces.

sill plate
A horizontal member of a building frame that extends from the exterior of the building to the centerline of the foundation wall, serving as a support for the bottom of the studs.

mudding sill
A sill that is set in place after the foundation wall has been built and before the building frame is erected.

sill plate
A horizontal member of a building frame that extends from the exterior of the building to the centerline of the foundation wall, serving as a support for the bottom of the studs.
WALL

siding
A weatherproof material, as shingles, boards, or units of sheet metal, used for surfacing the exterior walls of a frame building.

corner board
A board against which siding is fitted at the corner of a frame structure.

batten
A small board or strip of wood used for various building purposes, as to cover joints between boards, support shingles or roofing tiles, or provide a base for lathing.

board and batten
Sidings consisting of wide boards or plywood sheets set vertically with butt joints covered by battens.

vertical siding
Sidings consisting of matched boards applied vertically.

clapboard
A long, thin board with one edge thicker than the other, laid horizontally as bevel siding.

bevel siding
Sidings composed of tapered boards, as clapboards, laid horizontally with the thicker lower edge of each board overlapping the thinner upper edge of the board below it. Also called lap siding.

Dolly Varden siding
Bevel siding rabbeted along the lower edge to receive the upper edge of the board below it.

bevel lap siding
A board or molding placed along the sloping sides of a gable to cover the ends of the siding.

sheathing
A rough covering of boards, plywood, or other panel materials applied to a frame structure to serve as a base for siding, flooring, or roofing.

structural sheathing
Sheathing capable of bracing the plane of a framed wall or roof.

diagonal sheathing
A sheathing of boards applied diagonally for lateral strength.

boarding
A structure of boards, as for sheathing or subflooring.

building paper
Any of various papers, felts, or similar sheet material used in construction to prevent the passage of air or moisture.

shiplap
A flush, overlapping joint, as a rabbit, between two boards, joined edge to edge. Also, the boarding joined with such overlapping joints.

colonial siding
Sidings composed of plain, square-edged boards laid horizontally so that the upper overlaps the one below.

panelling
A series of panels, esp. decorative wood panels, joined in a continuous surface.

panel
A distinct portion, section, or division of a wall, wainscot, ceiling or door, esp. of any surface sunk below or raised above the surrounding area, or enclosed by a frame or border.

wainscot
A facing of wood paneling, esp. when covering the lower portion of an interior wall.

mullion
A vertical member dividing the panels in wainscoting.

ado
The lower portion of an interior wall when faced or treated differently from the upper section, as with paneling or wainscoting.

flush panel
A panel having a surface in the same plane as the surrounding frame.

raised panel
A panel having a center portion thicker than the edges or projecting above the surrounding frame. Also called fielded panel.

sunk panel
A panel having a surface recessed below the surrounding frame or surface.

flush bead
A bead having its outer surface at the same level as the adjoining surfaces.

cock bead
A bead that projects above or beyond the adjoining surfaces.

quirk
A groove or acute angle dividing a bead or other molding from adjoining members or surfaces.

bolection
A raised molding for framing a panel, doorway, or fireplace, esp. when the meeting surfaces are at different levels. Also, beveling.
anchor
Any of various metal devices used in curtain wall construction to secure a frame or panel to the building structure, usually allowing for adjustment in three dimensions.

unit system
A curtain wall system consisting of preassembled, framed wall units which may be preglazed or glazed after installation.

panel system
A curtain wall system consisting of preformed metal, cut stone, precast concrete, or panelized brick wall units, which may be preglazed or glazed after installation.

column-cover-and-spandrel system
A curtain wall system in which vision glass assemblies and spandrel units are supported by spandrel beams between exterior columns clad with cover sections.

curtain wall
An exterior wall supported wholly by the structural frame of a building and carrying no loads other than its own weight and wind loads.

gir
A horizontal member spanning between exterior columns to support wall sheathing or cladding.

safing
A noncombustible material placed in an opening to prevent the passage of fire, as between a curtain wall and a spandrel beam.

spandrel beam
A beam spanning between columns and supporting the outer edge of a floor or roof.

backup wall
An assembly of materials used behind a curtain wall to provide the required degree of fire-resistance.

spandrel
A panel-like area in a multistory frame building, between the sill of a window on one level and the head of a window immediately below. Also, spandrel.

stick system
A curtain wall system in which tubular metal mullions and rails are assembled piece by piece on-site to frame vision glass and spandrel units.

spandrel glass
An opaque glass for concealing the structural elements in curtain wall construction, produced by fusing a ceramic frit to the interior surface of tempered or heat-strengthened glass.

unit-and-mullion system
A curtain wall system in which one- or two-story-high mullions are installed before preassembled wall units are lowered into place behind the mullions. The framed wall units may be preglazed or glazed after installation.
WALL

Retaining wall
A wall of treated timber, masonry, or concrete for holding in place a mass of earth. A retaining wall can fail by overturning, sliding, or settling. Also called breast wall.

Surcharge
An additional or excessive load or burden, as that of the earth above the level of the top of a retaining wall.

cantilever wall
A retaining wall of reinforced concrete or reinforced concrete masonry, cantilevered from and securely tied to a spread footing that is shaped to resist overturning and sliding.

deadman
A log, concrete block, or similar mass buried in the ground as an anchor.

cribbing
g. a system of cribs for retaining earth or for a building being moved or having its foundation rebuilt. Also called cribwork.
c
a cellular framework of squared timbers, or steel or concrete members of similar form, assembled in layers at right angles, often filled with earth or stones and used in the construction of foundations and retaining walls.

Riprap
A layer of broken stones thrown together irregularly on an embankment slope to prevent erosion.

Erosion
Galvanized wire basket filled with stones and used in constructing an element or retaining structure.

Revet
to face a sloping surface or embankment with stone or other material.

Erosion: A facing of masonry or other suitable material for protecting an embankment against erosion.

Soil binder
A plant that prevents or inhibits erosion by providing a ground cover and forming a dense network of roots that hold the soil.

Soil stabilizer
A chemical admixture for maintaining or increasing the stability of a soil mass.
window sash
A manufactured assembly of a frame, sash, glassing, and necessary hardware, made to fit a window opening.

sash
The fixed or movable framework of a window or door in which panes of glass are set.

brick molding
A wood molding covering the gap between a door frame or window frame and the masonry wall into which the frame is set. Also called staff head.

head flashing
The flashing over a window opening or a projection in a masonry wall.

drip
Any of various devices for shedding rainwater so as to keep it from running down a wall or falling onto the sill of an opening.

drip cap
A projecting molding over an exterior door or window opening for catching and shedding rainwater.

backband
A molding surrounding the trim of a door or window.

window sill
A horizontal member at the base of a window opening, esp. the ledge formed by such a member.

wash
The upper surface of a building member, as a window sill or coping, sloped to shed rainwater. Also called weathering.

check thrust
A groove cut or forced on the underside of a sill or other exterior horizontal member to prevent the capillary flow of rainwater to a wall.

sub sill
An additional sill fitted to a window frame to cause rainwater to drip farther away from a wall surface. Also called sill drip molding.

dressing
The ornamental detail of a building, esp. the molded framework around door and window openings.

An opening in the wall of a building for admitting light and air, usually fitted with a frame in which are set operable sashes containing panes of glass.

pane
One of the divisions of a window or door, consisting of a single unit of glass set in a frame.

window pane
A pane of glass fitting a window sash.

mullion
A rabatted member holding the edges of windowpanes within a sash. Also called glazing bar, sash bar.

mullion
A vertical member between the lights of a window.

light
A medium for admitting light, as one compartment of a window or window sash. Also called day.

slip sill
A sill cut to fit between the jams of a window or door opening.

lug sill
A sill extending beyond a window or door opening and bolted into the jambs.

horn
That part of a jamb extending above the head of a door or window frame, or the horizontal extension of a window sill beyond the jamb.

stool
The interior sill of a window.

apron
A flat piece of trim immediately beneath the stool of a window. Also called skirt.

back
The area of interior wall, usually panelled, between a windowsill and the floor.
**WINDOW**

**double-hung window**
A window having two vertically sliding sashes, each in separate grooves or tracks and closing different parts of the window.

**sash fast**
A fastening for the meeting rail of one sash which engages with a corresponding rail of another sash and prevents or restrains any movement between sashes.

**sash fastener**
A fastening for the meeting rail of one sash which engages with a corresponding rail of another sash and prevents or restrains any movement between sashes.

**meeting rail**
The rail of each sash in a double-hung window that meets at the rail of the other when the window is closed.

**check rail**
A meeting rail, esp. one closing against a corresponding rail with a diagonal or radiating angle.

**plain rail**
A meeting rail equal in thickness to the other members of the frame.

**box-head window**
A double-hung window constructed with a pocket in the head, into which one or both sashes can pass to increase the opening available for ventilation.

**drop window**
A window constructed with a pocket below the sill, into which a sash can slide to increase the opening available for ventilation.

**horizontally sliding window**
A window having one or more sashes, all of which move horizontally along horizontal grooves or tracks.

**sliding sash**
A sash that opens by moving horizontally along grooves or tracks at the top and bottom of the window frame.

**single-hung window**
A window having two sashes, of which only one is movable.

**vertically sliding window**
A window having one or more sashes which move vertically and are held in various open positions by means of friction or a ratchet device instead of by sash balances or counterweights.

**sash balance**
A spring-loaded device used in place of sash weights to counterbalance a vertically sliding window sash. Also called spring balance.
extension casement hinge
A hinge for an outward-swinging casement window, located to allow cleaning from the inside when the window is open.

casement stay
A bar for holding a casement in any of several open positions.

lever operator
A gardener's device for operating a casement and holding it in an open position.

cam handle
A handle that locks a hinged sash in a closed position by wedging it against a keeper plate. Also called locking handle.

rotor operator
A crank-driven worm drive for opening and closing awning windows, casement windows, and jalousies.

wicket screen
A small sliding or hinged portion of a larger screen providing access for operating a window sash.

pivot window
A window having a sash that rotates 90° or 180° about a vertical or horizontal axis at or near its center, used in air-conditioned multistory or high-rise buildings and operated only for cleaning, maintenance, or emergency ventilation.

Jalousie window
A window having horizontal glass or wood louver which pivot simultaneously in a common frame, used primarily in mild climates to control ventilation and to cut off visibility from the outside.

Jalousie
A blind or shutter having horizontal slats that can be adjusted to admit light and air but exclude sun and rain.

shielding angle
The angle below which something can be seen when viewed through a louver.

fixed light
A window or sash of a window that does not open for ventilation. Also called fixed sash.

operable window
A window having a sash that may be opened for ventilation.

casement window
A window with at least one casement, often used in combination with fixed lights.

casement
A window sash opening on hinges generally attached to the upright side of its frame.

folding casement
A pair of casements with ribbed meeting stiles, hung in a frame having no mullion.

hanging stile
The stile of a window frame from which a casement is hung.

meeting stile
One of the studding stiles in a pair of casement.

French window
A pair of casement windows extending to the floor and serving as a doorway, esp. from a room to an outside porch or terrace.

cremorne belt
A vertical belt used on a French window or the like, consisting of two rods moved by a hand mechanism and extending into pockets in the head and sill of the opening to provide a secure fastening. Also, cremorne belt.

balconette
A railing or balustrade projecting slightly beyond the plane of a window and reaching to the floor, having the appearance of a balcony when the window is fully open. Also, balconette.

awning window
A window having one or more sashes swinging outward on hinges generally attached to the top of the frame.

projected window
A casement or awning window in which the inner end of the sash slides along a track on the sill or jamb as the sash swings outward.

hopper window
A window having one or more sashes swinging inward on hinges generally attached to the bottom. Also called hospital window.

hopper light
A window light hinged on the bottom and swinging inward. Also called hospital light.

hopper
One of the triangular draft barriers on each side of a hopper light.
picture window
A large, usually fixed single-pane window, placed to frame an attractive exterior view.

bay window
A window or series of windows projecting outward from the main wall of a building and forming a bay or alcove in a room within, esp. one having its own foundation.

window seat
A seat built into a recess of a window between the jambs.

cant window
A window having cantilevered sides.

swan window
A window having a rounded projection.

dormer window
A vertical window in a projection built out from a sloping roof. Also called lutherm.

internal dormer
A vertical window set below the line of a sloped roof.

lucarn
A dormer window in a roof or spire.

ocul
A comparatively small round or oval window, as in a frieze or dormer. Also called oeil-de-boeuf.

hood mold
A projecting molding over the arch of a window or door, esp. in interior work. Also, hood molding.

Palladian motif
A window or doorway in the form of a round-headed archway flanked on either side by narrower compartments, the side compartments being capped with entablatures on which the arch of the central compartment rests. Also called Serlian motif, Venetian motif.

window wall
A nonbearing wall composed primarily of vertical and horizontal framing members containing a combination of fixed lights and operating sashes.

ribbon window
A horizontal band of windows, separated only by Mullions.

clerestory
A portion of an interior rising above adjacent rooftops and having windows admitting daylight to the interior. Also, clerestory.

borrowed light
A window opening in an interior partition allowing light to be transmitted from one space to another.

pass-through
A windowlike opening in a wall or partition through which things may be passed, as between a kitchen and a dining room.

gable window
A window in or under a gable.

oriel
A bay window supported from below by corbels or brackets.

meshrebeyah
An oriel screened by latticework, through which the air may draw freely while the interior is concealed from view, found along the streets of Cairo and other towns of the Levant. Also, meshrebeyah, meshrebeyah.

lychnoscope
A small window set low in the wall of a medieval church, permitting the interior to be seen from the outside. Also called low-side window.

screen
A frame holding a fine mesh of metal or fibreglass, placed in a window or doorway, or around a porch to admit air but exclude insects.

storm window
A supplementary sash placed outside an existing window as additional protection against severe weather. Also called storm sash.

combination window
A window equipped with interchangible screen and glass sections for summer and winter use.
plate tracery
Early Gothic tracery formed of pierced slabs of stone set on edge, the design being in the shape and disposition of the openings. Also called perforated tracery.

bar tracery
Gothic tracery that succeeded plate tracery, consisting of molded stone mullions that divide into various branching elements which fill the window head.

reticulated tracery
Gothic tracery consisting mainly of a netlike arrangement of repeated geometrical figures. Also called net-tracery.

gomeric tracery
Gothic tracery characterized by a pattern of geometric shapes, as circles and foils. Also called geometric tracery.

mouchette
A dagger-like motif found esp. in Gothic tracery, formed by elliptical or ogive curves.

curvilinear tracery
Gothic tracery characterized by a pattern of irregular, boldly curved forms. Also called flowing tracery.

angel light
A triangular light in a Gothic window, formed by the arch of the window, an arch of a lower tier of tracery, and a mullion of an upper tier of tracery.

perpendicular tracery
Predominantly vertical Gothic tracery having mullions rising to the curve of the arch, crossed at intervals by horizontal transoms. Also called rectilinear tracery.

trefoil
An arrangement of three foliots divided by cusps and radiating from a common center.

quatrefoil
An ornament composed of four foliots divided by cusps and radiating from a common center.

cinquefoil
A design composed of five foliots, divided by cusps and radiating from a common center.

multifoil
Having more than five foliots.
WOOD

The tough, fibrous cellular substance that makes up most of the stems and branches of trees beneath the bark.

**bark**
The tough external covering of a woody stem, branch, or root, composed of a living inner layer called phloem and an outer bark of corky, dead tissue.

**phloem**
A layer of tissue that carries food from the leaves to the growing parts of a tree. Also called inner bark.

**cambium**
A thin layer of reproductive tissue between the phloem and xylem, which produces new phloem on the outside and new xylem on the inside of stems, branches, and roots.

**softwood**
The wood from a conifer. The term is not descriptive of the actual softness of the wood.

**conifer**
Any of various predominantly evergreen, cone-bearing trees, as pine, fir, hemlock, and spruce.

**evergreen**
Having foliage that remains green and functional throughout the year or through more than one growing season.

**crown**
The leaves and living branches of a tree.

**trunk**
The main stem of a tree apart from its branches and roots.

**resin duct**
A tubular, intercellular space in a woody stem that secretes resins, esp. in conifers. Also called resin canal.

**resin**
A viscous, clear to translucent, organic substance exuded by certain pines, used in making varnishes, adhesives, and plastics.

**pitch**
The resinous sap that exudes from various conifers.

**xylem**
The woody tissue of a tree that provides support and conducts water and mineral nutrients upward from the roots.

**lignin**
An organic substance that, with cellulose, forms the woody cell walls of plants and the cementing material between them.

**cellulose**
An inert carbohydrate that is the chief constituent of the cell walls of plants and of dried woods, jute, hemp, and cotton, used in the manufacture of a wide variety of synthetic building materials.

**sapwood**
The younger, softer, living portion of wood between the cambium and heartwood, comparable in strength to heartwood but usually lighter in color, more permeable, and less durable. Also called alburnum.

**heartwood**
The older, harder, inactive core of a tree, usually darker, denser, and more durable than the surrounding sapwood. Also called duramen.

**annual ring**
A concentric layer of wood produced during a single year's growth of a temperate tree. Also called growth ring.

**springwood**
The softer, more porous portion of an annual ring that develops early in the growing season, characterized by large, thin-walled cells. Also called early wood.

**summerwood**
The harder, denser, less porous portion of an annual ring that develops late in the growing season, characterized by compact, thick-walled cells. Also called late wood.

**tracheid**
One of the elongated, supporting and conducting cells in woody tissue, having tapering closed ends and lignified walls oriented parallel to the axis of a stem or branch.

**vessel**
A tubular structure of woody tissue for conducting water and mineral nutrients, formed by cell fusion and loss of end walls in a series of connected cells.

**ray**
One of the vertical bands of transverse cells that radiate between pith and bark for the storage and horizontal conduction of nutrients.

**pore**
One of the relatively large vertical cells for conducting sap, esp. in hardwood trees.

**saps**
The vital fluid of water, nitrogen, and mineral nutrients that circulates through a plant.

**fiber**
One of the slender, thick-walled cells which together serve to strengthen plant tissue.
**equilibrium moisture content**
The moisture content at which wood neither gains nor loses moisture when surrounded by air at a given temperature and relative humidity.

**fiber-saturation point**
The stage in the drying or wetting of wood at which the cell walls are fully saturated but the cell cavities are void of water, ranging from a moisture content of 20% to 32% for commonly used species. Further drying results in shrinkage and generally greater strength, stiffness, and density of the wood.

**moisture content**
The amount of water contained in a wood piece, expressed as a percentage of the weight of the wood when oven-dry.

**working**
The alternate swelling and shrinkage of seasoned wood occurring with changes in moisture content caused by changes in the relative humidity of the surrounding air.

**acclimatize**
To store wood products, as millwork and flooring, in an interior space until the materials adapt to the moisture content and temperature of the new environment.

**board foot**
A unit of quantity for lumber equal to the volume of a piece whose nominal dimensions are 12 in. (304.8 mm) square and 1 in. (25.4 mm) thick.

**board measure**
Lumber measurement is board foot.

**nominal dimension**
The dimension of lumber before drying and surfacing, used for convenience in defining size and computing quantity. Nominal dimensions are always written without inch marks. Also called nominal size.

**dressed size**
The dimension of lumber after seasoning and surfacing, from 3/4 to 3/4 in. (9.5 to 18.1 mm) less than the nominal dimension. A dressed size is always written with inch marks ('). Also called dressed dimension.

**lumber**
The timber product manufactured by sawing, resawing, passing lengthwise through a planing machine, cross-cutting to length, and grading.

**seasoned**
Of or pertaining to lumber that has been dried to reduce its moisture content and improve its serviceability.

**kiln-dried**
Of or pertaining to lumber seasoned in a kiln under controlled conditions of heat, air circulation, and humidity.

**air-dried**
Of or pertaining to lumber seasoned by exposure to the atmosphere.

**oven-dry**
Of or pertaining to lumber dried to a point at which no moisture can be extracted when exposed in a kiln to a temperature of 212°F (100°C) to 221°F (105°C).

**shrinkage**
The dimensional contraction of a wood piece occurring when its moisture content falls below the fiber-saturation point. Shrinkage is very slight along the grain, but significant across the grain.

**tangential shrinkage**
Wood shrinkage in a direction tangent to the growth rings, about double that of radial shrinkage.

**radial shrinkage**
Wood shrinkage perpendicular to the grain, across the growth rings.

**longitudinal shrinkage**
Wood shrinkage parallel to the grain, about 2% of radial shrinkage.
WOOD

grain
The direction, size, arrangement, and appearance of the fibers in a piece of dressed wood.

edge grain
Wood grain resulting from quartersawing, having the annual rings forming an angle of 45° or more with the broad faces of a piece. Also called vertical grain.

quartersaw
To saw quartered logs approximately at right angles to the annual rings.

plain-saw
To saw a squared log into boards with evenly spaced parallel cuts. Also called bastard-saw.

warp
Any deviation from a plane or true surface of a board or panel, usually caused by uneven drying during the seasoning process or by a change in moisture content.

cup
A curvature across the width face of a wood piece, measured at the point of greatest deviation from a straight line drawn from edge to edge of the piece.

bow
A curvature along the length of a wood piece, measured at the point of greatest deviation from a straight line drawn from end to end of the piece.

crook
A curvature along the edge of a wood piece, measured at the point of greatest deviation from a straight line drawn from end to end of the piece.

twist
A warp resulting from the turning of the edges of a wood piece in opposite directions.

shake
A separation along the grain of a wood piece, usually between the annual rings, caused by stresses on a tree while standing or during felling.

pitch pocket
A well-defined opening between the annual rings of a softwood containing or having once contained solid or liquid pitch.

check
A lengthwise separation of wood across the annual rings, caused by uneven or rapid shrinkage during the seasoning process.

split
A check that extends completely through a board or wood veneer. Also called internal check.

knot
The base of a woody branch enclosed by a subsequent growth of wood in the stem from which it rises. In the structural grading of a wood piece, knots are restricted by size and location.

rip
To saw wood in the direction of the grain. Also called rip-saw.

diagonal grain
Wood grain having the annual rings at an angle to the length of a piece, resulting from sawing at an angle to the axis of a log.

cross grain
Wood grain having the cells and fibers running transversely or diagonally to the length of a piece as a result of sawing, or irregularly as a result of a growth characteristic.

close grain
Wood grain characterized by narrow, inconspicuous annual rings with little difference in pore size between springwood and summerwood.

coarse grain
Wood grain characterized by wide, conspicuous annual rings with considerable contrast in pore size between springwood and summerwood.

coarse texture
Wood grain having large pores. Also called open grain.

fine texture
Wood grain having small, closely spaced pores.

raised grain
A dressed wood surface having the dents summerwood rising above the softer springwood.

live knot
A knot having annual rings intergrown with those of the surrounding wood. Live knots are allowable in structural timber within certain size limits. Also called intergrown knot.

sound knot
A knot that is solid across its face, at least as hard as the surrounding wood, and undecayed.

tight knot
A knot held firmly in place by growth or position.

dead knot
A knot having annual rings not intergrown with those of the surrounding wood. Encasement may be partial or complete, but a dead knot is considered to be a defect since it can easily loosen or be knocked out. Also called encased knot, loose knot.

decay
The decomposition of wood by fungi and other microorganisms, resulting in softening, loss of strength and weight, and often a change of texture and color.

dry rot
A decay of seasoned timber caused by fungi that consume the cellulose leaving a soft, brittle skeleton readily reduced to powder.

pecky
Having isolated spots of incipient decay from fungi, as pecky cypress or pecky cedar.
boards
Yard lumber less than 2 in. (51 mm) thick and 2 in. or more wide.

dimension lumber
Yard lumber from 2 to 4 in. (51 to 102 mm) thick and 2 in. or more wide.

structural lumber
Dimension lumber and timbers graded either by visual inspection or mechanically on the basis of strength and intended use. Also called framing lumber.

timbers
Yard lumber 5 in. (127 mm) or more in the least dimension.

yard lumber
Softwood lumber intended for general building purposes, including boards, dimension lumber, and timbers.

appearance lumber
Lumber sawn or selected primarily for use as a finish material rather than for strength, graded according to natural characteristics and manufacturing imperfections.

joists and planks
Structural lumber of rectangular cross section, from 2 to 4 in. (51 to 102 mm) thick and more than 4 in. wide, graded primarily with respect to bending strength when loaded either on the narrow face as a joist or on the wide face as a plank.

light framing
Dimension lumber 2 to 4 in. (51 to 102 mm) thick and 2 to 4 in. wide, intended for use where high strength values are not required.

decking
Dimension lumber 2 to 4 in. (51 to 102 mm) thick and 4 in. or more wide, graded primarily with respect to bending strength when loaded on the wide face.

beams and stringers
Structural lumber of rectangular cross section, at least 6 in. (127 mm) thick and a width more than 2 in. (51 mm) greater than the thickness, graded primarily with respect to bending strength when loaded on the narrow face.

posts and timbers
Structural lumber of square or approximately square cross section, 5 x 5 in. or larger and a width not more than 2 in. (51 mm) greater than the thickness, graded primarily for use as columns carrying an axial load.

matched lumber
Lumber having edges dressed and shaped to form a tongue-and-groove joint when laid edge to edge or end to end.

patterned lumber
Lumber dressed and shaped to a pattern or molded form.
visual grading
The visual examination and grading of structural lumber by trained inspectors according to quality-reducing characteristics that affect strength, appearance, durability, or utility.

machine rating
The grading of structural lumber by a machine that fixes a test specimen, measures its resistance to bending, calculates its modulus of elasticity, and electronically computes the appropriate stress grade, taking into account such factors as the effects of knots, slope of grain, growth rate, density, and moisture content. Also called machine stress-rating.

grade mark
A stamp applied to each piece of lumber indicating the assigned stress grade, mill of origin, moisture content at time of manufacturing, species or species group, and the grading authority.

elevation of grain
The angle of grain relative to a line parallel to the length of a wood piece.

- treated wood
Wood that has been coated or impregnated with chemicals to improve its resistance to decay, insect infestation, or fire.

- pressure-treated wood
Wood impregnated with chemicals applied under pressure to reduce its resistance to decay and insect infestation.

- non-pressure-treated wood
Wood coated, dipped, or impregnated with a preservative under atmospheric pressure.

- fire-retardant wood
Wood treated with mineral salts impregnated under pressure to reduce flammability or combustibility. The salts react chemically at temperatures below the ignition point of wood, causing the combustible vapors normally generated in the wood to break down into water and carbon dioxide.

stress grade
Any of the grades of structural lumber for which a set of base values and corresponding modulus of elasticity is established for a species or group of species by a grading agency.

stressed grade
A base value for a species or group of species of structural lumber, adjusted for cross-sectional size.

- design value
Any of the allowable unit stresses for a species and grade of structural lumber obtained by modifying the base value by factors related to size and conditions of use.

- preservative
Any of various substances for coating or impregnating wood in order to protect it against wood-destroying fungi and insects.

- preservative
A base value for a species or group of species of structural lumber, adjusted for cross-sectional size.

- base value
Any of the allowable unit stresses for bending, compression perpendicular and parallel to grain, tension parallel to grain, horizontal sheaf, and corresponding modulus of elasticity, established by a grading agency for various species and grades of structural lumber. Base values must be adjusted first for size and then for conditions of use.

- size factor
A coefficient for modifying the base values of a species and grade of lumber according to the cross-sectional size of the piece.

- repetitive member factor
A coefficient for increasing the size-adjusted values of repetitive members, since the sharing of the load by the pieces enhances the strength of the entire assembly.

- repetitive member
Any of a series of three or more light framing members, as joists or rafters, spaced not more than 24 in. (610 mm) on center and joined by sheathing, decking, or other load-distributing members.

- duration of load factor
A coefficient for increasing the size-adjusted horizontal sheaf value of a wood member having shakes, checks, or splits when their length is known and any increase in length is not anticipated.

- load-use factor
A coefficient for increasing the size-adjusted bending value for planking having a face width of 4 in. (102 mm) or more.

- wet-use factor
A coefficient for decreasing the size-adjusted values for wood members when their moisture content will likely exceed 19% in use.

- waterborne preservative
An organic, water-soluble compound, as a chromated copper arsenate (CCA) or chromated copper arsenate (CCA) used as a wood preservative. CCA and CCA are chemically to the wood cell walls and is resistant to leaching. The copper acts as a fungicide while the arsenate is toxic to wood-destroying insects. Wood treated with CCA and CCA is colorless and paintable.

- oilborne preservative
An organic chemical dissolved in a petroleum oil carrier, as pentachlorophenol or copper naphthenate, used as a wood preservative. Pentachlorophenol, the most commonly used oil preservative, has a persistent odor, is toxic in water, and is highly toxic not only to fungi and insects but also to humans and plants.

- creosote
An oily liquid of aromatic hydrocarbons obtained by the distillation of coal tar, used as a wood preservative for marine installations or for severe exposures to wood-destroying fungi and insects. Creosote and creosote solutions have a penetrating odor and render wood unpaintable.
**Ferrule**  
A metal ring or cap placed around the end of a wooden post or handle to prevent splitting.

**Bracket load**  
An eccentric load applied at some point below the upper end of a timber column; the static effect of which is assumed to be equivalent to the same load applied axially plus an additional side load applied at midheight.

**Box column**  
A built-up column having a hollow, square or rectangular cross section.

**Bolster**  
A horizontal timber on a post for enlarging the bearing area and reducing the free span of a beam.

**Solid column**  
A wood column consisting of a single piece of solid-sawn or glued-laminated timber, usually square or rectangular in cross section.

**Tapered column**  
A wood column having a cross section that diminishes along its length. In determining the slenderness ratio for a tapered column, the least dimension is taken as the sum of the minimum diameter or least dimension and one-third the difference between the minimum and maximum diameters or lesser and greater dimensions.

**Built-up column**  
A wood column formed by fastening or gluing cover plates to two or more parallel planks, or boxing planks around a solid core. A built-up column is never equal in strength to a solid column of comparable material and overall dimensions.

**Spaced column**  
A wood column consisting of two or more parallel members separated at their ends and midpoints by blocking, and joined at the ends by timber connectors capable of developing the required shear resistance.

**Fitchplate**  
A steel plate for reinforcing a flitch beam.

**Fitch beam**  
A vertically laminated beam consisting of timbers set on edge and bolted side by side to steel plates or sections. Also called fitch girders, sandwich beam.

**Glued-laminated timber**  
A structural timber product made by laminating stress-grade lumber with adhesive under controlled conditions, usually with the grain of all plies being parallel. The advantages of glued-laminated timber over dimension lumber are generally higher allowable unit stresses, improved appearance, and availability of various sectional shapes. Glue-laminated timbers may be end-jointed with scarf or finger joints to any desired length, or edge-glued for greater width or depth. Also called glulam.

**Appearance grade**  
One of three grades of glue-laminated timber — premium, architectural, and industrial — based on surface appearance as affected by growth characteristics, wood fillers, and dressing operations.
WOOD

plywood
A wood panel product made by bonding veneers together under heat and pressure, usually with the grain at right angles to each other and symmetrical about the center.

exterior plywood
A plywood panel consisting of C-grade veneers or better, bonded with a fully waterproof glue for permanent exposure to weather or moisture.

interior plywood
A plywood panel made with D-grade veneers or better, bonded with an exterior, intermediate, or interior glue.

high-density overlay
An exterior wood panel having a resin-fiber overlay on both sides providing a smooth, hard, abrasion-resistant surface, used for concrete forms, cabinets, and countertops. Abbr: HDO

medium-density overlay
An exterior wood panel having a phenolic or melamine resin overlay on one or both sides providing a smooth base for painting. Abbr: MDO

specialty panel
Any of various wood panel products, as grooved or rough-sawn plywood, intended for use as siding or paneling.

1-11
An exterior plywood panel having grooves 7/16 in. (0.4 mm) deep and 3/16 in. (0.5 mm) wide, spaced 4 or 6 in. (102 or 152 mm) on center.

group number
A number identifying one of five groups of species used for the face and back veneers of a plywood panel, the species being classified on the basis of bending strength and stiffness, with Group 1 containing the stiffest species and Group 5 the least stiff.

span rating
A number specifying the maximum recommended center-to-center spacing in inches of the supports for a structural wood panel spanning with its long dimension across three or more supports.

exposure durability
A classification of a wood panel product according to its ability to withstand exposure to weather or moisture without weakening or warping.

exterior
An exposure durability classification for structural wood panels manufactured with a waterproof glue line for use as siding or other continuously exposed applications.

exposure 1
An exposure durability classification for structural wood panels manufactured with an exterior glue line for use in protected construction subject to repeated wetting.

exposure 2
An exposure durability classification for structural wood panels manufactured with an intermediate glue line for use in fully protected construction subject to a minimum of wetting.

grade stamp
A trademark of the American Plywood Association (APA), stamped on the back of a structural wood panel product to identify the panel grade, thickness, span rating, exposure durability classification, mill number, and National Research Board (NRB) report number.

panel grade
The grade of a wood panel product identified by the face and back veneer grades or by its intended use.

engineered grade
The grade of a structural wood panel based on its intended use as sheathing, subflooring, or in the fabrication of box beams and stressed-skin panels.

veneer grade
A grade defining the appearance of a veneer in terms of growth characteristics and the number and size of repairs that may be made during manufacture.

N-grade
A smooth softwood veneer of all heartwood or all sapwood, free from open defects with only a few well-matched repairs.

A-grade
A smooth, paintable softwood veneer with a limited number of nearly made repairs parallel to the grain.

B-grade
A softwood veneer having a solid surface with circular repair plugs, tight knots, and minor splits permitted.

C-grade
A softwood veneer having tight knots and knotholes of limited size, synthetic or wood repairs, and decolorization and sanding defects that do not impair the strength of the panel.

C-plugged grade
An improved C-grade softwood veneer having smaller knots and knotholes, some broken grain, and synthetic repairs.

D-grade
A softwood veneer having large knots and knotholes, pitch pockets, and tapering splits.
premium grade
The highest grade of hardwood veneer, permitting only a few small burrs, pin knots, and inconspicuous patches.

good grade
A grade of hardwood veneer similar to premium grade except that matching of veneer faces is not required.

sound grade
A sound, smooth hardwood veneer free of open defects but containing streaks, discoloration, patches, and small sound tight knots.

utility grade
A hardwood veneer permitting discoloration, streaks, patches, tight knots, small knotholes and splits.

backing grade
A grade of hardwood veneer similar to utility grade but permitting larger defects not affecting the strength or durability of the panel.

matching
Arranging sheets of veneers so as to emphasize the color and figure of the wood.

book matching
Arranging veneers from the same flitch alternately face up and face down to produce symmetrical mirror images about the joints between adjacent sheets.

herringbone matching
Book matching in which the figures in adjacent sheets slope in opposite directions.

diamond matching
Arranging four diagonally cut sheets of a veneer to form a diamond pattern about a center.

random matching
Arranging veneers to intentionally create a casual, unmatched appearance.

decorative plywood
Hardwood-faced plywood manufactured for use as paneling or in cabinetry and furniture.

veneer
A thin sheet of wood rotary cut, sliced, or spun from a log or flitch and used as a superior facing to inferior wood or bonded together to form plywood.

crossband
A layer of veneer immediately adjacent to and at right angles to the face plies of a plywood panel.

core
The center of a plywood panel, consisting of veneers, sawn lumber, or composition board.

banding
The solid wood stock extending around the sides of a veneered panel, concealing the core and facilitating the shaping of the panel edges.

figure
The natural pattern on a sawed wood surface produced by the intersection of annual rings, knots, burrs, rays, and other growth characteristics.

rotary cutting
The rotating of a log against the cutting edge of a knife in a lathe, producing a continuous veneer having a bold, variegated wavy figure. Also called plain slicing.

flat slicing
The longitudinal slicing of a half-log parallel to a line through its center, producing a quarter log parallel to the annual rings, producing a series of straight or varied stripes in the veneer.

quarter slicing
The longitudinal slicing of a quarter log perpendicular to the annual rings, producing characteristics of both rotary cutting and flat slicing.

half-round slicing
The slicing of a flitch mounted off-center in the lathe, slightly across the annual rings, producing characteristics of both rotary cutting and flat slicing.

rift cutting
The slicing of oak and similar species perpendicular to the conspicuous, radiating rays so as to minimize their appearance.
WOOD

oriented strandboard
A nonveneer wood panel product commonly used for sheathing and as subflooring, made by bonding three or five layers of long, thin wood strands under heat and pressure using a waterproof adhesive. The surface strands are aligned parallel to the long axis of the panel, making the panel stronger along its length. Abbr. OSB

waterboard
A nonveneer panel product composed of large, thin wood flakes bonded under heat and pressure with a waterproof adhesive. The planes of the wafers are generally oriented parallel to the plane of the panel, but their grain directions are random, making the panel approximately equal in strength and stiffness in all directions in the plane of the panel.

composite panel
A wood panel product consisting of two face veneers bonded to a reconstituted wood core.

particleboard
A nonveneer wood panel product made by bonding small wood particles under heat and pressure, commonly used as a core material for decorative panels and cabinetwork, and as underlayment for floors. Also called chipboard.

parallel strand lumber
A structural lumber product made by bonding long, narrow wood strands together under heat and pressure using a waterproof adhesive. Parallel strand lumber is a proprietary product marketed under the trademark Paralam, used as beams and columns in post-and-beam construction and for beams, headers, and lintels in light frame construction. Abbr. PSL

laminated veneer lumber
A structural lumber product made by bonding layers of wood veneers together under heat and pressure using a waterproof adhesive. Having the grain of all veneers run in the same longitudinal direction results in a product that is strong when edge loaded as a beam or face loaded as a plank. Laminated veneer lumber is marketed under various brand names, as Microlam, and used as headers and beams or as flanges for prefabricated wood I-joists. Abbr. LVL

fiberboard
A building material made of wood or other plant fibers compressed with a binder into rigid sheets.

handboard
A very dense, compressed wood fiberboard.

tempered hardboard
A hardboard impregnated with a drying oil or other oxidizing resin and baked to improve its hardness and moisture resistance.

Masonite
Trademark for a brand of tempered hardboard.

Peg-Board
Trademark for a brand of tempered hardboard having regularly spaced perforations into which hooks may be inserted for the storage or display of articles.
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Architecture is an art for all to learn because all are concerned with it. —John Ruskin

Architecture depends on Order, Arrangement, Euphony, Symmetry, Propriety, and Economy. All of these must be built with due reference to durability, convenience, and beauty. Durability will be assured when foundations are carried down to the solid ground and materials wisely and liberally selected; convenience, when the arrangement of the apartments is faultless and presents no hindrance to use, and when each class of building is assigned to its suitable and appropriate exposure; and beauty, when the appearance of the work is pleasing and in good taste, and when its members are in due proportion according to correct principles of symmetry. —Vitruvius

Architecture is the masterly, correct and magnificent play of masses brought together in light. —Le Corbusier

Anyone entering on the study of architecture must understand that even though a plan may have abstract beauty on paper, the four facades may seem well balanced and the total volume well proportioned, the building itself may turn out to be poor architecture. Internal space, that space which cannot be completely represented in any form, which can be grasped and felt only through direct experience, is the protagonist of architecture. To grasp space, to know how to see it, is the key to the understanding of building. —Bruno Zevi

Architecture, painting, and sculpture are called the fine arts. They appeal to the eye as music does to the ear. But architecture is not judged by visual appeal alone. Buildings affect all of the human senses — sound, smell, touch, taste, and vision. —Forrest Wilson

It became apparent to us that architecture is generally assumed to be a highly specialized system with a set of prescribed technical goals rather than a sensual social art responsive to real human desires and feelings. This limitation is most frighteningly manifested in the reliance on two-dimensional diagrams that lay more stress on the quantifiable features of building organization than on the polychromatic and three-dimensional qualities of the whole architectural experience. —Kent Bloomer & Charles Moore

The only way you can build, the only way you can get the building into being, is through the measurable. You must follow the laws of nature and use quantities of brick, methods of construction, and engineering. But in the end, when the building becomes part of living, it evokes unmeasurable qualities, and the spirit of its existence takes over. —Louis Kahn

Built environments have various purposes: to shelter people and their activities and possessions from the elements, from human and animal enemies, and from supernatural powers; to establish place; to create a humanized, safe area in a profane and potentially dangerous world; to stress social identity and indicate status; and soon. Thus the origins of architecture are best understood if one takes a wider view and considers sociocultural factors, in the broadest sense, to be more important than climate, technology, materials, and economy. In any situation, it is the interplay of all these factors that best explains the form of buildings. No single explanation will suffice, because buildings — even apparently humble dwellings — are more than material objects or structures. They are institutions, basic cultural phenomena. People think environments before they build them. Thought orders space, time, activity, status, roles, and behavior. But giving physical expression to ideas is valuable. Encoding ideas makes them useful mnemonics; ideas help behavior by reminding people of how to act, how to behave, and what is expected of them. It is important to stress that all built environments — buildings, settlements, and landscapes — are one way of ordering the world by making ordering systems visible. The essential step, therefore, is the ordering or organizing of the environment. —Amos Rapaport

Ruskin said: 'Great nations write their autobiographies in three manuscripts, the book of their deeds, the book of their words and the book of their art. Not one of these books can be understood unless we read the two others, but of the three the only trustworthy one is the last.' On the whole I think this is true. If I had to say which was telling the truth about society, a speech by a minister of housing or the actual buildings put up in his time, I should believe the buildings. —Kenneth Clark

We require of any building, that it act well, and do the things it was intended to do in the best way; that it speak well, and say the things it was intended to say in the best words; that it look well, and please us by its presence, whatever it has to do or say. —John Ruskin

Architecture also exists without necessary assistance from an architect; and architects sometimes create buildings which are not architecture. —Norval White

Architecture is produced by ordinary people, for ordinary people, therefore it should be easily comprehensible to all. —Steen Eller Rasmussen